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July 28, 2015

Delivered by RESS, Email and Courier

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street
Suite 2701
Toronto, ON M4P 1E4

Dear Ms. Walli:

Re: Lead Lag Study
North Bay Hydro Distribution Ltd. ("NBHDL")
Board File No. EB-2014-0099

In accordance with the Board's Decision and Order of July 16, 2015 and NBHDL's letter of June 12, 2015 in respect of the above noted matter, NBHDL encloses its Lead-Lag Study as prepared by Navigant Consulting Ltd ("Navigant").

In NBHDL's letter of June 12, 2015, NBHDL requested the consent of the Board to approve recovery of the incremental costs (both internal and external) associated with the Navigant lead-lag study (the "Study").

With respect to such incremental costs, Navigant was retained to conduct the Study. The quote for Navigant's drafting of the Study was $35,000 plus five (5) percent, however a final invoice has not yet been received. Additional costs were set on a time and materials basis from Navigant (i.e. responding to interrogatories from the Intervenors) in addition to legal support on a time and materials basis.

NBHDL believes that recovery of these incremental costs is just and reasonable in the circumstances. The amounts represent the true incremental costs over and above NBHDL's 2015 Cost of Service Application. The need for such incremental costs was, as explained in NBHDL's June 12, 2015 letter, driven directly by the change in Board policy on working capital allowance and the Board's direction not to settle working capital allowance in this Application.

As of the date of this correspondence, final incremental costs are not yet known as final invoices have not yet been received. NBHDL undertakes to promptly notify the parties and the Board once final costs are known, which will likely occur only after the completion of any interrogatory process on the Study.

Yours very truly,

BORDEN LADNER GERVAIS LLP
Per:

Original signed by James K. Little

John A.D. Vellone
Encl.

cc: Todd Wilcox, Cindy Tennant, Melissa Casson and Matt Payne, NBHDL
Parties in EB-2014-0099

NAVIGANT

Working Capital Requirements of North Bay Hydro Distribution Ltd.'s Distribution Business

Prepared for:

North Bay Hydro Distribution Ltd.

Navigant Consulting Ltd.
333 Bay Street
Suite 1250
Toronto, ON, M5H 2R2

www.navigant.com

July 27, 2015

This report (the "report") was prepared for North Bay Hydro Distribution Ltd. ("NBHDL") by Navigant Consulting, Ltd. ("Navigant"). The report was prepared solely for the purposes of NBHDL's rate filing to before the Ontario Energy Board and may not be used for any other purpose. Use of this report by any third party outside of NBHDL's rate filing is prohibited. Use of this report should not, and does not, absolve the third party from using due diligence in verifying the report's contents. Any use which a third party makes of this report, or any reliance on it, is the responsibility of the third party. Navigant extends no warranty to any third party.

NAVIGANT

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Section I: Executive Summary

Navigant was engaged by North Bay Hydro Distribution Limited ("NBHDL") to prepare a lead-lag study to calculate the working capital requirements for NBHDL's distribution business. The results of this study are provided in this report and are intended to be used in NBHDL's rebasing proceeding filed with the Ontario Energy Board ("OEB").

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 2014 data identify the following working capital amount in Table 1, below.

Table 1: Summary of Working Capital Requirements

Year	2014
Percentage of OMA	**10.43%**
Working Capital Requirement	**$ 8,259,014**

Table 2, below summarizes the detailed working capital requirements for 2014 calculated in the study.

Table 2: NBHDL Distribution Working Capital Requirements (2014)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	65.58	33.02	32.56	8.92%	$ 70,516,783	$ 6,289,679
OM&A Expenses	65.58	15.28	50.30	13.78%	$ 8,704,414	$ 1,199,610
DRC	65.58	24.36	41.22	11.29%	$ 1,778,578	$ 200,868
PILS	65.58	(28.70)	94.28	25.83%	$ 500,000	$ 129,149
Interest Expense	65.58	44.80	20.78	5.69%	$ 1,089,717	$ 62,044
Total					**$ 82,589,492**	**$ 7,881,351**
HST						$ 377,663
Total - Including HST						$ 8,259,014
Working Capital as a Percent of OM&A incl. Cost of Power						**10.43%**

Organization of the Report

Section II of the report discusses the lag times associated with NBHDL'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 NBHDL's expenses. The section includes a description of the types of expenses incurred by NBHDL'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 NBHDL until the date payments are received from customers and funds are available to NBHDL.

Interviews with NBHDL staff indicate that its distribution business receives funds from the following funding streams:

1. Retail Customers; and,
2. Other Sources (for example, revenues for service charges and late payments, sale of scrap and other miscellaneous services performed by NBHDL).

NBHDL 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 is expected to cease December 31, 2015. OCEB was removed from retail revenues in this study to reflect this known and measurable change. NBHDL 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.

Table 3: Summary of Revenue Lag

Description	Lag Days	Revenues	Weighting	Weighted Lag
Retail Revenue	65.59	$ 97,138,801	98.87%	64.85
Other Revenue	64.82	$ 1,106,358	1.13%	0.73
Total		**$ 98,245,158**	**100.00%**	**65.58**

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 NBHDL'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 NBHDL. Figure 1 illustrates the start and end point for each component of NBHDL's retail revenue lag.

Figure 1: Retail Revenue Lag

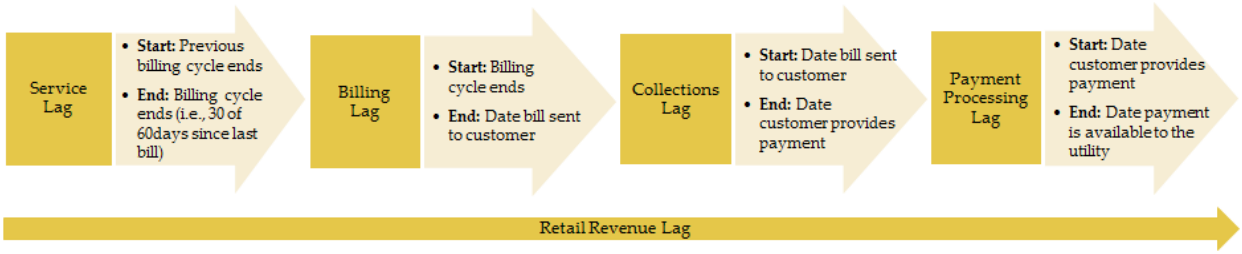

Table 3, below summarizes the total Retail Revenue Lag.

Table 4: Summary of Retail Revenue Lag

Description	Lag Days
Service Lag	15.25
Billing Lag	23.97
Collections Lag	24.56
Payment Processing Lag	1.80
Total	**65.59**

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

Service Lag

The Service Lag is the time from NBHDL'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 NBHDL customers are billed monthly. Therefore, the Service Lag was estimated to be 15.25 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, and the time that the bill is sent to the customer. NBHDL bills customers using the preliminary net system load shape from the IESO (available after the 15th of each month). Therefore, all bills are generated between the 15th and 30th of the month. In addition, three days are added to bills that are sent to customers using mail. Discussions with NBHDL staff and analysis of meter billing data indicated that NBHDL customers have an average billing lag of 23.97 days.

Collections Lag

The Collections Lag is the time period from when the bill is sent to the customer (including three days for bills that are sent by mail), until the time when the customer provides a payment to NBHDL. The Collections Lag is measured by analyzing the receivables aging data provided by NBHDL. NBHDL's Collection lag was calculated to be 24.56 days for NBHDL's distribution operations.

Payment Processing Lag

The Payment Processing lag is the time period from when the customer provides a payment to NBHDL 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 NBHDL customers. Some examples of the payment methods used include credit card, pre-authorized payment and branch payment.

NBHDL provided the processing time associated with each method of payment and the number of customers using each method of payment. Using such data provided by NBHDL for the calendar year 2014, a customer-weighted average payment processing lag of 1.80 days was determined for NBHDL's distribution operations.

Other Revenue Lag

NBHDL collects revenues from a variety of other activities such as service charges (collection fees, change of occupancy, legal letters, service calls, etc.), sale of scrap, and interest from monthly bank balances. NBHDL staff provided monthly data and payment information for each component of other revenue lag. Using such data provided by NBHDL for the calendar year 2014, a revenue-weighted average other revenue lag of 64.82 days was determined for NBHDL's distribution operations. Table 5 provides a breakdown of the amounts and revenue lag time associated with each component of the revenue lag.

Table 5: Summary of Other Revenues

Description		Amounts	Weighting	Revenue Lag Time	Weighted Lag Time
Rent from Electric Property	$	199,398	182.50	18.02%	32.89
Late Payment Charges	$	142,104	41.57	12.84%	5.34
Service Charges	$	598,993	41.58	54.14%	22.51
MicroFIT Monthly Charge	$	2,160	45.23	0.20%	0.09
NBHDL Services Management Fee	$	53,654	45.20	4.85%	2.19
Sale of Scrap	$	9,702	45.20	0.88%	0.40
Interest from Monthly Bank Balances	$	99,332	15.21	8.98%	1.37
Misc. Other Charges	$	1,015	41.11	0.09%	0.04
Total	**$**	**1,106,358**		**100.00%**	**64.82**

Section III: Expense Leads

Expense Leads are defined as the time period between when a service is provided to NBHDL and when payment is required 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;
4. Payments in Lieu of Taxes;
5. Interest on Long Term Debt; 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 NBHDL to its vendors in the following categories:

1. IESO Cost of Power Expenses;
2. Hydro One Cost of Power Expenses;
3. Customer Rebates;
4. Payments to Micro Feed-in Tariff (MFIT), and Feed-in Tariff (FIT) customers; and,
5. 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 33.02 days for cost of power expenses.

Table 6: Summary of Cost of Power Expenses

Description		Amounts	Weighting	Expense Lead Time	Weighted Lead Time
IESO Cost of Power	$	68,020,906	96.46%	32.78	31.62
Hydro One Cost of Power	$	1,266,460	1.80%	54.13	0.97
Customer Rebates	$	162,252	0.23%	39.47	0.09
Payments to MFIT and FIT customers	$	458,533	0.65%	47.16	0.31
Retailer Payments	$	608,631	0.86%	3.80	0.03
Total	**$**	**70,516,783**	**100.00%**		**33.02**

The following pages provide detailed transactional information for approximately 98 percent of the Cost of Power expenses: IESO Cost of Power and Hydro One Cost of Power expenses.

IESO Cost of Power Expenses

NBHDL 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. NBHDL provides the OCEB to customers and is reimbursed by the government through the settlement processes with the IESO. The OCEB is expected to cease December 31, 2015 and this study considers this a known and measurable change. Taking the information on actual payments made by NBHDL in 2014 and adjusting for the cessation of the OCEB, a dollar-weighted Cost of Power expense lead time of 32.78 days was calculated. Table 7 below summarizes the components of the Cost of Power expense lead calculation.

Table 7: Summary of IESO Cost of Power Expenses

Delivery Period	Amounts	Weighting Factor %	Payment Date	Service Lead Time	Payment Lead Time	Total Lead Time	Weighted Lead Time
Jan-14	$ 7,017,957	10.32%	2/19/2014	15.50	19.00	34.50	3.56
Feb-14	$ 7,036,252	10.34%	3/18/2014	14.00	18.00	32.00	3.31
Mar-14	$ 6,745,445	9.92%	4/16/2014	15.50	16.00	31.50	3.12
Apr-14	$ 4,776,424	7.02%	5/16/2014	15.00	16.00	31.00	2.18
May-14	$ 4,619,277	6.79%	6/17/2014	15.50	17.00	32.50	2.21
Jun-14	$ 4,652,565	6.84%	7/17/2014	15.00	17.00	32.00	2.19
Jul-14	$ 5,227,628	7.69%	8/19/2014	15.50	19.00	34.50	2.65
Aug-14	$ 4,580,095	6.73%	9/17/2014	15.50	17.00	32.50	2.19
Sep-14	$ 4,805,019	7.06%	10/17/2014	15.00	17.00	32.00	2.26
Oct-14	$ 5,267,573	7.74%	11/19/2014	15.50	19.00	34.50	2.67
Nov-14	$ 5,810,647	8.54%	12/16/2014	15.00	16.00	31.00	2.65
Dec-14	$ 7,482,023	11.00%	1/19/2015	15.50	19.00	34.50	3.79
Total	**$ 68,020,906**	**100.00%**					**32.78**

Hydro One Cost of Power Charges

NBHDL provides payment to Hydro One for cost of power expenses on a monthly basis including network, connection and low voltage services. Based upon information on payments made by NBHDL in 2014, a dollar-weighted Hydro One Cost of Power Charges expense lead time of 54.13 days was calculated. Table 8, below summarizes the components of the Hydro One Cost of Power Charges expense lead calculation.

Table 8: Summary of Hydro One Cost of Power Charges

Delivery Period		Amounts	Weighting Factor %	Payment Date	Service Lead Time	Payment Lead Time	Total Lead Time	Weighted Lead Time
Jan-14	$	128,094	10.11%	3/9/2014	15.00	39.00	54.00	5.46
Feb-14	$	98,035	7.74%	4/6/2014	14.50	38.00	52.50	4.06
Mar-14	$	103,795	8.20%	5/6/2014	14.50	39.00	53.50	4.38
Apr-14	$	56,360	4.45%	6/9/2014	16.00	41.00	57.00	2.54
May-14	$	80,150	6.33%	7/5/2014	15.00	37.00	52.00	3.29
Jun-14	$	106,079	8.38%	8/5/2014	14.50	39.00	53.50	4.48
Jul-14	$	95,973	7.58%	9/7/2014	16.00	40.00	56.00	4.24
Aug-14	$	93,826	7.41%	10/5/2014	15.00	38.00	53.00	3.93
Sep-14	$	167,739	13.24%	11/9/2014	16.50	40.00	56.50	7.48
Oct-14	$	118,418	9.35%	12/9/2014	15.50	39.00	54.50	5.10
Nov-14	$	109,879	8.68%	1/6/2015	15.00	37.00	52.00	4.51
Dec-14	$	108,112	8.54%	2/8/2015	15.50	39.00	54.50	4.65
Total	**$**	**1,266,460**	**100.00%**					**54.13**

OM&A Expenses

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

1. Payroll & Benefits;
2. Property Taxes; and,
3. 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 15.28 days for OM&A expenses.

Table 9: Summary of OM&A Expenses

Description	Amounts	Weighting	Expense Lead Time	Weighted Lead Time
Payroll & Benefits	$ 4,874,682	56.00%	18.25	10.22
Property Taxes	$ 66,357	0.76%	(67.42)	(0.51)
Miscellaneous OM&A	$ 3,763,376	43.24%	12.89	5.57
Total	**$ 8,704,414**	**100.00%**		**15.28**

Payroll & Benefits

The following items were considered to be expenses related to the Payroll & Benefits of NBHDL's regulated business:

1. Basic payroll;
2. Three types of payroll withholdings including the Canada Pension Plan, Employment Insurance, and Income Tax withholdings;
3. Contributions made by NBHDL to the NBHDL Pension Plan;
4. Group Life Insurance and Group Health and Dental Insurance related administrative fees and premiums, short and long-term disability, spending account, and employee assistance program;
5. Payments made by NBHDL on account of the Employer Health Tax (EHT);
6. Payments made by NBHDL to the Workplace Safety and Insurance Board (WSIB);
7. Payments made by NBHDL for the Social Club; and,
8. Payment made by NBHDL for union fees to CUPE.

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 18.25 days as shown in Table 10, below.

Table 10: Summary of Payroll & Benefits Expenses

Description	Amounts		Weighting	Expense Lead Time	Weighted Lead Time
Payroll	$	2,440,892	50.07%	9.36	4.69
Withholdings	$	1,138,412	23.35%	44.46	10.38
Pensions	$	697,756	14.31%	27.36	3.92
Group Life Insurance	$	43,227	0.89%	(14.21)	(0.13)
Group Health and Dental	$	353,725	7.26%	(14.21)	(1.03)
Short-Term and Long-Term Disability	$	50,767	1.04%	(14.21)	(0.15)
Spending Account	$	4,429	0.09%	(14.34)	(0.01)
Employee Assistance Program	$	2,495	0.05%	11.00	0.01
EHT	$	71,734	1.47%	8.60	0.13
WSIB	$	39,309	0.81%	28.25	0.23
CUPE	$	29,778	0.61%	33.19	0.20
Social Club	$	2,158	0.04%	33.25	0.01
	$	**4,874,682**	**100.00%**		**18.25**

Property Taxes

NBHDL makes property tax payments to the City of North Bay and the Ministry of Finance. These payments are made in the current year for the current year and are typically made in installments. Using the payment dates and amounts associated with NBHDL's distribution business for calendar year 2014, a dollar-weighted expense lead (-lag) time of negative 67.42 days was determined. Table 11, below summarizes the components of the property tax expense lead calculation.

Table 11: Property Tax Expenses

Municipality or Vendor	Amounts		Weighting Factor %	Payment Date	Service Lead Time	Payment Lead Time	Total Lead Time	Weighted Lead Time
City of North Bay	$	29,567	44.56%	2/13/2014	182.50	(320.00)	(137.50)	(61.27)
City of North Bay	$	33,504	50.49%	6/27/2014	182.50	(186.00)	(3.50)	(1.77)
Ministry of Finance	$	3,286	4.95%	4/3/2014	182.50	(271.00)	(88.50)	(4.38)
Total	**$**	**66,357**	**100%**					**(67.42)**

Miscellaneous OM&A

The Miscellaneous OM&A category includes items such as product purchases, equipment rentals, and provision of general services to NBHDL. Based on 2014 transactions in NBHDL's accounts payable system under the Miscellaneous OM&A category, a dollar-weighted expense lead time of 12.89 days was derived. Table 12, below summarizes the components of miscellaneous OM&A expense lead calculation.

Table 12: Summary of Miscellaneous OM&A Expenses

Description	Amounts		Weighting	Expense Lead Time	Weighted Lead Time
Outside Services	$	745,368	19.81%	12.33	2.44
Other Misc. OM&A	$	2,173,808	57.76%	(0.84)	(0.49)
Material Purchases	$	844,199	22.43%	48.73	10.93
Total	**$**	**3,763,376**	**100.00%**		**12.89**

Interest on Short-Term and Long-Term Debt

NBHDL makes interest payments on long-term and short-term loans out of current year revenues. NBHDL makes interest payments on three loans: infrastructure Ontario/smart meter loan, City of North Bay debt, and swap/capital loan. Table 13, below summarizes the components of the interest expense lead calculation. Taking into account the various long term and short term debt instruments, a dollar-weighted expense lead time of 44.80 days was determined for the 2014.

Table 13: Summary of Interest Expenses

Description	Amounts		Weighting	Expense Lead Time	Weighted Lead Time
Infrastructure Ontario/Smart Meter Loan	$	93,577	8.59%	0.41	0.04
City of North Bay Debt	$	975,580	89.53%	49.63	44.43
Swap/Capital Loan	$	20,560	1.89%	17.75	0.33
Total	$	1,089,717	100.00%		**44.80**

Debt Retirement Charge (DRC)

NBHDL 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 the estimated non-residential payment amounts that were made in calendar year 2014, a dollar-weighted expense lead time of 24.36 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	Amounts	Weighting Factor %	Payment Date	Service Lead Time	Payment Lead Time	Total Lead Time	Weighted Lead Time
Jan-14	$ 186,556	10.49%	2/6/2014	15.50	6.00	21.50	2.26
Feb-14	$ 202,129	11.36%	3/6/2014	14.00	6.00	20.00	2.27
Mar-14	$ 170,270	9.57%	4/2/2014	15.50	2.00	17.50	1.68
Apr-14	$ 172,250	9.68%	5/9/2014	15.00	9.00	24.00	2.32
May-14	$ 138,798	7.80%	6/12/2014	15.50	12.00	27.50	2.15
Jun-14	$ 119,366	6.71%	7/10/2014	15.00	10.00	25.00	1.68
Jul-14	$ 130,470	7.34%	8/7/2014	15.50	7.00	22.50	1.65
Aug-14	$ 128,027	7.20%	9/11/2014	15.50	11.00	26.50	1.91
Sep-14	$ 125,946	7.08%	10/14/2014	15.00	14.00	29.00	2.05
Oct-14	$ 121,841	6.85%	11/13/2014	15.50	13.00	28.50	1.95
Nov-14	$ 127,772	7.18%	12/11/2014	15.00	11.00	26.00	1.87
Dec-14	$ 155,153	8.72%	1/14/2015	15.50	14.00	29.50	2.57
Total	**$ 1,778,578**	**100.00%**					**24.36**

Payment in Lieu of Taxes (PILs)

NBHDL makes payments in lieu of taxes in three installments to the relevant taxing authorities. Using payment amounts that were made in calendar year 2014, a dollar-weighted expense lead time of negative 28.70 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		Amounts	Weighting Factor %	Payment Date	Service Lead Time	Payment Lead Time	Total Lead Time	Weighted Lead Time
2014	$	300,000	60.00%	5/16/2014	182.50	(229.00)	(46.50)	(27.90)
2014	$	100,000	20.00%	6/19/2014	182.50	(195.00)	(12.50)	(2.50)
2014	$	100,000	20.00%	7/10/2014	182.50	(174.00)	8.50	1.70
Total	**$**	**500,000**	**100.00%**					**(28.70)**

Harmonized Sales Tax (HST)

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

1. Revenues;
2. Cost of Power; and,
3. OM&A[1].

A summary of the expense lead times and working capital amounts associated with each of the above items is provided in Table 16. Note that the statutory approach described at the outset was used to determine the expense lead times associated with NBHDL's remittances and disbursements of HST (i.e., remittances are generally on the last day of the month following the date of the applicable period).

Table 16: Summary of HST Working Capital Amounts

Description	HST Lead Time	Working Capital Factor	2014	
Revenues	(24.66)	-6.76%	$	(853,252)
Cost of Power	43.59	11.94%	$	1,094,751
OM&A Expenses	43.92	12.03%	$	136,164
Total			$	377,663

[1] Costs within OM&A that attract HST include 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 NBHDL's distribution expenses for 2014, NBHDL's working capital requirements were determined. Table 17, below summarizes the working capital requirements for 2014 calculated in the study.

Table 17: NBHDL Distribution Working Capital Requirements (2014)

Description	Revenue Lag Days	Expense Lead Days	Net Lag Days	Working Capital Factor	Expenses	Working Capital Requirements
Cost of Power	65.58	33.02	32.56	8.92%	$ 70,516,783	$ 6,289,679
OM&A Expenses	65.58	15.28	50.30	13.78%	$ 8,704,414	$ 1,199,610
DRC	65.58	24.36	41.22	11.29%	$ 1,778,578	$ 200,868
PILS	65.58	(28.70)	94.28	25.83%	$ 500,000	$ 129,149
Interest Expense	65.58	44.80	20.78	5.69%	$ 1,089,717	$ 62,044
Total					**$ 82,589,492**	**$ 7,881,351**
HST						$ 377,663
Total - Including HST						$ 8,259,014
Working Capital as a Percent of OM&A incl. Cost of Power						**10.43%**

The following known and measurable changes have been made to the study to reflect changing policy:

1.1 Ontario Clean Energy Benefit (OCEB) and Ontario Electricity Support Program (OESP)

The Ontario government has indicated that the OCEB program will cease on December 31, 2015. This clear direction is considered a known and measurable change. OCEB amounts are not included in the estimate of North Bay's working capital amount.

The Ontario government has also indicated that a new program, OESP, administered by the Ontario Energy Board will be implemented January 1, 2016. Though NBHDL is preparing its billing system and staff for the implementation of this program, there are several details that are not yet available to accurately model the program's impact on working capital. To accurately model the impact of OESP, the tariff must be determined, the number of eligible customers, and the rebates available for individual customers. These details are not available at this time. Therefore, the OESP is not assessed in the estimate of North Bay's working capital amount. When the necessary details of this program become available, its impact can be assessed.

1.2 Debt Retirement Charge (DRC)

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.

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 NBHDL (or "lag") together with the time between which NBHDL 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 NBHDL'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) NBHDL 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) NBHDL. 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 NBHDL 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 NBHDL'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 NBHDL's operations, interviews with personnel 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) NBHDL, 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: 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 18: 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

NAVIGANT

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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 Divesture

» 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 divesture 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.

FORM A

Proceeding: EB-2014-099

ACKNOWLEDGMENT OF EXPERT'S DUTY

1. My name is Ralph Zarumba (*name*). I live at 736 Central (*city*), in the Evanston (*province/state*) of Illinois .

2. I have been engaged by or on behalf of North Bay Hydro, Ltd. (*name of party/parties)* to provide evidence in relation to the above-noted proceeding before the Ontario Energy Board.

3. I acknowledge that it is my duty to provide evidence in relation to this proceeding as follows:
   (a) to provide opinion evidence that is fair, objective and non-partisan;
   (b) to provide opinion evidence that is related only to matters that are within my area of expertise; and
   (c) to provide such additional assistance as the Board may reasonably require, to determine a matter in issue.

4. I acknowledge that the duty referred to above prevails over any obligation which I may owe to any party by whom or on whose behalf I am engaged.

Date July 24, 2015

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Signature