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April 1, 2021

Delivered by Email & RESS

Ms. Christine Long, Registrar
Ontario Energy Board
P.O.Box 2319, 27th Floor
2300 Yonge Street
Toronto, ON M4P 1E4

Dear Ms. Long:

**Re: 2021 Cost of Service Rate Application
Interrogatory Responses
North Bay Hydro Distribution Limited ("NBHDL")
OEB File No.: EB-2020-0043**

Pursuant to Procedural Order No. 1 dated February 18, 2021 and letter from the Ontario Energy Board ("**OEB**") dated March 31, 2021, please find attached NBHDL's Interrogatory Responses for the above proceedings.

Confidentiality Request

In response to interrogatory CCC-17, NBHDL is filing a copy of the report titled "Critical Factors for Determining Wood Pole Health" prepared by EDM International Inc. ("**EDM**") for the Utilities Standards Forum ("**USF**") (the "**Report**") in confidence pursuant to the OEB's *Practice Direction on Confidential Filings* (the "**Practice Direction**").

The Report provides EDM's opinion on the critical factors for determining wood pole health and its methodologies used.

NBHDL requests that the Report be kept in confidence pursuant to Rules 10.01 and 10.02 of the OEB's *Rules of Practice and Procedure* and Sections 5.1.1 and 5.1.2 of the Practice Direction. The nature of the Report and the basis for NBHDL's request for their confidential treatment are set out below.

In addition, USF has provided a letter setting out their position on the confidentiality of the Report. This letter is attached as "Attachment – Letter from USF".

Harm to USF

NBHDL is a USF member that pays annual membership fees to USF for access to membership privileges. Only USF members were provided with the Report. By placing the Report on public record, it would negatively impact USF's member potential, as utilities who are not currently a member of the USF would be able to access the Report at no cost. If the Report was disclosed publically, the information contained in the report could be used by third parties without the right to it or having contributed to the cost of development. This would be unfair to the current members who pay annual membership fees. Being able to access membership material without the need to join USF would harm the membership potential and result in a loss for USF.

Harm to EDM

The Report was prepared by EDM, a consultant hired by USF, to opine on the critical factors for determining wood pole health. NBHDL submits that the disclosure of the Report could reasonably be expected to prejudice EDM's position.

EDM is engaged in a competitive business and the disclosure of the details of their recommendations and methodologies related to wood pole health could reasonably be expected to prejudice the economic interest of, significantly prejudice the competitive position of, cause undue financial loss to, and be injurious to the financial interests of EDM. Their competitors, such as Kinectrics Inc. and Metsco Energy Solutions, can use this information to inform their own methodologies, recommendations, and opinions while maintaining strict confidentiality of their internal methodologies, recommendations and opinions, allowing them to gain an advantage over EDM.

OEB's Considerations for Confidentiality Requests

Appendix "A" to the Practice Direction sets out the OEB's considerations in determining requests for confidentiality. Among those considerations are the following:

- (a)(i) prejudice to any person's competitive position;
- (a)(iv) whether the disclosure would be likely to produce a significant loss or gain to any person; and
- (g) any other matters relating to FIPPA (the *Freedom of Information and Protection of Privacy Act*) and FIPPA exemptions.

With respect to item (g) above, the OEB has provided a summary of pertinent FIPPA provisions at Appendix C of the Practice Direction. That summary provides, in part, as follows:

"Under section 17(1), the OEB must not, without the consent of the person to whom the information relates, disclose a record where:

- (a) the record reveals a trade secret or scientific, technical, commercial, financial or labour relations information;

- (b) the record was supplied in confidence implicitly or explicitly; and
 - (c) disclosure of the record could reasonably be expected to have any of the following effects:
 - i. prejudice significantly the competitive position or interfere significantly with the contractual or other negotiations of a person, group of persons or organization;
 - iii. result in undue loss or gain to any person, group, committee or financial institution or agency;
- ...”

The Practice Direction recognizes that these are among the factors that the OEB will take into consideration when addressing the confidentiality of filings. They are also addressed in section 17(1) of FIPPA, and the Practice Direction notes (at Appendix C of the Practice Direction) that third party information as described in subsection 17(1) of FIPPA is among the types of information previously assessed or maintained by the OEB as confidential.

Filing of Confidential Documents

In keeping with the requirements of the Practice Direction, NBHDL is filing a confidential unredacted version of Attachment D – CCC-17 - Critical Factors for Determining Wood Pole Health with the Registrar only. The confidential version of the documents have been marked “Confidential”. NBHDL requests that the confidential version of the document be kept confidential.

Yours very truly,

BORDEN LADNER GERVAIS LLP

Per:



Flora Ho

/Encls: 1) Attachment - Letter from USF
2) NBHDL Interrogatory Responses
cc: Intervenor of record in EB-2020-0043

ATTACHMENT – LETTER FROM USF

234 Farley Drive,
Guelph, Ontario,
N1L 1N2

March 31, 2021

The Utilities Standards Forum (USF) “Critical Factors for Determining Wood Pole Health”(report) is confidential to its Members. The report is proprietary and should not be made public, as it contains intellectual property which if made public could be used by third parties without the right to it, or having contributed to the cost of development.

There is harm to USF’s membership potential. If a current Member or utility interested in joining USF had access to the report at no cost, versus paying the annual members fees, USF could see a reduction in Members or interested Members and future revenues.

There is harm to the consultant USF hired, EDM International Inc. (EDM). Should the competition, Kinectrics Inc. and Metsco Energy Solutions, gain access to the methodologies and opinions within the report, there is harm to EDM.

Further, there is harm to the industry that consults in this subject area, including EDM, Kinectrics Inc. and Metsco Energy Solutions, and others across North America. Should utilities outside of the USF membership gain access to the report at no charge, and choose to perform the activities without the assistance of expert consultants, the consulting industry may see impact in loss of clients, resulting in loss of revenues.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lori Gallagher".

Lori Gallagher
Executive Director

ONTARIO ENERGY BOARD

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

AND IN THE MATTER OF an Application by North Bay Hydro Distribution Limited ("NBHDL") for an Order or Orders approving or fixing just and reasonable rates and other service charges for the distribution of electricity, effective May 1, 2021.

NORTH BAY HYDRO DISTRIBUTION LIMITED

RESPONSES TO INTERROGATORIES

FILED: APRIL 1, 2021

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RESPONSE TO INTERROGATORIES FROM
ONTARIO ENERGY BOARD STAFF INTERROGATORIES

Exhibit 1 – Administrative Documents

1-Staff-1

Updated Revenue Requirement Workform (RRWF) and Models

Reference: None.

Preamble:

Upon completing all interrogatories from Ontario Energy Board (OEB) staff and intervenors, please provide an updated RRWF in working Microsoft Excel format with any corrections or adjustments that the Applicant wishes to make to the amounts in the populated version of the RRWF filed in the initial applications. Entries for changes and adjustments should be included in the middle column on Sheet 3 (Data_Input_Sheet). Sheets 10 (Load Forecast), 11 (Cost Allocation), and 13 (Rate Design) should be updated, as necessary. Please include documentation of the corrections and adjustments, such as a reference to an interrogatory response or an explanatory note. Such notes should be documented on Sheet 14 (Tracking Sheet) and may also be included on other sheets in the RRWF to assist understanding of changes.

Question:

In addition, please file an updated set of models, as applicable, that reflects the interrogatory responses, including an updated Tariff Schedule and Bill Impact model for all classes at the typical consumption/demand levels (e.g. 750 kWh for residential, 2,000 kWh for GS<50, etc.).

Response:

NBHDL has filed updated models separately through the RESS. The models include:

1. "NBHDL_LRAMVA_20210401"
 - a. This model has been updated in accordance 1-Staff-61 to account for more recent values. The new LRAMVA claim has been updated in the updated DVA Continuity schedule as well as the updated Bill Impact Model.
2. "NBHDL_2021_RTRS_WorkForm_IR_Response_20210401"
 - a. This model has been updated in accordance with 1-Staff-67 to account for the most recent Board Approved values. These values have also carried through the Revenue Requirement Workform as well as the Bill Impact Model. NBHDL notes that while the table below shows slight decreases in most bills for distribution rates as compared to the original

application, the overall bill impacts are increasing. This is primarily due to the updates in the RTSR model and the new network and connection rates that are produced.

3. "NBHDL_2021_DVA_Continuity_Schedule_20210401"
 - a. This model has been updated with the previously identified new account 1568 LRAMVA value, and updated 2020 actuals for accounts 1508 (Pole Attachments), 1508 (OEB Assessment), 1518 (Retail RCVA), and 1548 (STR RCVA). The accounts were previously forecasts. NBHDL has updated for 2020 actuals.
4. "NBHDL_Ch2_Appendices_20210401"
 - a. This model has been updated with new Cost of Power values calculated in 2-ZA and 2-ZB in accordance with the updated RPP pricing reflected in 1-Staff-14. This version has also been updated to reflect new RTSR rates (1-Staff-67) and new Low Voltage rates (1-Staff-68).
5. "NBHDL_Cost_Allocation_Model_20210401"
 - a. This model has been updated with the effects of an updated 2020 actual and its carry forward into 2021 rate base and depreciation. Previously highlighted changes to Cost of Power are also reflected.
6. "NBHDL_2020_Test_Year_Income_Tax_PILs_20210401"
 - a. This model has been updated to reflect NBHDL's pending actuals for 2020 (1-Staff-58) and the carry forward effects into 2021. Relevant 2021 values the derive from the other highlighted models in the section are also included.
7. "NBHDL_2021_Rev_Reqt_Workform_20210401"
 - a. This model has been updated to include the effects of all other model updates in this section. the changes and their effects are tracked on Sheet 14.
8. "NBHDL_2021_Tariff_Schedule_and_Bill_Impact_Model_NO_GS_3000-5000_20210401",
"NBHDL_2021_Tariff_Schedule_and_Bill_Impact_Model_GS_3000-5000_ONLY_20210401"
 - a. These tables in include all preceding updates. As well as updates to the Retail Service Charges (1-OEB-70). Table 1-Staff-1 below is a representative of the bill impact scenarios presented in the application as compared to current updates.

Table 1-Staff-1 – Bill Impact Scenarios

Rate Class	kWh	kW	2020 Dist Bill \$	2021 Dist Bill \$	\$ Difference	Bill Impact %	2020 Total Bill \$	2021 Total Bill \$	Bill Impact \$	Bill Impact %
AS PRESENTED IN APPLICATION										
Board Required										
Residential - TOU	750		\$29.79	\$33.79	\$4.00	13.4%	\$117.79	\$120.11	\$2.32	2.0%
Residential -10th %	92		\$29.26	\$33.26	\$4.00	13.7%	\$35.83	\$38.96	\$3.13	8.7%
GS<50	2000		\$64.80	\$75.69	\$10.89	16.8%	\$299.24	\$303.65	\$4.41	1.5%
Utility Specific										
Residential - 90th %	1,535		\$30.42	\$34.42	\$4.00	13.1%	\$215.57	\$216.93	\$1.36	0.6%
Residential - Retailer	750		\$29.79	\$33.79	\$4.00	13.4%	\$106.45	\$108.86	\$2.41	2.3%
GS<50 Retailer	2,000		\$64.80	\$75.69	\$10.89	16.8%	\$269.33	\$273.97	\$4.64	1.7%
GS<50 - 90th%	6,400		\$152.36	\$179.53	\$27.17	17.8%	\$911.43	\$919.31	\$7.88	0.9%
GS 50-2,999 kW - Median	33,000	75	\$521.62	\$631.43	\$109.81	21.1%	\$5,482.83	\$5,552.84	\$70.01	1.3%
GS 50-2,999 kW - 90%	117,000	244	\$985.51	\$1,217.85	\$232.34	23.6%	\$18,333.17	\$18,409.59	\$76.42	0.4%
GS 3,000-4,999 kW	1,280,000	2440	\$10,522.04	\$12,219.26	\$1,697.22	16.1%	\$200,092.00	\$200,001.55	(\$90.45)	(0.0%)
Street Lighting	170,000	474	\$40,316.67	\$12,341.78	(\$27,974.89)	(69.4%)	\$70,619.57	\$38,519.96	(\$32,099.61)	(45.5%)
Sentinal Light	150	1	\$22.89	\$29.48	\$6.59	28.8%	\$38.83	\$40.27	\$1.44	3.7%
Unmetered Scattered Load	150		\$7.44	\$7.42	(\$0.02)	(0.3%)	\$24.69	\$24.36	(\$0.33)	(1.3%)
Rate Class	kWh	kW	2020 Dist Bill \$	2021 Dist Bill \$	\$ Difference	Bill Impact %	2020 Total Bill \$	2021 Total Bill \$	Bill Impact \$	Bill Impact %
1-OEB-1 RESPONSE										
Board Required										
Residential - TOU	750		\$29.79	\$33.63	\$3.84	12.9%	\$133.17	\$136.65	\$3.48	2.6%
Residential -10th %	92		\$29.26	\$33.10	\$3.84	13.1%	\$40.50	\$44.02	\$3.52	8.7%
GS<50	2000		\$64.80	\$75.34	\$10.54	16.3%	\$338.30	\$345.28	\$6.98	2.1%
Utility Specific										
Residential - 90th %	1,535		\$30.42	\$34.26	\$3.84	12.6%	\$243.71	\$247.15	\$3.44	1.4%
Residential - Retailer	750		\$29.79	\$33.63	\$3.84	12.9%	\$120.34	\$123.92	\$3.58	3.0%
GS<50 Retailer	2,000		\$64.80	\$75.34	\$10.54	16.3%	\$304.48	\$311.73	\$7.25	2.4%
GS<50 - 90th%	6,400		\$152.36	\$178.74	\$26.38	17.3%	\$1,030.41	\$1,046.00	\$15.59	1.5%
GS 50-2,999 kW - Median	33,000	75	\$521.62	\$624.80	\$103.18	19.8%	\$5,482.83	\$5,588.40	\$105.57	1.9%
GS 50-2,999 kW - 90%	117,000	244	\$985.51	\$1,206.26	\$220.75	22.4%	\$18,333.17	\$18,536.59	\$203.42	1.1%
GS 3,000-4,999 kW	1,280,000	2440	\$10,522.04	\$12,171.06	\$1,649.02	15.7%	\$200,092.00	\$201,369.53	\$1,277.53	0.6%
Street Lighting	170,000	474	\$40,316.67	\$12,191.30	(\$28,125.37)	(69.8%)	\$70,619.57	\$38,545.64	(\$32,073.93)	(45.4%)
Sentinal Light	150	1	\$22.89	\$29.90	\$7.01	30.6%	\$43.89	\$46.18	\$2.29	5.2%
Unmetered Scattered Load	150		\$7.44	\$9.48	\$2.04	27.4%	\$27.91	\$29.63	\$1.72	6.2%

1-Staff-2

Responses to Letters of Comment

Reference: None.

Preamble:

Following publication of the Notice of Application, the OEB received one letter of comment. Section 2.1.7 of the Filing Requirements states that distributors will be expected to file with the OEB their response to the matters raised within any letters of comment sent to the OEB related to the distributor's application. If the applicant has not received a copy of the letters, they may be accessed from the public record for this proceeding.

Question:

Please file a response to the matters raised in the letter of comment referenced above. Going forward, please ensure that responses to any matters raised in subsequent comments or letter are filed in this proceeding. All responses must be filed before the argument (submission) phase of this proceeding.

Response:

NBHDL has replied to the matters raised in the letter of comment referenced above and has filed it with this application as Attachment A – 1-Staff-2 – Response to Letters of Comment. Going forward, responses to any matters raised in subsequent comments or letters will be filed in this proceeding. All responses will be filed before the argument (submission) phase of this proceeding.

1-Staff-3

Management Compensation

Reference: Exhibit 1, Pages 48-49

Preamble:

North Bay Hydro indicated that it has a review of management compensation scheduled to be completed in 2021.

Question:

- (a) Has the review been completed? If not, please indicate when North Bay Hydro expects the review to be completed.
- (b) If the review is expected to be completed during the course of this proceeding, please provide a copy of the review when it is available.

Response:

- (a) The management compensation review has been started at the Board level, but is not complete. The goal is to have the entire review complete before the end of 2021.

Please also refer to SEC-3 and 1-DDR-8.

- (b) If the review is completed during this proceeding, a copy of the review will be provided.

1-Staff-4

Customer Surveys

Reference: Exhibit 1, Pages 83-94

Preamble:

North Bay Hydro engaged in two surveys with customers, a telephone survey and an online survey.

Question:

(a) Please provide a copy of the surveys with all of the questions asked and the responses.

Response:

Please find a copy of the surveys and results of Phase 1 and Phase 2 customer engagement at Attachment B – 1-Staff-4 - Phase 1 and 2 Customer Engagement Survey Results.

1-Staff-5

Customer Service

Reference: Exhibit 1, Pages 76-77, 89

Preamble:

North Bay Hydro noted that it has an average of 10,000 customers go to its physical office annually and continues to see the need for in-person service options. On page 89, North Bay Hydro also noted that “customers have made clear their increasing preference for digital and self-service options.”

Question:

- (a) Are more customers shifting towards using digital and self-serve options?
- (b) Approximately how much customer service is done in-person versus through digital / self-service options?
- (c) Has the COVID-19 pandemic accelerated the adoption of digital communication over in-person service options?

Response:

- (a) At the onset of the COVID-19 pandemic, NBHDL closed its front office to customers and implemented a work from home rotation for customer service staff in alignment with provincial and local health unit directives. As a result of this, NBHDL has seen an increase in the use of digital / self-serve options such as online applications. However, the referenced quote and observations come from the customer engagement work that was done in preparation of this rate application and many of the options that are referenced are not yet in place. Section 2.1.7.5 includes a summary of the self-serve and digital options that NBHDL is looking to move forward with including upgrades to its website, customer portal, and a new mobile app.
- (b) Throughout most of 2020, there were no in-person interactions with customers as the office was closed. Customer service representatives continued to handle inbound emails and calls and assisted customers with their inquiries. As stated above, the self-serve options – beyond the basic online applications, pre-authorized forms, etc. – are not yet in place.
- (c) The COVID-19 pandemic has accelerated the need for NBHDL to move forward with enhancing digital communication and self-serve options. NBHDL believes there is significant value in providing the options outlined in Exhibit 1 and 4 to customers and the pandemic only reinforced that NBHDL has a gap when it comes our website and self-serve options. With that being said, NBHDL believes there is still some value to having a front-office that is available to customers, however, the company is not sure what that looks like in the post-pandemic world and it may evolve to an appointment only setting. NBHDL sees the adoption of digital and self-serve options as a continuation of the evolution of customer service and enhancement to the on-going and more personal and direct nature of phone calls and correspondence. Please also see 1-DDR-2.

1-Staff-6

Paperless Billing

Reference: Exhibit 1, Page 89

Preamble:

North Bay Hydro's survey explored the idea of reducing costs through the use of self-serve and online/digital options.

Question:

- (a) How much does North Bay Hydro expect to save through paperless billing?
- (b) Has North Bay Hydro undertaken any steps towards moving more customers to paperless billing?
If yes, are the cost savings reflected in North Bay Hydro's OM&A and are any incentive credits to customers recorded in other revenues? If no, why not?

Response:

- (a) NBHDL estimates that e-billing saves approximately \$1.15 per bill. This cost incorporates postage, paper, internal resource time spent on bill printing / stuffing, envelope, and printing costs.
- (b) NBHDL has run promotions in the past to encourage e-billing and currently has 8,363 accounts with this option. NBHDL's billing costs in 2021 already incorporate the savings associated with the current count of customers enrolled in paperless billing. NBHDL will continue to run campaigns to encourage paperless billing, the costs of which will be funded through the overall communications budget. The company typically encourages this type of initiative through the chance to win prizes which result in one-time costs and less administrative work as compared to on-bill credits.

1-Staff-7

Customer Survey

Reference: Exhibit 1, Pages 89-92

Preamble:

North Bay Hydro's survey probed customers on ideas to further empower customers (e.g. smartphone application, more self-serve options on the website).

Question:

- (a) In presenting these ideas of greater self-serve/online functionality, did North Bay Hydro also indicate to customers the capital investments that would be required and the potential bill impacts?

Response:

- (a) NBHDL presented bill impact scenarios in Phase 3 of the customer engagement plan. Please see SEC-2(2) for the Phase 3 questions and analysis.

For example, NBHDL posed that electricity usage tracking and alerts could provide real-time information and tips on reducing usage to help manage electric bills and reduce costs where possible. NBHDL indicated that software additions of this nature would have a bill impact of approximately 15 cents/bill; 70.89% of customers indicated that they would be willing to pay this cost. Specific questions around the bill impact of the new mobile app, website upgrades were not presented, but these topics were discussed.

Phase 3 did include an overview of the total costs incorporated into NBHDL's 2021 Test Year for both OM&A and capital and the proposed total bill impact (both \$ and %). While customers understandably would prefer to have no increase, 59.62% would be willing to pay the increase. NBHDL notes that the costs of the mobile app, website enhancements, and the revamp of the customer portal are incorporated in NBHDL's 2021 Test Year proposal.

1-Staff-8

DSP Implementation

Reference: Exhibit 1, Page 108

Preamble:

North Bay Hydro measures its DSP implementation progress by comparing its actual gross capital spending to its budgeted gross capital spending in any given year with the goal of at least meeting the spending envelope detailed in the DSP.

Question:

- (a) How does North Bay Hydro ensure that more progress is actually being made, rather than just more costs being incurred? (i.e. wouldn't overspending in any particular project also increase the DSP implementation progress metric?)
- (b) Does North Bay Hydro currently track the amount of planned completion versus actual completion of any key units (transformers, poles, etc.) on an annual basis? If no, why not?

Response:

- (a) NBHDL has a weekly Production Meeting where project progress during construction is discussed to ensure the project progresses as planned. Engineering and Finance have a monthly meeting to track project spending. A monthly Capital Planning Meeting which includes the President, Operations and Engineering Departments is held, which serves as a current to long-term planning exercise. During this meeting, project progress relative to budget allocations and project forecasting are reviewed. Reasons for cost overruns are discussed and solutions are developed to mitigate and manage the costs.
- (b) NBHDL tracks assets through its project delivery. NBHDL tracks progress respective to individual project plans and budgets, and through projects, the overall assets used. The reason is that the work is identified on an annual basis and plans are put in place to deliver per a pre-determined project schedule. The assets replaced are determined within those projects. Basically, if the project is delivered, the planned assets are delivered. By tracking the projects constructed, NBHDL, by default, tracks the assets associated with those projects. Any adjustments are made based on project priorities, value and available work resources. For example, a project with 15 shorter poles could be replaced with a project with 10 taller poles of similar cost if it falls higher on the priority list than another 15 pole project of similar value.

1-Staff-9

Return on Equity

Reference: Exhibit 1, Page 112

Preamble:

North Bay Hydro earned modestly above its 9.3% deemed ROE in 2018, but significantly under-earned in 2019 and was below 3% of the deemed ROE.

Question:

- (a) Please explain all the factors for the underearning in 2019.
- (b) Please calculate the 2019 ROE if costs associated with the 2019 purchase of Espanola Regional Hydro Distribution Corporation are removed.

Response:

- a) 2019 is the final year of what is intended to be a 5-year rate cycle; diminishing returns are expected as the company continues to move the business forward with continually increasing costs offset by rates that have increased annually on average 1.4% since 2015. Several drivers contributed to the lower ROE including the full year impact of the loss of collection charge revenue, increased OM&A spending as the management team continued to execute on resourcing needs and vacancies were filled, programs were push forward, such as vegetation management and continued increases in depreciation that are a result of capital infrastructure investments that have been made since 2015 in alignment with the DSP. The following Table 1-Staff-9 provides an overview of the ROE components:

Table 1-Staff-9 – Overview of ROE Components

	2015 Approved	2019 Actual	Variance	
			(%)	Variance (\$)
Distribution Revenue	11,793,143	12,286,498	4%	493,355
Other Revenue	1,173,934	978,139	-17%	(195,795)
OM&A	6,429,729	6,688,882	4%	259,153
Amortization	2,489,076	2,981,841	20%	492,765
Deemed Interest	1,497,051	1,784,668	19%	287,617
Taxes	272,060	26,189	-90%	(245,871)
Donation	16,700	15,561	-7%	(1,139)
Net Income	2,262,461	1,767,496	-22%	(494,965)
Working Capital:				
Eligible OMA	6,516,305	6,792,403	4%	276,098
Cost of Power	65,289,289	57,947,018	-11%	(7,342,271)
WCA @ 10.31%	7,403,157	6,674,634		(728,522)
Avg PP&E	53,415,660	65,278,941	22%	11,863,281
Rate Based	60,818,817	71,953,575	18%	11,134,758
Deemed Equity @40%	24,327,527	28,781,430	18%	4,453,903
ROE	9.30%	6.14%	-3.16%	

- b) The costs associated with the 2019 purchase of Espanola Regional Hydro Distribution Corporation were already removed from the 2019 ROE calculation.

1-Staff-10

Incentive Pay

Reference: Exhibit 1, Page 118

Preamble:

Page 118 indicates that more achievement points are given to North Bay Hydro's management team the more the budget is spent.

Question:

- (a) Please explain if these achievement measures only measure the amount of capital that is spent each year, or if it is also tied towards the percentage of project completion budgeted in any given year.
- (b) What incentive measures does North Bay Hydro have that are tied to distribution system performance?

Response:

- (a) The achievement measures only measure the amount of capital that is spent each year as a percentage of budget. It is not tied towards the percentage of project completion budgeted in any given year. However, actual project completion progress is closely managed and is considered – see the response to Staff-8(a).
- (b) NBHDL does not have any incentive measures that are tied to distribution system performance. These measures fall outside of the scope of consequences that an individual staff member can directly control / influence. Meaningful incentive measures must be realistic and achievable for the individual responsible.

Exhibit 2 – Rate Base

2-Staff-11

COVID-19 Impacts

Reference: None.

Preamble: None.

Question:

Please explain if North Bay Hydro's capital plans and budgets as presented include forecasted impacts due to COVID-19.

Response:

NBHDL's capital plans and budgets as presented did not include forecasted impacts due to COVID-19. Throughout 2020 NBHDL mitigated incremental costs, incurred as a result of the pandemic, to the greatest extent possible. With respect to capital costs NBHDL incurred \$24,495 in 2020, primarily driven by IT requirements (laptops/software) when the company shifted administrative resources to a work from home format. NBHDL is proposing to include these costs in updated 2020 capital costs as the company will utilize these resources over the rate horizon.

2-Staff-12

Microgrid Project

Reference:

Ref 1.: Exhibit 2, Page 40
Ref 2.:DSP, Page 41

Preamble:

As noted on page 40, MS23 was constructed because it was required to service a community microgrid. North Bay Hydro also undertook generation connection activities for the microgrid.

Question:

- (a) Please provide more details on the microgrid including its scale and intended function.
- (b) Was this microgrid constructed at the initiative of North Bay Hydro, or some other entity?
- (c) Are the microgrid assets owned and operated by North Bay Hydro, or some other entity? If owned by North Bay Hydro, what was the total capital cost of the project?
- (d) Did North Bay Hydro receive capital contributions for this work in accordance with section 3.2 of the Distribution System Code? If yes, please provide the calculations of the amounts received. If no, why not?

From reference 2, OEB staff notes that North Bay Hydro has spare capacity in many of its distribution substations.

- (e) Please explain why a new substation was required for the microgrid project.

Response:

- (a) The Community Energy park is a microgrid that brings innovative technologies together to supply electricity and thermal energy to a number of community facilities located on one parcel of City of North Bay land which include an outdoor park, a YMCA facility, and the local Ontario Hockey League arena. The innovative technologies include two cogeneration engines, a battery, solar panels and a very sophisticated connection with the NBHDL grid. The smart grid controller controls the technologies in a way that optimizes energy use and prioritizes the most economical supply to provide savings to the end users. The park also features EV charging locations and has created tremendous resiliency for the arena that is designated as a community shelter in the event of catastrophe. The microgrid is designed to accommodate up to 2MW of power.
- (b) The microgrid was an initiative of NBHDL's affiliate, North Bay Hydro Services ("NBHS"), and several partners were involved including the IESO and the Federation of Canadian Municipalities.
- (c) NBHDL owns the substation that connects the Community Energy Park. NBHS owns the entire microgrid, including the generators, battery, and other related assets and operates the park directly.

NBHDL would refer Board Staff to EB-2018-0339/EB-2018-0340 for additional details around this project.

- (d) In accordance with section 3.2 of the Distribution System Code, NBHDL has billed \$186,555 in contributed capital contributions for the connection work to date, NBHDL tracked the connection work for this project separately from the substation work and billed 100% of the costs to NBHS.
- (e) A new substation was required for the microgrid project to accommodate it's power requirements. Although there may be spare capacity in many of NBHDL's distribution substations, the lines in the area are not able to accommodate 2MW of power to this specific location. The option of constructing a substation was more economical than constructing a new circuit (which would involve poles, not just wire) from the closest substation with excess capacity.

2-Staff-13

Working Capital Allowance

Reference: Exhibit 2, Page 45

Preamble:

North Bay Hydro continues to use calendar month billing, which provides benefits to North Bay Hydro.

Question:

- (a) What benefits does North Bay Hydro gain from using calendar month billing?

Response:

- (a) The benefits NBHDL gains from the use of calendar month billing surround business processes and resource levels within the billing department. NBHDL's billing schedule allows for more accurate billing for non-RPP customers, an increased level of accuracy for financial statement reporting, including revenue and cost of power accruals, as well as a more accurate process for monthly Regulated Price Plan settlement with the IESO that also impacts deferral accounts and subsequent disposition. NBHDL's calendar month billing schedule also enables NBHDL to bill approximately 24,000 customers a month with a staff of two full-time employees. Changes to the process would require additional resourcing and IT support as explained on pages 49 and 50 of Exhibit 1.

NBHDL did seek input on the importance of calendar month billing from customers in Phase 3 of its customer engagement. 44.13% of customers indicated that they did not care what day their billing started, the same % indicated that their preference is the 1st of the month, but at a no charge, and 10.33% stated their willingness to incur additional charges for this service. As stated in the application, NBHDL is committed to reviewing its processes around this subject.

2-Staff-14

Cost of Power

Reference: Chapter 2 Appendices, App.2-ZA and App.2-ZB

Preamble:

The following are the forecasted commodity prices North Bay Hydro has used in appendix 2-ZA:

Forecasted Commodity Prices		Table 1: Average RPP Supply Cost Summary*	non-RPP	RPP
HOEP (\$/MWh)	Load-Weighted Price for RPP Consumers		\$20.87	\$20.87
Global Adjustment (\$/MWh)	Impact of the Global Adjustment		\$109.47	\$109.47
Adjustments (\$/MWh)				\$3.24
TOTAL (\$/MWh)	Average Supply Cost for RPP Consumers			\$133.58

The forecasted supply costs have been updated by the OEB in its December 15, 2020 Letter Re: New Regulated Price Plan Prices Effective January 1, 2021. The HOEP and adjustments are unchanged, but the GA \$/MWh is now \$83.62.

Question:

- (a) Please update appendices 2-ZA, 2-ZB and North Bay Hydro's cost of power calculations.
- (b) Please update North Bay Hydro's working capital allowance calculations.

Response:

- a) NBHDL has completed an updated version of the 2-ZA and 2-ZB appendices based on the new pricing provided in the above referenced December 15, 2020 letter. The results of which are in the following Table 2-Staff-14.1:

Table 2-Staff-14.1 – Updated 2-ZA and 2-ZB Results

2021 Test Year - Cop	Prior	Updated RPP Report
4705 -Power Purchased	\$ 42,905,782	\$ 35,507,263
4707- Global Adjustment	\$ 23,291,550	\$ 18,663,399
4708-Charges-WMS	\$ 1,983,722	\$ 1,983,722
4714-Charges-NW	\$ 3,582,806	\$ 3,582,806
4716-Charges-CN	\$ 3,273,741	\$ 3,273,741
4750-Charges-LV	\$ 68,752	\$ 68,752
4751-IESO SME	\$ 164,167	\$ 164,167
Misc A/R or A/P	\$ (9,218,715)	\$ (7,650,229)
TOTAL	\$ 66,051,805	\$ 55,593,621

NBHDL has included full versions of 2-ZA and 2-ZB as excel file
“NBHDL_Staff14_2ZA_2ZB_20210401”.

- b) NBHDL has updated the working capital calculation based on an updated version of 2-ZA and 2-ZB to include the above referenced December 15, 2020 as the following Table 2-Staff-14.2.

Table 2-Staff-14.2 – Working Capital Allowance for 2021 (Updated)

WORKING CAPITAL ALLOWANCE FOR 2021			
Distribution Expenses		Prior	Updated RPP Report
Distribution Expenses - Operation		1,028,903	1,028,903
Distribution Expenses - Maintenance		2,613,186	2,613,186
Billing and Collecting		1,328,174	1,328,174
Administrative and General Expenses		3,595,675	3,595,675
Donations - LEAP		18,823	18,823
Taxes Other than Income Taxes		96,944	96,944
Total Eligible Distribution Expenses		8,681,704	8,681,704
Power Supply Expenses		66,051,805	55,593,621
Total Working Capital Expenses		74,733,509	64,275,326
Working Capital Allowance @	7.50%	5,605,013	4,820,649

2-Staff-15

SAIDI/SAIFI

Reference: DSP, Pages 20-24

Preamble:

Defective equipment and foreign interference are among the top contributors to interruptions, excluding loss of supply and major event days.

Question:

- (a) If available, please provide a table showing the historical number of customer interruptions under defective equipment broken down into asset classes and a table for customer hours of interruptions. As well, please provide a table showing the SAIDI contribution per asset class and a table showing the SAIFI contribution per asset class.
- (b) What are the main contributors to foreign interference interruptions? What steps has North Bay Hydro taken to mitigate these types of interruptions?

Response:

- a) The following Table 2-Staff-15 shows the historical number of customer interruptions under defective equipment broken down into asset classes and a table for customer hours of interruptions including the SAIDI and SAIFI contributions per asset class.

Table 2-Staff-15 – Historical Interruptions from 2015 to 2020

<u>Cause Code 5 Interruptions</u>	2015			2016			2017		
	Number	SAIDI	SAIFI	Number	SAIDI	SAIFI	Number	SAIDI	SAIFI
Poles	1	0.001	0.001	0	0.000	0.000	0	0.000	0.000
Conductors & Support Equipment	18	0.236	0.208	14	0.613	0.283	3	0.147	0.079
Underground Cable and Equipment	3	0.007	0.002	5	0.061	0.037	1	0.030	0.017
Distribution Transformers	4	0.021	0.003	11	0.012	0.007	4	0.008	0.027
Line Switches	9	0.019	0.035	6	0.066	0.026	4	0.040	0.024
Station Transformers	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Relays	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Switchgears	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Reclosers	1	0.000	0.000	1	0.075	0.059	0	0.000	0.000

<u>Cause Code 5</u> <u>Interruptions</u>	2018			2019			2020		
	Number	SAIDI	SAIFI	Number	SAIDI	SAIFI	Number	SAIDI	SAIFI
Poles	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Conductors & Support Equipment	21	0.505	0.180	10	0.135	0.099	25	0.269	0.160
Underground Cable and Equipment	8	0.265	0.195	4	0.019	0.005	3	0.024	0.026
Distribution Transformers	6	0.062	0.025	8	0.005	0.010	4	0.013	0.068
Line Switches	11	0.044	0.027	4	0.065	0.021	1	0.000	0.000
Station Transformers	1	0.267	0.199	0	0.000	0.000	0	0.000	0.000
Relays	0	0.000	0.000	1	0.013	0.024	2	0.018	0.059
Switchgears	0	0.000	0.000	0	0.000	0.000	1	0.284	0.122
Reclosers	0	0.000	0.000	0	0.000	0.000	1	0.038	0.058

- b) The main contributor to foreign interference interruptions is animal contacts, with squirrels being the most frequent. NBHDL has installed animal guarding in its substations where animals have been able to make contact with an exposed energized component to mitigate against occurrence of large outages due to foreign interference. NBHDL believes that as it continues with clearing trees away from lines as part of its Vegetation Management program, foreign interference interruptions will be reduced along with tree contacts as well. This is based on the observation that squirrels use poles lines as elevated pathways to and from trees. In geographically mapping the locations of the foreign interference interruptions, NBHDL has observed that these interruptions are less common in areas where more recent tree clearing occurred. This suggests that clearing trees away from lines reduces access points for squirrels. For overhead distribution transformers, the piece of equipment where animal contacts are most frequent, NBHDL is planning to perform a cost benefit analysis to determine the value of the incorporating animal guarding where required to further mitigate the occurrence of foreign interference interruptions.

2-Staff-16

Voltage Conversion

Reference: Exhibit 2, Pages 67-68

Preamble:

Appendix 2-AA is reproduced in the reference noted above. OEB staff notes a large number of voltage conversion projects under the system renewal category. Under system service, there appears to be only one item for voltage conversion, "18F3 Voltage Conversion," with total past spending of less than \$100k.

Question:

- (a) Please explain why these projects were considered system renewal projects, rather than system service.
- (b) With North Bay Hydro's voltage conversion efforts mostly completed, please explain why there is no significant decrease in North Bay Hydro's forecasted system renewal spending.

Response:

- a) The category of these projects was determined as System Renewal because the main driver of these projects followed the criteria for System Renewal more than any other category. They involved the replacing of end-of-life 4.16 kV assets which would have been required regardless of whether or not the voltage conversion project moved forward and at the time of replacement, the condition of these assets was among the worst in the system. The 4.16kV system was the oldest part of the NBHDL electrical grid, with some assets dating back to the 1940s, and therefore replacement of those assets were prioritized first. These projects were not specifically done for voltage conversion, rather they were designed and constructed to accommodate voltage conversion with very little additional work necessary. Since NBHDL planned on eventually converting all of its 4.16kV to 12.47kV in the future with its voltage conversion project, all system renewal projects involving the replacement of assets operating at 4.16kV were designed with that in mind. These projects were also prioritized to coincide with the voltage conversion, but not all projects were necessarily converted at the time of construction. Voltage conversion is a project where the work needs to be carefully planned and executed in a specific manner to ensure no system vulnerabilities are introduced in the process. Expenditures related to the activities involving the actual conversion of the voltage were classified as system service. Ultimately, voltage conversion was an additional benefit to replacing those assets.
- b) As noted above, the expenditures were classified as System Renewal because the assets needed to be replaced due to their age and condition following asset management principles irrespective of the voltage conversion project. These expenditures made up part of the required annual pole replacements, simply prioritized because of age and condition with the additional benefit of voltage conversion. As such, the voltage conversion itself as a System Service project has no impact on the continued need for System Renewal investments. The requirement for System Renewal investment is based on the recommendations provided by Metsco in the ACA. With 127 poles to be replaced annually over the DSP period, NBHDL's System Renewal requirements have not decreased and as result, spending is not expected to decrease in the forecasted budget.

2-Staff-17

O&M Savings

Reference:

Ref 1: DSP, Pages 9-10, 90

Ref 2: Exhibit 2, Page 55 (Appendix 2-AB)

Preamble:

In reference 1, North Bay Hydro noted a number of anticipated cost savings, among which are system O&M savings. One noted example is underground renewal, which is expected to reduce O&M costs associated with underground outage restoration costs.

However, in Appendix 2-AB, OEB staff notes that North Bay Hydro's system O&M is increasing significantly in the test year and continues to increase by inflation over the period of the DSP.

Question:

- (a) Where have North Bay Hydro's cost savings been reflected? Please explain any impact anticipated cost savings have had on North Bay Hydro's budgets.
- (b) Given the anticipated cost savings, please explain why system O&M continues to increase. In particular, on page 90 of the DSP, North Bay Hydro noted that O&M costs are inversely correlated with declining asset condition and therefore expect a reduction in future O&M costs. Despite North Bay Hydro's continued system renewal spending, there is no decrease in the forecasted system O&M costs.

Response:

- (a) All past cost savings are already reflected in the historical O&M budgets, as discussed in greater detail below. Given that NBHDL's current investment into System Renewal allows it to only replace approximately 1.7% to 1.8% of its infrastructure in a year, the rates at which these O&M cost could be reduced in the future is greatly limited because of the limited impact of the investment.

The anticipated cost savings associated with O&M is based on the rationale that once an asset starts to fail due to degradation of the asset, it will continue to fail at an increased frequency as the asset degrades further. These failures increase the O&M cost associated with responding to failed equipment (trouble calls) and the repair work. Typically repair work done under emergency circumstances is more expensive than planned work. These are reactive costs (additional) that occur on top of the baseline O&M cost associated with the asset such as inspections, testing, routine maintenance, and losses. The anticipated cost savings is a combination of the O&M cost eliminated and the future O&M cost avoided. The nature of NBHDL's System Renewal program,

which is primarily focused around replacing deteriorating infrastructure, has its O&M cost benefits realized through cost avoidance with only a very small cost eliminated through improvements to efficiency of the new design.

In the noted example of underground renewal, the cost associated with failures is particularly high. For example, NBHDL has approximately 2km of direct-buried underground primary cables in the West Ferris area of Lovell Ave and Labreche Road which it will replace in phases from 2020 to 2026. In the historical period of 2015 to 2020, this 2 km stretch of underground cables has had 10 failures, or on average 1.7 failures per year. Repair work for each failure required switching work to isolate the area, Hydro-Vac excavation to expose the cables, splice work on the cables, backfill with new material, and restoration work. Depending on where the fault in the cable occurred, the work could involve road or paved driveway cuts (such as stone, asphalt, concrete) would lead to more expensive restoration work. On average NBHDL estimates that each failure costs about \$5k in repair work. At 1.7 failures a year, the reactive O&M cost associated with this line is \$8.5k a year or \$4.25k per km / year. Even though the renewal of the line will save \$8.5k as described, the nature of the savings is cost avoidance. It is not an elimination of baseline maintenance costs which can be quantified for budgeting purposes. The fact that reactive O&M such as response to failures cannot be predicted in any given year, the O&M budget for this would be estimated as 5-year average. The impact of the O&M savings would be its contribution to lowering the average, however inflation increases and the fact that other deteriorating asset failure will occur offsets the overall change to the average.

NBHDL has realized savings already in the same manner described above. In the Lake Heights (also referred to as the Turret complex) group of underground projects, including Wickstead Avenue, Melina Close, and Madelena Drive, NBHDL was experiencing on average 2.2 underground failures a year and incurring a cost of approximately \$11K annually in O&M to repair these failures. NBHDL has successfully completed all of these projects and has saved these costs from current O&M budgets as not a single failure has occurred since the completion of these projects.

Figure 2-Staff-17.1 – O&M for All Trouble Calls, Storms and UG Repairs

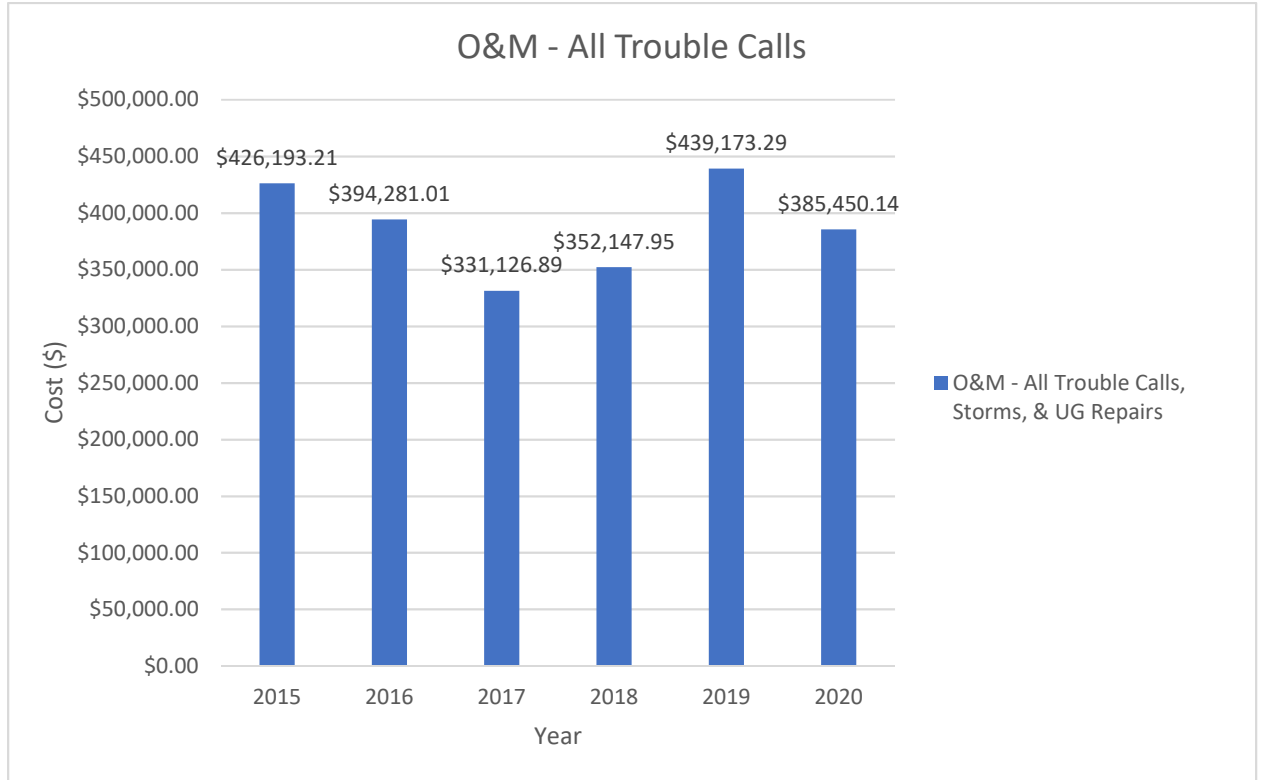
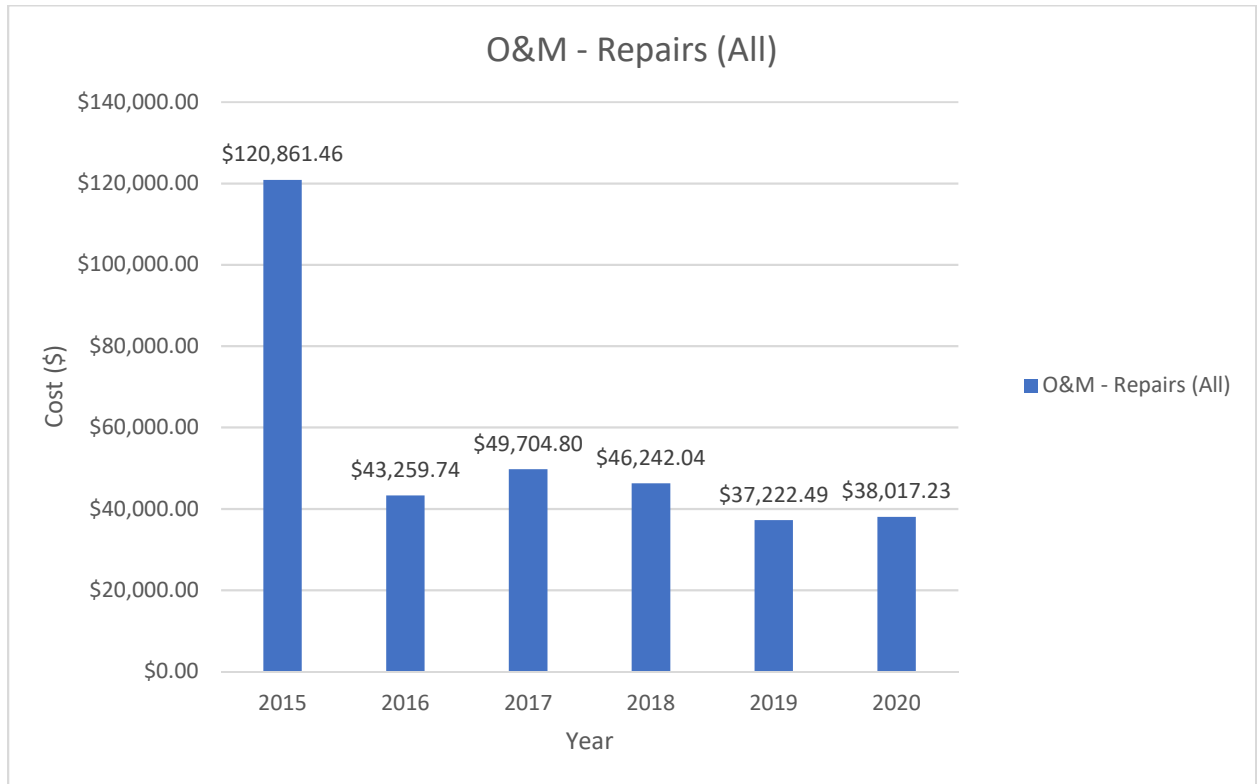


Figure 1-Staff-17.1 above shows that NBHDL's System Renewal has had success in managing the increase to these reactive O&M costs and they are overall on a slight downward trend. The decrease is only modest .35% but given inflation rates at 1.9%, any downward trend is a form of success in controlling costs. Given that NBHDL's current investment into System Renewal allows it to only replace approximately 1.7% to 1.8% of its infrastructure in a year, the rates at which these O&M cost could be reduced is limited to its investment.

Figure 2-Staff-17. – O&M for All Repairs



Similar to reactive cost associated with failures, there are also costs associated with maintenance repairs that comes out of inspections. With System Renewal projects, the amount of equipment that would need to be repaired which arises out of these inspections is also reduced as an O&M cost saving benefit. Given that the historic average of the O&M costs related to trouble calls and repairs account for only \$440k of the overall cost, increases in other areas of O&M overshadow any impact that could be reflected as a decrease in the overall budget. Figure 2-Staff-17.2 above shows the O&M for all repairs from 2015 to 2020.

- (b) NBHDL's System Renewal spending is guided by the asset management principle of asset lifecycle optimization in order to achieve the economic efficiency of its investment. As the in-service life of an asset extends past its economic life, the fundamental principle is that the O&M cost associated with maintaining the asset will start to increase past a marginal cost to the point which increases the overall cost of the asset over its lifespan. Only when an asset has far exceeded its economic life and requires extensive maintenance to keep it in service while preventing it from continuously failing to the point where the O&M expenses of maintaining the asset exceed being marginal, will an actual decrease to the current O&M expense occur. An example of this is allowing underground cable or an overhead line to deteriorate to the point of where costly failures occur, incurring those

costs as an increase to O&M expenses, and then categorizing the elimination of those O&M incurred as a cost savings benefit in the system renewal project. However, in this situation, the O&M cost being reduced is actually O&M cost that could have been avoided altogether with a timelier System Renewal investment that would have kept the O&M cost marginal. The extra costs incurred in addition to its original cost may make the assets overall more expensive per year of its service.

The O&M cost savings attributed as a benefit to a System Renewal project under a life cycle optimization approach cannot be qualified as an elimination of an O&M cost because it is fundamentally **an avoidance of a cost increase**. The cost reduction in future O&M costs realized though investments in system renewal holds true as the cost of future O&M cost would be greater without these investments.

NBHDL's forecasted system O&M costs continue to increase in the 2022-2025 forecast period by approximately 1.95% per year. The continued increase in O&M by inflation is attributed to the reality that North Bay Hydro's O&M expenses such as employee wages, contracted services, and equipment, will also continue to increase with inflation. Staffing is required to continue the execution of North Bay Hydro capital program and meet the required needs of the business. As explained in (a) above, the cost savings that NBHDL is referencing within the DSP are more appropriately put into the context of future cost avoidance and more efficient use of resources, the direct cost savings that are identified are immaterial in the aggregate. NBHDL's O&M costs included in Table 4-5 of the DSP incorporate costs tied to the vegetation management program, on-going costs related to enhancing NBHDL's maintenance program, and the O&M related labour costs that are tied to NBHDL's Operations and Engineering department (33 FTEs), including the lines department, substations, metering, stores, and overall supervision. These costs do not decline in a one-to-one correlation with improved asset condition as a result of the practices followed in the AMP. These costs are required annually. NBHDL will continue to focus on productivity improvements and incorporate these savings where feasible. It is NBHDL's position that the continued focus on vegetation management and a properly planned and executed system renewal program will continue to harden and strengthen NBHDL's system, improve reliability and reduce costs related to reactionary maintenance and after-hours trouble and storm calls.

2-Staff-18

System Renewal

Reference:

Ref 1: DSP, Page 63

Ref 2: Chapter 2 Appendices, Appendix 2-AB

Preamble:

North Bay Hydro indicated on page 63 of the DSP that the test year has a higher than usual number of composite pole installations planned. OEB staff notes that the test year capital budget is higher than every other year in the forecast period.

Question:

- (a) Please explain why it is necessary to accelerate the installation of composite poles specifically in the test year. Has North Bay Hydro considered spreading out the installation of composite poles across the period of the DSP to better smooth out its capital spending and rates?
- (b) What are the projected reliability improvements (SAIDI, SAIFI, or CAIDI) associated with the acceleration the installation of composite poles?

Response:

- a) Over the historic period of the last DSP, NBHDL has been primarily focusing its System Renewal investments in the downtown core of North Bay rebuilding its oldest and worst condition assets while also upgrading the 4.16kV system to 12.47kV in its voltage conversion project. NBHDL has achieved its goal in rebuilding the downtown core and only a small step of voltage conversion remains to be completed in 2021. Since projects centered around completing voltage conversion were prioritized over the historic period, much of the required 44kV work was deferred to the present DSP period.

Good operating condition of the 44kV sub transmission lines are critical for NBHDL to be able to maintain its reliably performance targets and the priority for these rebuilds is driven by the significant risk posed by the degradation of their condition. To provide context to the criticality of these lines, the OEB may refer to Table 2-10 in the DSP for worst performing feeders. Any feeder with an "M" designation is a 44kV feeder that supplies multiple substations. It can be observed that three 44kV sub-transmission feeders (18M2, 18M5, 15M3) tops the list. These feeders however only represent 2.6% (9 of 340) of the total outage occurrences, but account for 40% (26,330 of 65,510) and 26% (19,350 of 75,043) of the total Customer Interruptions and Customer Hours of Interruptions respectively for the period of the table (2018-2019). NBHDL's Project Prioritization Tool takes multiple factors into account to prioritize the projects including CI and CHI values and also identifies a risk-cost to every project. As evident by the values identified above, any outage on these 44kV feeders will have a significant impact to reliability metrics and the tool will prioritize 44 kV feeders in poor condition ahead of other lines with lower consequences in the event of failure.

NBHDL has prioritized two major 44kV sub-transmission line rebuilds to be completed in the test year which is why the test year is higher than the rest of the forecasted period where NBHDL expects to complete only one major 44kV line rebuild per year. Deferring one of these projects would only move the cost spike to another year and increase the risk associated with the asset by keeping it in service for an extra year.

NBHDL's focus is not to accelerate the installation of composite poles, but the asset management tool used by NBHDL prioritizes 44kV projects and the more pressing 44 kV renewal projects are located in areas that can significantly benefit from the use of composite poles. Ultimately, the use of composite poles has nothing to do with the priority of the projects. Each project is prioritized and then the design evaluates various pole types as explained below. Some 44 kV projects might or might not benefit from the use of composite poles. In which case standard poles would be used.

- b) As stated above in part a), NBHDL's plans are not the acceleration of composite pole installations, rather they are driven by the need to replace deteriorating 44kV sub-transmission lines which are a critical component to NBH's system. These projects will avoid an adverse impact to SAIDI and SAIFI as also explained in part a) of the response.

The use of composite poles over wood poles does not have a direct benefit in reliability metrics, but it does have a benefit in the avoidance of pole failures. A pole failure does not necessarily mean that pole has failed in service and caused an outage. This would be an instance where the pole actually breaks and the structure collapses. A pole failure may also arise out of an inspection where it is determined that the pole can no longer meet its functional and safety requirement and must be replaced. One of the most common causes of inspection failure is woodpecker holes where considerable pole strength is lost and the pole is no longer structurally adequate to support the conductors and equipment it carries. Unlike excessive rotting (the other most common cause) from moisture, which takes many years and is typically only found on older poles, woodpecker damage can and has occurred on brand new poles. This causes a considerable amount a value lost with the asset. With expensive assets such as 44kV sub transmissions poles, woodpecker damage can be very costly. Composite poles also do not suffer from accelerated rot caused by moisture.

For all projects with composite pole installations, NBHDL performed a cost benefit analysis that demonstrated that composite poles offer more benefit and are actually more cost effective compared to wood poles over the life cycle of the asset. Since the 80-year service life of composite poles last much longer than the 45-year service life of wood poles, the cost per year of service is less. Using pole inspection data collected from the field, NBHDL sampled wood poles in areas that have been observed to have a high frequency of wood pecker damage, deemed as wood pecker "hot spots". NBHDL discovered that approximately 43% of wood poles located in wood pecker "hot spots" had some form of wood pecker damage to varying degrees. On average, NBHDL estimates that approximately 8% of service life will be lost on these poles due to early replacement from wood pecker damage. NBHDL intends to use, as a standard practice, composite poles for all 44kV sub-transmission lines and some 12.47kV distribution lines in woodpecker "hot spots" to protect its assets from this damage.

The photos below represent poles impacted by woodpeckers.



Pole with Multiple Holes in 44kV Sub transmission Line



The above photo was taken on March 25th and is a one-month old pole (installed in February 2021) where a woodpecker has already made a hole.

2-Staff-19

Asset Replacement Plan

Reference: DSP, Page 64

Preamble:

North Bay Hydro's Asset Replacement Plan recommends a total of 127 poles for replacement in 2021-2023 and 135 from 2024-2025. Specifically for the test year, North Bay Hydro has planned to replace 129 poles.

Question:

- (a) Please clarify that, where the reference says "a total of 127 poles... and 135", these replacements numbers are intended to be annual numbers.
- (b) Over the historical period 2015-2020, on average, how many poles has North Bay Hydro replaced annually?

Response:

- a) Yes, the pole replacement is shown in the following Table 2-Staff-19.1:

Table 2-Staff-19.1.1 – Planned Pole Replacements from 2021 to 2025

Total Amount of Planned Pole Replacements / Year					
Year	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>
Total Number of Poles	129	127	127	135	135

- b) The following Table 2-Staff-19.2 provides the historical pole replacements from 2015-2020:

Table 2-Staff-19.1.2 –Historical Pole Replacements from 2015-2020

Total Amount of Pole Replacements / Year						
Year	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Total Number of Poles	153	103	64	88	114	106

It may be observed from the table above that the pole replacements, particularly in 2017 and 2018, are lower than NBHDL's plan. Those years are outliers particularly due to the reallocation of a large amount of budget and funds to focus primarily on underground and station work. In 2017, NBHDL had to replace a transformer and switchgear in one station and a recloser in another station for a combined cost of approximately \$1.5M. NBHDL had to replace its underground infrastructure at the airport for another \$480K.

These projects limited the available budget and resources which could be committed to pole installations for the year.

In 2018, NBHDL had to construct a new substation (MS23) at approximately \$1.3M and spent another \$540K in work associated with the connection of the Community Energy Park. Again, these projects limited the available budget and resources which could be committed to pole installations for the year. NBHDL notes that \$428k of the connection work is in CWIP as Hydro One has not completed invoicing on this component of the project and final costs will be charged to NBHS in the form of contributed capital, resulting in a net \$0 impact on rate base.

In 2019 / 2020 NBHDL set its focus on renewing its overhead system, primarily its 44kV sub transmission lines and composite poles were used for construction of these lines. These lines are more expensive than an average distribution line and as such, the number of poles which could be installed had to be scaled down for budgeting reasons.

In 2022 to 2026, NBHDL projects a small decrease in the rate of 44kV poles to be replaced which will allow more distribution poles to be replaced as a result. This adjustment to the type of poles expected to be installed puts NBHDL's expected pole replacements to be in line with Metsco's recommendation in the ACA.

2-Staff-20

Project Prioritization

Reference: DSP, Pages 70-76, 92

Preamble:

As indicated in the reference, North Bay Hydro uses a weighted prioritization criteria to prioritize its capital plans. A table with North Bay Hydro's planned test year projects and associated priority ranking is shown on page 92.

Question:

- (a) At what point does North Bay Hydro determine that a project must be completed within a certain year? That is to say, is there a threshold of project scores under which projects will be deferred to the next rate year?
- (b) As an example, project "WF0551260 – Montrose Ave Rebuild" has one of the lowest priority rankings in the table on page 92. Would this project be able to be deferred to 2022?
- (c) North Bay Hydro's test year system renewal budget is significantly higher than the rest of the forecasted years. Has North Bay Hydro considered deferring some of its low priority projects to later years in order to smooth out its capital spending?

Response:

- a) This question ignores a fundamental component of capital work planning – which is to ensure that there is enough work to utilize the capacity of NBHDL's workforce. Otherwise, a low workload year would result in the firing of a large portion of NBHDL's skilled workforce which would then not be available to support NBHDL in years where there were high workloads, meaning that work would then not be completed. NBHDL needs to maintain a capacity of skilled workers to operate and maintain its system, and utilization of that capacity is a relevant consideration that management must factor into its decision making.

There is no specific threshold to which the weighted prioritization dictates replacement. This would provide a challenge in asset management planning as some years where the factors would be low would result in fewer installations and for years when the factors would be high, NBHDL would have to install more poles which would be difficult to do with its current resources. NBHDL plans its projects on a yearly balanced approach for its capital plans based on an asset management strategy that replaces a similar number of poles, underground infrastructure and other assets per year. It uses the prioritization tool to determine the priority/order of asset replacement. NBHDL prioritizes all projects and selects them in a manner that allows asset management targets (# of poles and \$ invested) to be met while ensuring full resource utilization. Once those targets are achieved, other projects are pushed to the following year.

- b) The Montrose Ave Rebuild project cannot be deferred to 2022 for NBHDL to meet its DSP targets. This will create a pole replacement deficit by not meeting its 127-pole replacement plan for 2021 and more poles would need to be installed in 2022. NBHDL would also have additional resources with no work to perform. Page 64 of the DSP provides details on the pole replacement number selection. Due to the fact that there are 1,709 poles beyond 50 years of age and 1,090 of them had a Health Index of less than 60%, where degradation of the poles can start deteriorating rapidly below this value, the ideal number of replacements is 200 poles per year. Due to various resource and financial constraints, NBHDL has determined that it can deliver 127 poles per year for 2021-2023 and 135 poles per year for 2024-2025. 127 and 135 poles per year represents 1.7% and 1.9% respectively of the overall sub-transmission and distribution network. At this pace, it will take over 52 years to replace all pole assets, which means that the future replacement age of those poles will be 52 years old. NBHDL will work to sustain its poles condition through close monitoring and the use of composite poles to extend the life of its assets. However, any reduction to less than the 127 poles would result in a cumulative deficit and is not sustainable. Ultimately, this would lead to the need for a future cash infusion to sustain NBHDL's assets. During the next 5-years, NBHDL will perform close monitoring and testing of its pole assets to determine if the overall condition increases or decreases. If the condition decreases, the next rate application will require an additional investment to increase the number of poles replaced. In addition, future significant increases in pole installations would create issues for the Operations Department as NBHDL does not have sufficient internal resources to deliver the additional work. NBHDL must balance spending needs with resource availability to construct its projects. If more projects are pushed out to future years, NBHDL would need to hire additional staff or contract out the work, which would increase expenditures.
- c) NBHDL recognizes the higher cost in system renewal projects in the test year due to reasons stated above in response 2-Staff-18 a) and b) and did consider deferring some lower priority projects to later years in order to smooth out its capital spending. In doing so, NBHDL determined that while deferring low priority projects may smooth out the spending, some of the benefit realized in NBHDL's approach of optimizing its project planning would be lost and NBHDL would not be able to implement its DSP. Pushing out projects would reduce the amount of work delivered and therefore will prevent NBHDL from achieving its goals. The 44 kV lines that are to be installed in the test year would create a spike in a subsequent year. There are no options at this time that avoids a year with higher spending. While individual projects are prioritized and ranked by the prioritization tool according to the benefits they offer, NBHDL utilizes that information to make its decision based on the projects that cumulatively offer the greatest benefit (highest ranked), its capital budget, and maximizing the use of its internal construction resources. Again, since NBHDL mainly uses its internal resources for overhead line construction, which the two lowest priority projects are, deferring these projects would leave a gap in time where NBHDL would not be maximizing their use for overall better efficiency. NBHDL cannot reduce its internal resources without significantly hurting its ability to execute its DSP. It would be a decision of either cutting back the budget at the cost of resource utilization or have a cost spike in the test year.

2-Staff-21

Asset Condition Assessment

Reference: Asset Condition Assessment (ACA), Pages 31-35

In total, North Bay Hydro owns approximately 10,384 distribution poles, but only 5,955 poles carrying primary circuit were considered in the ACA.

- (a) What are the other poles that are not currently included in the condition assessment? Why were these poles not included?
- (b) Please confirm that North Bay Hydro's proposed pole renewal plans only target poor condition poles within the population of 5,955 poles. What are North Bay Hydro's renewal plans for the remainder of the pole population not included in the condition assessment?

The ACA noted that only 31% of the distribution of wood poles have a valid health index. The remaining 69% of poles have an extrapolated health index.

- (c) The 31% of poles that is referred to in the ACA, is this referring to the population of 5,955 poles or the entire pole population of 10,384?
- (d) The ACA notes that North Bay Hydro visits and inspects all poles in 3-year cycles. What are the missing data that prevents the calculation of a valid health index for 69% of the poles?

OEB staff notes that less than 50% of North Bay Hydro's pole population have a valid health index – the majority of poles have an extrapolated health index. Sub-transmission poles have a similar issue with the lack of data availability.

- (e) Please discuss the validity of using the health indices of poles as an input for pole renewal planning when most poles do not have a valid health index.
- (f) What efforts is North Bay Hydro taking to improve its data availability issues for poles?

Response:

- a) In addition to the 5,955 poles carrying a primary circuit, 1,330 poles carrying a sub-transmission circuit were also included in the ACA for a total of 7,285 poles considered out of a total population of 10,384. These 7,285 poles comprise all of the poles in NBHDL's system which carry a high voltage conductor at 12.47 kV or 44kV. For asset management purposes, this constitutes the population of poles which carry significantly higher consequence if they were to fail in the form of safety, reliability, and cost compared to secondary and auxiliary poles. The condition of these poles is the main driver of NBHDL's overhead system renewal investments and it was NBHDL's intent to have the ACA focus particularly on these types of pole. The 3,099 poles not included in the condition assessment are secondary poles (low voltage) and stub poles. The absence of information for these poles in the ACA was not necessarily a purposeful exclusion, rather an

oversight due to the immateriality of these poles to NBHDL's system renewal plans. Those poles are also typically a fraction of the replacement cost of sub-transmission and primary poles and are typically replaced on an as required approach.

- b) As stated in the response for part a), NBHDL's renewal plans involve 7,285 poles carrying a voltage conductor and constitutes the poles associated with a high consequence of failure in the form of safety, reliability and cost. Outside of a line rebuild, the poles not included in this number will be replaced only as required when the pole is deemed no longer fit for service. When these poles fall inside the area of a line rebuild, they will be replaced in the same manner as auxiliary equipment for these projects. For this purpose, they are considered as part of the auxiliary equipment cost included in the unit pole replacement cost of the project.
- c) The 31% refers to the 5,955 distribution poles and 43% in reference to the 1,330 Sub-Transmission poles.
- d) NBHDL revamped its pole inspection program in 2019 to start collecting more detailed condition data on its poles to be used for asset management purposes. This includes a visual inspection of all equipment mounted on the pole and a hammer test and pole prod to assess decay at the ground line. Previously poles were inspected only to ensure they were safe with no undue hazard to the public and asset condition data was not collected. Approximately one third of poles was inspected with asset condition data collected in 2019, another third was complete in 2020 and the remainder of the poles will be completed in 2021 for 100% inspected over a three-year cycle. Only the 2019 data was available at the time the ACA was completed.
- e) NBHDL believes the health indices of poles used as input for renewal planning is valid because of the statistical methodology NBHDL used to sample the poles in its condition assessment. Knowing that not all poles would be able to be inspected prior to ACA completion, the sampling of poles chosen to inspect was done in a manner to obtain the best representation of the overall inventory. Having 98% of age data for all currently in-service poles, NBHDL used that information to determine the percentage of the inventory that fell within each age demographic and proceeded to sample the number of poles proportionately to the population of each age demographic. As such, condition data collected from each age demographic of poles was extrapolated to only represent poles in that same age demographic. Furthermore, the poles selected were also geographically dispersed across NBHDL's entire service territory, both rural and urban, to ensure that the results weren't reflective of only a particular area. Poles of the same age group often reflect similar condition, therefore by testing the same percentage of poles based on age groups, NBHDL is confident that it obtained a distribution of the overall network that is representative of the system as a whole. The accuracy of the proposed replacement plan should be considered as a Class 5 estimate which is defined as having an accuracy range of -20% to -50% on the low-end and +30% to 100% on the high-end. The Class 5 estimate is generally used for concept screening which is applicable for parametric models, judgement or analogy analysis. At this stage, the maturity level of the project definition is estimated to be between 0-2% and is used as guidance. As NBHDL plans its capital projects and identifies areas for renewal, the estimates become clearer and more accuracy up to project execution. Furthermore, the DAI is another tool for consideration in asset management to understand what data was available at the time of planning, how it was used, and how it can be improved moving forward. Additionally, a larger emphasis is on qualitative results (i.e., testing) versus quantitative results as the former provides a better understanding of the assets condition.

- f) NBHDL has already taken steps in improving its pole inspection program to collect more detailed asset condition data by revamping the inspection program in 2019. By the end of 2021, NBHDL will have enough data to produce a valid health index on 100% of the poles in service in its distribution system. Furthermore, on the condition that this rate application is approved, NBHDL will start performing non-destructive pole testing on primary distribution and sub transmission poles which are older than 10 years over the next 5 years. NBHDL has determined that testing poles which are less than 10 years of age does not offer enough value in the information collected. This pole testing program will allow NBHDL to collect valuable data on remaining pole strength and decay which will be used to further improve Health Index accuracy. Health index modeling criteria used by industry experts (such as Metsco) typically assigns a high weight to remaining strength in determining the health of a pole as it is one of the most important pieces of information in determining failure risk. This information can only be reliably collected and interrupted with a scientific pole testing method. NBHDL is also upgrading its ESRI based GIS software (new licensing agreement). NBHDL has been using the GIS to store valuable technical and locational asset data and is now moving to use it to store asset condition information collected in field. It is also being used to start storing outage information and equipment failures. Using the GIS, NBHDL will be able to better represent the condition of its system in its geographical areas which can be used by engineering personnel to understand which areas need addressing. This visual representation is an invaluable tool that will paint a very clear picture to even relatively inexperienced staff. As NBHDL continues to import condition data into its GIS, its current non-server-based version has seen a significant decrease in performance to the point where it has been described as “frustrating” to use by staff. Slow data loading, freezes, and crashes are some of the issues experienced. The amount of data that could be inputted is near capacity and at risk to become “unusable” due to performance issues. The upgraded GIS will not only solve the performance issues, but provide access to data collecting applications which will allow field personnel to directly import data, such as pole testing results, into the GIS seamlessly. The current GIS licenses are currently all utilized, therefore no other staff can use the current system. The upgrade will allow access to additional engineering and operations staff who can use it with the new licensing agreement. This upgrade is also contingent on funding approval from this rate application.

2-Staff-22

Fleet Renewal

Reference: DSP, Page 76

Preamble:

North Bay Hydro has a fleet replacement schedule that was created in 2015 based on the fleet assessment completed in 2013.

Question:

- (a) Please provide a copy of the fleet replacement schedule.
- (b) Does North Bay Hydro strictly replace its fleet according to this schedule, or does North Bay Hydro continue to track the condition of vehicles in its fleet and vary the replacement schedule as necessary?

Response:

- a) The fleet replacement schedule is included in Appendix E – Fleet Assessment (which can be found at pdf page 298 of Exhibit 2).
- b) NBHDL tracks the condition of vehicles in its fleet and adjusts the replacement schedule for its small vehicle fleet accordingly. The fleet report recommends replacement at 7 years, but NBHDL reviews those vehicles and replaces them between 7-12 years, with an assumed replacement year depending on type of use, condition, maintenance and kilometres. For example, NBHDL has a 2008 pickup that is used for vegetation management in the summer and only has approximately 63,000 km on it. This makes the truck 13 years old in 2021, however, it is not expected to be replaced. A truck utilized by the Engineering department assumes a 10-year life span, however, the low kilometres and light use of the vehicle may extend its service life beyond the 10 years. A truck used by the metering department every day all over the city is expected to be replaced at the earlier 7-year mark due to high kilometres and the importance of having this vehicle in operation, however the decision will be reviewed at that time.

NBHDL maintains the replacement for line trucks to the year they are scheduled (12 or 15 years depending on the truck type) unless maintenance costs increase beyond a reasonable value, at which point the line truck would be exchanged with an earlier scheduled line truck replacement. For example, Truck 43, a 40' single bucket purchased in 2012, had numerous expensive maintenance issues to the point where there is no value in retaining an asset that cannot be relied upon and where significant funds are being spent to keep it running. The original schedule had it planned for replacement in 2025, but a replacement truck was ordered for 2020. NBHDL pushed out other replacement trucks to maintain the current spending profile for line trucks. At the end of 2019, maintenance on the truck had reached \$160,037 which is 74% of the \$216,479 purchase price. In comparison, and in NBHDL's experience, maintenance costs for line trucks over 8 years of age is around 40%. More details are available in the "W – Truck 43 Replacement 2021 - Capital Project Summary".

2-Staff-23

General Plant

Reference: Chapter 2 Appendices, Appendix 2-AA

Preamble:

OEB staff notes that North Bay Hydro's test year spending on software at \$158,150 is significantly higher than historical years.

Question:

- (a) Please provide a breakdown of the different software that make up this amount.
- (b) Please discuss the need to complete all of these software upgrades in the test year.

Response:

- a) The following Table 2-Staff-23 is a breakdown of software applications that contribute to the 2021 spending amount of \$158,150:

Table 2-Staff-23 – Breakdown of Software Applications

Software Listing	2021
Mobile Device Manager	7,800
Enterprise Software	28,350
Customer Application	30,000
Microsoft Volume Licensing	42,000
Questica - Financial Reporting Software	50,000
Total Software - 2021	158,150

- b) The following is description each individual software purchase, its purpose, and why NBHDL believes 2021 is the appropriate time to make the investments:

Mobile Device Management (MDM): NBHDL has invested in mobile technology such as smart phones, tablets, and mobile-enabled laptops. To ensure integrity of these devices, an MDM solution is being sought to inventory, secure, locate, and remote-manage (including remote lock, wipe) them. Deferring this could potentially put company assets and information at risk.

Enterprise Software – Enterprise Backup Solution: NBHDL has increased the number of servers and services over the past three years and its current backup software is not meeting the needs of a robust and reliable enterprise-level backup. Backups are completing during business hours instead of off-peak hours. As most of NBHDL's servers are now virtual machines (VM), a backup solution with VM snapshot capability is preferred. Additionally, the backup solution will need to be able to quiesce databases and perform backups from database snapshots.

Customer Application: Based on feedback from the 3 phases of customer engagement surveys, customers are looking for different ways to interact with NBHDL. Developing a customer app will

allow NBHDL to meet those demands. Deferring this would risk alienating our customer wants and potentially encountering inflated development costs.

Microsoft Volume Licensing: Volume licensing allows NBHDL to purchase bulk operating system licenses and client access licenses. These are perpetual licenses and are capitalized over 5-years. To date, NBHDL has been buying Windows 10, Windows Server, SQL Server, Remote Desktop, and SharePoint licenses ad-hoc and not at bulk rates. This is an opportunity to save costs over this time as the systems go through their next round of renewal during this rate period.

Questica – Business Intelligence Software: To help improve the financial reporting, Questica is being looked at as a business intelligence solution to be used primarily with our ERP – HTE. This is the same solution used with the City of North Bay so the intent is to leverage their configuration since NBHDL uses the same ERP. By completing this in 2021, we have the opportunity to significantly reduce staff effort with regards to month-end, year-end, and ad hoc reporting. This will enable finance staff to be reallocated to other value-add activities.

2-Staff-24

System Renewal

Reference: DSP, Appendix I, Project A, Transformers – System Renewal

Preamble:

The table in the sixth bullet shows that North Bay Hydro's test year spending (\$229,240) in this program is approximately equal to average of North Bay Hydro's historical expenditures for this program. This section further notes that a significant number of transformers were required and installed in the past few years due to voltage conversion projects.

Question:

- (a) OEB staff notes that North Bay Hydro's voltage conversion projects have mostly been completed. In light of this, please explain why North Bay Hydro has forecasted the test year budget at historical average levels if less transformers (i.e. for voltage conversion) will be required.

Response:

- a) NBHDL has continued to budget transformer purchases based on historical averages because its budget is based on cost spent on transformers rather than the number of units purchased. While the note in the section that states that a significant number of transformers were needed for the voltage conversion is true, NBHDL recognizes that the note may have been misleading because it was specifically referring to the number of units, not the cost. In addition, when the capital project summary indicated that more transformers were required for the voltage conversion, it was in reference to the inventory units that needed to be carried for spares for two voltages (4.16 kV and 12.47 kV). The actual transformer replacement purchases would have been required irrespective of the voltage conversion due to the system renewal of those assets as the pole line was being reconstructed. The majority of transformers required in the voltage conversion were overhead pole mount transformers ranging from 25 to 100 kVA. Since the cost of a transformer unit will vary with size (see Table 2-Staff-24 below), the number of units alone will not be an accurate reflection of the cost required. Referring to the cost per year in Table 2-Staff-24 below, it can be observed that a year such as 2019 with 36 units purchased was more costly than 2020 where 62 units were purchased.

NBHDL only replaces transformers as a planned activity when they are included with major overhead / underground distribution system renewal projects. Transformers outside of these projects are replaced in response to failures only (run to failure approach). NBHDL orders transformers to maintain an inventory that allows timely replacement of failed units (backup replacement units). Transformers replaced in line rebuilds may return to inventory to be used again if the unit passes testing and condition inspection. Only transformers that fail inspection / testing are disposed of. Since the quantity of transformers to be purchased in a given year cannot be accurately determined, NBHDL uses a historical average of the cost for budgeting purposes.

Table 2-Staff-24 – Transformer Costs Per Year

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Number of Transformers Purchased	103	39	80	47	36	62
Cost	\$247,628	\$187,250	\$289,585	\$149,515	\$265,374	\$156,050

<u>Typical Cost for Different Sizes of Transformers</u>		
kVA	<u>Type</u>	<u>2020 Cost</u>
10	Pole Mount	\$ 1,245
25	Pole Mount	\$ 1,604
50	Pole Mount	\$ 2,375
75	Pole Mount	\$ 3,085
100	Pole Mount	\$ 3,620
50	Pad Mount	\$ 3,655
100	Pad Mount	\$ 4,827
300	Pad Mount	\$ 14,332
500	Pad Mount	\$ 18,943
750	Pad Mount	\$ 24,193
1000	Pad Mount	\$ 29,177

2-Staff-25

System Renewal

Reference: DSP, Appendix I, Project B, WF0551387 – MacBeth Cres – Capital Project

Preamble:

The project description of this project discusses cost sharing with Bell, with Bell providing the costs of the poles.

Question:

- (a) OEB staff understanding is that this is an overhead to underground conversion project, with overhead assets being replaced with underground. Please clarify Bell's role in this project. What poles are being replaced?
- (b) If North Bay Hydro removes these poles and moves everything underground, where will Bell put its assets?
- (c) Does North Bay Hydro expect any capital contribution from Bell? If yes, please indicate how much it is, and why the capital contributions noted for this project is \$0.

Response:

- a) This is not a cost-sharing project and Bell has no role. To clarify the backlot poles, owned by Bell, are in poor condition and at end of life due to the associated risks of carrying high voltage conductors. NBHDL is not installing new poles since the existing line has accessibility and clearance issues outlined in the capital project summary. NBHDL is removing its assets from the backlot Bell poles and installing new underground infrastructure in the front of the properties.
- b) Bell will retain its assets on their backlot poles.
- c) No, NBHDL will not install poles for Bell assets, therefore no capital contributions are required.

2-Staff-26

System Renewal

Reference: DSP, Appendix I, Project C, WF0525291 – Walalce Rd – Sub-Transmission Line Rebuild (44kV)

Preamble:

This line rebuild project affects Hydro One Networks Inc. as the line in question also carries Hydro One Networks circuits and equipment.

Question:

- (a) Please clarify whether these pole lines are owned by North Bay Hydro or Hydro One Networks Inc.
- (b) Given that the line rebuild must be designed to accommodate Hydro One Networks Inc.'s 44 kV circuit as well, does North Bay Hydro expect any capital contribution from Hydro One Networks Inc. for this project? If yes, what is the amount expected, and why is the capital contributions shown as \$0? If no, why not?
- (c) North Bay Hydro noted that it must coordinate with Hydro One Networks Inc. to coordinate the isolation and de-energizing of the line, which poses a risk to the timeline of the project. Please provide an update to the status of this project and whether it is still expected to be completed in 2021.

Response:

- a) These poles are owned by NBHDL.
- b) The joint use agreement between HON and NBHDL does not permit for capital contributions to be requested for pole replacements where joint use attachments are already established, therefore no capital contribution has been requested and it is the reason the capital contribution amount is zero.
- c) The project is scheduled to start in May 2021 and will be completed in 2021. HON has a 44 kV sub-transmission circuit on this line which will be required to be de-energized during the pole replacement. NBHDL is coordinating with HON who has requested that the work occur in May-June or October.

2-Staff-27

System Renewal

Reference: DSP, Appendix I, Project K, MS15 Rehabilitation

Preamble:

OEB staff notes that the scope of this project pertains to the engineering design work of anticipated rehabilitation work at MS15 with actual construction expected to start in 2022 and be put in-service in 2022.

Question:

- (a) Please explain why North Bay Hydro has listed this as a separate project, instead of including it with the construction costs, to be completed in 2022. What will be used and useful when the engineering portion is completed in 2021, but not the physical construction?
- (b) Please clarify if these costs are included in the 2021 capital additions.

Response:

- a) NBHDL notes that DSP Appendix K project summaries as well as Chapter 2 Appendices 2AA & 2AB are completed based on capital expenditures (since this is what the titles of the appendices stipulate), and thus will not be a perfect replication of the total assets put into service in any given year. Any variances would therefore flow in and out of construction work-in-progress (CWIP).

NBHDL believes this question applies to Appendix I, Project L, MS18 Rehabilitation, not MS15. The purpose of completing the engineering in 2021 is to be ready and have flexibility in 2022 to tender the work early and get the best possible price for the work. NBHDL notes this investment would be in CWIP until 2022 and thus not part of rate base. The engineering portion of MS18, however, is a capital expenditure over the materiality threshold, so was included in the project summaries.

- b) These costs would be part of CWIP in 2021 and not part of in-service capital additions.

2-Staff-28

System Renewal

Reference: DSP, Appendix I, Project L, MS18 – MS18 Rehabilitation (Engineering)

Preamble:

Under comparative information, North Bay Hydro stated the historical costs of rehabilitating MS11 for comparison purposes.

Question:

- (a) How many reclosers and relays were replaced for the MS11 rehabilitation project?

Response:

- a) There were 3 reclosers and relays replaced in the MS11 rehabilitation project.

2-Staff-29

System Access

Reference:

Ref 1: DSP, Appendix I, Projects N, O, P, Q, R

Ref 2: Appendix 2-AA

Preamble:

The projects in the reference all refer to system access projects. OEB staff notes that, for each of the projects, the amount of capital contributions indicated is \$0.

Question:

- (a) Please explain why North Bay Hydro has not included any capital contributions for these system access projects.
- (b) Please explain what the contributed capital line item in Appendix 2-AA for the test year represents and also explain how North Bay Hydro calculated this number.
- (c) Please provide a breakdown of the contributed capital line item in Appendix 2-AA into the projects each amount relates to.

Response:

- (a) NBHDL notes that these project summaries were completed on a spending basis only, and thus do not include capital contributions. The allocation of capital contributions is provided at the demand work level in part b).
- (b) The revised Appendix 2-AA that was filed as part of NBHDL's correspondence dated February 18, 2021, shows a contributed capital figure of \$551,144 for the test year. This can be further broken down in to the projects in Table 2-Staff-29 below:

Table 2-Staff-29 – Contributed Capital by Projects

Contributed Capital Reconciliation	
OH Transformers	(4,853)
UG Transformers	(86,648)
Road Relocations	(24,718)
Subdivisions	(75,208)
Primary Services	(178,258)
Secondary Services	(181,460)
	(551,144)

These figures are calculated based on varying percentages of budgeted spending as well as historical averages.

- (c) See response to part b).

2-Staff-30

System Access

Reference: DSP, Appendix I, Project R, Road Relocations

Preamble: None.

Question:

- (a) To date, is North Bay Hydro aware of any road relocation projects from the municipality scheduled to be completed in 2021?

Response:

- a) The only road relocation project is a continuation of a 2020 road relocation that the City did not complete in 2020 and carried over in 2021. The expectation is that the amount for NBHDL will be covered within the envelope of costs that NBHDL has allocated for this type of work in 2021. NBHDL is not aware of any other projects the municipality currently has scheduled for completion in 2021.

2-Staff-31

General Plant

Reference: DSP, Appendix I, Project S, Yard Fabric Structure

Preamble:

There are several benefits listed for this project, many of which relate to O&M, such as eliminating the time required to clear snow from vehicles and equipment, making equipment more accessible during the winter, and reducing the risk of equipment freezing to cement pads.

Question:

- (a) Are these O&M savings reflected in North Bay Hydro's O&M and reliability metrics (SAIDI, SAIFI, CAIDI) forecasts? If yes, please indicate the quantum of savings. If no, why not?

Response:

a) O&M savings are reflected in the 2021 Test Year through productivity and efficiency gains incorporated into the compensation budget. These include the efficiency of working operations and protection of equipment. Working under a shelter in raining or snowing conditions improves the efficiency of the work and reduces time to extract material from frozen conditions. The fabric structure could be utilized for work when the weather conditions are too severe to work out in the open. These are overarching benefits that will impact all aspects of NBHDL work including productivity in the capital and O&M programs. These savings are not reflected in the reliability metrics. The quantity of the savings, over the course of a full year, are not anticipated to impact the reliability metrics in a significant way. The benefits are more qualitative than quantitative.

2-Staff-32

General Plant

Reference:

Ref 1: DSP, Appendix I, Project T, General Building Work

Ref 2: Building Assessment Report, Appendix F Table, Building Assessment Recommendations 2021-2025, Page 2

Preamble:

North Bay Hydro's proposed test year spending on general building work is \$130,300. In reference 2, there is a table provided as part of the Building Assessment Report summarizing the capital spending needs over 2021-2025 on the building. OEB staff notes that the "needs" budget as laid on in reference 2 has \$62,900 in spending for the test year, with the total 2021-2025 cost of \$219,900 spread out across the five years. It appears that North Bay Hydro has opted for a different budget, with \$130,300 in the test year, and then \$22,400 in subsequent years.

Question:

- (a) Please explain why North Bay Hydro has opted not to follow the timing and schedule as recommended by the Building Assessment Report. In particular, please explain why it is necessary to budget more than half of the total work in the test year.

Response:

- a) NBHDL has re-organized the general building work as it is better to complete more work in the first year instead of spreading it out over 5-years to limit the facility's deterioration. The work selected for the test year is recommended since the repairs will prevent deterioration of additional components of the structure mostly relating to water infiltration. Delaying work will either increase the cost of those works or damage other components that will require additional repairs. In addition, NBHDL is evaluating its future facility needs and increased deterioration to the building could impact the future value of the building and property. Improvements planned for the test year include drainage around the building, roof repairs, metal siding repair, foundation flashing repair, flute seals replacements, fall-arrest lifeline system installation, doors, electrical disconnects, breaker panels and painting. Table 2-Staff-32 provides details on the highest cost components for the test year. Further details on all proposed repairs are located in the building condition assessment report.

Table 2-Staff-32 – Highest Cost Components for Test Year

Work Required	Justification/cause	Resolution	If work is not performed	Estimated Cost
Drainage Around	Building facade is in direct contact with the grade	Construct a French Drain	Degradation will increase future repair	\$ 38,000

Structure	causing degradation of the building facade.	and curb on the north and south side.	costs of the facade and future value of the asset.	
Repairs to Roof	Roof leaking in various locations. Fasteners gaskets are gone and previously applied sealant is failing.	Repair gaskets and sealant.	Leaks will continue and will create additional damage to the building	\$ 26,300
Metal Siding Repair	There are numerous areas of siding corrosion and damage.	Replace damaged siding panels	Water ingress to the building envelope and accelerated degradation.	\$ 10,600
Foundation Flashing to the Southside Addition	Flashing is badly damaged and deteriorated in many locations	Replace flashing and ensure it is sloped properly	Accelerated degradation and damage due to water ingress	\$ 10,600
Flute Seals	Flute seals missing in a number of locations on north and south side of the main building	Replace flute seals	Accelerated degradation and damage due to water ingress	\$ 9,000
Fall-Arrest System to south side addition	There is no information on the fall-arrest system or its design parameters.	Design and install a fall-arrest system	Cannot utilize the current fall-arrest system for inspection or maintenance. Required to access roof.	\$ 5,300
Ice shield on south side addition	Ice and snow sliding off building is damaging the eavestrough	Install ice shields	Continued damage will cause eavestroughs to fail and create a slipping hazard for pedestrians.	\$ 5,000

\$8,860 of roof work that was budgeted to be completed in 2021 was actually completed in 2020 and is incorporated in 2020 OM&A actuals. NBHDL recognizes the need to adjust the 2021 capital expenditures accordingly, but did not have time to make this adjustment prior to the filing of these interrogatory responses.

2-Staff-33

Fleet Renewal

Reference:

Ref 1: DSP, Appendix I, Project V, Replacement of Truck 34

Ref 2: Chapter 2 Appendices, Appendix 2-AB

Preamble:

The project description noted that the finished unit (Truck 34) will be delivered and put into service in Q2 2022 with a total cost of \$464,143. The 2021 costs of \$119,649 are only related to the cab and chassis components.

Question:

- (a) Please explain why North Bay Hydro has included this project in the test year when it appears the finished unit will not be put in-service until 2022. What will be used and useful in 2021 if the finished unit will not be delivered until 2022?
- (b) Do North Bay Hydro's 2021 capital additions include the 2021 costs?

Under project alternatives, one alternative considered was replacing the truck in 2022 instead of 2021, which North Bay Hydro stated would double truck replacement costs in 2022. OEB staff notes that North Bay Hydro's 2021 test year net capex exceeds the 2022 forecasted net capex by over \$800k.

- (c) Please discuss why North Bay Hydro opted not to defer this project to 2022, which could help smooth out North Bay Hydro's total capex over the DSP period.

Response:

- a) NBHDL notes that DSP Appendix I project summaries as well as Chapter 2 Appendices 2AA & 2AB are completed based on capital expenditures, and thus will not be a perfect replication of the total assets put into service in any given year. Any variances would therefore flow in and out of construction work-in-progress (CWIP).

The purchase of Truck 34 is being included in the test year since a partial portion of the vehicle (Cab & Chassis, \$119,649) is scheduled to be purchased and owned by NBHDL in 2021. NBHDL notes that this asset value would be in CWIP until 2022 and thus not part of rate base. The partial purchase, however, is an actual asset acquisition over the materiality threshold, so was included in the project summaries which represent capital expenditures.

- b) 2021 capital additions include those 2021 costs that are expected to be fully in service in 2021. All other additions (i.e.; spending) would be transferred from CWIP for prior year's work, or into CWIP, to be brought into service later.

- c) NBHDL notes that the variance between 2021 and 2022 is being driven by System Renewal and General Plant. System Renewal is driven by actual projects proposed for 2021 and General Plant will always be largely driven by IT requirements and fleet replacement. Both of these categories are based primarily on schedules that do not lend themselves to the same smoothing ability that other asset spending might. Further, the COVID-19 pandemic has created backlogs in supply for large vehicles (bucket trucks), and any delays in replacement could shift acquisitions further into the future, making replacement unpredictable. NBHDL notes that the practice of splitting the cab and chassis and the complete unit is not something it has discretionally chosen to do. It is a reality of the timing of manufacture and when payment and ownership by NBHDL takes place.

2-Staff-34

Fleet Renewal

Reference: DSP, Appendix I, Project W, Replacement of Truck 43

Preamble:

The project description noted that the finished unit (Truck 43) will be delivered and put into service in Q2 2021 with a total cost of \$323,941. The 2021 costs of \$214,084 are only related to the aerial life / bucket components.

Question:

- (a) Please explain why North Bay Hydro has split the costs of this truck between 2020 and 2021 when it appears the finished unit will not be put in-service until 2021.
- (b) Do North Bay Hydro's 2020 capital additions include the 2020 costs?

Under project timing, North Bay Hydro noted that the cab and chassis of the truck were scheduled to be delivered in Q4 2020. North Bay Hydro goes on to note potential delays caused by COVID-19

- (c) Has North Bay Hydro received the cab and chassis? If yes, when?
- (d) How certain is North Bay Hydro that it will receive the full and finished unit before the end of 2021?

Response:

- (a) Similar to 2-Staff-33, the purchase of Truck 43 is being completed in two phases. NBHDL will take ownership of the cab and chassis and the completed unit at different times. The initial purchase of the cab and chassis in 2020 will remain in CWIP until the completed unit is put in service in 2021.
- (b) 2020 capital additions include those 2020 costs that are expected to be fully in service in 2020. All other additions (i.e.; spending) would be transferred from CWIP for prior year's work, or into CWIP, to be brought into service later.
- (c) NBHDL took ownership of the cab and chassis of Truck 43 in November 2020.
- (d) NBHDL is currently scheduled to receive the unit in Q2 2021. NBHDL is unaware of any supplier delays that will push the receipt of this asset beyond 2021.

Exhibit 3 – Operating Revenue

3-Staff-35

Load Forecast

Reference:

Ref 1: Exhibit 3, Pages 8-9, 25-33

Ref 2: Load Forecast Model, sheet: Summary

Preamble:

North Bay Hydro has selected a five-year historic period for regression due to a low R-Square and worsening in other measures of predictive capability when longer time periods were tested.

OEB staff notes that billed energy decreased every year from 566,701,778 kWh in 2010 to 482,398,546 kWh in 2017 with the largest decreases between 2014 and 2016. In 2018, energy use increased to 496,980,971 kWh.

The regression model used Heating Degree Days, Cooling Degree Days, Number of Days in the Month, and a Spring Fall Flag.

In explaining year over year variances from 2015, North Bay Hydro explained that “the average usage per customer will be a reflection of weather, economic indicators, and the result of local CDM efforts.”

Question:

- (a) Is North Bay Hydro aware of any reasons for the decrease in load from 2010 to 2017? In particular, the larger reductions between 2014 and 2016?
- (b) Has North Bay Hydro attempted to address the historic reductions in load through dummy variables, economic variables, or other measures? If so, please explain what has been attempted.
- (c) Please produce a scenario with ten years of data where a dummy variable is included that indicates 1 in every month from January 2010 to June 2015, and then zero in every month from July 2015 to December 2021.
- (d) Has North Bay Hydro attempted to address the impact of economic indicators or local CDM efforts in its load forecast? If so, what were the results, if not, why not?

Response:

- (a) NBHDL is unaware of any specific reasons that would explain the scale of the decreased load between 2010 to 2017 other than general local weather, economic factors, conservation and usage

trends. The same can be said for the drastic decrease between 2014 and 2016. However, NBHDL can highlight what it sees as contributing factors:

- CDM program successes: as part of this application, NBHDL has filed its 3rd LRAMVA recovery since the 2015 COS. Since North Bay is not an area of large growth, CDM programs would necessarily affect a net reduction in overall load.
 - Weather: Between 2014 and 2016 the combined heating and cooling degree days decreased from 5,558 to 5,145, or a 7.4% reduction.
 - Economy: In its 2015 COS application, NBHDL included a “North Bay Economy” flag variable that began in 2012. While unused in this application due to the shorter time frame and decreasing predictive value, it is indicative of a local downward trend in load due to economic factors.
- (b) NBHDL attempted to reuse the “North Bay Economy” variable from the last approved load forecast, however, the variable proved to have decreased predictive value as more recent years were added to the analysis. Once the decision was made to shorten the period from 10 to 5 years, it became a nil variable.
- (c) NBHDL has calculated a scenario with ten years of data where a dummy variable is included that indicates 1 in every month from January 2010 to June 2015, and then zero in every month from July 2015 to December 2021. The relevant results compared to NBHDL’s previous results are as in the following Table 3-Staff-35:

Table 3-Staff-35 – Comparison of Results of NBHDL Application vs Staff Question Scenario

Statistic	Application	Staff Q
R Square	95.7%	95.7%
Adjusted R Square	95.4%	95.5%
F Test	307.30	502.01
MAPE (Monthly)	2.3%	2.6%
T-stats by Coefficient		
Heating Degree Days	29.3	37.3
Cooling Degree Days	8.9	11.3
Number of Days in Month	3.8	6.0
Spring Fall Flag	(5.1)	(5.8)
OEB DUMMY VARIABLE		20.3
Constant	1.0	0.0
2021 Predicted Purchases	512,910,056	509,224,268

The suggested addition of the dummy variable produces 2021 predicted kWh purchases 0.72% lower than the application. Overall, the regression statistics suggest this would be a reasonable approach to projecting future purchases. Especially, when the statistics NBHDL considers to be most important (R-Square, Adjusted R-Square, MAPE), are so similar to the model supplied.

- (d) NBHDL has not attempted to factor in future CDM efforts in its load forecast. The centralization of program delivery and LDC’s lack of involvement eliminate NBHDL’s ability to predict future reductions. Further to that, without NBHDL promoting and delivering conservation projects in the

local community, there will not be additional uptake at the same levels. With respect to local economic indications, as stated above, NBHDL did attempt to use an economic variable, but the value of such a flag in the output proved unreliable. Detail around the results of the use of this economic variable are discussed in VECC-23.

3-Staff-36

Load Forecast

Reference: Bay Today, "City's financial contribution to natural gas expansion project formalized", January 28, 2021.

Preamble:

Bay Today reports that an agreement has been reach which will bring natural gas service to Peninsula and Northshore Roads.

Question:

- (a) Does North Bay Hydro expect to lose load due to fuel conversions away from electricity?
- (b) If the answer to a) is yes, does it have an estimate of the timing of these conversions, and the amounts of load it expects to lose?

Response:

- a) NBHDL does not expect to lose load due to fuel conversions away from electricity. These lines are sparsely populated and any conversions would be slow to take hold. As such, material impacts would likely be beyond the current rate setting period.
- b) Not applicable.

3-Staff-37

Load Forecast

Reference:

Ref 1: Exhibit 3, Page 34
Ref 2: Load Forecast Model, sheet: Rate Class Energy Model

Preamble:

North Bay Hydro notes that "When determining the billed energy forecast as described in 2.3.3.3, NBHDL applied a 3-year geometric mean year over year in 2020 and 2021 to determine the non-normalized average consumption by class with the same average 10-year average heating and cooling degree days."

OEB staff notes that ten years of growth rate data is available, and five years of data were used in the regression equations.

Question:

- (a) Please explain why the three-year geometric mean was selected, and not either a five-year or ten-year geometric mean, consistent with either the period used for regression, or the available data.
- (b) As a scenario, please provide a load forecast, where a five-year geometric mean growth rate is applied to 2020 and 2021.

Response:

- a) As stated on page 4 of Exhibit 3, NBHDL used the previously filed and approved load forecast from its 2015 COS application as a starting point. As such, in an attempt to be consistent, NBHDL selected a three-year geometric mean for both the customer count growth rate and the average use per customer growth. NBHDL did not have a compelling reason to change the previously approved methodology.
- b) NBHDL has recalculated the load forecast using five-year geometric means as growth rates. Table 3-Staff-37 below is a summary of the relevant changes. NBHDL notes that the total forecast is unchanged. Only the underlying pre-normalized would be updated as a result of this adjustment.

Table 3-Staff-37 – Recalculation of Load Forecast Using Five Year Geometric Means

Customer/Connection Forecast

Year	Residential	General	General	General	Street	Sentinel	Unmetered	Total
Forecast number of Customers/Connections								
2020 - 3yr	21,316	2,651	266	1	5,424	408	9	30,075
2021 - 3yr	21,352	2,649	269	1	5,424	400	9	30,104
2020 - 5yr	21,313	2,652	265	1	5,424	415	9	30,079
2021 - 5yr	21,346	2,651	267	1	5,424	413	9	30,111
2020 - Variance	-3	1	-1	0	0	7	0	4
2021 - Variance	-6	2	-2	0	0	13	0	7

Forecast Annual kWh Usage per Customer/Connection

Year	Residential	General Service < 50 kW	General Service 50 to 2999 kW	General Service 3000 to 4999 kW	Street Lighting	Sentinel Lighting	Unmetered Scattered Load
Forecast Annual kWh Usage per Customers/Connection							
2020 - 3yr	9,438	30,303	749,362	14,897,244	375	294	4,388
2021 - 3yr	9,580	30,296	738,601	14,455,054	375	294	4,388
2020 - 5yr	9,209	29,958	741,415	15,761,603	376	294	4,388
2021 - 5yr	9,121	29,610	723,018	16,181,122	376	294	4,388
2020 - Variance	-229	-345	-7,947	864,359	1	0	0
2021 - Variance	-459	-686	-15,583	1,726,068	1	0	0

Non-normalized Weather Billed Energy Forecast

Year	Residential	General Service < 50 kW	General Service 50 to 2999 kW	General Service 3000 to 4999 kW	Street Lighting	Sentinel Lighting	Unmetered Scattered Load	TOTAL
NON-normalized Weather Billed Energy Forecast (GWh)								
2020 5yr (Not Normalized)	196.3	79.4	196.5	15.8	2.0	0.1	0.0	490.2
2021 5yr (Not Normalized)	194.7	78.5	193.0	16.2	2.0	0.1	0.0	484.6
2020 3yr (Not Normalized)	201.2	80.3	199.3	14.9	2.0	0.1	0.0	497.9
2021 3yr (Not Normalized)	204.6	80.3	198.7	14.5	2.0	0.1	0.0	500.1
2020 - Variance	5	1	3	-1	0	0	0	7.8
2021 - Variance	10	2	6	-2	0	0	0	15.5

Weather Billed Energy Forecast

Year	Residential	General Service < 50 kW	General Service 50 to 2999 kW	General Service 3000 to 4999 kW	Street Lighting	Sentinel Lighting	Unmetered Scattered Load	TOTAL
Weather Normalized Billed Energy Forecast (GWh)								
2020 Bridge - Normalized - 5yr	199.7	79.6	195.5	14.9	2.0	0.1	0.0	491.9
2021 Test - Normalized - 5yr	201.7	79.0	193.7	14.5	2.0	0.1	0.0	491.1
2020 Bridge - Normalized - 3yr	198.2	80.1	195.7	15.8	2.0	0.1	0.0	491.9
2021 Test - Normalized - 3yr	198.7	80.0	194.1	16.2	2.0	0.1	0.0	491.1
2020 - Variance	-2	0	0	1	0	0	0	0.0
2021 - Variance	-3	1	0	2	0	0	0	0.0

3-Staff-38

CDM Savings

Reference:

Ref 1: Exhibit 3, Page 17, Table 3-15
Ref 2: Participation and Cost (P&C) Report

Preamble:

North Bay Hydro included actual conservation and demand management (CDM) savings results up to and including 2019 in its load forecast. An extract of Table 3-15 is shown below.

	2018	2019	2020	2021
2018 CDM Programs	4,027,457	2,917,353	2,907,174	2,907,174
2019 CDM Programs		1,827,951	1,946,094	2,199,926

Question:

- (a) Please explain what project savings are included in 2018 (4,027,457 kWh) and 2019 (1,827,951 kWh) in Table 3-15.
 - i. Please confirm that any additional savings, that are not reflected in the P&C Report, were approved by the IESO to be delivered as part of the Conservation First Framework.
- (b) Please explain why there is an increase in savings from 2019 programs into the 2021 test year from 1,827,951 kWh (2019), 1,946,094 kWh (2020) to 2,199,926 kWh (2021).
- (c) Please confirm whether the 2021 impact from 2019 CDM programs (2,199,926 kWh) represents a full year of 2019 programs. If not, please reflect the full-year of 2019 actual amounts in the load forecast.
- (d) Please file the supporting documentation (for example, an aggregated version of CDM-IS excel report) to reconcile the 2021 CDM savings included from prior year programs in the load forecast. In the excel spreadsheet, please ensure the following details are included:
 - Framework under which the savings will be delivered under (e.g. CFF wind-down framework, interim framework, etc.)
 - Date that the program was approved by the IESO
 - Expected completion date of the program
 - Expected kWh and kW savings (net)
 - Delivery agent for the program savings (e.g. LDC or IESO led)
 - Approval date of an IESO incentive

Response:

- a) Project savings in both years include savings identified in the April 2019 Participation and Costs report for North Bay Hydro, as well as Conservation First Framework projects completed after that report was issued. Details of these projects are provided in the Excel worksheet provided in response to VECC-27 b). In addition, savings from the Community Energy Park project are based on a shadow analysis, the results of which are shown on Tab 8 of the LRAMVA work form.
 - i. North Bay Hydro confirms that the additional savings, not reflected in the P&C report, were approved by the IESO to be delivered as part of the Conservation First Framework.
- b) The increase relates to the Community Energy Park project savings, shown on Tab 8 of the LRAMVA workform. The CEP began operation in May 2019 and the operators were learning and optimizing the system. 2020 had lower run hours/savings because of COVID-19; both facilities the CEP provides energy to were closed and therefore not requiring load (both electrical and thermal). Savings in 2021 are estimated based on the average monthly savings from May 2019 to December 2020 which incorporate the impacts of both a continual evolution on learning how to optimize an innovative and unique project, along with pandemic related reductions. NBHDL submits that an average is appropriate in this situation given the uncertainty of COVID-19 and the on-going learning that is taking place with respect to load optimization. Details are on Tab 8 of the LRAMVA.
- c) The 2021 impact from 2019 programs represents a full year of 2019 programs.
- d) Details of the projects were provided in the response to VECC-27 b) with the exception of the CEP, which is provided on Tab 8 of the 2020-11-16 LRAMVA workform. Only completed projects are included. All projects included were delivered by NBHDL under the Conservation First Framework.

3-Staff-39

CDM Adjustments

Reference: Exhibit 3, Page 18, Table 3-16

Preamble:

In Table 3-16, North Bay Hydro included a CDM manual adjustment of 2,644,686 kWh to its 2021 load forecast based on savings from a cogeneration project. OEB staff labelled the breakdown of these adjustments as “Adjustment 1” and “Adjustment 2”.

CDM adjustment – 2021	kWh	
2021 Manual adjustment	1,099,963	Starting number
Less CEP	-777,539	Adjustment 1
NBHDL CEP Adj	2,322,262	Adjustment 2
Total Manual Adjustment	2,644,686	

For Adjustment 2, North Bay Hydro notes it is “based on 70% of the former usage of the customers at this location without a loss in kW as the facility is expected to continue to peak normally based on periodic shut downs at the generation facility.”

Question:

- Please confirm the in-service date(s) of the cogeneration project(s), whose forecast savings are included in the CDM adjustment.
- Please explain what the starting 2021 manual adjustment of 1,099,963 kWh represents and what this value is based on, including reference source(s) of the data and key assumptions used in the estimate.
- Please explain what the CEP adjustment reflects, as this first adjustment results in a deduction of 777,539 kWh from the 2021 load.
- Please provide the facility peak value(s) that were used in estimating forecast savings of 2,322,262 kWh, including the reference source(s) of base consumption (i.e. peaks based on periodic shutdowns) and how the facility peak(s) were selected.
 - Please confirm that the 70% allocation of former usage reflects a 30% reduction of load due to periodic shutdowns and is based on facility-specific measurements. If not, please explain how the 70% estimate was derived.
 - Please show the calculation of the 2,322,262 kWh savings figure.

Response:

- NBHDL confirms that the in-service date of the specified cogeneration project, whose savings are included in the CDM adjustment, was May 23, 2019.

- b) The starting value of 1,099,963 is based on using half the forecasted CDM savings from 2019 programs ($2,199,926 / 2 = 1,099,963$).
- c) Within the 2021 manual adjustment of 1,099,963kWh is the CEP's specific contribution to that number. Therefore, in this line, NBHDL has removed the CEP's 2019 contribution as described in 3-Staff-38 b) to the previous total. See Table 3-Staff-39 below:

Table 3-Staff-39 – 2019 CDM Savings and CEP Share

		@50%
2019 CDM Savings	2,199,926	1,099,963
CEP Share	1,555,078	777,539

- d) The figures used in this calculation were taken from a detailed engineering study performed at the time of the project's conception. Though it was estimated that the CEP would displace 86% of the property's load of 3,339,015 kWh, through actual operational analytics, it is NBHDL's contention that this figure is closer to 70% as more power is being imported/supplied from the NBHDL grid than was originally modelled ($3,339,015 * 70\% = 2,322,262$).
- i. See explanation above.
 - ii. See explanation above.

3-Staff-40

Other Revenues

Reference: Ref 1: Exhibit 3, Page 36, Table 3-44

Preamble:

OEB staff notes that the other revenues variance table shown in the reference above is missing account 4362 – Loss on Disposition of Utility Property.

Question:

Please provide a revised variance table with account 4362 as well as an explanation for any material past variances.

Response:

NBHDL provides the revised variance in Tables 3-Staff-40.1 and 3-Staff-40.2 below.

Table 3-Staff-40.1 – Revised Variance Table

USoA	Other Revenue	2015 Board Approved	2015 Actual	2015 Actual vs. 2015 Board Approved	2016 Actual	2016 Actual vs. 2015 Actual	2017 Actual	2017 Actual vs. 2016 Actual	2018 Actual	2018 Actual vs. 2017 Actual	2019 Actual	2019 Actual vs. 2018 Actual	2020 Bridge Year	2020 Bridge Year vs. 2019 Actual	2021 Test	2021 Test Year vs. 2020 Bridge Year
4086	SSS Administration Charge Revenue	83,834	84,282	448	85,403	1,121	86,269	866	86,924	655	87,410	486	87,000	(410)	86,997	(3)
4210	Rent from Electric Property	198,208	315,551	117,343	260,464	(55,087)	260,448	(16)	245,584	(14,863)	266,288	20,704	261,898	(4,390)	499,198	237,299
4220	Other Electric Revenues	-	177	177	-	(177)	-	-	-	-	-	-	-	-	-	-
4225	Late Payment Charges	138,983	144,454	5,471	145,466	1,012	161,685	16,219	152,362	(9,323)	134,994	(17,368)	77,754	(57,240)	150,473	72,719
4235	Specific Service Charges	591,356	616,193	24,837	579,684	(36,509)	437,297	(142,387)	358,852	(78,445)	214,871	(143,980)	144,519	(70,352)	144,519	-
4325	Merchandising, Jobbing	4,900	-	(4,900)	-	-	-	-	-	-	-	-	-	-	-	-
4335	Profits and losses from financial instruments	-	(152,493)	(152,493)	672,578	825,071	890,292	217,714	(140,775)	(1,031,067)	(681,401)	(540,626)	-	681,401	-	-
4355	Gain on disposal of property	-	19,959	19,959	137,183	117,224	30,000	(107,183)	3,432	(26,568)	90,253	86,821	-	(90,253)	-	-
4360	Loss on disposal of property	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4362	Loss from retirement of utility property	(78,456)	(69,759)	8,697	(21,640)	48,119	(184,023)	(162,383)	(29,352)	154,671	(180,525)	(151,174)	(47,391)	133,134	(69,191)	(21,800)
4375	Revenues from Non-Utility Operations	2,556,998	1,386,728	(1,170,270)	1,103,430	(283,299)	1,237,152	133,722	1,155,268	(81,884)	864,459	(290,809)	614,918	(249,541)	67,344	(547,575)
4380	Expenses of Non-Utility Operations	(2,505,068)	(1,322,810)	1,182,258	(1,091,120)	231,690	(1,316,877)	(225,757)	(1,320,284)	(3,407)	(876,802)	443,482	(555,463)	321,339	(17,123)	538,340
4390	Miscellaneous Non-Operating Income	11,925	22,104	10,179	3,199	(18,906)	14,685	11,487	9,197	(5,489)	3,042	(6,154)	9,120	6,078	9,120	-
4398	4398-Foreign Exchange	-	18,074	18,074	(13,352)	(31,426)	(10,733)	2,619	915	11,648	(1,406)	(2,321)	(15,000)	(13,594)	(15,000)	-
4405	Interest & Dividend Income	92,798	104,588	11,790	107,758	3,169	141,039	33,281	230,285	89,246	862,621	632,336	246,566	(616,055)	171,044	(75,523)
	Other Income and Expenses	83,097	6,392	(76,705)	898,036	891,643	801,536	(96,499)	(91,314)	(892,850)	80,241	171,555	252,751	172,510	146,194	(106,557)
	Other Revenue	1,095,478	1,167,049	71,571	1,969,052	802,003	1,747,234	(221,818)	752,408	(994,826)	783,804	31,395	823,923	40,119	1,027,381	203,458

NBHDL provides the follows discussion for year over year material variances.

Table 3-Staff-40.2 – Variance of Account 4362

USoA	Other Revenue	2016 Actual	2017 Actual	2017 Actual vs. 2016 Actual
4362	Loss from retirement of utility property	(21,640)	(184,023)	(162,383)
USoA	Other Revenue	2017 Actual	2018 Actual	2018 Actual vs. 2017 Actual
4362	Loss from retirement of utility property	(184,023)	(29,352)	154,671
USoA	Other Revenue	2018 Actual	2019 Actual	2019 Actual vs. 2018 Actual
4362	Loss from retirement of utility property	(29,352)	(180,525)	(151,174)
USoA	Other Revenue	2019 Actual	2020 Bridge	2020 Bridge Year vs. 2019 Actual
4362	Loss from retirement of utility property	(180,525)	(47,391)	133,134

The material variances between 2016 and 2020 are driven by larger than usual losses from disposition of utility property in 2017 and 2019, representing peaks of \$184,023 and \$180,525 respectively.

As mentioned in Exhibit 2 (page 39), in 2017 NBHDL completed necessary construction work involving a recloser replacement at MS19 totaling \$656,456 (\$562,296 in 2017). This was done to address on-going outage issues caused by squirrel contact inside the station that had led to the premature failure of two recloser units and at total of five entire station outages (over 1,050 customers impacted each time), involving extremely high pass-through faults, each with the potential to cause significant power transformer damage. The overhead reclosers were replaced with padmounted reclosers, which involved significant changes to the substation design and disposal of existing overhead structures and equipment not near the end of life, which were disposed of. Since the investment the outages have been eliminated and there has been no further equipment damage. The total loss on this equipment totaled \$126,788, which is the main contributing factor in both the 2016 vs 2017 and the 2017 vs 2018 comparisons.

In 2019 Cassells Street, at the direction of the City of North Bay, underwent a significant rebuild. Part of this rebuild involved NBHDL having to move and rebuild significant portions of pole and line assets that had been replaced in 2013. Unfortunately, much of this equipment was disposed of as it was no longer useful. The total losses for this specific disposal were \$122,369, which is the main contributing factor in both the 2019 vs 2018 and the 2020 vs 2019 comparisons.

3-Staff-41

Other Revenues

Reference:

Ref 1: Chapter 2 Appendices, Appendix 2-H

Ref 2: Revenue Requirement Workform, Tab 3. Data_Input_Sheet

Preamble:

OEB staff is unable to reconcile the “Other Revenue” inputs in the RRWF to Appendix 2-H.

Question:

- (a) Please reconcile the different specific service charges amounts shown in the two references (\$144,519 in Appendix 2-H but \$111,570 in the RRWF).
- (b) Please provide a breakdown of the “Other Distribution Revenues” and “Other Income and Deductions” items in the RRWF and reconcile it with Appendix 2-H.

Response:

NBHDL submits the following reconciliation between to total amounts in Appendix 2-H and the RRWF.

	Appendix 2H	RRWF
Total Other Revenues	1,181,835	1,228,466
Reconciling items:		
Acct 4405: RSVA Interest Revenue		22,560
Acct 4362: Loss on Disposition		(69,191)
	<u>1,181,835</u>	<u>1,181,835</u>

These two items have been adjusted for between Appendix 2-H and the RRWF due to their respective treatment in rate setting. The budgeted loss on disposition has previously been accounted for in the net depreciation line in the RRWF. Interest revenue related to RSVA balances is not meant to be recovered through distribution rates.

- a) NBHDL submits the following reconciliation of accounts between Appendix 2-H and the RRWF for specific service charges, late payment charges, other operating revenues, and other income or deductions. Note the highlighted values that account for the overall reconciling items described above in the following Table 3-Staff-41.

Table 3-Staff-41 – Reconciliation of Accounts between Appendix 2-H and RRWF

Acct	Description	Appendix 2H					RRWF				
		Total	Specific Service Charges	Late Payment Charges	Other Operating Revenues	Other Income or Deductions	Total	Specific Service Charges	Late Payment Charges	Other Operating Revenues	Other Income or Deductions
4235	Specific Service Charges	(144,519)	(144,519)				(144,519)	-		(144,519)	
4225	Late Payment Charges	(150,473)		(150,473)			(150,473)		(150,473)		
4082	Retail Services Revenues	(24,145)			(24,145)		(24,145)	(24,145)			
4084	Service Tr Revenues	(428)			(428)		(428)	(428)			
4086	SSS Charge	(86,997)			(86,997)		(86,997)	(86,997)			
4210	Rent from Electric Property	(499,198)			(499,198)		(499,198)			(499,198)	
4245	Govt Assistance Credited to Income	(116,593)			(116,593)		(116,593)			(116,593)	
4362	Loss on Disposition of utility Property	69,191				69,191					
4375	Revenues From Non-Rate Regulated Utility Ops	(67,344)				(67,344)	(67,344)				(67,344)
4380	Expenses From Non-Rate Regulated Utility Ops	17,123				17,123	17,123				17,123
4390	Misc Non-Operating Income	(9,120)				(9,120)	(9,120)				(9,120)
4398	Foreign Exchange	15,000				15,000	15,000				15,000
4405	Interest and Dividend Income	(184,331)				(184,331)	(161,771)				(161,771)
		(1,181,835)	(144,519)	(150,473)	(727,361)	(159,481)	(1,228,466)	(111,570)	(150,473)	(760,311)	(206,112)

	Account 4235 incorrectly allocated in the RRWF
	Accounts 4082, 4084, 4086 incorrectly allocated in the RRWF
	Adjustments made to 4362 and 4405 for rate setting treatment

NBHDL notes that with respect “Specific Service Charges” and the misalignment between Appendix 2-H and the submitted RRWF, the table above highlights that in the RRWF Account 4235 is incorrectly categorized under “Other Operating Revenue” and should be classified as “Specific Service Charges” and Accounts 4082, 4084 and 4086 are incorrectly allocated to “Specific Service Charges and should be classified under “Other Operating Revenues”. These offsets net to zero. NBHDL will correct the classifications in the revised RRWF requested in 1-Staff-1.

- b) In the table provided in part a), NBHDL notes the respective breakdowns of both 2H and the RRWF for “Other Operating Revenues” and “Other Income and Deductions”. “Other Income and Deductions” differs by the Accounts 4362 and 4405 as addressed in the preamble to this response, while “Other Operating Revenues” suffers from the other side of the misallocations in the RRWF described in part a). NBHDL will correct the classifications in the revised RRWF requested in 1-Staff-1.

Exhibit 4 – Operating Expenses

4-Staff-42

COVID-19 Impacts

Reference: None.

Preamble: None.

Question:

Please explain if North Bay Hydro's OM&A budget and forecasted expenses, aside from North Bay Hydro's forecast of bad debts, include forecasted impacts due to COVID-19.

Response:

NBHDL's OM&A budget and forecasted expenses do not include forecasted impacts due to COVID-19.

To-date, NBHDL has not experienced a significant incremental increase in costs tied to the pandemic and has focused on mitigating these costs. NBHDL has incorporated approx. \$50k in 2020 costs (50% of costs incurred) in to the COVID-19 deferral account. These costs relate health and safety items, increased cell phone and internet costs, port-a-john's for 3 substations that were designated for the crews in order to keep pods separated and avoid the need to come to the main building location, additional security and other incremental costs specific to NBHDL's response to the pandemic that continues to evolve. On-going costs related to COVID-19 are approximately \$3.5k-\$4k per month and relate primarily to additional internet bandwidth and turbo hubs for remote access. These costs are not incorporated into 2021 Test Year costs.

NBHDL would note that the May 1, 2020 rate increase was deferred to November 1, 2020 and the company did not seek to recover this lost revenue (approx. \$100k). In addition, NBHDL has halted all interest charges on overdue balances and will not be seeking recovery of this lost revenue either (approx. \$100k in 2020). NBHDL will continue to monitor the impact of the pandemic on customers and will provide relief where we can.

4-Staff-43

Employees

Reference: Exhibit 4, Page 9

Preamble:

North Bay Hydro created a new operations coordinator role in the operations department to complement the operations manager and operations supervisor.

Question:

- (a) Please provide further details on the responsibilities of the operations coordinator and how the role will fit in with the existing manager and supervisor roles.

North Bay Hydro indicated that its operations manager and supervisor are expected to retire in the near future.

- (b) When are these two employees expected to retire?

Response:

- (a) The Operations Coordinator position will have the following main responsibilities:
- Provide coordination and planning of capital projects and OM&A activities;
 - Oversee and coordinate contractors and third parties required for capital and OM&A activities;
 - Perform safety duties (creating and maintaining safety policies, leading safety talks, performing and managing safety inspections, etc.);
 - Lead for all purchasing within the Operations department - will aid with purchasing in other departments as well (i.e. Engineering);
 - Oversee risk management within the Operations department;
 - Aid with fleet management;
 - Provide Stores oversight and aid with material coordination; and
 - Provide redundancy and support for both the Operations Manager and Operations Supervisor positions.

The role will report to the Operations Manager and be lateral to the Operations Supervisor position. The Operations Coordinator and Operations Supervisor will have overlapping duties and will cover for each other in times of absence (sick, vacation, training, etc.). Either one will cover for the Operations Manager in times of absence (sick, vacation, training, etc.).

- (b) The Operations Manager and Operations Supervisor are both eligible for retirement now. Neither employee has provided NBHDL with a retirement date, but both are expected to retire before 2025.

4-Staff-44

OM&A

Reference:

Ref 1: Exhibit 4, Page 12

Ref 2: Exhibit 1, Page 91

Preamble:

The test year includes costs towards the creation of a secure mobile app for customers.

Question:

- (a) Are there incremental OM&A costs associated with the mobile app? If yes, what are the costs and in OM&A program are these costs recorded?
- (b) In the second reference, North Bay Hydro discusses customer preferences for the mobile app among the 18-34 years old demographic and among commercial customers. Please provide the overall customer preferences (i.e. across all age groups) related to the mobile app.

Response:

(a) NBHDL anticipates that there will be on-going incremental costs in relation to the mobile app, however, at this time these costs are not known but it is expected that on-going costs will be covered under the costs that NBHDL's proposed for on-going customer engagement.

(b) As mentioned on page 92 of Exhibit 1, 67% of 18–34-year-old respondents gave “Very High Priority + High Priority” to the development of a mobile app. Additional details that were not included in Exhibit 1, but discussed in the Customer Engagement Summary, pointed to the 50% of survey takers in the age range of 35-44 and 28% of those 55+ shared the same “High and Very High Priority” view on the development of a mobile app. See also Attachment B – 1-Staff-4 - Phase 1 and 2 Customer Engagement Survey Results .

4-Staff-45

OM&A

Reference:

Ref 1: Exhibit 4, Pages 12-13, 26

Ref 2: Exhibit 1, Pages 121-122

Preamble:

North Bay Hydro forecasted \$150k annually towards “corporate policies, initiatives, and strategy.”

OEB staff notes that \$110k was already spent in this category in 2020.

Question:

- (a) Please indicate if this was the actual amount spent or a forecast at the time of filing. If forecast, please provide the actual amount spent in 2020.
- (b) Please provide a breakdown of the costs incurred.
- (c) Please provide a breakdown of what costs are expected to be incurred in 2021 (e.g. the external consultants that North Bay Hydro expects to contract).
- (d) Please provide further details on the need for continual annual spending in this category. What initiatives does North Bay Hydro have planned for 2022-2025, and what of these initiatives cannot be completed by North Bay Hydro's executive team and employees?

North Bay Hydro expects to merge with Espanola Regional Hydro Distribution Corporation in 2022.

- (e) Please explain why it is preferable to engage in these initiatives now, such as a comprehensive update of North Bay Hydro's Conditions of Service, instead of waiting until after the merger, when these initiatives can be applied to the merged utility?

Response:

- (a) The \$110k was a forecast at the time of filing. The actual amount spent in 2020 was \$56,220. Due to the pandemic, NBHDL was forced to delay or defer several initiatives in 2020. These decisions were made so that the Management team could commit to ensuring its employees had a safe working environment, focus on ensuring strong reliability of the power grid and implement new processes to ensure business continuity.
- (b) In 2020, NBHDL funded an updated Lead/Lag study through this budgeted envelope of dollars and began initial discussions around the updating of Health and Safety policies.
- (c) Please see 1-DDR-8. NBHDL notes that the \$150k referenced is for external consultants.
- (d) Please see 1-DDR-8.

- (e) Although efforts have been made over the last five years to address outdated policies, procedures, and processes, and to implement new frameworks that foster improvement, drive efficiency, enhance safety, create accountability, and align NBHDL with emerging trends and best practices, these types of initiatives have not progressed due to the leanness of the resource complement and the lack of available dollars in the OM&A budget. It is critical that NBHDL is able to move these initiatives forward regardless of a potential merger with ERHDC. Because of the difference between NBHDL and ERHDC in terms of utility size and organizational capacity, it is important that NBHDL have an updated CoS document to form a strong basis for integrating ERHDC should a potential merger occur.

4-Staff-46

Regulatory Costs

Reference:

Ref 1: Exhibit 4, Pages 13-14, 78

Ref 2: Exhibit 1, Pages 121-122

Preamble:

North Bay Hydro's actual 2015 regulatory costs were over \$200k more than forecast (\$920,898 vs. \$656,930). North Bay Hydro's total forecasted costs for this cost of service application is \$793,550.

Question:

- (a) Why were the 2015 actual regulatory costs higher than forecast?
- (b) How much has North Bay Hydro spent to date for this cost of service application?

As noted in reference 2, North Bay Hydro intends to enter a five-year deferred rebasing period after merging with Espanola Regional Hydro Distribution Corporation in 2022.

- (c) Given the deferred rebasing period, North Bay Hydro would not rebase until 2027, which is six years from 2021. Has North Bay Hydro considered amortizing its regulatory costs over six years instead of five to reflect the fact that it does not expect to rebase until 2027? If North Bay Hydro does not support amortization over six years, please explain why not.

Response:

- (a) Please see SEC-12 c).
- (b) NBHDL has spent \$340,747 in incremental costs towards this COS application as of December 30, 2020. NBHDL has made significant efforts to minimize the costs of this application and that is reflected in costs to date; the Management team was able to bring substantially more of the work in house than 2015 and contemplated in the budgeted costs. NBHDL proposes that the costs of this application be updated through the settlement process so that customers benefit from these efforts.
- (c) This is not factually correct. Consistent with the evidence filed in EB-2019-0015, including Section 7.9.1(c) of the Securities Purchase Agreement, the rebasing application is planned to be filed for May 1, 2026.

4-Staff-47

Employees

Reference: Exhibit 4, Page 55

Preamble:

North Bay Hydro is currently recruiting for a substation electrician learner.

Question:

- (a) Has North Bay Hydro filled this position?
- (b) What other positions are currently included in North Bay Hydro's FTE forecast, but remain vacant and still need to be filled? When does North Bay Hydro expect to fill these positions?

Response:

- (a) The recruitment for the substation electrician learner position has been filled effective February 8, 2021.
- (b) North Bay Hydro's current vacancies and expected hire dates are as follows:
 - An employment letter has been signed for the position of Accountant, and the employee will begin their employment on April 12, 2021.
 - The positions of Administrative Assistant, Operations Coordinator, and succession planning in the operations department are vacant and the expected hire dates will be in the second quarter of 2021.

4-Staff-48

Customer Engagement

Reference:

Ref 1: Exhibit 4, Pages 14, 77-78

Ref 2: Chapter 2 Appendices, Appendix 2-JC

Preamble:

On page 77 under regulatory costs, North Bay Hydro has included \$71,300 for customer engagement and consultation related to this cost of service application. In table 4-6 on page 14, the amortized costs of this application are included in North Bay Hydro's 2021 total regulatory costs of \$270,679. OEB staff notes that this corresponds to the "Regulatory Reporting & Assessments" item in Appendix 2-JC.

In Appendix 2-JC, there is another separate line item for customer engagement with test year costs of \$164,820.

Question:

- (a) Please explain what customer engagement costs are included as part of regulatory costs, and what costs are included under the "customer engagement" line item.
- (b) Please confirm that no customer engagement costs have been double counted in both accounts.

Response:

- (a) Cost related to customer engagement that are included as part of regulatory costs are those specific to this COS application. The budget included external costs surrounding the specific engagement activities that were contemplated and explained throughout the application, including additional components added to the bi-annual customer satisfaction survey to help begin to frame NBHDL's understanding at the beginning of this process, several online surveys completed through Phase 1 and Phase 2, and the costs surrounding Phase 3. Also included in the forecast were external costs to manage this facet of work and prepare the accompanying reports and analytics.

The costs included under the "Customer Engagement" line of \$164,820 are separate and distinct from this and are related to the annual on-going customer engagement activities that NBHDL plans to implement, outside of the compensation costs of the Communications Officer which are included in the "Executive, Financial, Regulatory, Professional, Insurance (all)" line of the cost driver table (4-11). Customer engagement activities are detailed in Exhibit 1 and are explained in the "Overview" and "OM&A Summary and Cost Driver Tables" within Exhibit 4. As referenced on page 12, costs included in the Test Year include the creation of a secure mobile app to aid in better real-time self-serve options for billing, account management and consumption monitoring, continued

updating and enhancements of NBHDL's website to ensure relevant and timely information, bill inserts, bi-annual survey regulatory survey requirements, on-going marketing, advertising, and formal engagement sessions with commercial and industrial customers including focus groups, one-on-one working sessions, and annual open forum meetings. These costs are required to meet increasing customer communication and engagement requirements and expectations as well as address outcomes of meaningful engagements to ensure NBHDL is able to respond to evolving needs and preferences.

- (b) NBHDL confirms that no customer engagement costs have been double counted in both accounts.

4-Staff-49

Customer Engagement

Reference:

Ref 1: Exhibit 4, Pages 36-37

Ref 2: Chapter 2 Appendices, Appendix 2-JC

Preamble:

The responsibilities of the new communications officer role include dealing with customer engagement. North Bay Hydro explained that part of the increase to “Executive, Financial, Regulator, Professional, Insurance” in Appendix 2-JC is due to the addition of the new communications officer. There is a separate line item in Appendix 2-JC for customer engagement.

Question:

- (a) Please explain what costs are recorded under the Customer Engagement budgets versus what costs are recorded under “Executive, Financial, Regulator, Professional, Insurance” as part of the costs of the new communications officer.

On pages 36-37, North Bay Hydro noted that the hiring of a communications officer is a cost-effective solution because it no longer needs to rely on affiliate resources and could additionally outsource the communications officer to its affiliates.

- (b) Please provide a breakdown of the impact of adding a communications officer on North Bay Hydro’s budgets, i.e. the incremental cost of the new FTE against the revenue offset of not using affiliate resources as well as outsourcing the employee to affiliates.

Response:

- (a) Please see 4-Staff-48 b). The costs referred to and included in “Executive, Financial, Regulator, Professional, Insurance” are the compensation costs of the new Communications Officer. The costs included under “Customer Engagement” are external costs that support the proposed engagement activities that NBHDL is incorporating on an annual basis.
- (b) To clarify, NBHDL utilized an affiliate resource to cover communication requirements and the total cost to NBHDL included a 15% administrative fee charged by NBHS which is incorporated in the cost. NBHDL began utilizing this resource in 2016 which continued until the end of 2019. These costs are summarized below in Table 4-Staff-45 and can be found in Tables 4-33 through 4-36 under services from NBHS to NBHDL “Communication / Administrative Services” and are incorporated into NBHDL’s historical OM&A costs.

Table 4-Staff-49 – NBHS Communication/Administrative Services Costs

Year	Costs
2016	32,379
2017	25,761
2018	41,242
2019	85,284

For confidentiality purposes and in compliance with applicable privacy laws, NBHDL has not isolated the costs of the Communications Officer as this is one individual. NBHDL can confirm that when factoring in the administrative fee that is recorded as a revenue offset and the compensation costs to NBHDL in the 2021 Test Year, the net impact is less than the 2019 costs shown above when incorporating the ability to outsource to affiliates.

4-Staff-50

OM&A

Reference: Exhibit 4, Page 24

Preamble:

North Bay Hydro has determined that the allocation ratio between OM&A and capital should change from what was used in its 2015 rebasing application to better reflect the time spent on O&M. For line crews, this is 43% to O&M and for engineering this is 53% to O&M.

Question:

- (a) Please explain how North Bay Hydro calculated the 43% for lines and 53% for engineering allocation ratios.

Response:

- (a) For the Lines crew, NBHDL begins with the pool of available hours for all 12 FTEs. From there, NBHDL forecasts the O&M splits by factoring in the following requirements: supervisory coverage (planned vacation, training, sick, etc.), training, corporate/department/health and safety meetings, substation work that requires line crew support, and the service truck hours. The service truck operates 5 days per week during business hours and responds to all planned and unplanned maintenance work, power outages, and all customer requests. Once NBHDL factors in the hours that are forecast to be required for recoverable work (based on 5-year average of time actually worked on these type of jobs), the projected hours that will be charged out to the affiliate (based on high-level work plans), and the required hours to execute the capital plan, the hours dedicated to O&M are approximately 43%.

The determination of the Engineering hours for management is done on an individual basis and incorporates the anticipated hours required to directly support the capital plans, management oversight of the vegetation management program, corporate/department/health and safety meetings, training, coverage requirements, and oversight of the substations and metering departments including operations and maintenance programs. When all requirements are factored in, the hours dedicated to O&M are approximately 53%.

4-Staff-51

OM&A

Reference:

Ref 1: Exhibit 4, Page 25

Ref 2: Chapter 2 Appendices, Appendix 2-JC

Preamble:

For the bridge and test years, North Bay Hydro has forecasted \$200k annually in bad debt expenses.

Question:

- (a) Please explain how North Bay Hydro derived its forecast of \$200k.
- (b) What are North Bay Hydro's actual bad debt expenses in 2020?

Response:

- (a) NBHDL's forecasted bad debt expense took into consideration historical averages and incorporated additional costs to factor in the uncertainty that is surrounding COVID-19 and the full impact on customers. The following Table 4-Staff-46 provides the 2015 – 2019 bad debt expense. Given the levels NBHDL saw in 2017 and 2018, management felt that \$200k was an appropriate forecast.

Table 4-Staff-51 – 2015 to 2019 Bad Debt Expense

Year	Costs
2015	131,849
2016	72,850
2017	163,484
2018	167,985
2019	121,132

- (b) NBHDL's actual bad debt expense in 2020 was \$113,333. NBHDL attributes this to the significant amount of outreach that the team initiated in an effort to connect with customers during the pandemic and to work with customers to set-up customized payment plans that are affordable and enabled customers to address growing balances while dealing with the financial realities of COVID-19 circumstances. NBHDL believes the rate freezes implemented by the OEB assisted in mitigating escalating balances and that the various programs offered by the Federal government also enabled a subset of customers to continue making payments. That being said, there are many unknowns tied to the pandemic and NBHDL is yet to be able to assess whether customers will be able to maintain payment arrangements or if those that have ceased to pay through the disconnection moratorium will be able to address significant balances. Compounding this will be the ending of programs like CERB. NBHDL will continue to focus customer service efforts on collections, however, it is not unrealistic to assume that there is a high probability that the coming years will see an increase in bad debt.

4-Staff-52

Maintenance Programs

Referenec: Exhibit 4, Pages 28-29

Preamble:

Starting in the 2021 test year, North Bay Hydro is starting several maintenance programs consisting of wood pole testing, underground cable testing and an ARC flash study.

Question:

- (a) Please explain how North Bay Hydro estimated the annual costs of these programs.
- (b) Has North Bay Hydro ever conducted an ARC flash study in the past? Please explain the reasoning for completing this study in the test year.
- (c) Please explain if the ARC flash study is a one-time cost or an annual cost of \$110k.

Response:

- (a) NBHDL estimated the annual costs of these programs through pricing inquiries and approximate quotes of the work involved.

The wood pole testing consists of non-destructive testing to diagnose the current health of wood poles in NBHDL's distribution system. This testing will collect information not available through visual inspections such as internal pole decay (at and below the ground line) as well as make a determination on the remaining strength of the pole. Based on pricing inquiries, the average cost is estimated to be \$25.00 per pole. The cost of testing will vary depend on the location and access to a pole. In an effort to contain costs, NBHDL plans to test only poles carrying high voltage conductors and equipment and only pole greater than 10 years old. Based on NBHDL's pole count and the costs provided, this plan will cost approximately \$169,500.00 in total or \$33,900.00 per year over 5 years.

The estimated cost for the cable testing services is \$15,000 per week (third-party quote). The rate at which testing is performed can vary. On average, 40 single phase cable segments can be tested in a week, putting the cost at approximately \$375.00 per single phase cable segment. While it was recommended that all cables be tested to establish a baseline health index to keep track of cable degradation, the avoidance of testing new low risk cable can reduce the overall cost. Based on this NBHDL excluded cable of 10 years and younger from the program, only 555 cables will be tested at a total cost of \$208,125.00 or \$41,625.00 per year.

For the arc flash study, NBHDL obtained a third-party quote by a consultant qualified to do this type of work. Based on NBHDL's system, size, and number of substations, the estimated cost for this assessment was \$110k.

- (b) NBHDL has no record or knowledge of an arc flash study ever being performed in the past. Protecting workers' lives is a priority for NBHDL. Arc flashes are typically due to a fault from equipment, inadequate safety practices or using unsafe tools. An arc flash analysis determines the incident energy available at specific electrical devices that employees would be exposed to while interacting with the electrical equipment at the facility. The output of the study will determine the PPE labelling requirements for the various devices, suitability of the devices for service as installed and identify if there are any miscoordination issues with the system as installed. In order to determine the incident energy, a short-circuit analysis and clearing times determination are required. Basically, an arc flash study is an analysis of the utility's equipment and should have been completed in the past, however for various reasons, this work was not done. This has left NBHDL at risk of an incident and vulnerable to potential litigation due to the lack of information that can be provided from an arc flash study. This study needs to be completed as soon as possible so that proper safety measures can be put in place if required. These could include modified PPE, new safety procedures, new tools, etc. NBHDL personnel who work in proximity to energize equipment safe. As such, the nature of this study makes it a critical priority.

Please also see SEC-15.

- (c) The arc flash study is a one-time cost in the context that once completed NBHDL will have all the necessary information NBHDL with the information it needs to properly assess the risk, provide up to date hazard information, select appropriate PPE, and update work procedures necessary to keep its workers safe. NBHDL intends to continuously enhance its maintenance program on an annual basis, beyond the minimum requirements of the DSC in an effort to improve upon DSP information inputs for planning and execution of capital projects. As such, NBHDL intends to utilize these funds on an annual basis to undertake and support different initiatives.

4-Staff-53

Vegetation Management

Reference: Exhibit 4, Pages 29-30, 76

Preamble:

North Bay Hydro's 2015 vegetation management budget was \$456,194 to complete tree trimming under a four-year cycle. Starting in the test year, North Bay Hydro is proposing an annual budget of \$773,437 to complete tree trimming under a five-year cycle.

North Bay Hydro explained that it has historically struggled to complete its vegetation management due to lack of contractor availability, pricing volatility, poor contractor performance, and contractor crew constraints that led to work not being completed.

To address these issues, North Bay Hydro along with two other utilities found a solution through the formation of 17 Trees.

Question:

- (a) Please explain the corporate relationship between North Bay Hydro and 17 Trees. How did North Bay Hydro help form this company?
- (b) OEB staff notes that work contracted to 17 Trees is sole sourced. How does North Bay Hydro ensure that the prices from 17 Trees are competitive?

As described by North Bay Hydro, it is OEB staff's understanding that 17 Trees addresses the issues noted above, namely price volatility and contractor availability.

- (c) Given that 17 Trees is expected to provide better service, and North Bay Hydro's tree trimming cycle is being increased from a four-year cycle as budgeted in 2015 to a five-year cycle in 2021 (i.e. less work each year), please explain why an increase to the vegetation management budget is required.
- (d) Please explain how North Bay Hydro determined that a five-year cycle would be the optimal vegetation management strategy in balancing costs, resourcing and system reliability.

Response:

- (a) 17 Trees is a collaboration between NBHDL and two other northern Ontario LDCs (in Sudbury and Sault Ste. Marie) to create a northern utility-focused arborist service, created in response to the unavailability of local contractors, the inability of awarded contractors to complete all the work in given timeframes, to mitigate the price volatility involved in vegetation management bids, and finally

to ensure a consistent workforce, well trained and able to meet the safety requirements of vegetation management work.

- (b) The intention behind the formation of the company was to correct a number of issues found within the competitive market for vegetation management, all of which are outlined in the response to 4-Staff-53 a). The costs are competitive within the vegetation market based on comparison to other work. The question becomes productivity and to date, the costs associated with the work performed by 17 Trees is comparable to similar work performed by other contractors. NBHDL will continue to monitor this to ensure costs for the sole sourced work remain competitive.
- (c) An increase to the Vegetation Management budget is necessary because NBHDL needs to get the work back under a cycle that keeps reliability and safety at acceptable levels. The increase is required to achieve a 5-year cycle not to maintain a 5-year cycle. Presently, NBHDL is clearing areas that have not received vegetation maintenance for 10 years that have become substantially overgrown and will continue to do so until the completion of its first 5-year cycle. It is substantially more expensive to clear 10 years of overgrowth compared to clearing 5 years of growth once the cycle has been established and is being maintained. As vegetation continues to grow annually, the incremental cost of clearing it grows exponentially. This is due to the fact that not only is there more volume removed, but the vegetation also grows closer to high voltage conductors and require much more care and time to clear away. In some cases, an outage is required to perform the work safely since it can no longer be done while maintaining the safe limits of approach. NBHDL's budget for its 4-year cycle in 2015 was not sufficient to achieve a 4-year cycle and NBHDL has continued to fall behind every year without the necessary funding to catch up. NBHDL has lengthened this work to a 5-year cycle that still enables the company to meet safety and reliability standards.

Please also see SEC-13 and 1-DDR-9.

- (d) In determining the optimal strategy for a vegetation management, NBHDL has considered reliability, safety, cost, and resourcing. This involves evaluating NBHDL's safety and reliability objectives and determining the cost and resources required to achieve these goals. Reliability and safety objectives are established by determining a minimum distance that vegetation must be maintained away from high voltage conductors. Once this minimum clearance to be maintained was established, NBHDL built a vegetation management program around it. The length of a cycle is determined by how much of a growth buffer is allowed before NBHDL must return to clear an area. The longer a cycle, the more of a buffer is needed and the more vegetation must be cleared as a result. The longer the cycle, the more vegetation is removed, but this is offset by less km of line needed to clear in a year. In determining a cycle, NBHDL also evaluated the present state of overgrown vegetation in proximity to its lines to understand where it is as a starting point. The cost to achieve a cycle is not the same as the cost to maintain a cycle. A 5-year cycle is the best balance of km of line cleared versus clearance required versus cost and resources needed to complete the work. A 4-year cycle would be more expensive to achieve, given the current state of vegetation in proximity to NBHDL lines. A 6-year cycle would involve a more aggressive clearing practice that would have a greater impact to adjacent customers as NBHDL will have to clear deeper into their property. It may mean the difference between a tree trimmed versus a tree removed and may ultimately be more expensive with no benefit. Failure to execute the Vegetation Management

program within the cycle as planned will have an adverse impact to reliability and safety objectives. To minimize the funding increase requirement to get to a 4-year cycle, NBHDL is increasing the vegetation management cycle to 5 years. In order to maintain a 4-year cycle, NBHDL would need to further increase its vegetation management budget. With the increased funding requested as part of this COS application, NBHDL plans to complete the 5-year cycle by 2026.

Further extending the vegetation management cycle to 6-years or longer would allow too much time between clearing periods and vegetation growth would be too significant to properly maintain. In order to maintain a 5-year cycle, the vegetation clearing and trimming requirements have to be low for each area. 6-year cycles would increase the amount of clearing that would need to be undertaken in each year and increase the overall long-term vegetation management costs. However, based on customer feedback, from the Phase 3 customer engagement NBHDL would consider moving to 6 years, but anything longer than that and safety and reliability worsen, and the actual removal of trees is much more difficult as they are denser and touching or within the safe limits of approach of high voltage lines, slowing down removal work.

4-Staff-54

Employee Compensation

Reference: Exhibit 4, Page 101

Preamble:

As noted in the reference, an external consultant regularly reviews North Bay Hydro's compensation plan for competitiveness against two market comparators.

Question:

- (a) When was North Bay Hydro's compensation plan last reviewed?
- (b) Please provide the previous review(s) that was conducted of North Bay Hydro's compensation plan.

Response:

- (a) NBHDL's compensation plan was last reviewed by an external consultant in 2018.
- (b) The previous review conducted in 2018 resulted in a 2.1% increase to management compensation structure for external competitiveness. There was not a formal report provided.

4-Staff-55

Employee Compensation

Reference:

Ref 1: Exhibit 4, Pages 57-58

Ref 2: Chapter 2 Appendices, Appendix 2-K

Preamble:

OEB staff notes large year over year increases in total compensation to management from 2015 actuals to 2018 actuals. However, as described on pages 57-58, there does not seem to be any material change to North Bay Hydro's management during that period, and Appendix 2-K indicates that the management FTE count did not change during that period.

Question:

- (a) Please explain the reasons for the increases in management compensation.

Response:

- (a) The reasons for the increase in management compensation through 2015 actuals to 2018 actuals are driven by the following:
- 2016 vs. 2015 - as referenced on page 49, NBHDL saw the addition of a Distribution Engineer to the management team in 2016 and experienced turn-over in this position between 2015 and 2016.
 - 2017 vs. 2016 - as part of the IT department development, discussed on pages 6-8 of Exhibit 4, a new Senior IT manager was brought on board in 2017. NBHDL also had an IT Manager at this time who left the organization in Q4. 2017 was also the beginning of a significant transition in the executive and management teams.
 - 2018 vs. 2017 - as a result of the retirements of the President and Finance Manager, including payouts of unused vacation days, and the cascading effect throughout the management team, there was succession overlap in multiple positions resulting in higher compensation in 2018.

NBHDL would note that the number of employees referenced in Appendix 2-K is based on the computation of the number of full-time equivalent (FTE) positions throughout each of the fiscal years. Employees that were hired during the year or employees that left the organization were pro-rated based on start or end date month.

4-Staff-56

Affiliates

Reference: Exhibit 4, Page 70, Table 4-31

Preamble:

For the test year, there are \$465,612 in affiliate revenues shown in Table 4-31 that are used as a direct reduction in North Bay Hydro's test year OM&A.

Question:

- (a) Please map the OM&A reductions shown in table 4-31 to the OM&A programs in Appendix 2-JC that they are recorded in.

Response:

- (a) The following Table 4-Staff-50 provides the OM&A programs that the affiliate charges provide a direct reduction to in Appendix 2-JC:

[illegible]

4-Staff-57

Employee Compensation

Reference: Exhibit 4, Page 58

Preamble:

For benchmarking purposes, North Bay Hydro participates in and reviews the MEARIE Management Salary Survey of Local Distribution Companies.

Question:

- (a) Please provide the results for North Bay Hydro in the most recent survey.
- (b) Has North Bay Hydro taken any steps in response to the results from the benchmarking surveys?

Response:

- (a) When compared to the most recent 2020 MEARIE Management Salary Survey of Local Distribution Companies, the majority of North Bay Hydro's management employees are below the 50th percentile or median of their respective salary ranges.
- (b) Please see 1-Staff-3. The results from the benchmarking survey are currently being reviewed and compared with North Bay Hydro's management compensation structure.

4-Staff-58

PILs

Reference: Exhibit 4, Page 101

Preamble:

North Bay Hydro assumed a loss carry-forward of \$2,048,903 in its originally filed application.

Question:

- (a) If available, please provide an update for 2020 actuals and update the PILs model/RRWF as necessary.

Response:

- (a) NBHDL has completed its 2020 tax return and does not have the loss carry-forward amounts that were assumed in the filed application. NBHDL has updated Table 4-60 from Exhibit 4 to provide the 2020 Forecast vs. 2020 Actuals, provided below in Table 4-Staff-52. Based on this NBHDL does not have \$2,048,903 in loss carry-forwards, primarily as result of financial instrument losses as compared to the forecast. As a result of this, NBHDL has updated the PILs model/RRWF to reflect an increase in the proposed 2021 PILs expense of \$43,032.

Table 4-Staff-58 – 2020 Forecast vs. 2020 Actuals (Update to Table 4-60 from Exhibit 4)

Item	2015 Board Approved	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Bridge Year	2020 Actuals	2021 Test Year	2021 Test Year - REVISED
Net Income Before Taxes	2,262,460	3,225,071	4,528,079	3,923,785	3,908,964	2,666,455	432,438	169,457	2,542,949	2,521,170
Additions:										
Amortization of tangible assets	2,566,491	2,537,087	2,614,481	2,677,812	2,854,199	2,981,841	3,230,932	3,158,923	3,427,178	3,342,561
Recapture of capital cost allowance from Schedule 8										
Tax reserves deducted in prior years	2,250,289	2,298,355	2,492,767				4,668,298	4,668,298	4,646,251	5,014,447
Reserves from financial statements - balance at the end of the year	6,557,387	7,428,791	5,100,637				4,646,251	5,014,447	4,620,373	4,998,570
Loss on disposal of assets	78,456	49,800		154,023	25,920	90,272	47,391	44,768	69,191	69,191
Charitable donations		15,800	27,661	80,765	35,073	33,458	15,560	9,645	18,823	18,823
Tax credits	20,725	12,000		1,781		2,000				
Meals & entertainment	10,000	9,370	8,954	16,939	16,339	15,179	18,579	6,947	18,146	18,146
Unrealized loss		152,493			140,775	681,401		2,102,924		
Post employment benefit expense				209,666	177,966	275,841	184,420	270,702	188,177	188,177
Taxable capital gains			14,104							
Interest and penalties on taxes		1,194	4,248	1,028						
Net change in regulatory assets								421,363		
Total Additions	11,483,348	12,504,890	10,264,852	3,142,014	3,250,272	4,079,992	12,811,430	15,698,018	12,988,139	13,649,915
Deductions:										
Capital cost allowance from Schedule 8	4,288,068	4,220,176	4,363,739	4,523,683	4,964,455	4,788,912	5,502,877	5,579,831	5,654,607	5,627,093
Tax reserves claimed in the current year	2,267,698	2,492,767	895,073				4,646,251	5,014,447	4,620,373	4,998,570
Reserves from financial statements - balance at the beginning of the year	6,551,059	7,227,658	7,428,791				4,668,298	4,668,298	4,646,251	5,014,447
Net change in regulatory assets		558,772	1,306,718	725,666	1,866,790	442,716				
Gain on disposal of assets			115,544							
Charitable donations		15,800	27,662			68,531				
Contributions in Aid of Capital (CAIC) - deferred revenue amortization		43,034		71,269	80,619	93,371	104,244	104,192	116,593	116,593
Unrealized gains				890,292						
Non capital losses						22,474				
Post employment benefit paid				239,718	269,846	260,166	266,541	257,459	295,030	295,030
Other miscellaneous				-	-	605,148	85,000	236,851		
Total Deductions	13,106,825	14,558,206	14,137,527	6,450,628	7,181,710	6,281,318	15,273,211	15,861,078	15,332,854	16,051,733
Taxable Income	638,983	1,171,755	655,404	615,171	(22,474)	465,129	(2,029,343)	6,396	198,234	119,352
Tax Rate	26.50%	25.65%	25.49%	23.02%	0.00%	26.90%	26.50%	26.50%	26.50%	26.50%
Income Taxes	169,331	300,515	167,047	141,617	-	125,124	-	1,695		31,628
Tax Credits	20,725	2,000	1,781	-	-	2,000		2,000		
Total Income Taxes	148,605	298,515	165,266	141,617	-	123,124	-	-	-	31,628
Gross Up	53,579	-	-	-	-	-	-	-	-	11,403
Total Taxes	202,184	298,515	165,266	141,617	-	123,124	-	-	-	43,032

4-Staff-59

LRAMVA

Reference:

Ref 1: Exhibit 4, Appendix 4-F, IndECO report, Page 11

Ref 2: Tab 2 of LRAMVA workform

Ref 3: EB-2014-0099, Settlement Proposal, June 22, 2015 (PDF page 46 of 49)

Preamble:

The forecast demand savings for the GS 50-2999 kW class is 8,959 kW in the LRAMVA workform, but it appears to be 33,344 kW from the settlement proposal.

2015 CDM Manual Adjustment	2015 (kWh) - Full Year	Factor	2015 CDM Adjustment
2014 CDM Programs	2,656,334	0.5	1,328,167
2015 CDM Programs Excl Cogen	1,343,022	0.5	671,511
2015 Cogen	12,200,000	0.25	3,050,000
Total	16,199,356		5,049,678

2015 LRAMVA Threshold	kWh	kW
Residential	1,769,698	
General Service < 50 kW	967,905	
General Service 50 to 2999 kW	13,461,754	33,344
Total	16,199,356	33,344

Source: EB-2014-0099, Settlement Proposal, June 22, 2015

In the IndECO report filed as Appendix 4-F, it noted the following on page 11:

In the case of the demand threshold (kW), the value in the table in the settlement is not consistent with that actually used in the agreed upon load forecasting model. The load forecast for GS>50 rate class was increased (meaning the CDM impact was decreased) because the cogeneration facility developed in NBHDL's service territory was not expected to fully impact revenues to the extent of the anticipated energy savings. The 2015 forecast load was increased by 25% of 24,000 kW; 25% since the facility was only expected to begin operations in the final quarter of 2015. **This LRAMVA kW threshold value in the table of the agreement does not capture this adjustment. (emphasis added)**

Question:

- (a) Please reconcile the 33,344 kW of forecast savings from the GS 50-2999 kW class in the settlement agreement to the 8,959 kW of forecast savings used for lost revenue calculations.
- (b) Please clarify whether the 8,959 kW reflects an annualized savings value, and confirm the actual amount of savings that was embedded in the load forecast.
- (c) If an annualized value is not used for LRAMVA purposes, please explain why the 8,959 kW figure is appropriate.

Response:

- a) The adjustment mentioned is in the filed spreadsheet in the 2014 Cost of Service application "North Bay 2015 Load Forecast Model Settlement Prop_20150622.xlsx" at B18 of the "Rate VClass Load Model" tab.

The values used in the load forecast, and the associated LRAMVA threshold are shown in the following Table 4-Staff-53:

Table 4-Staff-59 – Values Used in Load Forecast and Associated LRAMVA Threshold

Rate class	LRAMVA threshold		Factor	2015 CDM Adjustment	
	kWh	kW		kWh	kW
Residential	1,769,698	N/A	0.50	884,849	
General Service < 50 kW	967,905	N/A	0.50	483,953	
General Service 50-2,999 kW Exc Cogen	1,261,754	3,089	0.50		1,545
General Service 50-2,999 kW Cogen	12,200,000	29,870	0.25		7,467
General Service 50-2,999 kW Cogen Adjustment	NA	-24,000	0.25		(6,000)
Total	16,199,357	8,959		1,368,802	3,012

Notes: The above table and the load forecast model use the approved kW/kWh factor of 0.2448%. This table was previously included as Appendix A of NBHDL's the LRAMVA report approved and filed with EB-2019-0057.

The LRAMVA work form uses the values that were used in the forecast.

- b) The 8,959 kW reflects an annualized savings value. The load forecast itself used the weighting factor of 0.25 to capture that the facility would operate for one quarter of the year, but the LRAMVA value is 4 times the 6,000 kW removed for the manual adjustment.

- c) As discussed above, the 8,959 kW value is an annualized value.

4-Staff-60

LRAMVA

Reference: LRAMVA workform, Tab 3-a and Tab 5

Preamble:

North Bay Hydro included Post-P&C report savings as part of its 2019 LRAMVA balance, which were not identified in the P&C report and completely reconciled in Tab 3-a of the LRAMVA workform.

Question:

- (a) Please confirm that all Post-P&C savings are reflective of program savings approved as part of the former Conservation First Framework. Please discuss eligibility of the program savings.

Response:

- a) Applications for these projects were submitted before April 1, 2019, but the documentation was not completed until after the last P&C report was issued in April 2019. These savings are eligible for lost revenue recovery as they were in relation to CFF programs with the incentives being paid beyond the IESO's reporting cut-off date.

4-Staff-61

LRAMVA

Reference:

Ref 1: Tab 8 of LRAMVA workform
Ref 2: Exhibit 4, IndECO report, Pages 8-9

Preamble:

North Bay Hydro has included savings from two cogeneration related projects that participated in the IESO's Process and Upgrade Program as part of the LRAMVA.

For project 1 (North Bay Regional Health Centre), savings are calculated from the difference between billed demand and max load (billed + generated kW). Max load is used as the base case had the project not been in place. The pre- and post-demand are provided on a monthly basis.

For project 2 (Community Energy Park – microgrid comprised of solar panels, cogeneration and battery storage), savings are calculated from the difference between monthly billed demand and monthly shadow bills. A shadow bill was used as the facility is not interval metered.

Question:

- (a) For project 1, please confirm that billed demand represents the point at which the facility was billed in the month.
- (b) For project 2, please explain the approach to develop a shadow bill and provide a numerical example.
 - i. How did North Bay Hydro ensure that the monthly facility usage developed in shadow bills is reflective of the base case, had the cogeneration project (reflected in Tab 8) not existed at the YMCA Aquatic Centre, Thomson Park and Memorial Gardens?
- (c) For both projects, the data from June 2020 to April 2021 was estimated based on the average of Jan 2018 to May 2020 facility usage. Please discuss whether any actual data is now available to recalculate the CHP savings. If yes, please recalculate the lost revenues for both projects for the months that have actual data available in Tab 8 of the LRAMVA workform, and quantify the impact of the LRAMVA balance.
- (d) If there are no changes to part c), please confirm whether the average of Jan 2018 to May 2020 is reflective of actual usage at both facilities, if the facilities may or may not have operated at full capacity during the COVID-period from June 2020-April 2021.

Response:

- a) NBHDL confirms that billed demand represents the point at which the facility was billed in the month.

- b) Each of the facilities are separately metered at their electrical service entrance so the shadow price is the exact price that they would have been billed in the absence of participating in the CEP. North Bay Hydro has the exact same information for these facilities as it would have if they were being individually billed.
- c) Data for 2020 are now available and an updated LRAMVA workform has been provided with these interrogatory responses as "NBHDL_2021_LRAMVA_20210401".
- d) Please see 4-Staff-38-b).

4-Staff-62

LRAMVA

Reference: LRAMVA workform

Preamble: None.

Question:

- (a) If North Bay Hydro made any changes to the LRAMVA workform as a result of its responses to the above LRAMVA interrogatories, please file an updated LRAMVA workform, and confirm the LRAMVA balance requested for disposition, the disposition period and the revised rate riders.
- (b) Please confirm that any changes to the LRAMVA workform in response to any LRAMVA interrogatories are reflected in "Table A-2. Updates to LRAMVA Disposition (Tab 1-a)".

Response:

- a) An updated LRAMVA workform has been provided as "NBHDL_2021_LRAMVA_20210401".
- b) Changes to the workform have been documented in Table A-2.

Exhibit 5 – Cost of Capital

N/A

Exhibit 6 – Calculation of Revenue Deficiency or Sufficiency

6-Staff-63

Revenue Requirement

Reference: RRWF, Tab 10

Preamble:

OEB staff notes that cell D32 in tab 10 of the RRWF refers to the “GS>2000<5000” rate class.

Question:

- (a) Please confirm that this is meant to refer to the GS 3000kW-4,999kW rate class.

Response:

- a) NBHDL confirms that the customer class in D32 should refer to the class GS 3000kW-4999kW.

Exhibit 7 – Cost Allocation

7-Staff-64

Cost Allocation

Reference:

Ref 1: Exhibit 7, Pages 4-5

Ref 2: Cost Allocation Model, sheet I3 TB Data, sheet E4 TB Allocation Details

Preamble:

To determine the weighting factors for Billing and Collecting, an analysis of Accounts 5315 and 5320 was conducted. It is later explained that late payment revenue forms part of this analysis.

Question:

- (a) Please provide the derivation of the billing and collecting weighting factors including the major cost drivers used, and USoA account for each cost driver.
- (b) Please confirm that North Bay Hydro tracks late payment charge revenue in account 4225, or explain where it is tracked, and what is tracked in account 4225.
- (c) Please confirm that Account 4225 – Late Payment Charges is not allocated using the billing and collecting weighting factor.

Response:

- a) NBHDL submits the following Table 7-Staff-64, highlighting the derivation of the billing and collecting weighting factors:

Table 7-Staff-64 – Derivation of Billing and Collecting Weighting Factors

Description	Allocator	Residential	GS < 50 kW	GS > 50 to 2,999 kW	GS >3,000 to 4,999 kW	Street Lighting	Sentinel	Unmetered Scattered Load	Total Costs
Billing Costs - Account 5315:									
Postage / Delivery Costs	# of bills/year	177,196	21,984	2,232	8	8	1,602	75	203,105
ODS Costs	# of customers	41,373	5,133	-	-	-	-	-	46,506
Internal Staffing Costs	# of customers	240,991	29,898	14,208	53	53	2,178	102	287,482
		459,561	57,015	16,440	61	61	3,780	176	537,094
Other	% per Class	4,165	517	149	1	1	34	2	4,868
Total Billing Costs by Class		463,726	57,531	16,589	62	62	3,814	178	541,962
Collecting Costs - Acct 5320:									
Postage / Delivery Costs	# of customers	17,224	2,137	217	-	-	-	-	19,578
3rd Party Costs	# of customers	56,532	7,014	712	-	-	-	-	64,258
Internal Staffing Costs	# of customers	176,655	21,916	2,226	-	-	-	-	200,796
Total Collecting Costs by Class		250,411	31,067	3,155	-	-	-	-	284,632
		88%	11%	1%					
Total Billing & Collecting Costs by Class:									
Total Costs		714,137	88,598	19,744	62	62	3,814	178	
# of bills issued / year - (I6.2-CA Model)		256,224	31,788	3,228	12	12	2,316	108	
Cost / bill		2.79	2.79	6.12	5.14	5.14	1.65	1.65	
Weighting factor - relative to Resi Class		1	1.0	2.2	1.8	1.8	0.6	0.6	

NBHDL also notes that, as discussed in VECC-43, there is an error in both Table 7-3 as well as the cost allocation model. As per the table above, the weighting factor should read 1.0 for General Service <50kW, and 0.6 for Sentinel Lights and UMSL. The correct factor of 1.0 for GS<50 was utilized in the submitted cost allocation model, while the incorrect value of 0.06 was used for Sentinel Lights and UMSL. VECC-43 provides a comparison of the impacts of this error which NBHDL has corrected and is incorporated into the revised models submitted in 1-Staff-1.

- b) NBHDL confirms that it tracks late payment charge revenue in Account 4225.
- c) NBHDL confirms that Account 4225 is not allocated using the billing and collecting weighting factor.

7-Staff-65

Cost Allocation

Reference: Cost Allocation Model, sheet I6.2 Customer Data, sheet I8 Demand Data

Preamble:

North Bay Hydro has forecasted 269 General Service 50 – 2,999 kW customers. Of these, it indicates that 242 rely on line transformers provided by North Bay Hydro. It also indicates that it provides secondary distribution service for 265 customers.

Question:

- (a) For the 27 GS 50 – 2,999 kW customers where North Bay Hydro is not providing line transformer service, please confirm that the customer is providing its own line transformer or explain why this is not the case.
- (b) If part a) can be confirmed, please explain the situation that would give rise to a providing its transformer, but North Bay Hydro owning the secondary assets on the low side of the transformer.

Response:

- a) NBHDL confirms that these customers would necessarily be providing their own transformer service.
- b) There is no situation where that would give rise to a customer providing its transformer but NBHDL owning the secondary assets on the low side of the transformer. I6.2 shows customer counts with respect to the location of the meters. That is, NBHDL has 269 total GS 50-2,999 customers, but 265 of them are billed on the secondary line. The remainder are billed on the primary. These values are irrespective of transformer ownership.

7-Staff-66

Rate Classifications

Reference:

Ref 1: Exhibit 7, Page 8

Ref 2: Exhibit 1, Page 51

Preamble:

North Bay Hydro is proposing to amend the name of its “General Service 3,000 to 4,999 kW Service Classification” to “General Service Greater Than 3,000 kW.” OEB staff notes that North Bay Hydro’s current conditions of service, as linked in reference 2, continues to refer to “General Service (3001kW – 5000kW).”

Question:

- (a) As noted in the Chapter 2 Filing Requirements, distributors are required to identify any changes to its Conditions of Service that would result from the approval of the application. Please confirm whether North Bay Hydro would update its Conditions of Service to reflect the name change noted above.

Response:

- a) NBHDL confirms its Conditions of Service would be updated to reflect the rate class “General Service Greater than 3,000 kW”.

Exhibit 8 – Rate Design

8-Staff-67

Retail Transmission Service Rates

Reference:

Ref 1: RTSR Model, sheet 4. UTRs and Sub-Transmission

Ref 2: EB-2020-0030, Decision and Rate Order, December 17, 2020

Ref 3: EB-2020-0251, Decision and Rate Order, December 17, 2020

Preamble:

North Bay Hydro has used the 2020 Hydro One Sub-Transmission rates and 2020 UTRs to calculate its proposed 2021 RTSR charges.

As noted in the second reference, the OEB has approved updated sub-transmission rates for Hydro One Networks Inc. As noted in the third reference, the OEB has approved updated 2021 UTRs.

Question:

- (a) Please update the RTSR model to reflect the Hydro One Sub-Transmission rates and the UTRs issued on December 17, 2020.

Response:

- a) NBHDL has updated the RTSR model with the following rates as reflected in EB-2020-0030 and EB-2020-0251:

Uniform Transmission Rates	/kW
Network Service Rate	4.67
Line Connection Service Rate	0.77
Transformation Connection Service Rate	2.53
H1 Sub-Transmission Rates	
Network Service Rate	3.4778
Line Connection Service Rate	0.8128
Transformation Connection Service Rate	2.0458

The RTSR model is filed with these interrogatory responses as "NBHDL_2021_RTRS_WorkForm_IR_Response_20210401".

8-Staff-68

Low Voltage Charges

Reference:

Ref 1: Exhibit 8, Page 13

Ref 2: EB-2020-0030, Decision and Rate Order, December 17, 2020

Preamble:

North Bay Hydro has used Hydro One Networks Inc.'s 2020 low voltage rates to forecast its low voltage expense.

As noted in the second reference, the OEB has approved new distribution rates for Hydro One Networks Inc. effective January 1, 2021.

Question:

- (a) Please update the low voltage forecast and recovery calculations using Hydro One Networks Inc.'s 2021 approved low voltage rates.

Response:

- a) NBHDL has updated the referenced forecast in Exhibit 8 to account for EB-2020-0030 in Table 8-Staff-68 below.

Table 8-Staff-68 – Updated Low Voltage

Distributor	12-Month Billed kW (Nov'19- Oct'20)	Current Rate/kW	Fixed Sub Transmissi on	LV Expense	Decision Reference
Hydro One Networks	37,247.07	\$1.53350	\$13,985.76	\$71,104.14	EB-2020-0030

NBHDL has updated its recovery calculations referenced in Exhibit 8 to account for both the new low voltage forecast, as well as updated rates calculated in 8-Staff- 67 in the updated RTSR Model as shown in Table 8-Staff-68 below.

Table 8-Staff-68 – Updated Recovery Calculations

Rate Class	Retail TX Connection Rates		Billing Determinants		Allocation of Low Voltage Charges			Low Voltage Charge Rates	
	Per kWh	Per kW	Annualized kWh or kW	Unit of Measure	Retail Tx Connection Revenue - Basis for Allocation (\$)	Allocation Percentages	Allocated \$	Low Voltage Rates/k Wh	Low Voltage Rates/ kW
Residential	\$0.0069		201,705,111	kWh	\$1,391,765	43.47%	\$30,908	\$0.00015	
General Service < 50 kW	\$0.0061		79,035,853	kWh	\$482,119	15.06%	\$10,707	\$0.00014	
General Service 50 to 2999 kW		\$2.4190	514,190	kW	\$1,243,827	38.85%	\$27,622		\$0.05372
General Service 3000 to 4999 kW		\$2.6732	27,098	kW	\$72,439	2.26%	\$1,609		\$0.05937
Street Lighting		\$1.9089	5,690	kW	\$10,862	0.34%	\$241		\$0.04239
Sentinel Lighting		\$1.8698	298	kW	\$557	0.02%	\$12		\$0.04152
Unmetered Scattered Load	\$0.0061		39,490	kWh	\$241	0.01%	\$5	\$0.00014	
Total			281,327,731		\$3,201,810	100.00%	\$71,104		

8-Staff-69

Cost Allocation

Reference:

Ref 1: Revenue Requirement Work Form, sheet 13 Rate Design

Ref 2: Cost Allocation Model, sheet O2 Fixed Charge|Floor|Ceiling

Preamble:

North Bay Hydro is proposing to increase the fixed charge for GS 50 – 2,999 kW from \$315.75 to \$371.19, and the fixed charge for GS 3,000 – 4,999 kW from \$6,734.18 to \$7,673.78. Both of these fixed charges are already above the Minimum System with Peak Load Carrying Capability (PLCC) Adjustment from the cost allocation model.

Question:

- (a) Please provide the variable charges that would result from keeping the fixed charge at the current charge for these two rate classes.

Response:

- a) Assuming the fixed rates are kept at current levels, NBHDL has calculated the variable charges in the following Table 8-Staff-69:

Table 8-Staff-69 – Recalculated Variable Charges

Class	Fixed Rate	Recalc'd Variable Rate
GS>50 to 2999kW	\$ 315.75	\$ 3.4154
GS 3000 to 4999 kW	\$ 6,734.18	\$ 1.7429

8-Staff-70

Retail Service Charges

Reference:

Ref 1: Exhibit 8, pages 11-12

Ref 2: EB-2020-0285, Decision and Rate Order, December 3, 2020

Preamble:

North Bay Hydro has proposed a 2.0% inflation factor for its Retail Service Charges.

The OEB's generic retailer service charges for 2021 have been increased using an inflation factor of 2.2%.

Question:

- (a) Does North Bay Hydro propose to use the generic retailer service charges, or the 2.0% inflation factor from Exhibit 8?
- (b) If North Bay Hydro proposes to use the standard charges, please update the tariff of rates and charges.

Response:

- a) NBHDL intends to use the generic retailer service charges.
- b) NBHDL has updated the tariff of rates and charges to reflect the generic retailer services charges. Revised rates are as follows:

Charge Type	CURRENT	2021-Updated
One-Time Retailer Establishment	\$102.00	\$104.24
Fixed Monthly Charge	\$40.80	\$41.70
Variable Charge	\$1.02	\$1.04
Distributor Consolidated Billing	\$0.61	\$0.62
Retailer Consolidated Billing	(\$0.61)	(\$0.62)
STR - Request Fee	\$0.51	\$0.52
STR - Processing Fee	\$1.02	\$1.04
Information Request	\$4.08	\$4.17
Notice of Switch	\$2.04	\$2.08

8-Staff-71

Tariff and Bill Impact

Reference: Tariff and Bill Impact Model, sheet 6. Bill Impacts

Preamble:

North Bay Hydro's tariff and bill impact model currently uses an Ontario Electricity Rebate rate of 31.8%. Effective January 1, 2021, the Ontario Electricity Rebate has been reduced to 21.2%.

Question:

- (a) OEB staff has revised North Bay Hydro's tariff and bill impact models to reflect the new 21.2% Ontario Electricity Rebate. The revised models are attached to these interrogatories – please use the revised models to make any updates to bill impacts going forward.

Response:

- a) NBHDL will use the revised bill impact models going forward.

Exhibit 9 – Deferral and Variance Accounts

9-Staff-72

DVAs

Reference:

Ref 1: Exhibit 4, Page 104

Ref 2: Exhibit 9, Page 18

Preamble:

At the first above-noted reference, North Bay Hydro stated:

NBHDL determined the amount in Account 1592 for 2019 by having its outside tax specialists determine income taxes with and without the use of accelerated CCA. For the 2019 historical period, this amount was determined to be \$177,903.

At the second above-noted reference, North Bay Hydro presented Table 9 – 9: PILs and Tax Variance, which is reproduced below:

PILs and Tax Variance	Total	50% Claim
2019	177,903	88,952
Closing 2019 Interest	-	-
Projected Interest – April 30, 2021	2,784	1,392
Total Claim		90,344

Question:

- (a) Please provide a detailed calculation on how the total \$177,903 was determined.
- (b) Please confirm if the above calculation is based on actual 2019 capital additions or capital additions approved in North Bay Hydro Distribution's last cost of service proceeding.
- (c) If the calculation is based on actual 2019 capital additions, please provide the calculation using approved capital additions. If the calculation is based on approved capital additions, please provide the calculation based on actual 2019 capital additions.

Response:

- a) NBHDL had its external tax consultants prepare parallel tax returns for 2019 and 2018 with and without the accelerated CCA. See below Table 9-Staff-72.1 for the calculations with the noted T2 line numbers.

Table 9-Staff-72.1 – Calculations With and Without Accelerated CCA

2019 Account 1592 Analysis					
Part 1 - Tax Returns			With All	Without All	1592 Adj
Net income - Line 360			285,226	1,042,135	
38% - Line 560	(A)		108,386	396,011	
10% abatement - Line 608	(B)		28,523	104,214	
General Tax 13% - Line 638	(C)		37,079	135,478	
Investment Tax Credit - Line 652	(D)		2,000	2,000	
Tax Payable	(A+B+C+D) = (E)		40,784	154,320	
Provincial Tax - Line 760	(G)		61,732	119,846	
Total	(E)+(G)		102,516	274,166	171,650

2018 Account 1592 Analysis					
Part 1 - Tax Returns			With All	Without All	1592 Adj
Net income - Line 360			-	31,150	
38% - Line 560	(A)		-	11,837	
10% abatement - Line 608	(B)		-	3,115	
General Tax 13% - Line 638	(C)		-	4,050	
Investment Tax Credit - Line 652	(D)		-	2,000	
Tax Payable	(A+B+C+D) = (E)		-	2,673	
Provincial Tax - Line 760	(G)		-	3,582	
Total	(E)+(G)		-	6,255	6,255
				Total 1592	177,905
					(rounding)

- b) NBHDL used actual capital additions in preparation of the above calculations.
- c) NBHDL has recalculated the CCA variance using its most recent approved PILS Model (EB-2014-0099). The resulting calculated Account 1592 adjustment is in the following Table 9-Staff-72.2:

Table 9-Staff-72.2 – Calculated Account 1592 Adjustments

Class	Class Description	UCC Test Year Opening Balance	Additions	Disposals (Negative)	UCC Before 1/2 Yr Adjustment	1/2 Year Rule {1/2 Additions Less Disposals}	Reduced UCC	Rate %	Test Year CCA	UCC End of Test Year
1	Distribution System - post 1987	\$ 28,806,147	137,929		\$ 28,944,075	\$ 68,964	\$ 28,875,111	4%	\$ 1,155,004	\$ 27,789,071
8	General Office/Stores Equip	\$ 555,210	47,151		\$ 602,361	\$ 23,575	\$ 578,785	20%	\$ 115,757	\$ 486,604
10	Computer Hardware/ Vehicles	\$ 428,211	621,995		\$ 1,050,206	\$ 310,998	\$ 739,209	30%	\$ 221,763	\$ 828,444
12	Computer Software	\$ 43,435	27,250		\$ 70,685	\$ 13,625	\$ 57,060	100%	\$ 57,060	\$ 13,625
45	Computers & Systems Software	\$ 2,098			\$ 2,098	\$ -	\$ 2,098	45%	\$ 944	\$ 1,154
47	Distribution System - post Febr	\$ 29,474,147	6,447,041		\$ 35,921,188	\$ 3,223,521	\$ 32,697,667	8%	\$ 2,615,813	\$ 33,305,374
50	Data Network Infrastructure Eq	\$ 177,921	86,800		\$ 264,721	\$ 43,400	\$ 221,321	55%	\$ 121,727	\$ 142,995
	TOTAL	\$ 59,487,168	\$ 7,368,166	\$ -	\$ 66,855,334	\$ 3,684,083	\$ 63,171,251		\$ 4,288,068	\$ 62,567,266

CCA on opening UCC	AIIP Additions	All CCA	Revised CCA
\$ 1,152,245.86	137,929	8,275.73	\$ 1,160,521.59
\$ 111,041.97	47,151	14,145.23	\$ 125,187.20
\$ 128,463.40	621,995	279,897.75	\$ 408,361.15
\$ 43,434.85	27,250	40,875.00	\$ 84,309.85
\$ 943.89	-	-	\$ 943.89
\$ 2,357,931.73	6,447,041	773,644.94	\$ 3,131,576.68
\$ 97,856.68	86,800	71,610.00	\$ 169,466.68
\$ 3,891,918	\$ 7,368,166	\$ 1,188,449	\$ 5,080,367

Difference in CCA due to AIIP \$ 792,299

2019 Account 1592 Analysis				
Part 1 - Tax Returns		With All	Without All	1592 Adj
Net income - Line 360		285,226	1,077,525	
38% - Line 560	(A)	108,386	409,460	
10% abatement - Line 608	(B)	28,523	107,753	
General Tax 13% - Line 638	(C)	37,079	140,078	
Investment Tax Credit - Line 652	(D)	2,000	2,000	
Tax Payable	(A+B+C+D) = (E)	40,784	159,629	
Provincial Tax - Line 760	(G)	61,732	123,915	
Total	(E)+(G)	102,516	283,544	181,028

NBHDL notes that using approved addition from its 2015 COS (EB-2014-0099) resulted in a delta of \$9,378 between this calculation and the previous, using the same methodology.

9-Staff-73

Reference: Exhibit 9, Page 18

Preamble:

At the above-noted reference, North Bay Hydro stated:

In the 2019 audited financial statements, and the subsequent RRR 2.1.7 NBHDL included 100% of the impact as directed by the OEB in the above excerpt. However, as part of this Application, NBHDL is requesting that it retain 50% of the tax incentive.

In its Accounting Direction Regarding Bill C-97 and Other Changes in Regulatory or Legislated Tax Rules for Capital Cost Allowance, July 25, 2019, the OEB stated that:

For natural gas utilities and electricity distributors and transmitters, the OEB's long-standing practice with respect to the impact of changes in taxes due to regulatory or legislated tax changes during an incentive rate-setting period has been to share the impacts between Utility shareholders and ratepayers on a 50/50 basis¹. However, Utilities should not expect that this practice will necessarily apply in respect of CCA rule changes, and determinations as to the appropriate disposition methodology will be made at the time of each Utility's cost-based application.

Question:

- (a) Please explain why a 50/50 split between the Utility and rate payers of the benefits resulting from the temporary changes in CCA tax rules introduced by Bill C-97 is a fair and equitable method of disposing of these amounts.

Response:

- a) NBHDL references the wording provided in the OEB's letter dated July 25. It is stated that "determinations as to the appropriate disposition methodology will be made at the time of each Utility's cost-based application." It appears that a decision from the OEB on this particular issue has not yet been made. Given the historical context referenced in the letter of "...OEB's long-standing practice with respect to the impact of changes in taxes due to regulatory or legislated tax changes during an incentive rate-setting period has been to share the impacts between Utility shareholders and ratepayers on a 50/50 basis.", NBHDL submits this tax change is not unique, and unless there is specific direction from the OEB, the 50/50 practice should apply.

RESPONSE TO INTERROGATORIES FROM
CONSUMERS COUNCIL OF CANADA INTERROGATORIES

CCC-1

Reference: Exhibit 1

Preamble: None.

Question:

Please provide all documentation provided to NBH's Board of Directors related to this Application and approval of the underlying Business Plan and budgets.

Response:

Please see Attachment C –CCC-1 – 2021 Final Budget Presentation dated July 29, 2020.

CCC-2

Reference: Exhibit 1

Preamble: None.

Question:

Please explain the extent to which the COVID-19 pandemic has impacted the overall budgets and forecasts for 2021.

Response:

Please see 2-Staff-11 and 4-Staff-42.

CCC-3

Reference: Exhibit 1, page 61, Exhibit 4, pages 17-18

Preamble: None.

Question:

Please provide a timeline for the development of the budgets underlying this Application and described in Ex. 4. Please provide all instructions provided to NBH employees regarding the preparation of the budgets.

Response:

NBHDL began budget preparations for 2020 and preliminary 2021 in August 2019. This initial work incorporated Phase 1 and 2 of our customer engagement plan with respect to this COS application. The 2020 budget was approved in December 2019 and NBHDL began a more detailed 2021 budget development that incorporated customer engagement feedback, addressed major gaps in the business in terms of much needed resource requirements and various policies and initiatives, further developed and finalized the DSP, addressed a much needed formalized on-going communications and customer engagement plan, and reviewed the vegetation management program in light of mitigating customer impacts while addressing safety and improved reliability. Through this process NBHDL also finalized load forecast results, rate design, cost allocation and all models that are required in the rate setting process. Rate impacts for all classes were reviewed and assessed against customers preference for affordability and the requirements of the business to operate the distribution system and deliver the services customers expect. Rates impacts were also reviewed to ensure NBHDL was well within the threshold that dictates mitigation efforts. The budget and the underlying cost structures that incorporate the OM&A, capital spending, and debt structure proposals put forward in this application were approved by the NBHDL Board of Directors in July 2020. See also the response to CCC-1.

NBHDL's internal budget process does not incorporate formal instructions to the Management team with respect to the budget preparation. NBHDL has a small team that works closely together; interaction and communication is direct and face to face. An initial kick-off meeting is done with the management team in terms of the overarching directions, cost pressures, regulatory requirements, to address any areas that are cause for concern, and to communicate timelines and the priority the undertaking must have. As this was a year where NBHDL was planning for a COS application and setting the stage for the next 5 years, much discussion was had about the gaps in the business, forward looking plans and ideas from staff. Emphasis was put on enhancing customer interactions and areas of the business that must improve on in order to be successful. Much of this discussion reiterated the need for funding in many of the areas where NBHDL has proposed incremental spending, areas that have been highlighted by the Management team over the last several years; resourcing, vegetation management, and customer engagement.

Finance department staff then work one-on-one with each department's management team to review historical trending, determine new requirements, review external costs for need, cost minimization, or service level improvements, address areas that are causing concerns, and develop resourcing budgets that determine work plans and needs with respect to the splits between capital, OM&A, recoverable work and work that is charged out to affiliates. Finance staff also work closely with the Engineering department on the development of capital plans and associated depreciation budgets that align with the DSP. Meetings were held with Finance staff, the President and CEO, and the respective department management teams to review in detail and revise as needed to ensure customer engagement feedback is incorporated, that core objectives are achieved and that inputs and outputs are aligned with NBHDL's Core Values.

The budget is then presented to the Board of Directors through a formal board meeting and approved via resolution.

CCC-4

Reference: Exhibit 1, pages 36, 66

Preamble:

The evidence states that an increase in capital spending has not been requested in this rate application – instead NBH is pacing capital investment at a slightly lesser pace than it did the previous 5 years. The increase from 2020 to 2021 is 4.75%.

Question:

What would be the impact on the 2021 revenue requirement if the 2021 budget was held to the average over the rate plan period - \$6.254 m?

Response:

As the revenue requirement is driven by assets that are in-service and not necessarily the actual capital spending that takes place in any given year, NBHDL has made the assumption that in the same decrease in capital spending proposed (Actual \$6,692M - Average \$6,254M = \$438k reduction) would be done at the in-service level as well. As such, the revenue requirement would decrease from \$15,685,587 to \$15,670,333 in the proposed scenario.

A cut to the test year capital spending would result in NBHDL not being able to meet its DSP target. Due to various resource and financial constraints, NBHDL has determined that it can deliver 127 poles per year for 2021-2023 and 135 poles per year for 2024-2025. 127 and 135 poles per year represents 1.7% and 1.9% respectively of the overall sub-transmission and distribution network. At this pace, it will take over 52 years to replace all pole assets, which means that the future replacement age of those poles will be 52 years old which is longer than the expected 45-year service life. NBHDL will work to sustain its poles condition through close monitoring and the use of composite poles to extend the life of its assets. However, any reduction to less than the 127 poles would result in a cumulative deficit and is not sustainable. Ultimately, this would lead to the need to a future cash infusion to sustain its assets. Additionally, the cutting of projects required to lower the test year spending would result in the underutilization of NBHDL's internal resources as crews would have no work to perform.

CCC-5

Reference: Exhibit 1, page 67

Preamble:

NBH's OM&A for 2021 is \$8,565,938. This represents an increase of 33% over 2015 Board approved levels and 15% from the 2020 Bridge Year amounts.

Question:

Please provide the actual OM&A for 2020.

Please identify all productivity initiatives that NBH intends to undertake during the rate plan term and quantify the impacts of those initiatives.

Response:

Please see response to CCC-29 for an updated Table 4-11 – OM&A Programs Table that includes 2020 actuals.

The actual OM&A for 2020 is \$6,777,595.

The following are the productivity initiatives NBHDL intends to undertake during the rate plan term. The initiatives are quantified where possible.

Unless otherwise explicitly noted below, each of these productivity initiatives are already incorporated into NBHDL's budgeting process and are reflected in the historicals and forecasts included in this Application.

1. NBHDL will continue to utilize just-in-time delivery to keep inventory levels low. The storekeeper also pursues new vendors in the procurement of inventory and equipment items to unlock savings where possible.
2. NBHDL will continue to purchase materials through the North East District Buying Consortium (NEDBC) which saves approximately \$139,000 per year versus buying outside the Consortium. This is a result of volumetric discounts on purchases (\$52k savings) and the elimination of freight charges for delivery of stock items (\$87k). In addition to the savings, NBHDL also receives dedicated inventory that remains at vendor warehouses valued at approximately \$100k, costs that NBHDL does not have to incur, but represents inventory that is ready for immediate shipment should we require it. These savings are already built into the Application.
3. NBHDL is working towards having all C&I meters read remotely, eliminating the cost of third-party meter reading which has historically cost \$20,000 per year.
4. NBHDL is investigating the ability to get to one automated metering solution through the elimination of the MV90 system. The MV90 system has an annual cost of \$8,602. It is unknown if, and when, this may happen, so the savings related to the elimination of the MV90 system have not been included in the Application.
5. NBHDL actively manages bad debt using payment plans and a collections agency to minimize required write-offs. Historically bad debt has ranged from \$72,850 - \$167,985;

NBHDL's focus on collections has enabled the company to continue to keep amount of bad debt write-off in rates low.

6. The Engineering and Operations department work together to deliver construction packages that are easy to execute, properly designed, and free from mistakes. An area that has been identified for improvement between Engineering and Operations is better post construction analysis in the form of financial reconciliation to project budgets. Over the rate term, NBHDL, as a result of implementing a financial reconciliation process, will look to improve estimation accuracy, identify and correct productivity issues preventing project completion at budget amounts, review work methods and external costs in efforts to drive project efficiency, instill accountability, and find better methods to execute construction activities. These improvements are hard to quantify, however the goal is do more with the same resource complement while improving work processes to drive possible savings.
7. By the end of 2021, the distribution voltage conversion program will be complete. NBHDL's distribution system loss has been trending downwards over the last number of years and part of that is attributable to the elimination of the higher loss 4.16kV system. The distribution system loss improvements have been included in the Application with through proposed loss factors of 1.0389 and 1.0285 for secondary and primary customers respectively as compared to current loss factors of 1.0471 and 1.0366. In addition, the duplication of distribution transformers (same size but different input voltage) will be eliminated resulting in a lower transformer inventory (not to be confused with less transformers being installed per year). This ties back to point 1 above that indicates NBHDL works towards minimizing inventory levels.
8. The locate function will be fully contracted out in 2021, resulting in a savings for that work specifically of approximately \$100,000/year as compared to the 5-year historical average cost NBHDL has incurred; these savings are made possible by contracting out the locate work at a lower cost than utilizing internal resources. The internal union staff previously responsible for the seasonal locate work has been re-tasked into other positions that have full-time work, making their time now 100% productive. The use of a contractor also minimizes the need to allocate powerline maintainers to this work during high volume or coverage situations which is a higher resource cost.
9. NBHDL continues to push vendors to automated payment processes eliminating the need for payment by manual cheque. Switching vendors to EFT saves \$5.13 per avoided cheque. NBHDL has pursued this initiative aggressively and will continue to encourage vendors to switch.
10. NBHDL continues to push solutions that eliminate the need for paper. The manual paper-based timesheet process was automated in the 2015-2020 period, eliminating paper use, providing mobile timesheet input, and reducing the overall time spent on timesheets. The Engineering and Operations teams have moved to tablet and mobile based data collection to eliminate paper use, reduce transposition errors, and streamline integration of data into the GIS system. NBHDL continues to push customers to transition to eBilling as mentioned in number 17 below, eliminating monthly printed bills, postage costs and creating better access for customers to their invoices. All of the above initiatives also limit the amount of stored paper records, which can reduce the cost of future storage needs. The effects of the reduction of paper are incorporated into the Application.
11. NBHDL will continue to complete preventative substation maintenance work with internal resources avoiding approximately \$100,000 per year in external contractor costs.

12. NBHDL has proposed several new maintenance programs in the Application in addition to all the strong maintenance activities already being performed. The goal of these programs will be to provide better condition assessment data to improve asset management analysis, reduce unplanned outages and overtime callouts, and improve the overall safety and reliability performance of the system.
13. NBHDL works hard to get sick time at an average of 6.8 days per year per employee to ensure a present and productive workforce.
14. With rapidly evolving technology and innovative grid solutions being developed all the time, NBHDL will continue to pursue smart grid initiatives that provide an actual cost benefit to customers. No specific projects have been included in the Application, but this does not preclude NBHDL from implementing any that may present themselves over the rate term.
15. Reorganization of the Customer Service, Billing and Finance department to allow the creation of a Senior Billing Control clerk, and a third Accountant Position (net zero new positions). The Senior Billing control clerk will handle the day-to-day billing functions ensuring timely and accurate invoicing to customers with a focus on identifying process efficiencies. This position will also enable the Billing Team Lead to turn efforts towards enhancing department oversight, the creation of metrics to improve productivity and accountability. The Accountant will provide cross-functional coverage, increase analytical work to drive further efficiencies in the business, produce capital spending reports with detailed analytics to support project budgeting and execution to support DSP planning.
16. NBHDL has included costs in the Application for the enhancement of the existing customer portal and the development of a new mobile application. Both initiatives help meet customer needs determined through the customer engagement work completed for the Application by providing them with access to more information (billing, consumption, education, conservation tips) in real time. The savings associated with these developments are not quantifiable, but it is believed that over time as more customers use these services they will reduce the number of inbound calls, allowing customer service representatives to spend more time with the customers that do call, and be more proactive in making outbound customers, both in efforts to increase customer satisfaction.
17. NBHDL will continue to offer and promote eBilling to maintain and potentially increase the number of customers using this billing option. NBHDL has been using eBilling since 2012, and to date approximately 34.3% of customers utilize this option. NBHDL estimates that e-billing saves approximately \$1.15 per bill. This cost incorporates postage, paper, internal resource time spent on bill printing / stuffing, envelope, and printing costs. The potential for customers to switch to eBilling is unknown and therefore no additional cost savings have not been included in the Application, however there is normally a cost involved with incenting customers to switch, so for this rate term the savings from customers switching versus what it costs to market and incent customers to switch has been forecasted to be a net zero gain in the Application.
18. NBHDL is looking to streamline and improve the financial reporting process by investigating the implementation of Qwestica, a business intelligence solution software. The main benefit of implementing the software is the reduction of staff time with regards to month-end, year-end and for any required ad-hoc financial reporting enabling the same staff to be reallocated to other value-add activities. The secondary benefit is the ability for managers to have better financial data, closer to real-time, to help drive decision making. The City of

North Bay runs the same enterprise software as NBHDL and has implemented Questica with great success.

19. NBHDL is in the process of upgrading its phone service, a critical component to providing exceptional customer service and meeting the daily needs of the business. The replacement of the phone system has four main benefits and the costs and associated savings below have been included in the Application:
 - a. To replace the on-premises system with a cloud-based system enabling maximum availability and easy porting in a disaster recovery situation or with loss of service to the main building.
 - b. To provide additional features to better serve customers. One example is the inclusion of a web chat that integrates into existing customer service queues.
 - c. Provides a streamlined work from home solution (current solution NBHDL has implemented is a work-around), something that COVID-19 has made a reality now and most likely into the future.
 - d. Eliminate capital costs related to on-premises phone infrastructure, approximated at \$61k and an annual operational savings cost of approximately \$2,700 per year.
20. The IT department over the last few years has worked hard at finding cost savings when renewing IT assets. Examples that have created cost savings that will continue over the rate term include:
 - a. Bill Printer – by going to an RFP process, the lowest bid was accepted and created OM&A savings on consumables of 13% over a 5-year period.
 - b. Multi-function Printers – by going to an RFP process, selecting the lowest bid allowed for all of the existing printers to be replaced at 50% of their prior cost and also included a 9% decrease in consumable costs.
 - c. Cloud-based Payroll system – the current system is obsolete and NBHDL was able to negotiate an upgrade to the vendor's preferred platform at no additional cost. The new platform includes an integrated Human Resources Information System and time and attendee modules that will result in an overall OM&A cost savings of \$5,000 per year with the retirement of current systems.
 - d. Computer Hardware Purchases – by working with a trusted partner, NBHDL achieves discounts on most computer hardware purchases of between 2% and 7%. On very large capital purchases, NBHDL has been able to negotiate discounts in the range of 20%.
21. The Application includes the addition of an Administrative Assistant. The entire justification behind this position is to increase the productivity of existing highly skilled individuals by delegating administrative tasks from their daily duties. The Application includes the benefits to be gained from the addition of this position (see Section 2.4.1.1.2 of Exhibit 4).
22. The Application includes the addition of an Operations Coordinator, an incremental cost to the business. However, the addition of the position is to drive more productivity within the Operations department and move forward initiatives that simply do not receive enough or any attention currently, such as risk assessment, improvements in safety, more time spent on purchasing activities, and enhanced coordination of internal resources and external contractors all of which can lead to cost savings. In addition, the position will provide redundancy that will ensure productivity of internal resource continues should an unexpected absence amongst the other two operations management employees occur. The Application includes the benefits to be gained from the addition of this position (see Section 2.4.1.1.2 of Exhibit 4).

NBHDL works hard to build a culture of continuous improvement. Due to this and the fact the industry is rapidly evolving NBHDL will throughout the entire rate term look for additional improvement areas, including productivity initiatives, and will not limit improvements to the ones listed above.

CCC-6

Reference: Exhibit 1, page 82

Preamble: None.

Question:

Please provide a copy.

Response:

NBHDL is unsure what is being requested in this question. The response to CCC-7 below provides copies of customer engagement activities.

CCC-7

Reference: Exhibit 1, pages 83-85

Preamble: None.

Question:

Please provide copies of the surveys developed by of UtilityPULSE and Clark Marketing Communications and the results of those surveys. Was this work subject to an RFP process? If not, why not? Please provide the terms of reference for this work. How was this work funded?

Response:

Please see copies of surveys and results at Attachment B – 1-Staff-4 - Phase 1 and 2 Customer Engagement Survey Results.

This work was not subject to an RFP and there are no terms of reference to provide for either consultant.

With respect to the use of UtilityPulse (“UP”) for the Customer Satisfaction Survey work, NBHDL has historically utilized the company to complete the mandatory bi-annual survey. With the success in previous years working with the company, and to enable process and result reporting consistency, NBHDL has continued to engage them for this work. In NBHDL’s last bi-annual survey, UP included additional questions to begin the engagement framework.

In the 2015 COS application, NBHDL spent \$53k in consultant fees for work specific to customer engagement around the application. While the budget for 2021 assumed similar costs, NBHDL ultimately reached out to a local firm, Clark Communications, to handle the engagement end to end. The result of these efforts were overall cost savings as compared to 2015 of approximately \$15k, with the additional benefit of supporting a local business.

The costs surrounding customer engagement are included in the total costs of this application as explained in Section 2.4.3.6 in Exhibit 4. NBHDL is seeking to recover these over the next 5 years.

CCC-8

Reference: Exhibit 1, page 108, Table 1-47

Preamble:

NBH uses a metric that calculates the percentage of budgeted gross capital spending detailed in in the DSP in each year compared to actual gross capital spending in that given year. The overall goal is to deliver on the expectations set forth in the DSP over the planning horizon in total, with at least 100% of the planned spending realized in any given year, creating stable and paced capital investment. There is a deadband of +/- 10%.

Question:

Why should not the goal be to meet the planned investment, not exceed it?

Response:

The goal is to meet planned investment, with allowance for a reasonable degree of variance to account for known unpredictability.

As stated on page 108, it is important to note that given the dynamic nature of the business, a number of issues emerge over the course of a year that require the management to postpone, re-prioritize, add to or otherwise amend the capital work plan at the start and throughout any given year. Depending on the projects selected, unit costs can vary; 20 subtransmission poles are a much different cost than 20 single circuit distribution poles. The jobs selected in any given year will by definition have varying costs depending on a number of variables. In addition, there are costs that are not in NBHDL's control. For example, NBHDL tenders its substation projects which means the costs of the project are subject to market pricing at that time which can vary significantly from planned amounts. The result of these decisions could lead to NBHDL exceeding or coming up short in specific year. NBHDL's approach to the DSP is to work within the overall planned expenditures over the 5-year timeframe.

Given the number of variables, NBHDL submits that a +/-10% threshold is reasonable.

CCC-9

Reference: Exhibit 1, page 112

Preamble: None.

Question:

What was the actual ROE for 2020? Please explain the factors that contributed to NBH's overearning, above the allowed return in 2015 and 2018. What contributed to the underearning in 2019?

Response:

The estimated ROE for 2020 is 4.72%. NBHDL rejects the statement put forth that it over-earned in 2015 and 2018. NBHDL was above the deemed ROE by 1.35% and 0.87% in 2015 and 2018 respectively which is within the OEB prescribed dead-band of 300 basis points.

Please see 1-Staff-9 for details on the contributing factors of the underearning in 2019.

- In 2015 NBHDL did not receive a final OEB approved rate order until November 12, 2015. This delay arose primarily because when NBHDL filed its rate application on Dec. 15, 2014, the default working capital allowance was 15% (which is what NBHDL elected to use). On June 3, 2015 the OEB changed the rules regarding the default working capital allowance to 7.5%. NBHDL identified that the new default allowance would significantly underfund its working capital requirements, thereby forcing arbitrary cuts to OM&A. As a result, NBHDL filed a lead-lag study and a decision on this aspect of the application did not arise until late in 2015. Because of significant uncertainty in the anticipated revenue requirement arising from this late in the year decision, NBHDL management, acting prudently, had to postpone some spending to manage within the potentially reduced revenue requirement. Ultimately NBHDL was successful in achieving its required working capital allowance, however it was too late in the year to catch-up on all budgeted spending. NBHDL notes that 2015 actuals included the approved Account 1576 rate rider and disposition which was the primary driver of changes in Other Revenue and Amortization. The following table is provided with a breakdown of the ROE components:

	2015 Approved	2015 Actual	Variance (%)	Variance (\$)
Distribution Revenue	11,793,143	11,589,046	-2%	(204,097)
Other Revenue	1,173,934	650,319	-45%	(523,615)
OM&A	6,429,729	6,213,210	-3%	(216,519)
Amortization	2,489,076	1,693,086	-32%	(795,990)
Deemed Interest	1,497,051	1,471,219	-2%	(25,832)
Taxes	272,060	309,897	14%	37,837
Donation	16,700	14,550	-13%	(2,150)
Net Income	2,262,461	2,537,404	12%	274,943
Working Capital:				
Eligible OMA	6,516,305	6,304,746	-3%	(211,559)
Cost of Power	65,289,289	58,509,961	-10%	(6,779,328)
WCA @ 10.31%	7,403,157	6,682,396		(720,760)
Avg PP&E	53,415,660	52,866,550	-1%	(549,110)
Rate Based	60,818,817	59,548,946	-2%	(1,269,871)
Deemed Equity @ 40%	24,327,527	23,819,578	-2%	(507,948)
ROE	9.30%	10.65%	1.35%	

- In 2018 NBHDL underwent significant management team turnover that saw major transition throughout the entire management team (both the CEO and CFO retired - and internal resources were promoted to fill both roles). This created vacancies in certain positions for the year which took time to fill as the utility worked to transition staff to their new positions. The average age of the NBHDL management team prior to 2018 was 48.8 years. The average age of the NBHDL management team now is 44.8 years. The following table is provided with a breakdown of the ROE components:

	2015 Approved	2018 Actual	Variance (%)	Variance (\$)
Distribution Revenue	11,793,143	12,330,235	5%	537,092
Other Revenue	1,173,934	1,186,150	1%	12,216
OM&A	6,429,729	6,239,812	-3%	(189,917)
Amortization	2,489,076	2,854,199	15%	365,123
Deemed Interest	1,497,051	1,685,636	13%	188,585
Taxes	272,060	(47,240)	-117%	(319,300)
Donation	16,700	15,560	-7%	(1,140)
Net Income	2,262,461	2,768,418	22%	505,957
Working Capital:				
Eligible OMA	6,516,305	6,337,527	-3%	(178,778)
Cost of Power	65,289,289	55,082,974	-16%	(10,206,315)
WCA @ 10.31%	7,403,157	6,332,454		(1,070,703)
Avg PP&E	53,415,660	61,725,696	16%	8,310,036
Rate Based	60,818,817	68,058,150	12%	7,239,333
Deemed Equity @ 40%	24,327,527	27,223,260	12%	2,895,733
ROE	9.30%	10.17%	0.87%	

CCC-10

Reference: Exhibit 2 Appendix 2-A DSP, page 9

Preamble:

NBH indicates additional costs savings are expected to be achieved over the forecast period through good planning and DSP execution and a list of savings is provided.

Question:

Please quantify these savings and discuss how these savings are reflected in the 2021 cost structure.

Response:

Please see the response to 2-Staff-17.

CCC-11

Reference: Exhibit 2, Appendix 2-A DSP, p. 19 Table 2-5

Preamble: None.

Question:

Please provide a version of Table 2-5 that reflects all interruptions excluding MEDs, Loss of Supply and Scheduled Outages.

Response:

The following Table CCC-11 provides a version of Table 2-5 that reflects all interruptions excluding MEDs, Loss of Supply and Scheduled Outages.

Table CCC-11 – Updated Table 2-5

Table 2-5: 2015-2019 Reliability Metrics (LOS and MED, and Scheduled Outage adjusted)

Metric	2015	2016	2017	2018	2019	Average	NBH Target
SAIDI	1.08	2.27	1.09	1.94	1.03	1.48	2.1
SAIFI	0.88	1.96	0.93	1.4	1.31	1.30	1.99

CCC-12

Reference: Exhibit 2, Appendix 2-A DSP, page 19 Table 2-6

Preamble: None.

Question:

Please add a row to Table 2-6 that reflects all interruptions excluding MEDs, Loss of Supply and Scheduled Outages.

Response:

The following Table CCC-12 provides a row to Table 2-6 that reflects all interruptions excluding MEDs, Loss of Supply and Scheduled Outages.

Table CCC-12 – Updated Table 2-6

Table 2-6: Outage summation (2015-2019)

Categorization	2015	2016	2017	2018	2019
All interruptions	141	180	136	167	193
All interruptions excluding LOS	141	179	132	164	179
All interruption excluding MED and LOS	141	179	132	164	179
All interruptions excluding MED, LOS, and Scheduled Outage	136	165	128	145	166

CCC-13

Reference: Exhibit 2 Appendix 2-A DSP, p. 31 Table 2-11 Performance Measure – DSP Implementation Progress

Preamble:

DSP Implementation Progress shows that for the years 2015, 2016, 2017, 2018, 2019 the DSP Implementation Progress was 94%, 106%, 118%, 112%, and 119%, respectively. The target was 100%.

Question:

Please explain why NBH was unable to manage its' overall 5-year capital budget (2015 to 2019) within the budgeted amounts.

Response:

NBHDL respectfully disagrees with the statement that the company was unable to manage its overall 5-year capital budget. The following tables provides a summary of the 2015 – 2019 period with a net overall impact of 7.2% ahead of the 2015 DSP planned spending. NBHDL notes that included in these values is the construction of a substation that was not contemplated in the 2015 DSP which brings this value closer to 5%. The DSP provides that foundation for all capital planning, however, in any given year the job specifications will drive capital spending as will changes in scope, unanticipated issues (such as rock or frost), and the constant fluctuations of demand work which can materially impact planned jobs. NBHDL submits that it successfully executed the 2015 DSP. Following Table CCC-13 provides a comparison of 2015 to 2019 Capital Spend vs. DSP. See also the response to CCC-8.

Table CCC-13 – 2015-2019 Capital Spend vs. DSP

	Act.	Plan	Var. (\$)	Var. (%)
System Access	5,531	5,588	(57)	
System Renewal	20,897	21,923	(1,026)	
System Service	3,689	931	2,758	
Total EDA	30,117	28,442	1,675	6%
General Plant	3,246	2,687	559	
Total Capital	33,364	31,129	2,235	7.2%

CCC-14

Reference: Exhibit 2, Appendix 2-A DSP, page 42

Preamble:

The evidence states “Although some of the assets’ condition may not report as “poor” or “very poor” in the ACA, the asset might be at an age that is typically considered the end of its useful life and would be prioritized for replacement. In order to perform proper resource planning and distribute investments evenly during the 5-year period of this DSP, NBHDL might choose to re-place an asset based on its age to decrease the risk of failure.”

Question:

- a) Please summarize the basis for asset renewal over the 2015 to 2020 period. Was it primarily driven by asset age or asset condition?
- b) Does NBH track the age an asset fails? If not, does NBH have the ability to track this information?
- c) Does NBH track the age of an asset replaced on a planned basis? If not, does NBH have the ability to track this information?

Response:

- a) The basis for asset renewal over the 2015 to 2020 period is driven by the overall health of the asset which is assessed using various condition-based criteria. The age of the asset is considered as part of the criteria in most asset classes. For some older assets where there is an absence of condition data, age may be the only criteria for which asset renewal requirement can be assessed depending on the consequence of its failure.
- b) NBHDL does not explicitly track the age of asset failures as a stand-alone statistic. Utilizing GIS software, NBHDL does record all known information (such as age) for major assets at the time they are taken out of service (replaced) for any reason. This information can be extracted and linked back to work order documents to determine the reason why the asset was removed from the system and in turn, isolated for assets that have failed. For asset failures where the asset is repaired rather than replaced, this information is captured on an outage report. Information on the equipment that failed is written in the comments section of the report. All outage causes are tracked for SAIDI and SAIFI calculations which is part of the RRR reporting requirements.

NBHDL is also upgrading its ESRI based GIS software (new licensing agreement). NBHDL has been using the GIS to store valuable technical and locational asset data and is now moving to use it to store valuable asset condition information collected in field. It is also being used to start storing outage information and equipment failures. Using the GIS, NBHDL will be able to better geographically represent the condition of its system, which can be used by engineering personnel to understand which areas need addressing. This visual representation is an invaluable tool that will paint a very clear picture to staff of all experience levels. As NBHDL continues to import condition data into its GIS, its current non-server-based version has seen a significant decrease in performance to the point where it has been described as “frustrating” to use by staff. Slow data loading, freezes, and crashes are some of

the issues experienced. The amount of data that can be inputted is near capacity and is at risk to become “unusable” due to performance issues. The upgraded GIS will not only solve the performance issues, but open up access to data collecting applications which will allow field personnel to directly import the data, such as pole testing results, directly into the GIS seamlessly. The current setup has utilized all of its available licenses and cannot accommodate any more users. This upgrade will also allow additional engineering and operations staff to use it with the new licensing agreement. The investment requested to upgrade the GIS is critical to allow for enhanced data collection and better tracking of assets over the next 5 years that will aid in the improvement of NBHDL’s asset management program.

Please also see page 28, 34, and 37 of Exhibit 4 for additional information on the GIS system and costs.

- c) As stated above in part b), NBHDL records all known asset information (such as age) at the time they are taken out of service (retired) for any reason in its GIS database.

CCC-15

Reference: Exhibit 2 Appendix 2-A DSP, p. 42 Figure 3-5 NBHDL Health Index Distribution for Major Assets

Preamble: None.

Question:

For each of the applicable asset classes in Figure 3-5, please provide:

- i) the number of asset failures by year for the years 2015 to 2020;
- ii) the average age of the failures by year for the years 2015 to 2020.

Response:

The following Table CCC-15 lists the number of assets failures caused by equipment, as well as the average age of failures by years for the years 2015 to 2020.

Table CCC-15 – Assets Failures 2015 to 2020

In Service Equipment Failures						
<u>Asset Class</u>	<u>2015</u>		<u>2016</u>		<u>2017</u>	
	Number of Failures	Average Age	Number of Failures	Average Age	Number of Failures	Average Age
*Poles (All Types)	17	48	9	48	11	50
Conductors & Support Equipment	18	35	14	33	3	46
Underground Cables	3	44	5	36	1	30
Transformers (Pole Mounted)	1	13	10	29	1	21
Transformers (Pad Mounted)	3	41	1	8	3	36
Line Switches	9	37	6	37	4	40
Station Transformer	0	-	0	-	0	-
Protective Relays	0	-	0	-	0	-
Station Switch Gears	0	-	0	-	0	-
Station Reclosers	1	25	1	50	0	-
In Service Equipment Failures						
<u>Asset Class</u>	<u>2018</u>		<u>2019</u>		<u>2020</u>	
	Number of Failures	Average Age	Number of Failures	Average Age	Number of Failures	Average Age
*Poles (All Types)	19	47	12	41	21	51
Conductors & Support Equipment	21	49	10	10	25	55
Underground Cables	8	38	4	31	3	47
Transformers (Pole Mounted)	5	31	7	40	4	44

Transformers (Pad Mounted)	1	25	1	13	0	-
Line Switches	11	32	4	18	1	50
Station Transformer	1	28	0	-	0	-
Protective Relays	0	-	1	15	2	12
Station Switch Gears	0	-	0	-	1	22
Station Reclosers	0	-	0	-	1	5

The table includes both poles that have failed in service from events such as weather or vehicle collisions or have failed an inspection due to serious condition issues such as woodpecker holes and excessive rot where the pole can no longer meet the safety requirement and where an in-service failure is imminent.

CCC-16

Reference: Exhibit 2 Appendix 2-A DSP, p. 52

Preamble:

Reactive maintenance is not planned and therefore is budgeted for using historical incidents and cost trends.

Question:

Please provide the reactive maintenance budget for the years 2015 to 2020 and the forecast for 2021 to 2025 and explain the cost trend for 2021 to 2025.

Response:

The statement referred to in the DSP requires greater clarification in light of the question submitted. For budget purposes, NBHDL determines O&M requirements and then allocates those costs among various internal accounts and OEB mapping aligned with historical trending. NBHDL does not specifically budget reactive maintenance costs and therefore this information is not available for 2015-2020 at the budget level.

NBHDL has reviewed internal work orders for the historical period and, on average, costs towards reactive maintenance are \$583,068 and this trend is incorporated into the 2021-2025 period. For further context, this represents approximately 15% of the O&M budget for the Operations department in 2021.

CCC-17

Reference: Exhibit 2 Appendix 2-A DSP/p. 63

Preamble:

NBH states, “In assessing the failure risk of a pole line asset, NBHDL utilizes asset condition data collected from inspections to establish a health index and also refers to a report titled “Critical Factors for Determining Wood Pole Health” prepared by EDM International Inc. and submitted to USF (of which NBHDL is a member of).

Question:

Please provide a copy of the report titled “Critical Factors for Determining Wood Pole Health” prepared by EDM International Inc.

Response:

A copy of the report at Attachment D – CCC-17 – Critical Factors for Determining Wood Pole Health Report is filed in confidence.

CCC-18

Reference: Exhibit 2 Appendix 2-A DSP/p. 63

Preamble:

The Asset Replacement Plan recommends a total of 127 poles for replacement in 2021-2023 and 135 from 2024-2025. 129 poles are planned to be replaced in 2021 as part of the system renewal of which 44 will be replaced with composite poles.

Question:

- a) Please provide the total number of poles replaced under system renewal for each of the years 2015 to 2020 and indicate the amount that are composite poles.
- b) Please provide the unit cost for pole replacement by pole type for each of the years 2015 to 2020.
- c) Please map the 129 poles to the system renewal categories in Appendix 2-AA.
- d) Please provide the additional pole replacements that fall under the System Access or System Service categories for 2021.
- e) Please indicate how many poles were replaced on a reactive basis for the years 2015 to 2020.

Response:

- a) The following Table CCC-18.1 provides the total number of poles replaced under system renewal for each of the years 2015 to 2020 and indicates the amount that are composite poles.

Table CCC-18.1 – Total Amount of Pole Replacements / Year

Year	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Total Number of Poles	153	103	64	88	114	106
Number of Composite Poles	0	0	0	1	33	41

- b) Since NBHDL primarily replaces the majority of its poles in the system renewal category through major line rebuild projects, where other equipment is replaced at the same time, the unit cost of a pole replacement is determined by taking the total project cost and dividing it by the number of poles installed in the project. As such, the unit cost of a pole replacement in this manner is a ratio of a line rebuild project cost and not solely the cost of a pole installation itself.

In identifying a methodology for determining a unit cost of replacement, NBHDL recognizes that the different combinations in the type and height of poles, number span lengths installed, length and size of conductors installed, number and type of switching devices installed, number and sizes of transformers installed, number of services, line angles and anchoring installed, as well as other

design considerations makes all projects unique. Construction methods and equipment may vary depending on location, geography, subterranean conditions (such as rock), and season as well. All of which affect the cost of a project. This means that there is typically a substantial difference in cost per pole between a single-phase distribution circuit and sub transmission circuit with three phase distribution underbuilt for example. For the purposes of determining a unit cost, no single or small sample of projects could be used to adequately determine a unit cost.

NBHDL's approach in determining a unit cost is to use a rolling average of projects over the last 10 years. This time frame represents enough variety of different projects and the average pole cost is a weighted average of the population of that type of circuit carrying poles found in NBHDL's system. The average unit cost of a pole replacement from 2015 to 2020 is \$18,468.58.

The cost premium of composite poles is included as part of the pole average. Composite and wood poles have the same installation costs but composite as a pole material is on average approximately \$2,750 higher for poles in the height range of 45ft to 75ft.

- c) The following Table CCC-18.2 maps the 129 poles to the system renewal categories in Appendix 2-AA.

Table CCC-18.2 – Mapping of Poles to System Renewal Categories

Projects	2021 Test Year	# of Poles	Projects Cost / Pole	Average Cost / Pole of Specific Line Type	% Difference
Reporting Basis	MIFRS				
System Renewal:					
Transformer Purchases - Various Jobs	229,240				
Major Betterment Projects					
Macbeth Cres Backlot Elimination	949,317				
Wallace Road	811,240	31	\$26,169	\$24,676	+ 6%
Marshall Ave (MS10) to Highway 11 South	629,884	13	\$48,453	\$24,676	+ 96%
Highway 11 North - Sunshine Lane to Berkley Blvd	337,164	24	\$14,049	N/A	N/A
Ski Club Rd Part 3 - Chapais St to O'Brien St	201,271	20	\$20,273	\$19,800	+ 2%
Dane Ave	177,414	10	\$17,741	\$14,341	+ 24%
Gertrude St East	106,113	10	\$10,611	\$14,341	- 26%
Montrose Ave	105,930	11	\$9,630	\$14,341	- 33%
Minor Betterment Projects - Various Jobs	295,359	10	N/A	N/A	N/A
Distribution Substation Improvements & Rehabilitation - Subtotal					
MS15 Rehabilitation	424,402				
MS18 Rehabilitation	82,619				

Primary Services	132,411				
Misc. Projects <\$75k on Individual Project Basis	61,503				

**See below for description on each project and cost per pole comparison information*

Wallace Road

The Wallace Road Project is a 44kV Line Rebuild with a 12.47kV underbuilt circuit. It will be constructed with composite poles since this line borders a lake as well as wooded area which has been designated as a woodpecker hotspot. The average per pole cost specific for this type of line is \$24,676 per pole. At a project cost of \$811,240 with 31 poles to be installed, the estimated per pole cost of the Wallace Rd Rebuild project is \$26,169, approximately 6% over the average which can be attributed to the use of composite poles.

Marshall Ave. (MS10) to Highway 11 South

The Marshall Ave. (MS10) to Highway 11 South Project is a 44kV Line Rebuild with a 12.47kV underbuilt circuit. The average per pole cost specific for this type of line is \$24,676 per pole. At a project cost \$629,884 with 13 poles to be installed, the estimated per pole cost of the MS10 to HWY 11S Rebuild project is \$48,453, approximately 96% higher than the average. This is a significant increase over the historic average; however, there is a few important nontypical aspects of this project that increases the cost:

- The line is located in an off-road swampy area inaccessible by NBHDL's current equipment. NBHDL will have to contract out this off-road equipment with an operator for the installation of this pole line.
- The line will be constructed with composite poles as it resided in a protected wetland that has been designated a woodpecker hotspot. Swamp cribbing and rock drilling will also be required for setting of the poles.
- The line will be built to be weather resilient with additional storm guying due to its location. There are two rail crossings which will need additional guying for adjacent poles to meet grade 1 construction requirements.

Highway 11 North – Sunshine Lane to Berkley Blvd

•The Highway 11N – Sunshine Lane to Berkley Blvd is a double circuit 12.47 kV distribution line rebuild. NBHDL has not completed a specific project with enough similarities in recent history to determine an average cost for this line for cost comparison. The closest was Worthington St in 2010, but that line also had a 4.16kV underbuilt circuit and was substantially more costly. At a project cost of \$337,164 with 24 poles to be installed, the estimated per pole cost of the Highway 11N project is \$14,049.

Ski Club Rd Part 3

The Ski Club Rd Part 3 project is a three phase 12.47 kV distribution line rebuild. The average per pole cost specific to this type of line is \$19,800. At a total project cost of \$405,466 (2020 & 2021) with 20 poles to be installed, the estimated per pole cost of the Ski Club Rd Part 3 is \$20,273, approximately 2% higher than the average.

Dane Ave.

The Dane Ave. project is a single phase 7.2kV distribution line rebuild. The average per pole cost specific to this type of line is \$14,341 per pole. At a project cost of \$177,414 with 10 poles to be installed, the estimated per pole cost of the Dane Ave rebuild project is \$17,741, approximately

24% higher than the average. This increased cost over the average is attributed to the following reasons:

- The fixing of “alley jumped” services which is not typical in the average line rebuild and cost with additional cost.
- The redesign of the underground secondary to correct the “T-Splicing” issue, which again, is not typical in the average rebuild.

Gertrude St. East

The Gertrude St. East project is a single phase 7.2kV distribution line. The average per pole cost specific to this type of line is \$14,341 per pole. At a project cost of \$106,113 with 10 poles to be installed, the estimated per pole cost of the Gertrude St East rebuild project is \$10,611 per pole, approximately 26% lower than the average. This lower cost is due to this project having only overhead servicing with no underground (civil) component. It is a very straight forward project in terms of construction complexity.

Montrose Ave.

The Montrose Ave. project is a single phase 7.2kV distribution line. The average per pole cost specific to this type of line is \$14,341 per pole. At a project cost of \$105,930 with 11 poles to be installed, the estimated per pole cost of the Montrose Ave rebuild project is \$9,630 per pole, approximately 33% lower than the average. Similar to the Gertrude St East project, this lower cost is due to this project having only overhead servicing with no underground (civil) component. It is a very straight forward project in terms of construction complexity.

Minor Betterments

Minor Betterments involves all small-scale replacements of any asset in system renewal, typically as a response to a failure. Pole replacements are only a component of what makes up the Minor Betterments budget. Due the reactive nature of these replacements, it can not be determined beforehand what type of poles will be replaced and as such, no cost comparison can be performed for this. Generally, reactive replacements are more costly then planned ones.

- d) Pole replacements under the System Service or System Access categories would only be performed as required in order to accommodate a customer request. This work is not planned or scheduled until NBHDL formally receives the request and the need to replace a pole can only be determined at the time in which NBHDL receives the customer's plans.
- e) The following table provides the number of poles that were replaced on a reactive basis for the years 2015 to 2020.

Total Amount of Pole Replaced on a Reactive Basis / Year						
	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
SR	17	9	11	19	12	21
SA	8	6	2	1	22	7

SR – includes both poles that have failed in service from events such as weather or vehicle collisions or have failed an inspection due to serious condition issues such as woodpecker holes and excessive rot where the pole can no longer meet the safety requirement and where an in-service failure is imminent.

SA – includes pole replacements required for customer request, road relocations, and make ready for third party attachments.

CCC-19

Reference: Exhibit 2 Appendix 2-A DSP/p. 91

Preamble:

The evidence states “System Renewal investments include the following drivers:

- a) Failure Risk - Multiyear planned asset replacement programs that address assets at the end of life condition. Includes priority replacement of one-off items as a result of high-risk issues identified during inspection and maintenance programs.
- b) Failure - Emergency reactive replacement of distribution system assets (poles, transformers, switches, switchgear, cable, conductor, insulators, guys, anchors, etc.) due to unanticipated failure, storms, motor vehicle accidents, vandalism, etc.”

Question:

Please provide NBH’s reactive spend for the years 2015 to 2020 and the forecast spend on emergency reactive replacement for the years 2021 to 2025.

Response:

NBHDL’s reactive capital spend for the years 2015 to 2020 is provided in Table CCC-19 below. The forecast period incorporates the historical spending averages and NBHDL will address failures through the envelope of dollars proposed for System Renewal. As stated throughout the DSP, NBHDL’s overall asset condition will not change with the proposal renewal plan as assets continually degrade; based on this, NBHDL can expect reactive replacements to remain similar to historical averages.

Table CCC-19 - Reactive Spend on Emergency and High Risk Priority Replacements

<u>Category</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>5-YR Average</u>
a) Failure Risk – High Priority Replacements	\$ 80,494.82	\$ 160,846.28	\$ 258,840.83	\$ 214,502.20	\$ 220,017.18	\$ 181,023.23	\$ 207,045.94
b) Failure – Emergency Reactive Replacements	\$ 89,855.99	\$ 42,044.72	\$ 15,778.88	\$ 59,049.87	\$ 59,120.20	\$ 59,056.94	\$ 47,010.12

CCC-20

Reference: Exhibit 2 Appendix 2-A DSP Appendix C/p. 9 Table O-2: Asset Condition Assessment Overall Results

Preamble: None.

Question:

- a) Please add the sample size of each asset class to Table O-2.
- b) Please recast Table O-2 to add the quantity of assets in very good, good, fair, poor and very poor for each asset category and provide an excel version of the table.
- c) Please identify the assets where the Health Index relies on only age as a parameter explicitly incorporated into the calculation of asset Health Indices.
- d) Several asset categories have a low data availability index, specifically a DAI of between 39.57% and 51.75%. For each of these asset classes within this range, please discuss the potential impact on the accuracy of the proposed replacement pace.
- e) Please identify assets run on a run to failure approach.
- f) Please provide NBH's previous ACA.
- g) Please provide the total % of assets in poor condition and very poor condition.

Response:

- a) 0.24% of total assets are in poor condition and 0.49% of assets are in very poor condition, however, that number includes 522,772 m of overhead conductor and underground primary cable. When removing those assets from the total, the values change to 8.06% poor and 3.36% very poor.

Please see updated Table O-2 as Table CCC-20.1 below that includes sample size.

Table CCC-20.1– Updated Table O-2 (include sample size)

Asset Class	Sample Size	Sample size for each asset class including service age		Sample size for each asset class excluding service age	
		% of asset class	Sample size	% of asset class	Sample size
Distribution					
Distribution Wood Pole	5955	100%	5955	31%	1846
Sub Transmission Only Wood Pole	253	100%	253	41%	104
Sub Transmission with Underbuilt Distribution Wood Pole	1077	100%	1077	43%	463
Overhead Primary Conductor (m)	407103	100%	407103	100%	407103
Underground Primary Cable (m)	115669	100%	115669	100%	115669
Pole-Mount Transformer	2419	100%	2419	96%	2322
Pad-Mount Transformer	676	100%	676	94%	635
Vault Transformer	52	100%	52	96%	50
Overhead Switch	1341	82%	1100	0	0
Station					
Power Transformer	21	100%	21	100%	21
Switchgear	8	100%	8	100%	8
Recloser	56	100%	56	100%	56
Protective Relays	20	100%	20	100%	20
Station Switch	14	0%	0	100%	14
Buildings	17	100%	17	100%	17

Table CCC-20.2 – Updated Table O-2 (Asset Health)

Asset Class	Population	Health Index Distribution (%)										Average Health Index	Average DAI
		Very Good		Good		Fair		Poor		Very Poor			
		%	#	%	#	%	#	%	#	%	#		
Distribution													
Distribution Wood Pole	5955	34.54 %	2057	19.81 %	1180	36.83 %	2193	7.32 %	436	1.50 %	89	73.49 %	39.57 %
Sub Transmission Only Wood Pole	253	43.47 %	110	24.61 %	62	20.36 %	52	6.28 %	16	5.27 %	13	76.23 %	48.72 %
Sub Transmission with Underbuilt Distribution Wood Pole	1077	46.79 %	504	23.57 %	254	21.83 %	235	7.23 %	78	0.59 %	6	78.49 %	49.96 %
Overhead Primary Conductor (m)	407103	30.70 %	124981	68.69 %	279639	0.00 %	0	0.06 %	244	0.55 %	2239	81.41 %	99.99 %
Underground Primary Cable (m)	115669	34.01 %	39339	41.71 %	48246	24.20 %	27992	0.08 %	93	0.00 %	0	76.56 %	99.85 %
Pole-Mount Transformer	2419	20.46 %	495	19.17 %	464	39.63 %	959	12.44 %	301	8.30 %	201	60.88 %	97.77 %
Pad-Mount Transformer	676	52.61 %	356	31.83 %	215	13.97 %	94	1.60 %	11	0.00 %	0	86.41 %	82.84 %
Vault Transformer	52	3.88 %	2	8.74 %	5	60.19 %	31	13.59 %	7	13.59 %	7	98.08 %	51.75 %
Overhead Switch	1341	73.68 %	988	7.90 %	106	4.40 %	0	8.35 %	112	5.67 %	76	84.93 %	81.56 %
Station													

<i>Power Transformer</i>	21	76.19 %	16	19.05 %	4	4.76%	1	0.00%	0	0.00%	0	88.47 %	98.75%
<i>Switchgear</i>	8	75.00 %	6	12.50 %	1	12.50 %	1	0.00%	0	0.00%	0	92.71 %	100.00 %
<i>Recloser</i>	56	64.29 %	36	23.21 %	13	12.50 %	7	0.00%	0	0.00%	0	91.48 %	96.89%
<i>Protective Relays</i>	20	55.00 %	11	5.00%	1	0.00%	0	0.00%	0	40.00 %	8	67.98 %	100.00 %
<i>Station Switch</i>	14	42.86 %	6	57.14 %	8	0.00%	0	0.00%	0	0.00%	0	87.23 %	100.00 %
<i>Buildings</i>	17	35.29 %	6	58.82 %	10	5.88%	1	0.00%	0	0.00%	0	82.79 %	100.00 %
<i>Ground Grid</i>	17	47.06 %	8	23.53 %	4	23.53 %	4	5.88%	1	0.00%	0	76.81 %	100.00 %

- c) The only asset where the age is the sole parameter utilized in the development of a health index is distribution overhead switches.
- d) The accuracy of the proposed replacement plan should be considered as a Class 5 estimate which is defined as having an accuracy range of -20% to -50% on the low-end and +30% to 100% on the high-end. The Class 5 estimate is generally used for concept screening which is applicable for parametric models, judgement or analogy analysis. At this stage, the maturity level of the project definition is estimated to be between 0-2% and is used as guidance. As NBHDL plans its capital projects and identifies areas for renewal, the estimates become clearer and with more accuracy up to project execution. Furthermore, the DAI is another tool for consideration in asset management to understand what data was available at the time of planning, how it was used, and how it can be improved moving forward. Additionally, a larger emphasis is on qualitative results (i.e. testing) versus quantitative results as the former provides a better understanding of the assets condition. Ultimately, for the level of planning to which this data is utilized, the assets with the lower DAIs would not change the proposed replacement pace. Please identify the assets where the Health Index relies on only age as a parameter explicitly incorporated into the calculation of asset Health Indices.
- e) Distribution transformers and overhead secondary services are the only assets that are run to failure.
- f) Please see attached as Attachment E – CCC-20 – North Bay Hydro Distribution Limited Asset Condition Assessment.

CCC-21

Reference: Exhibit 2 Appendix 2-A DSP Appendix C/p. 94 Table 3

Preamble: None.

Question:

- a) Please provide the metres of underground cable replaced for each of the years 2015 to 2020.
- b) Please provide NBH's planned replacement units for the years 2020 to 2025.
- c) Please provide unit costs for the years 2015 to 2025.

Response:

- a) The following Table CCC-21.1 provides the metres of underground cable replaced for each of the years 2015 to 2020.

Table CCC-21.1 – Metres of Underground Cables Replaced

Total Circuit Metres of Underground Cable Replaced						
	2015	2016	2017	2018	2019	2020
UG Metres Replaced	0	62	289	54	350	722

The length of installations identified above fluctuate due to the prioritization of projects. The prioritization tool used by NBHDL ranks projects based on various factors as described on pages 71-78 in the DSP. Some years, there are few underground projects identified. NBHDL anticipates that there will be underground projects in each year of this DSP and has identified a relatively balanced quantity of circuit metres, however the actual determination of the length will depend on the results of the prioritization exercises.

- b) NBHDL intends to follow Metsco's recommendation in the ACA with respect to underground cable replacement, the following Table CCC-21.2 summarizes this for ease of reference.

Table CCC-21.2 – Summary of Underground Cable Replacement

Quantity of Assets Recommended for Replacement						
Year	2020 (actual)	2021	2022	2023	2024	2025
Units (m)	722	500	460	470	490	460
Cost (\$)	\$ 1,243,573.00	\$ 949,317.00	\$ 873,371.64	\$ 891,357.98	\$ 930,330.66	\$ 873,371.64

- c) Similar to pole replacements, NBHDL replaces the majority of its underground primary cable through major underground rebuild projects where other equipment such junction box, transformer pads, switches, and service conductors would all be replaced at the same time. The unit cost per unit

(metre) of primary cable installation for a line rebuild project is the total project cost divided by the number of metres installed. As such, the unit cost per metre of underground cable is a ratio of the project cost and not solely the cost of the cable installation.

In identifying a methodology for determining a unit cost of replacement, NBHDL recognizes that the different combinations of cable and equipment installed, number services to be redone, the cable route to avoid existing infrastructure, the cost of relocating other utilities, number of road crossings, restoration work, and other design considerations makes all projects unique. Construction methods and equipment may vary depending on location, geography, subterranean conditions, and season as well. All of which affect the cost of a project. NBHDL tenders the civil work of the project to outside contractors which introduces another cost variability as contractor bids per unit will be subject to the competitive volatility of the market in any given year. For the purposes of determining a unit cost, no single or small sample of projects could be used to adequately determine a unit cost.

NBHDL's approach in determining a unit cost is to use an average of projects completed over the last 5 years. The average unit cost per circuit metre of an underground line rebuild project for 2015 to 2020 is \$1,898.64. NBHDL estimates the unit cost for 2021-2025 will align with the table provided in b) above.

CCC-22

Reference: Exhibit 2 Appendix 2-A DSP Appendix C/p. 94 Table 4

Preamble: None.

Question:

- a) Please provide the number of distribution transformers replaced for each of the years 2015 to 2020.
- b) Please provide NBH's planned replacement units for the years 2021 to 2025.
- c) Please provide unit costs for the years 2015 to 2025.

Response:

a) NBHDL only replaces transformers as a planned activity when they are included with major overhead / underground distribution system renewal projects. Transformers outside of these projects are replaced in response to failures only (run to failure approach). NBHDL orders transformers to maintain an inventory that allows timely replacement of failed units. Transformers replaced in line rebuilds may return to inventory to be used again if the unit passes testing and condition inspection. Only transformers that fail inspection / testing are disposed of and considered to be replaced. Transformers that return to inventory are not considered replaced. Table CCC-22.1 below shows the number of transformers replaced from 2015 to 2020.

Table CCC-22.1 – Number of Transformers Replaced (2015 to 2020)

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Number of Transformers Replaced	55	27	50	81	41	70

b) Based on the system renewal plan for overhead and underground lines, NBHDL estimates the planned replacement units will align with the recommended replacement units in the Metsco ACA as a 5-year average as shown in Table CCC-22.2 below.

Table CCC-22.2 – Quantity of Assets Recommended for Replacement

Year	2021	2022	2023	2024	2025
Units (#)	55	55	55	55	55
Estimated Dollar Replacement (\$)	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000

c) The unit cost for transformers varies with transformer size and type. NBHDL purchases transformers only as required to maintain inventory necessary for failed transformers replacements and line rebuild projects.

As a reference, the unit cost for transformer is in the following Table CCC-22.3:

Table CCC-22.3 – Unit Cost for Transformer

kVA	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
10	\$ 1,133	\$ 1,168	\$ 1,213	\$ 1,279	\$ 1,261	\$ 1,245
25	\$ 1,501	\$ 1,553	\$ 1,622	\$ 1,713	\$ 1,624	\$ 1,604
50	\$ 1,896	\$ 1,995	\$ 2,082	\$ 2,184	\$ 2,408	\$ 2,375
75	\$ 2,574	\$ 2,691	\$ 2,813	\$ 2,955	\$ 3,129	\$ 3,085
100	\$ 2,977	\$ 3,127	\$ 3,289	\$ 3,325	\$ 3,615	\$ 3,620
50	\$ 3,474	\$ 3,468	\$ 3,604	\$ 3,757	\$ 3,674	\$ 3,655
100	\$ 4,377	\$ 4,384	\$ 4,578	\$ 4,775	\$ 4,850	\$ 4,827
300	\$ 12,444	\$ 12,596	\$ 13,185	\$ 13,496	\$ 14,463	\$ 14,332
500	\$ 15,658	\$ 16,007	\$ 16,796	\$ 17,127	\$ 18,946	\$ 18,943
750	\$ 18,846	\$ 19,036	\$ 19,789	\$ 20,419	\$ 24,354	\$ 24,193
1000	\$ 28,134	\$ 28,781	\$ 30,418	\$ 31,190	\$ 29,305	\$ 29,177

The historic cost on transformer purchases is outlined in Appendix 2-AA and produced in Table CCC-22.4 below:

Table CCC-22.4 – Historic Cost on Transformer Purchases

Projects	2015	2016	2017	2018	2019	2020 Bridge Year	2021 Test Year
Reporting Basis	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS
System Renewal:							
Transformer Purchases - Various Jobs	247,628	187,250	289,585	149,515	265,374	156,050	229,240

The cost on transformer purchases is outlined for 2021 to 2025 will align with the Metsco recommendation on average plus inflation.

CCC-23

Reference: Exhibit 2 Appendix 2-A DSP Appendix C/p. 94 Table 5

Preamble: None.

Question:

- a) Please provide the spend on auxiliary overhead assets for the each of the years 2015 to 2020.
- b) Please provide NBH's planned spend on auxiliary overhead assets for the years 2021 to 2025.

Response:

- a) As stated in CCC-18 b), NBHDL's methodology for determining average pole replacement unit cost included in line rebuilds also includes auxiliary costs. Since the unit replacement cost for a pole is based on a 10-year average, an attempt to extract this cost per pole and apply it to a single year will not yield the actual spend for the year.
- b) NBHDL's planned spend on auxiliary overhead assets is included in the planned spend of overhead system renewal projects which is based on pole replacements and the average cost per pole of a line rebuild project. As a five-year average, the spend is estimated to align with Metsco's ACA recommendation as shown in Table CCC-23 below.

Table CCC-23 – Costs of Assets Recommended for Replacement

Year	2020	2021	2022	2023	2024	2025
Estimated Dollar Replacement (\$)	\$978,000	\$1,028,00	\$1,028,00	\$1,028,00	\$1,061,000	\$1,061,000

CCC-24

Reference: Appendix 2-AA

Preamble: None.

Question:

- a) Please add Plan amounts for the years 2015 to 2019 to Appendix 2-AA.
- b) Please update 2020.
- c) Please provide an excel version of appendix 2-AA with the updates in a) and b).
- d) Please provide a list of planned projects that were deferred beyond the 2015 to 2019 period.
- e) Please provide a list of planned projects that were cancelled.
- f) Please provide a list of projects that were completed as planned within the 2015 to 2019 period.
- g) Please provide a list of projects that are new within the 2015 to 2019 period.

Response:

- a) NBHDL does not plan its 5-year capital spending on an individual project basis. There are no planned amounts for the projects listed from 2015-2019.
- b) Please see the updated Chapter 2 appendices file accompanying these responses. 2-AA has been updated with 2020 actuals. See excel model attached as "NBHDL_Ch2_Appendices_20210401".
- c) Please see b) above.
- d) There were no specific planned projects from the 2015 COS application that were deferred beyond 2015 to 2019. NBHDL does not plan its 5-year capital spending on an individual project basis. The planned projects identified were for 2015 only and all were completed within the 2015-2019 timeframe.
- e) There were no planned projects that were cancelled outright, however one project, the Turret Complex – Wickstead, was rescope and renamed the Lavase Road – Underground Rebuild.
- f) All planned projects identified in the 2015 COS Application listed in Appendix 2-AA were completed within the 2015 to 2019 period.

- g) All projects identified in Appendix 2-AA aside from the projects identified in 2015 COS Application.

CCC-25

Reference: Appendix 2-AB

Preamble: None.

Question:

- a) Please add the plan amounts for capital contributions for each of the years 2015 to 2020 to Appendix 2-AB.
- b) Please add plan net capital expenditure amounts for amounts for each of the years 2015 to 2020 to Appendix 2-AB.
- c) Please provide an excel version of appendix 2-AB with the updates in a) and b).

Response:

- a) NBHDL notes that there were no capital contribution estimates that form part of the Distribution System Plan for the historical period aside from the 2015 test year (\$503,987). The submitted Appendix 2-AB has been updated for the 2015 Test Year. NBHDL has however forecasted capital contributions for the 2022-2025 period. As seen in Exhibit 2, page 55.
- b) Please see a) above. Net capital expenditures have been added for the 2015 test year in the updated Appendix 2-AB which can be found in excel file "NBHDL_Ch2_Appendices_20210401" attached to these interrogatory responses.
- c) An excel version of Appendix 2-AB has been submitted as part of excel file "NBHDL_Ch2_Appendices_20210401" attached to these interrogatory responses.

CCC-26

Reference: Exhibit 4, page 3

Preamble:

The evidence states that “Approximately 60% of the requested increase in this application is related to NBHDL’s focus on properly staffing the utility in a manner that enables the company to meet the increasing needs and expectations of all of its stakeholders: customers, the shareholder and the regulator.”

Question:

Is the 60% referring to OM&A or the overall increases in distribution rates? Is there an expectation that staffing requirements will be less once the merger of operations with Espanola Regional Hydro Distribution Corporation takes place in 2022?

Response:

Table 4-3 provides a cost driver summary that lists major incremental increases in OM&A costs as compared to the 2015 Board-Approved amount. The reference to 60% is in relation to the compensation component of the total requested incremental OM&A costs (\$1,259,091 / \$2,136,211).

With respect to the potential future merger of NBHDL and Espanola Regional Hydro Distribution Corporation and what may occur as a result of the merger, NBHDL is of the view that it is not relevant to this proceeding.

As provided in OEB’s Decision on Issues List for ERT Power Corporation’s 2018 Cost of Service Application (EB-2017-0038):¹

“The setting of just and reasonable rates in this proceeding is not modified by considerations of what might eventuate in a future MAADs decision. The OEB finds that potential cost savings arising from the proposed amalgamation of ETPL with West Coast Huron Energy Inc., are outside the scope of this proceeding.”

In another decision of the OEB, PowersStream Inc. 2016 Cost of Services Application (EB-2015-0003), the OEB made a similar finding:²

“the OEB considers that evidence on potential cost savings due to the merger regardless of substance, is outside the scope of this proceeding.”

In a similar vein, the future staffing requirements following a potential merger that has not yet happened is outside of the scope of this proceeding.

¹ EB-2017-0038 - ERT Power Corporation 2018 Cost of Service Application – Decision on Issues List dated August 9, 2018, at page 9.

² EB-2015-0003 – PowersStream Inc. – Decision on Threshold Question and Procedural Order No. 5 dated October 6, 2015 at pages 6 to 8.

CCC-27

Reference: Exhibit 4, page 13.

Preamble:

The overall regulatory costs for this Cost of Service Application are \$793,551 which are to be amortized over the five year rate plan at a cost of \$158,710 per year.

Question:

Has NBH benchmarked these costs with other utilities? If not, why not? If so, please file the results of that benchmarking.

Response:

NBHDL internally reviewed the proposed 2021 costs against the prior 2015 COS application with a focus on reducing costs. Included in that forecast are the requirements of NBHDL specifically with respect to external consultants and legal expertise when taking into account the size of NBHDL's management team and internal expertise. That structure is different across every LDC.

NBHDL provides the following Table CCC-27 as a comparison.

Table CCC-27 – Comparison of Regulatory Costs for NBHDL and other LDCs

Cost Category	NBHDL (2015)	NBHDL (2020)	ERHDC (2020)	PUC (2018)	Sudbury (2019)	NPEI (2020)	WNH (2019)	OPUCN (2020)
Legal / Consultants	722,331	626,300	507,539	366,829	280,000	489,451	525,000	532,786
Intervenors & OEB Costs	84,494	85,000	70,000	55,620	60,000	94,000	115,000	155,000
Internal Labour	114,073	82,250	-	405,760	110,000	-	10,000	-
Other	-	-	5,000	10,000	-	-	-	-
Total Costs	920,899	793,550	582,539	838,209	450,000	583,451	650,000	687,786

Please also see SEC-12 c), 4-Staff-46.

CCC-28

Reference: Exhibit 4, page 29

Preamble:

NBH is proposing to spend \$773,437 in the 2021 Test Year on Vegetation Management.

Question:

Has NBH benchmarked these costs with like utilities? If not, why not? If so, please provide the result of that analysis. What is the ownership structure of the contracting company 17 Trees?

Response:

Please see SEC-13 and 4-Staff-53.

CCC-29

Reference: Exhibit 4, page 31

Preamble: None.

Question:

Please update Table 4-11 – OM&A Programs Table to include 2020 Actuals.

Response:

Table 4-11 is reproduced below as Table CCC-29 with 2020 actuals. NBHDL has provided high level explanations of material variances and the main drivers of the variance between 2020 actuals and 2020 forecasts and implications on the 2021 Test Year, if applicable.

Table CCC-29 – Updated Table 4-11 with 2020 Actuals

Programs (Core Values "CV")	Last Rebasement Year (2015 Board-Approved)	Last Rebasement Year (2015 Actuals)	2016 Actuals	2017 Actuals	2018 Actuals	2019 Actuals	2020 Bridge Year	2020 Actuals	2021 Test Year
Reporting Basis	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS
Customer Services, Billing & Collecting (1,4,5)	\$874,281	\$852,944	\$951,084	\$913,856	\$856,418	\$809,381	\$932,859	\$811,497	\$931,904
Bad Debts (4)	\$191,079	\$131,849	\$72,850	\$163,484	\$167,985	\$121,132	\$200,000	\$113,333	\$200,000
Locates (1,2)	\$249,857	\$281,031	\$342,115	\$271,936	\$189,340	\$293,933	\$183,361	\$241,077	\$172,430
Customer Engagement (1,4,5)	\$62,000	\$33,590	\$51,273	\$57,655	\$67,979	\$108,844	\$66,790	\$23,695	\$164,820
Executive, Financial, Regulatory, Professional, Insurance (all)	\$1,197,087	\$1,260,162	\$1,228,678	\$1,220,284	\$1,132,601	\$1,139,758	\$1,325,767	\$1,368,387	\$1,382,280
Regulatory Reporting & Assessments (5)	\$222,552	\$163,255	\$275,338	\$270,027	\$269,009	\$270,260	\$140,496	\$140,142	\$270,679
Information & Technology (1,4,5,6)	\$453,162	\$411,146	\$455,611	\$605,282	\$579,942	\$600,795	\$669,547	\$550,301	\$712,558
Smart Meters, Meter Reading (4,5)	\$377,808	\$376,075	\$374,498	\$302,500	\$316,606	\$314,485	\$328,463	\$293,275	\$342,707
Human Resources (all)	\$376,108	\$401,609	\$335,128	\$439,642	\$355,030	\$425,209	\$491,812	\$441,971	\$568,202
Corporate Policies, Initiatives, and Strategy (all)	\$0	\$0	\$0	\$0	\$0	\$0	\$110,000	\$56,220	\$150,000
Training, Health & Safety (2,4)	\$215,387	\$238,322	\$266,588	\$166,018	\$251,168	\$218,912	\$288,647	\$122,273	\$294,009
Overhead Operations & Maintenance (2,3,4)	\$711,686	\$705,682	\$755,322	\$731,007	\$740,328	\$866,065	\$853,864	\$967,556	\$1,141,750
Underground Operations & Maintenance (2,3,4)	\$276,014	\$448,112	\$328,702	\$317,505	\$309,295	\$331,735	\$383,846	\$466,963	\$462,900
Substation Maintenance, Load Dispatching, SCADA (2,3,4)	\$510,537	\$398,805	\$413,185	\$396,446	\$418,110	\$516,528	\$706,996	\$468,846	\$840,861
Vegetation Management (2,3,4)	\$456,194	\$438,897	\$541,345	\$516,229	\$515,994	\$550,373	\$685,609	\$596,124	\$773,437
Metering - Operations & Maintenance (2,3,4)	\$330,670	\$252,727	\$301,221	\$306,947	\$240,739	\$292,249	\$322,179	\$321,663	\$362,170
Miscellaneous (4)	(\$74,692)	(\$180,997)	(\$285,992)	(\$247,722)	(\$170,733)	(\$170,777)	(\$237,408)	(\$205,727)	(\$204,776)
Total	6,429,729	6,213,210	6,406,945	6,431,094	6,239,812	6,688,882	7,452,827	6,777,595	8,565,931

The key drivers of the variance between the 2020 Bridge Year forecast and 2020 Actuals are as follows:

- Compensation costs are lower than expected as a result of delaying recruitment due to COVID-19. NBHDL experienced delays in recruitment with respect to the following positions: Substation Electrician, Meter-to-Cash Specialist, Accountant, and a Distribution Engineer. The positions were filled in late 2020 and early 2021. NBHDL will have its full proposed complement in 2021. Please see 4-Staff-47.
- Customer engagement costs (related to annual activities, not COS application) were put off as a result of COVID-19. Proposed 2021 activities are expected to move forward as planned. Please see 4-Staff-48.
- As a result of a focused effort by NBHDL to work with customers on individualized payments plans, NBHDL's bad debt came in lower than expected. Please see 4-Staff-51.
- As a result of COVID-19, corporate policies and initiatives, and cyber security related projects came in lower than anticipated and will be incorporated into the proposed 2021 budget. Initiatives are expected to move forward as planned in 2021. Please see 4-Staff-45.

CCC-30

Reference: Exhibit 1, pages 63 to 70

Preamble: None.

Question:

Please describe the specific activities that are undertaken by North Bay Services Inc. Please describe the specific interactions between NBH and North Bay Services Inc. and the total costs/revenues of those activities included in the 2021 Test Year. Please set out those total costs/revenues for the years 2015-2020.

Response:

The specific activities that are undertaken by North Bay Hydro Services Inc. include equipment rentals, (water heaters, furnaces, air conditioning, etc.) and the operation of three generator facilities in the community. The activities of NBHS are irrelevant to this application.

With regards to the shared services that are relevant, those that are provided to NBHDL and vice versa, are explained in detail on pages 63-65 of Exhibit 4. Table 4-31 provides a summary of costs/revenues for 2015-2021. Tables 4-32 through 4-38 provide details of all transactions for 2015-2021.

CCC-31

Reference: Exhibit 9, page 3

Preamble:

The evidence states with respect to Account 1509 (Impacts Arising From the COVID-19 Emergency) NBDL fully supports the OEB in its development of accounting guidance and continues to monitor all incremental costs related to this account throughout 2020.

Question:

Please set out all incremental costs incurred in 2020 related to the pandemic and an estimate for 2021.

Response:

Please see 2-Staff-11, 4-Staff-42, and 4-Staff-51.

CCC-32

Reference: Exhibit 9, page 18 – Account 1592

Preamble: None.

Question:

Given the amounts recorded in Account 1592 related to Bill C-97 and the Accelerated Investment Incentive are simply related to timing differences in the CCA deductions, would NBH be willing to credit 100% of these amounts to ratepayers? If not, why not?

Response:

Please see 9-Staff-73.

RESPONSES TO INTERROGATORIES FROM D.D. RENNICK

Exhibit 1 - Administration

1 – DDR – 1

Reference: Page 13-7

Preamble:

Almost immediately after the leadership change, NBHDL participated in a competitive process for the acquisition of Espanola Regional Hydro (ERH)

Question:

Please explain the reasoning behind pursuing this acquisition and adding more work load if as suggested the operation was already operating in an extremely lean fashion and also how this acquisition will make rates more affordable for current customers

Response:

The acquisition presented an opportunity to share the fixed overhead costs associated with administering a local distribution utility over a larger number of customers, thereby bringing benefits for both NBHDL and ERHDC customers.

These benefits are not expected to begin accruing until after the closing of the Phase 2 transaction as further discussed in the MAADs Application (EB-2019-0015).³

³ EB-2019-0015 North Bay (Espanola) Acquisition Inc. MAADs Application, Sections 7 and 8, dated January 16, 2019.

1 – DDR – 2

Reference: Page 13-5

Preamble:

With the onset of social media integration into LDC operations, and increased importance placed on customer engagement, in late 2019 NBHDL created the role of Communications Officer.

The position of communications officer was not included in the 2015 COS application. This is another example of actions taken by the Applicant which fall into the category of asking for forgiveness rather than asking for permission. This tactic impacts rates and the effectiveness of these costs of service applications. The Applicant suggests that this position will increase its future success with meeting customer expectations and addressing their need and preferences.

The increased use of social media to replace contacts previously made by phone calls and correspondence is merely a change in the method of interaction by customers. This is supported by the fact that phone calls from customers which numbered 39,000 in 2015 dropped to 19,000 in 2019. These numbers would not appear to support additional resources in the form of a communications officer. It is also difficult to suppose that foregoing this “investment” would be a major setback to NBHDL’s future success with meeting customer expectations and addressing their needs and preferences.

Question:

Please provide a list detailing the specifics of customers’ expectations, needs and preferences that will be negatively impacted if this position were eliminated? Also, please the criteria for and method of enumerating the phone call statistic.

Response:

NBHDL takes exception to the implication in this question that the addition of the Communications Officer position in 2019 was a “tactic” [...] “which fall into the category of asking for forgiveness rather than asking for permission.” Casting aspersions such as these is neither productive nor informative in the OEB’s evidence gathering process.

The Communications Officer position was added in response to OEB regulatory expectations around **enhanced** customer engagement as well as an identified business need for new skills for the organization to be able to properly communicate with customers using modern communication channels.

The position is involved in **all** of the specific customer engagement endeavours outlined in Exhibit 1, pages 76 through 101 in some capacity, and thus elimination of this position would negatively impact each of these endeavours.

In addition, NBHDL would no longer have a dedicated resource to improve and formalize customer engagement, handle annual reporting requirements of the regulator, and most importantly, to coordinate education and interaction among all customer classes, increase social media presence and awareness, ensure website content is current, creative, and relevant, and to promote NBHDL and its programs in the community.

The following initiatives will be negatively impacted, and likely significantly scaled back, if this position were eliminated:

- Social media presence: NBHDL manages multiple platforms that interact directly with customers, including 2,454 on Facebook and 1,788 on Twitter. The monitoring, updating, and direct interaction

with customers occurs seven days a week, throughout all hours of the day. NBHDL also uses these tools to keep customers informed of both planned and unplanned outages. This engagement also involves a level of decision-making autonomy in terms of the ability to resolve customer issues in real-time. These requirements dictate that this position remain in management and cannot be handled by employees within union positions. Social media presence will be halted with the elimination of this position.

- NBHDL website: NBHDL's website requires significant improvements as well as on-going updates and management to ensure content stays relevant and ease of access for customers evolves. Over the years, not having a specific management resource assigned to this task has resulted in little or no attention to updating the website.
- New platforms: customer engagement throughout the rate application has shown that customers are looking for more online/real-time platforms, including improvements to the customer portal and a new mobile app. Customers want interactive tools to provide better access to information, in real-time, that allows NBHDL to create stronger customer interaction and deliver on customer needs. These initiatives will not move forward, and cannot be continually managed, without this position. Online platforms will increase the need for online availability for support on how to use the platforms.
- Increased engagement with Commercial and Industrial (C&I) customers: this position has been tasked with establishing long-term relationships with these customers to enable NBHDL to better understand their needs and meet their expectations. Included in this engagement are the following (as explained in Exhibit 1, page 96):
 - o Face to Face meetings with the top 10 customers annually, with follow-up meetings to address needs and preferences communicated;
 - o Annual Focus group created from a selection of GS<50 and GS>50 customers to provide C&I feedback that is very hard to gather through traditional means;
 - o An open forum annual meeting with customers/contractor and developers. In an effort to reach all stakeholders, the focus of the event will shift between C&I customers one year to contractors and developers the following year. The event will simulate a half day conference, with a large emphasis on Q and A, and the education of relevant topics and initiatives; and
 - o Developing a stronger and ongoing relationship with C&I customers and local contractors and developers is a main priority for NBHDL moving forward.
- Media and public relations: the CO position is responsible for all media inquiries. NBHDL receives media inquiries on a weekly basis and prior to the CO position, these requests were handled by different management personnel diverting resources away from the day-to-day operations of the business.
- Community stewardship: NBHDL believes that it must enhance its stewardship in the community and improve interactions with all of its partners. This role will be critical in enabling and fostering this initiative.

NBHDL believes that improving continual engagement with customers will enable the company to provide the education, support, and enhancements that customers desire. It is imperative that the company build better relationships with our customers and in order to do so this position is critical.

NBHDL has an enterprise-grade phone system that allows for call metadata to be captured and reported on in accordance with OEB requirements. NBHDL is unsure where the reference to 39,000 calls is from as the 2015 inbound call volume was approx. 29,000. Building an effective social media presence is extremely important; it helps us to connect with our customers and create positive interactions. It allows us to push

out or exchange general information with the masses in a time-effective manner. Social media platforms are a different avenue for interaction, but do not replace the personal and direct nature of phone calls and correspondence. Customer service staff continue to receive phone calls and handle email correspondence, with especially high volumes of both during periods of active service disconnections. Customer service staff are devoting more time to each customer; explaining continually evolving customer service rules and programs, helping them navigate our expanding online processes and addressing whatever concerns they may have. Customer service staff are doing more outreach via outbound calling to offer support and explore flexible payment arrangements to avoid the collections process. The proposed introduction of a new online chat function will further support an improved customer experience. The overall customer experience is directly impacted by the CO role and will only serve to improve customer service as we adapt and expand our services to meet their needs. The CO role provides a central figure to control customer facing messaging to ensure consistent verbiage and to make certain aspects of the business easier to understand to the community.

1 – DDR – 3

Reference: Page 19-14

Preamble:

Two additional FTE's are being requested as part of this application to round out the team and to further ensure the achievement of results.

Question:

What evidence exists that the “team” is not presently rounded out and what specific results will not be achieved if these two FTE’s are not hired?

Response:

NBHDL is an extremely lean organization, with very little middle management. This creates ongoing operational risks that need to be managed as a direct result of having a lean workforce as outlined in Exhibit 1 at page 23.

These operational risks include:

- Inability for workforce to perform all required work; timelines missed, quality of work diminished, or work not done at all
- Staff redundancies are limited or non-existent leading to lack of coverage and business continuity issues in the situations of sudden employee loss

Failing to properly address these risks is not a realistic option. The status quo is driving staff so hard it will lead to employee burnout and turnover issues triggering an even worse situation.

In this context, management considered and ultimately rejected an option that involved extending work timelines, accepting a lower quality of work or work not being completed at all. This was not an acceptable approach to managing NBHDL in management’s view.

As a consequence, management decided to hire additional staff to relieve workload, create redundancies and support current employees.

Having compared its operations with other local distribution companies (“LDCs”) of similar size, NBHDL considered the addition of the following six positions to align with the management structures of other LDCs and fill NBHDL’s resource gaps:

- Purchasing Manager
- Risk Management Officer
- Controller
- Safety Coordinator
- Executive Assistant
- Departmental administrative support positions⁴

However, NBHDL saw the importance of balancing affordability and operations of the company and after further assessment, decided to limit the changes to only two new positions – Administrative Assistant and Operations Coordinator.

⁴ Exhibit 1, Section 2.1.7.5.3 Affordability, page 99, dated January 5, 2021.

The Administrative Assistant will assist the entire management team, with time allocated to Human Resources ("HR").

As explained in Exhibit 4 of the Application⁵, the senior management and executive management teams currently do not receive any assistance with their administrative tasks. If the Administrative Assistant position is not hired, then the senior management executive teams will have to spend a significant amount of their time on administrative tasks, which will distract them not only from their areas of expertise, but from identifying inefficiencies and areas of improvement, providing short-term planning and oversight, encouraging and fostering employee growth and development, and, most importantly, long-term strategic planning and execution. These are the areas that drive the most benefit to the company and enable the business to move forward to continue to successfully meet provincial, regulatory, shareholder and customer needs and requirements.

In addition, if the Administrative Assistant position is not hired, the Manager, HR and Administration who is currently the sole HR and administrative resource will continue to be inundated with the demands of the HR department, the needs of the President and CEO along with company wide administrative requirements. This has and will continue to result in a stalling of HR work, such as new systems and the revision of HR policies and processes, if the Administrative Assistant position is not hired.

In fact, there is an administrative resource gap that can support two FTEs, but NBHDL combined the work into one role as a continued effort to mitigate costs.⁶

As for the Operations Coordinator role, it has been created to address the current gap that exists in the management of the Operations Department in areas such as purchasing, planning, project management, risk management, and safety.⁷

The Operations Department is the largest department within the organization and is led by only two management employees: an Operations Manager and an Operations Supervisor. The focus of these employees' center on the delivery of the annual \$6M-\$7M capital program and \$3-4M operating programs, which involve handling a tremendous volume of work and demands of constructing and maintaining an electrical grid that powers over 24,000 customers.⁸

Given the amount of work and comparing NBHDL's organizational structure to other utilities of similar size, NBHDL can hire up to four additional resources for this resource gap, such as a Safety Officer, a Purchasing Manager, and multiple levels of supervision within the Operations Department. However, to mitigate costs, NBHDL created one position to cover all areas.

If the Operations Coordinator role is not hired, there will be continued operational risk of having a lean workforce and management team. Risk assessment, safety improvement, improved purchasing processes, identifying construction productivities and efficiencies and overall improved coordination can not come to fruition without this resource and the company is vulnerable in the event of an unexpected absence. Having this position in place in parallel with the resource that is proposed for succession allows for the opportunity to gain the tremendous knowledge of the two senior employees set to retire.

⁵ Exhibit 4, 2.4.1.1.2 New Resourcing Requirements, page 9, dated January 5, 2021.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

1 – DDR – 4

Reference: Page 20-3 to 34-1

Preamble:

The management of risk is critical in delivering on our mission to distribute...

The risks referred to in the Handbook for Utilities focuses on managing risks which will be detrimental to customer benefits such as the risk of interruption in the delivery of electricity. The Applicant appears to have interpreted this to mean risk that the regulated rate of return may be reduced by the OEB and a reduction in the rate requested rate increase.

The fact it is considered a risk if OEB mandated the consolidation of LDC's is noteworthy since the Applicant applied consolidate NBHDL with Espanola Hydro in the near future and guaranteed \$8 million dollars of customers' money to finalize the deal.

The information in these 13 pages does little to inform the subject of the rate increase requested. This application contains a number of statements in support of this rate increase which are merely self-serving and not evidentiary. They appear to be included for the sole purpose of replacing solid arguments for requested rate increase.

This is a comment by the intervenor- no response required.

Question: None.

Response:

In accordance with Rule 26.02(d) of the OEB's *Rules of Practice and Procedure* (the "**Rules**"):

Interrogatories shall:

[...]

(d) contain specific requests for clarification of a party's evidence, documents or other information in the possession of the party and relevant to the proceeding

This interrogatory fails to meet the basic requirement of Rule 26.02(d) of the Rules. Typically, it should be removed from the record. The interrogatory process is not an appropriate forum to engage in argument with the applicant.

However, NBHDL recognizes that you are acting as a self-represented customer and will attempt to address the points you raise in this interrogatory as best it can.

We assume that you are referring to the OEB's Handbook for Utility Rate Applications, last revised October 13, 2016 ("Handbook").

In the Handbook at page 10, it states the following:

"In reviewing utility proposals in rate applications, the OEB's key considerations are:

- A focus on cost effective delivery of outcomes that matter to customers*
- **Robust planning, informed by customer preferences and driven by benefits to customers, with appropriate pacing and prioritization to control costs and manage risks***
- Performance assessments which analyze the level of continuous improvement and a utility's ability to plan and execute plans" (emphasis added)*

Pages 20-34 of Exhibit 1 outline the relevant risks and mitigation measures that NBHDL considered as relevant in informing its business plan and consequently is directly relevant in considering this rate application and the associated rate increase.

1 – DDR – 5

Reference: Page 34-12

Preamble:

NBHDL's operating program in 2021 will see an increase over previous years due to the following main drivers:

Increase in staff complement to address the issues created by a lean workforce; specifically, worker exhaustion, the lack of critical resourcing redundancies, the inability to complete additional work that drives efficiencies and productivity gains, the under-utilization of resource skills and the increase of risk

No evidence has been presented the workforce is lean and a statement to this effect does not provide any evidence that the information is factual. In 2004 NBHDL was operated by 35 employees with an annual payroll and benefit cost of \$3,039,403. This application requests an employee contingent of 53 with a payroll of \$6,624,610 which represents an increase of 51% and 118% respectively. In other words the employee contingent is 151% higher than it was in 2004 and the payroll is 218% higher than in 2004. Meanwhile the connection base has only increased from slightly over 23,000 to slightly over 24,000.

Question:

Please supply a justification for this continual increase in the workforce and in particular the pay rates when the service provided and the number of connections has remained virtually unchanged?

Response:

NBHDL has been unable to identify or verify the 2004 information asserted in this question.

In addition, 2004 is not a realistic year to compare against 2021. Not only was it 17 years ago, but it occurred within a period of significant organizational upheaval between 2001 (51 employees) and 2006 (42 employees) that saw GMs terminated, a major union strike and numerous key union and non-union employees leave. At the low period, late 2003 and early 2004 – the utility was very close to collapsing.

Instead, we invite you to refer to Exhibit 4, Section 2.4.3.2 for a detailed discussion of workforce planning and employee compensation at NBHDL, inclusive of a year-over-year variance analysis from the last rebasing year (2015) to the test year (2021).

There are a number of cost drivers that affect NBHDL's business beyond changes in the number of connections. These include inflation, improving technologies, evolving customer expectations, continuously changing regulatory and public policy requirements, an aging workforce and the need for succession planning, responding to the risks identified in Exhibit 1, among others.

1 – DDR – 6

Reference: Page 34-18

Preamble:

Early succession planning for the critical roles of Operations Manager and Operations Supervisor. NBHDL has included an additional position that will cover the retirements of both positions through the 5-year horizon of this application. This will help ensure the transfer of knowledge and ensure competency in the positions when the current employees retire taking over 60 years of knowledge and experience with them.

Question:

What percentage of the current salaries and benefits of the current Operations Manager and Operations Supervisor are included in the current rate calculation? How long is the estimated time until these two employees retire?

Response:

100% of the current salaries and benefits of the current Operations Manager and Operations Supervisor are included in the current rate calculation.

Both employees are **eligible** to retire over the 5-year time horizon, however ultimately the decision of whether or not to retire once eligible is one that the individual employees will make. Neither individual has communicated a specific date to management at this time.

At this time, it is unknown when these employees will retire.

In this context, NBHDL has included one full-time employee in the budget to coverage succession training for both positions which will enable the business to allow for sufficient time to mentor/train with the flexibility to address each position based on the circumstances of each employee. This proposal avoids burdening the customer with the cost of two full-time positions to cover succession for each position separately.

1 – DDR – 7

Reference: Page 34-23

Preamble:

Increase in IT related costs to fulfill new IT mandate to maintain its systems with a determined effort: ensuring asset lifecycle is managed, availability is high, systems are secure from inside and outside threats, and services delivered on-time, on-budget, and on-quality

Exhibit 4 - Page 7-14 quotes from the Communications Security Establishment and discusses the cyber threat that Russia- associated actors pose to the supply of electricity and the fact that Iranian hacking groups have targeted industrial control systems in various countries not including Canada.

Question:

I would be particularly interested in how the Applicant feels this information, which appears to be as bit of fear mongering, is applicable to a small LDC in a small city in Northern Ontario. In any event is NBHDL suggesting that a could spend enough money on security to thwart a determined group intent on disrupting operations here in North Bay?

Also in Exhibit 4 - Page 7- 6 the Ontario Cyber Security Framework provided the OEB with information about cyber security and privacy maturity which included a questionnaire designed to assess the level of security an LDC might reasonably be required to initiate.

I would be interested in the score of the Applicant obtained following the completion of that questionnaire.

Response:

NBHDL is not immune to cybersecurity risk.

In April 2016, the general manager of the Lansing Board of Water and Light, in Lansing Michigan, received an email from a hacker informing him that “You’ve been locked out of your systems and if you want the code to get back in, you have to pay a ransom.” (Wall Street Journal – How a U.S. Utility Got Hacked – December 30, 2016). There have been numerous other similar stories of small town utilities being targeted in cyber attacks and being forced to pay a ransom, or worse, losing control of their customers’ personal information.

While cyber security is an OEB mandated program where compliance must be reported on an annual basis, it is also best practice to ensure the security of our systems and data from bad actors, whether they be internal or external threats. Cyber threats are not limited to large or small companies, or solely focused on the utility industry. Our service is vital to the citizens of North Bay: we need to make every effort to make it difficult for bad actors to breach our systems and disrupt our services. In addition, we are custodians of a large volume of customers’ personal information: we must make every effort to make it difficult for bad actors to breach our systems and steal this information.

The cyber threat is an ever-evolving situation. No one is immune and there is no absolute fix. As we have seen recently with Microsoft Exchange and SolarWinds breaches, it can potentially be extremely impactful. And most hackers do not specifically target any industry or company. They invariably “knock on as many doors” as they can until they get an answer. At that point, they try to determine the type of system they have access to and exploit known vulnerabilities. Sometimes their motives are malicious (like in a ransomware or DOS attack) or voyeuristic (just to see what is out there) or capitalistic (smash-and-grab).

In order to reduce the risk of “answering the door”, we use due diligence to put a program in place to ensure known vulnerabilities are addressed, monitor for suspicious activities, make the path to critical systems difficult to get to, secure systems at the source, and ensure we are prepared in the event we have a cyber incident.

The OEB has developed a “Cyber Security Framework” to help LDC’s address cyber security concerns. As a framework, it gives suggestions and best practices to put a program in place. Many LDCs are not suitably staffed to develop their own so having the OEB framework gives them base to work from.

Strategic components

In North Bay Hydro’s case, we have developed our own Cyber Security Framework that works in conjunction with the OEB’s framework that identifies critical infrastructure, best practices, and roles. It explains “how we will work” with respect to cyber security: improvements to the current security policies; implementation of controls (technical/process); response plans; Cyber-insurance requirements; awareness and training requirements; audits and assessments; and continuous improvements. The desired outcomes are defined as: having a return on investment of assets; ensuring integrity, reliability, and confidence in security systems and their processes; having measurable goals; and being compliant to OEB Cyber Security Regulations. This is a living document that is adjusted as our needs require.

In 2017, when we used the OEB “Governance Internal Audit Reporting Tool” (based on NIST standard), North Bay Hydro scored “at high risk” (later adjusted to “medium-high” as more refined definitions were added). This meant, in relation to known controls, North Bay Hydro was highly susceptible to cyber attack. A third-party vulnerability audit (performed by Cytelligence, a leading Canadian cyber security expert) revealed gaps and vulnerabilities and a remediation plan was put in place. As more controls were implemented, the 2020 evaluation has seen us move to a “medium-low” risk. We still have room to be better. A new cyber vulnerability audit in 2021 will give us a new baseline to identify gaps (old and new) and help us prioritize our efforts.

Operational Components

As well as addressing the immediate needs resulting from the audit, new tools were implemented to help manage the changing cyber environment. For example, the addition of an email spam filter ended up blocking over 60% of incoming emails, most being identified as spam (advertising, solicitation) and threats (malware, phish). In 2019, this was close to 20,000 emails that were blocked. Additional filters by country and by attachment extension were also added to limit exposure to known bad actors. As recently as March 1 2021, twenty malware incidents were stopped by these filters.

Using dashboards available to us today, we can monitor how well we are performing:

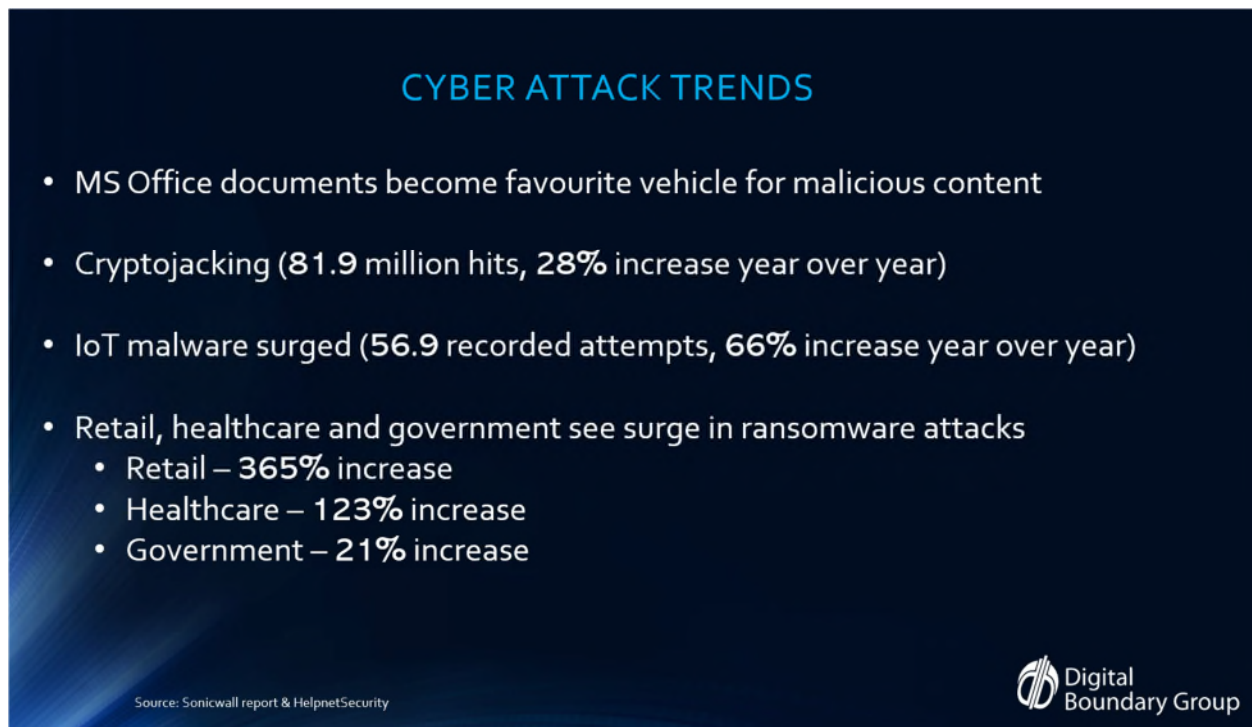
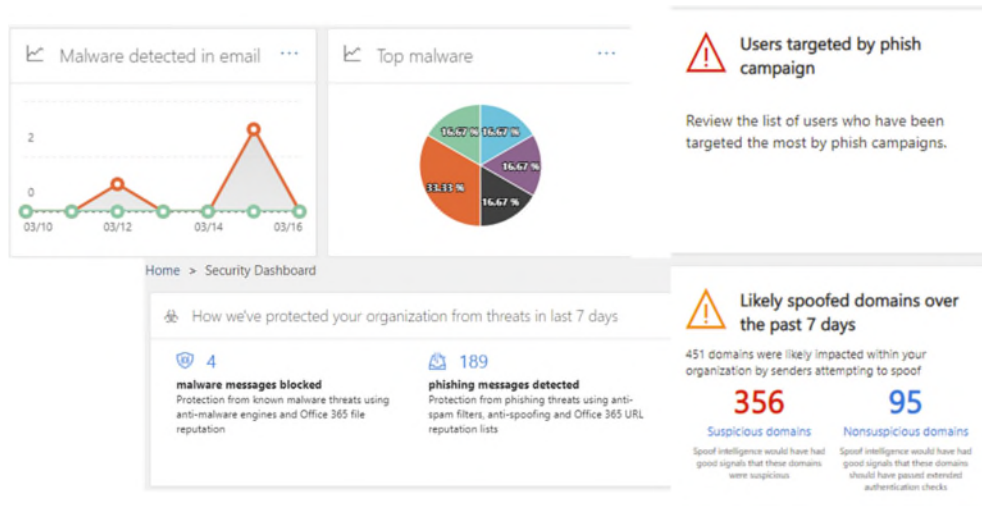


Figure 1: 2021 Cyber Trends

With the addition of centralized endpoint protection, we further reduced the number of possible issues by blocking access to over 1000 bad websites (in 2019), quarantining and eliminating existing bad files, and quickly detecting, isolating, and eliminating possible infections.

But our cyber protection systems can only stop known issues or use intelligence to detect suspected malicious incidents. End user cyber training was included to educate the end users on how to detect those new threats and how to deal with them. Monthly tests are executed and on-going communications are required to keep cyber security on the forefront. In fact, despite the cyber security controls, end users had

detected 2 phishing attempts that made it through in the past week (starting March 15 2021). IT personnel have acted on these to block them permanently.

Network redesign has been a much larger effort. The design is to ensure the right resource is accessible for the right person using the right device in the right location. Network segregation isolates internet-facing systems from internal only systems. It also ensures that devices that only need to talk to specific services (like scan-to-email) can only do that function and not be allowed to browse the network. Not all employees need access to all resources so security is applied and reviewed to make sure what is in place still makes sense. Security is not put in place to cripple the business from being able to execute their tasks but it cannot be wide-open: this can lead to internal abuse and external threats.

Additionally, firewall rules were tightened to restrict external actors from finding our internet-facing resources. We average over 150,000 daily “knocks on the door” that we do not allow a response to, effectively hiding us from the internet. Internal security was also enhanced by increasing password lengths and complexity, and administration and user functions were segregated.

Interface	Rule#	Hits	Source	Destination	Service	Action
Outside_Int	2	74,370	BadPublicTraffic	any	IP ip	Deny
IT_MANA...	12	50,230	any	LocalOnly	IP ip	Deny
Servers	9	31,690	any	LocalOnly	IP ip	Deny
IT_MANA...	12	15,219	any	LocalOnly	IP ip	Deny
Workstati...	13	15,189	any	any	IP ip	Deny

Figure 5: March 17 2021 snapshot of blocked traffic from outside sources

Finally, having personnel trained in cyber monitoring, identifying threats, and understanding the remediation process is key in reducing the impact to individuals, customers, and the business, in general. Having built “playbooks” that allow us to evaluate and document threats has given us a solid foundation to tackle these events. They include communication plans, bringing in outside resources, and protection of existing systems. While we may not be able to stop all threats, we are better prepared to act if we are compromised. And new tools are always being made available and improved to better protect us.

Specific comment on state-sponsored hacking

According to Cytelligence, a leading Canadian cyber security firm, Canadian companies still fall short on cyber security. “[Ed Dubrovsky, managing director at Cytelligence has talked] to many SMBs [a category that North Bay Hydro falls under] on a regular basis and tell them they need to do all these things, and they go, ‘Why, nobody cares about my data.’ And [his] question to them is. ‘Do you care about your data?’ Your data means a lot to you.” Source: <https://cytelligence.com/resource/organizations-still-fall-short-on-cyber-security-canadian-breach-response-expert-tells-privacy-conf/>

And our data means a lot to us. By protecting our systems, we are protecting our ability to deliver power to our customers in a safe and reliable fashion. And the type of bad actor is irrelevant. The example in Exhibit 4 was being illustrative of the threat that is out there, not the driver for having a robust cyber security program. It does not matter if it is a state-sponsored entity, a curious high-school student, or a disgruntled employee. Any threat to our systems should be, and is, a priority. The investment in cyber security outweighs the risk and possible disruption to the business that a major breach may cause, which the North Bay Hydro customers would ultimately pay for.

1 – DDR – 8

Reference: Page 35-1

Preamble:

Increase in costs to update important policies and processes in HR, safety, and customer service that have fallen out of relevance or are extremely outdated. These are activities that require on-going attention.

Unless it is suggested that employees who would be completing these updates are working at 100% capacity 100% of the time, this activity surely could be accomplished at when they are between other activities.

Question:

Please provide the amount this increase in costs and how they are being calculated.

Response:

As evidenced in Exhibit 4, Table 4-3, Table 4-10, Table 4-11, Table 4-12, Section 2.4.1.3, Section 2.4.3.1.1, and Section 2.4.3.1.2, the 2021 Test Year includes \$150,000 related to the above referenced statement. These costs are for incremental external consultants only; the time that internal resources will spend on these initiatives, including working with various experts, is incorporated into regular compensation.

NBHDL utilizes consultants for a variety of reasons, but primary among them is to ensure that we're tapping into experts in the fields to ensure that we're incorporating best practices, both within and outside of our industry, in our policies and procedures. NBHDL staff will be heavily involved in these projects, however, it is important for someone outside our walls to stress test our outputs. Consultants have the right expertise, provide objectivity, can teach, and are utilized only when needed. NBHDL's staff are extremely skilled in what they do, however, it is difficult to assess gaps or problems that we can't see or don't know about.

As evidenced in Exhibit 4, page 12, NBHDL has included the following initiatives in 2021: comprehensive update of NBHDL's Conditions of Service, the updating and formalization of Health and Safety policies and procedures, a review of the NBHDL's compensation plan, and costs required to address the long-term review of NBHDL's building and future options. In general, consultants can range from \$150-\$300 per hour, and based on this range, NBHDL could be able to allocate up to 8 weeks on a project (ex; 8 weeks x \$150/hr = \$50,000). It is expected that each area will have differing requirements and costs. For example, the updating and formalization of Health and Safety policies will involve a comprehensive audit of 91 policies, a gap analysis to identify what's missing, the anticipated creation of new policies, and an overall framework that will be put into place going forward requiring annual updates. Likewise, there are over 220 Corporate policies that require a complete overview with most not updated since the late '90's. The comments above appear to infer that staff have ample down time to take on these types of duties, however, in addition to the day-to-day operations of the business projects like these are significant undertakings and require external support. See also the response to 1-DDR-3 relating to the operational risk of running an extremely lean business.

As stated in Exhibit 4, page 12, although efforts have been made over the last five years to address outdated policies, procedures, and processes, and to implement new frameworks that foster improvement, drive efficiency, enhance safety, create accountability, and align NBHDL with emerging trends and best practices, these types of initiatives have not progressed due to the leanness of the resource complement and the lack of available dollars in the OM&A budget. It is critical that NBHDL is able to move these initiatives forward.

1 – DDR – 9

Reference: Page 35-4

Preamble:

Increase to tree trimming costs to ensure the completion of a 5-year cycle in 5 years (Proposed modification of cycle length from 4 years to 5 years in 2021 to reduce annual increase).

In Exhibit 4 Page 37-6 it is indicated that NBHDL is now in year 10 of what was initially intended to be a 4-year cycle in 2015. On Page 39-22 in Exhibit 4 it is indicated that in 2021 NBHDL will be in the eleventh year of what was originally intended to be a 4-year cycle.

Question:

This statement is unclear. Please explain what that statement means in terms of understanding the point being made.

Response:

The completion of a Vegetation Management cycle is defined as when every area in a LDC's service area containing overhead conductors has received vegetative maintenance. This is the maintenance activity of clearing vegetation away from high voltage energized conductors, also referred to as line clearing. When a Vegetation Management program is described as a 4-year cycle, it means that the intent of the program is to perform line clearing in every area of the service territory in 4 years. In NBHDL's case, this is the entire City of North Bay.

In 2010, NBHDL intended its Vegetation Management program to be a 4-year cycle. This was the same plan in 2015.

However, based on decisions that had to be made as a result of the OEB settlement process which significantly cut the OM&A budget proposal, and all of the issues that are identified in Exhibit 4 (Section 2.4.2.12), NBHDL is now (in 2021) in year 11 of the program that began in 2010. When the evidence at Exhibit 4 at page 37 was written (in 2020), NBHDL was in year 10 of the program that began in 2010.

Under a 10+ year cycle, NBHDL has a significantly higher safety risk for employees and the public and a higher risk of decreased reliability of service. In this 10-year cycle scenario, clearance standards are not being met and trees are growing into the dedicated space that should be reserved for the high voltage distribution lines.

To minimize the funding increase requirement to get to a 4-year cycle, while maintaining the safety and reliability priorities, NBHDL is proposing to increase the vegetation management cycle to 5 years. With the increased funding requested as part of this COS application, NBHDL plans to complete the 5-year cycle by 2026.

1 – DDR – 10

Reference: Page 35-9

Preamble:

In addition, NBHDL must pay negotiated union wage increases and follow management compensation framework

Question:

Since NBHDL is the negotiator involved in any union wage increases, it follows naturally that they must pay those negotiated pay raises. How does this statement provide evidence that these pay raises are necessary or warranted?

Rather than follow management compensation framework, how does that framework support management compensation levels based on the actual needs of the business?

Response:

NBHDL believes that it is important to design a competitive and equitable compensation to attract and retain qualified personnel in an industry that is very competitive for skilled resources.

NBHDL recognizes that it must offer salaries that are competitive in the local market and LDC environment but also must be reflective of the budgetary and business constraints of operating in a regulated environment.

Unionized staff's labour wages and benefits are adjusted annually based on negotiated percentages as per the Collective Bargaining Agreement. The negotiation process focuses on other recent settlements in neighbouring LDC areas and LDC's of similar size. Through benchmarking, NBHDL is able to assess what is a reasonable increase. Overall, the average of the wage increases are 1.9% per year over the five-year term of April 1, 2018 to March 31, 2023.

The management compensation framework forms part of the basis to address the actual needs of the business.

NBHDL hires individuals to address the actual needs of the business, for reasons such as operations, resourcing complement, to address requirements for additional resources, or to fulfill succession plans. Once it has identified those needs and positions required, NBHDL would then evaluate appropriate compensation accordingly.

For management compensation, NBHDL uses the Hay system, which is an industry standard job evaluation system used to develop and maintain pay structures by comparing similarities and differences in the content and value of jobs. Through benchmarking surveys and expert consultants, NBHDL is able to ensure that its compensation is market competitive and can help attract and retain employees to fulfill the needs of the business. The majority of management employees are below the 50th percentile or median (mid) of their respective salary ranges at NBHDL.

1 – DDR – 11

Reference: Page 68-21

Preamble:

All compensation is included whether expensed or capitalized and for the 2021 Test Year this represents a \$1,103,704 or 20.6% over the six years since the 2015 Board approved.

The increase in compensation of 20.6% follows a 19.6% increase from 2010 to 2015. The overall wage increase in the 11 years since 2010 is 44.6%. That represents a 4% increase during that period.

When one looks at management compensation only, the figures are more troubling. The overall management wage burden since 2010 has risen by 83.7% and the average wage per management employee has risen by 55.4%.

Wages now represent 75.5% of the total OM&A budget and this fact identifies the major cost driver in the delivery rates.

Neither the electricity delivery service required by customers nor the method of delivering that electricity has changed in 60 years. The company has a monopoly on the service. Obtaining customers is not a responsibility or concern of management. Prices are regulated and guaranteed by government authorities. In the case of NBHDL, the customer numbers have not changed in decades and not only that are probably for the most part the same customers.

Intervenor comment – no response required.

Question: None.

Response:

In accordance with Rule 26.02(d) of the OEB's *Rules of Practice and Procedure* (the "**Rules**"):

Interrogatories shall:

[...]

(d) contain specific requests for clarification of a party's evidence, documents or other information in the possession of the party and relevant to the proceeding

This interrogatory fails to meet the basic requirement of Rule 26.02(d) of the Rules. Typically, it should be removed from the record. The interrogatory process is not an appropriate forum to engage in argument with the applicant.

However, NBHDL recognizes that you are acting as a self-represented customer and will attempt to address the points you raise in this interrogatory as best it can.

NBHDL is unable to confirm the 44.6% calculation. However, assuming the calculation was a comparison between 2021 Test Year compensation levels and 2010 Board Approved levels, the overall wage increase since 2010 is 44.3%. To say that it is an average 4% increase during that period is inaccurate. The average actual increase per year is 3.39%, utilizing a compound growth rate. If comparing to 2010 Actuals, the average actual increase per year is 3.67%, utilizing a compound growth rate.

Over the 11 years, from 2010 to 2021, there have been increases in wages for all staff in NBHDL. However, even with these increases, which account for inflation, NBHDL's non-unionized staff has compensation levels below the median market rate according to the compensation management system which is managed

by external expertise. To ensure that its compensation and FTE counts are comparable to market, NBHDL also benchmarks against other similarly sized LDCs and annually participates in and reviews the MEARIE Management Salary Survey of Local Distribution Companies. With respect to management compensation, NBHDL follows its management compensation framework that is competitive and standard within the industry. In an effort to continuously improve, a review of management compensation is scheduled to be completed in 2021.

NBHDL would like to point out that wages do not represent 75.5% of the total OM&A budget as stated in your interrogatory. Although you have not shown how this number is derived, we believe that you have taken the total labour wages and divided it by the total OM&A, in order to achieve 75.5% (i.e. $\$6,463,890/\$8,565,938 = 75.5\%$). However, that is an incorrect representation of the percentage of wages in the total OM&A budget. As NBHDL's staff performs capital work as well, the total labour wages would include wages for capital work.

The correct calculation would be dividing OM&A by non-capital wages, which equals to 53.1% (i.e. $\$4,545,615/\$8,565,938 = 53.1\%$). Therefore, the wages represent 53.1% of the total OM&A budget and not 75.5% as alleged. In addition, it is important to note that this 53.1% increase is reflective of 4 new FTEs since 2015.

The percentage of increase in compensation cannot simply be viewed in isolation but is much more informative when put into context.

As explained in section 2.4.2.4 Employee Compensation in Exhibit 4, the changes in year over year employee compensation in OM&A is a result of increases in employee compensation including wages and benefits, headcount fluctuations, resourcing required to deliver OM&A programs and changes in the allocation of labour hours between OM&A and capital programs as a result of differing annual demands.

For more details on the changes, a year over year variance analysis can be found in Section 2.4.3.2.3 – FTE, Wages and Benefit Variance Analysis in Exhibit 4 and will not be repeated here.

The statement "Neither the electricity delivery service required by customers nor the method of delivering that electricity has changed in 60 years" cannot be further from the truth. There have been significant advancements in the electricity industry over the past 60 years due to the improvements of technology, implementation of control and monitoring system applications such as SCADA, digitization, changes in regulatory and public policy requirements, evolving customer expectations, among others. NBHDL's business continues to evolve with the many changes, which means the need to hire the right resources carry out the various tasks. For example, recent ideas from customer engagement involve smart phone application development, providing more self-service on the website, and making better use of social media. These are genuine needs and expectations of customers and are services NBHDL is expected to provide now, that did not exist 60 years ago.

Although it is true that NBHDL has a regulated monopoly for distribution services, ensuring that customer needs and preferences are met is a key responsibility and concern of management. Utilities are expected to develop a genuine understanding of their customers' interests and preferences and reflect those interests and preferences in their business plans. NBHDL demonstrates this through extensive customer engagement activities and by providing services in a manner which is responsive to customer preferences. This requires financial and human resources.

1 – DDR – 12

Reference: Page 77-22

Preamble:

Customer engagement opportunities often occur as a result of operations and an average of 10,000 customers walk in to the NBHDL office on an annual basis for service.

Question:

This number has decreased from a reported 15 to 20 thousand in 2015. This decrease to ten thousand customers would still amount to an average of 20 customers per day based on 50 weeks and five days per week. How does NBHDL keep track of this statistic?

Response:

NBHDL logs customer interactions in its CIS system using unique codes. Based on this system, NBHDL is able to run queries and extrapolate the data to determine approximate customer walk-in values.

1 – DDR – 13

Reference: Page 100-26

Preamble:

Although it is NBHDL's assertion that all positions would benefit the company greatly, in the balancing act of affordability for the customer and forward movement of the company, the compromise down to only two new positions was made.

It is obvious that requesting a hire of two people would keep rates lower than a hire of six people. This comparison fact does not support the request for two new hires.

Question:

Please explain what forward movement will benefit from these hires and how these hires are necessary for the delivery of electricity to the a customer base that is unchanged.

Response:

There are a number of cost drivers that affect NBHDL's business beyond changes in the number of customers. These include inflation, improving technologies, evolving customer expectations, continuously changing regulatory and public policy requirements, an aging workforce and the need for succession planning, responding to the risks identified in Exhibit 1, among others.

Please see Exhibit 4, pages 9-10, which provides background and details with respect to the Administrative Assistant and Operations Coordinator positions.

Please also see the response to 1-DDR-3 which provides additional information and discussions on these two positions.

1 – DDR – 14

Reference: Page 119-2

Preamble:

The NBHDL management team is incentivized based on four metrics, three of which are financially based. They are as follows:

- EBITDA
- ROE
- NBV

The management team sets the budget and then is incentivised when results show an improvement over budget. This arrangement seems to be open to exploitation. In addition, the metrics are all connected to one another and an improvement in one automatically means an improvement in the others.

It appears that these incentives are an artificial way to increase compensation over base rates.

Intervenor comment – no response is required.

Question: None.

Response:

In accordance with Rule 26.02(d) of the OEB's *Rules of Practice and Procedure* (the “**Rules**”):

Interrogatories shall:

[...]

(d) contain specific requests for clarification of a party's evidence, documents or other information in the possession of the party and relevant to the proceeding

This interrogatory fails to meet the basic requirement of Rule 26.02(d) of the Rules. Typically, it should be removed from the record. The interrogatory process is not an appropriate forum to engage in argument with the applicant.

However, NBHDL recognizes that you are acting as a self-represented customer and will attempt to address the points you raise in this interrogatory as best it can.

NBHDL's executive team bonus structure is based on quantitative performance on budgeted metrics of financial and safety performance with a formulated payout. There is little opportunity for “exploitation” using such a quantitative and formulaic approach.

This bonus structure was reviewed and approved by the NBHDL board of directors on March 17, 2016.

In addition to the information cited in this interrogatory, please also make reference to Exhibit 4, pages 40-41 for additional information about the executive bonus structure (including the 5% total salary cap on bonuses and scoring methodologies).

1 – DDR – 15

Reference: Page 122-9

Preamble:

NBHDL confirms that there are no incentives that formed part of the acquisition and amalgamation that represent costs that are included or are being proposed to be included in NBHDL's rate base and/or revenue requirement.

This statement is misleading. What the Applicant meant to say is that no costs are included in *this year's* rate base and/or revenue requirement. All revenue comes from rates and any revenue is supplied by the owners/customers of NBHDL

Question:

Please provide the total costs to date relating to the acquisition of ERHDC.

Response:

The statement is not misleading.

NBHDL understands that Mr. Rennick believes that the OEB's policies as it relates to the cost of capital of electricity distribution utilities are not appropriate. In addition, NBHDL understands that Mr. Rennick believes that NBHDL's legal right to earn a fair rate of return for its investments as dictated by numerous court decisions, including decisions of the Supreme Court of Canada, on the fair return standard is a legal principle that can be ignored at a whim. Wishing it does not make it true.

The total costs relating to the acquisition of ERHDC are \$376,152 and can be found in Appendix 2-H of the Chapter 2 Appendices under Account 4380. NBHDL funded these costs through retained earnings that it is legally entitled to earn – and is not and has not ever sought ratepayer funding for these costs.

Exhibit 2 – Rate Base

2 – DDR – 16

Reference: Page 179 – Facilities

Preamble:

The facilities expenditures entail general maintenance as well as a new yard fabric structure. It also includes a Building Master Plan. The purpose of this plan is to identify NBHDL's current and long-term facility infrastructure needs.

It appears as if NBHDL is presenting the replacement of the building as a fait accompli and intends to move ahead with the project without any outside input. Included in the reasons for replacement is the Covid19 situation which arguably a temporary condition. Improving efficiency suggests either lowering costs or doing more with the same resources not increasing space for more resources. North Bay has an abundance of empty space which would suffice if indeed there is a real need for a change in the facilities

Question:

Please provide the cost of the November 28, 2019 Induspec Building Condition Assessment report.

Response:

No decisions have been made regarding facilities and NBHDL is in the preliminary stages of its future facility plan. The Building Master Plan will be a rigorous data and need driven analysis that will guide the future facility needs of NBHDL. The initial step of this plan is to perform a Needs Assessment. Following this assessment, NBHDL will be able to evaluate various alternatives that would satisfy its needs requirements. These could include maintaining the status quo, reconfiguring the existing facility, purchasing or leasing another facility, constructing a facility on its existing property or on a new property. Performing a Needs Assessment at this time will give NBHDL an opportunity to take advantage of facilities or properties that could come up for sale or lease in the future providing better value.

The cost of the November 28, 2019 Induspec Building Condition Assessment report was \$7,175.

Exhibit 4 – Operating Expenses

4 – DDR – 17

Reference: Page 4-20

Preamble:

Approximately 60% of the requested increase in this application is related NBHDL's focus on properly staffing the utility in a manner that enables the company to meet the increasing needs and expectations of all its stakeholders: customers, the shareholder, and the regulator.

Customers and shareholders are the same people not different groups. Their numbers have not changed in the last decade.

Question:

Please outline the increasing needs and their respective estimated costs as well as the increasing expectations and their estimated costs.

Response:

There are a number of cost drivers that affect NBHDL's business beyond changes in the number of connections. These include inflation, improving technologies, evolving customer expectations, continuously changing regulatory and public policy requirements, an aging workforce and the need for succession planning, responding to the risks identified in Exhibit 1, among others.

NBHDL has engaged in extensive customer engagement to find out the needs of customers, details of which could be found in Section 2.1.7 of Exhibit 1. Specifically:

- NBHDL's Customer Service departments handles an average of 10,000 customers walk in to the NBHDL office on an annual basis for service, seeking to pay a bill, arrange a payment, or set up a new account or service and general inquiries. NBHDL saw the clear indication of a need for continued in-person service options, and as such, has maintained this service option combined with training all front office staff to deal with all manner of customer in-person issues. In addition, staff handled an average of 24,000 inbound calls per year between 2015 and 2019, and handled approximately 11,000 outbound calls in 2019. All front office staff are fully trained to handle all inquiries with the customer service call centre operating as a 'one-stop shop' for customers. NBHDL holds regular training sessions and weekly meetings to discuss best practices, programs and staff inquiries to ensure all customer service staff are prepared and empowered to serve the community. The estimated cost to maintain customer service, collections and billing \$931,904.
- NBHDL receives and completes 2,000-3,000 locates per year through an efficient process with Ontario One Call ensuring the customer is provided with accurate, timely information to keep them safe. The estimated cost to maintain this service is \$172,430.
- Customer demand work is another facet of customer service that NBHDL handles in its daily operations, which includes new services, service upgrades, increased transformation and servicing new developments such as subdivisions. The estimated cost to maintain this service is \$1,368,859.
- NBHDL offers cost-free site visits to customers, and provide information and education to aid in problem solving, such as those involving complex industrial conservation projects. Depending on the uniqueness of each customer's situation, costs for this service can vary. Customer interaction such as this is incorporated within the overall budget envelope and staff respond to requests upon

demand. On average, the estimated cost to maintain this service is approximately \$160 per visit. In 2021, the number of site visits is estimated to be 50 and the estimated cost is \$8,000.

- NBHDL participates in community endeavours, offering education surrounding tree-trimming initiatives. NBHDL implemented an education program designed to offer communication to all customers, with a bill insert once a year to discuss the vegetation management program. With respect to specific vegetation management operations 300-400 customers per year have door hangers delivered when they are in the general area that NBHDL will be completing tree-clearing operations; and face-to-face meetings are scheduled with 100-200 customers per year to discuss the scope of tree trimming on or in front of their property that will have substantial impact to them. In addition, NBHDL responds to all customer inquiries regarding vegetation management and additional discussions are held if the customer is impacted by the clearing program. In the case of customers who are directly affected, NBHDL works with the customer through site visits that include a sign-off accepting the proposed vegetation management work and will incorporate their feedback to find solutions that work for all. The estimated cost to maintain this service is incorporated into the overall vegetation management budget of \$773,437.
- NBHDL added a Communications Officer position to address increasing customer expectations on increased digital and self-service options, different communication methods regarding outages, new projects and general information, digital privacy and security, etc. This dedicated resource will help improve and formalize customer engagement, handle annual reporting requirements of the regulator, and most importantly, coordinate education and interaction among all customer classes, increase social media presence and awareness, ensure website content is current, creative, and relevant, and to promote NBHDL and its programs to the community. The Communications Officer will also be responsible for managing and delivering on the 2021 customer engagement initiatives as outlined in 1-DDR-2 with an estimated cost of \$164,820.

4 – DDR – 18

Reference: Page 13-24

Preamble:

The amount of change occurring within the business and the sector means that ongoing operational business and strategic planning is required. NBHDL is continuously adapting its business and strategic direction to better reflect increased customer expectations. Also from EB-2014-0099: NBHDL also believes that the amount of change occurring within the business and the sector means that ongoing business and strategic planning is required.

Question:

The theme of change as a cost driver has been suggested in previous NBHDL applications. Please detail the changes are occurring in delivering of electricity that constitutes a cost driver? Also, address the same question regarding how changes in customers' central expectations have increased costs.

Response:

Please refer to Section 2.1.2.4 of Exhibit 1 for an extensive discussion of the changes that are occurring across the NBHDL business that pose risks to the organization, necessitate mitigation and thus represent a relevant cost driver in this Application.

With regards to how changes in customers' central expectations have impacted costs – please see the response to 4-DDR-17.

4 – DDR - 19

Reference: Page 16-23

Preamble:

As a result of this change, the management team reviewed the costs of internal resources against outsourcing this activity and determined that there were other areas of the business that required resourcing. The use of a contractor in 2021 is an incremental cost to the business as compared to 2015 with a 3rd party contractor managing the locate volumes at a lower cost while enabling NBHDL to better utilize internal resources.

Continuously Improving Efficiency and Productivity is stated core value of NBHDL but the result of changes such as the above simply increase overall costs through the use of a 3rd party contractor while not lowering the overall payroll costs (internal resources).

Intervenor comment - No response required.

Question: None.

Response:

In accordance with Rule 26.02(d) of the OEB's *Rules of Practice and Procedure* (the “**Rules**”):

Interrogatories shall:

[...]

(d) contain specific requests for clarification of a party's evidence, documents or other information in the possession of the party and relevant to the proceeding

This interrogatory fails to meet the basic requirement of Rule 26.02(d) of the Rules. Typically, it should be removed from the record. The interrogatory process is not an appropriate forum to engage in argument with the applicant.

However, NBHDL recognizes that you are acting as a self-represented customer and will attempt to address the points you raise in this interrogatory as best it can.

Please refer to 1-DDR-3 for a discussion of the organization risk faced by NBHDL as a result of NBHDL operating as an extremely lean organization. The outsourcing of locate volumes frees up capacity amongst the existing workforce thereby mitigating the need for a new hire.

4 – DDR - 20

Reference: Page 17-1

Preamble:

The goal of wood pole testing program is to diagnose the current health of wood poles in NBH's distribution stem by collecting information not available through visual inspections such as internal pole decay

Question:

Please compare the cost efficiency of spending on this type of test as opposed to simply replacing poles when they are obviously in a weakened condition.

Please indicate the date and cost of the last report done by a third party on the condition of wood poles.

Response:

The reactive replacement of a wood pole that was not in an "obvious weakened condition" but had internal pole decay that could have been identified through wood pole testing is not as efficient as a planned pole replacement.

A single wood pole replacement could take up to a day of staff and contractor time to mobilize and install, whereas a planned project could install multiple assets in a day since mobilization and setup must be completed only once. Depending on the type of pole installation, a planned project could have poles installed at a rate of two to four a day. Even at the lower side of two, that's twice the number of poles for the same amount of labour hours. This is an increased efficiency of 100%. With four hours of labour and equipment costs saved per pole installation and a three-person line crew and equipment rate of \$368 per hour, this translates to a cost savings of \$1,473 per pole. This cost savings will scale with the amount of poles installed per year.

In addition, while a proactive pole replacement can often be accomplished without causing a customer outage, typically a reactive pole replacement would involve an outage of approximately 3 to 6 hours, affecting as high as 4,000 customers depending on the location of that pole and the conductors supported by that pole.

In this context, NBHDL currently performs pole inspections on all its poles to guide its system renewal program. Poles that are visually observed to be in very poor condition are prioritized, however the visual difference between fair and poor poles can be subtle and subjective by the inspector. The inspectors also perform a hammer test on a pole, which includes hammering a pole for sounds of hollowness. This test is also subjective as the inspector's perception of a hollow pole can be different from person to person based on hearing abilities which could skew the results in one direction or another.

Performing pole testing on poles that are observed to be in fair or poor condition would allow NBHDL to prioritize the future pole replacements and system renewal program. As NBHDL moves to longer range forecasting, this information will be critical to avoid replacing poles that might appear in poor condition with a high core strength compared to a pole that appears in fair condition and poor core strength.

The last third-party pole condition analysis was conducted in 2010 and 2011. 2,754 poles were inspected and tested at a cost of \$86,744.

4 – DDR - 21

Reference: Page 25-30

Preamble:

Throughout 2020 and 2021, a more formalized customer engagement plan has been developed including a budget developed to address annual on-going activities and to provide the ability for the Communications Officer to address outcomes of meaningful engagements to ensure NBHDL is able to respond to evolving needs and preferences.

Question:

Please detail the needs and preferences that are evolving and explain what the “annual on-going activities” are exactly and what the benefit will follow from the CO addressing outcomes of meaningful engagements.

Response:

Exhibit 1, pages 76 through 101, provide a summary of all customer engagement needs, preferences, and NBHDL’s budget responses to this. The Distribution System Plan (Exhibit 2, Appendix 2-A) further discusses customer engagement on pages 8 and 9, and Exhibit 4, pages 12, 24, and 24 provide further information.

Please also see the response to 1 – DDR – 2.

4 – DDR - 22

Reference: Page 27- Locates-6

Preamble:

NBHDL had two internal resources (Customer Service Representatives) performing locates as described above. As a result of internal movement, the Operations department was reduced by a resource for this task, with powerline maintainers back-filling the role to cover absences and assist with heavy volume workloads. NBHDL began contracting 50% of this activity out with the intention of outsourcing 100% of the work in the 2021 Test Year at a forecasted cost of \$172,430, the two positions have been re-directed to a Substation Learner Electrician and a Storekeeper Assistant.

This extra expense of \$172,430 per year for a service that was previously being done internally is an example of charging ratepayers more for the same services.

The application contains 41 mentions of the word “efficiency” in Exhibit 1 alone.

It is mentioned as part of one of NBHDL's core values which will drive cost savings and help keep rates low. It is described as a goal along with an increase in productivity. It is used in conjunction with a number of activities such as investing in updating policies and procedures, investing in proper data mining and data access. It is mentioned as the goal of a pursuit. It is mentioned as a goal of the capital program. It is suggested the collaboration with stakeholders is necessary to achieve efficiency. It is mentioned as a plan for coming years to update and add policies that drive efficiency. There is some mention of how efficient NBHDL is compared to other LDC's. What is missing is an example of examples of some action taken by NBHDL that actually reduced costs through the use of fewer resources or avoided extra costs to produced required results.

Question:

It appears that the word is being used as a catchall to support the need for rate increases while no evidence is presented that any efficiency is occurring. Please comment on this assumption if possible.

Response:

The assumption is false.

The Ontario Energy Board measures the efficiency of all electricity distribution utilities across Ontario using an econometric benchmarking model created by the Pacific Economics Group (PEG).

The results of the PEG model are used each year to group distributors into one of 5 efficiency cohorts. Group 1 utilities are the most efficient (actual costs are significantly less than expected costs), Group 3 utilities are at an expected level of efficiency (actual costs are at or near expected costs), and Group 5 utilities are the least efficient.

As noted in Table 1-48 of Exhibit 1, NBHDL has been in Group 3 (expected level of efficiency) since 2015, and as shown in Table 1-57 of Exhibit 1, since the cohort rating is based on the 3-year average result NBHDL is forecasted to continue to be in Group 3 efficiency cohort from 2020 – 2024.

4 – DDR - 23

Reference: Page 30-18

Preamble:

The Vegetation Management program is the largest OM&A cost that NBHDL incurs outside of labour. The importance of this program to safety and reliability cannot be understated. NBHDL is proposing to spend \$773,437 in the 2021 Test Year, which is an additional \$260,033 over the board approved levels in the 2015 COS.

EB-2009-0270 Page 458 of the Application NBHDL's distribution area is divided into four cycles for the purposes of tree trimming (Cycles 1 through 4) with each cycle on a four year rotation. Each cycle is further divided into 4 subsections; A through D. Tree trimming costs were higher in 2007 due to the beginning of a new cycle with a denser tree population in a rural area of the City. This cycle is the most expensive with sections A and B being held off until 2009. Eagle Tree Service 2006 contract \$266,853.

According to my calculations tree trimming expenses increase approx by \$60,000 from 2005 to 2010 test year and by \$346,655 from 2010 and 2015 test year and a further \$260,033 from 2015 to 2021 and a total ask of \$773,437 per year (plus IRM increases) for the next five years. That would indicate that the tree trimming budget went from \$106,749 in 2005 to a requested \$773,437 in 2021 or an increase of 625% or 39% per year.

Question:

Please describe the ownership and legal structure of the vegetation management contracting company describe as 17 Trees. Also, please comment on the option of using Hydro One's in-house forestry service as a more efficient solution to this issue.

Response:

17 Trees is a collaboration between NBHDL and two other northern Ontario LDCs (in Sudbury and Sault Ste. Marie) to create a northern utility-focused arborist service, created in response to the unavailability of local contractors to meet the tree trimming needs of each of these utilities, the inability of awarded contractors to complete all the work in given timeframes, to mitigate the price volatility involved in vegetation management bids, and finally to ensure a consistent workforce, well trained and able to meet the safety requirements of vegetation management work.

NBHDL contracts a portion of its annual tree trimming work out to this company at competitive rates.

As an OEB regulated utility, Hydro One must comply with legal restrictions on their business activities that all utilities including NBHDL must comply with. As a consequence, Hydro One does not sub-contract their forestry service out to other companies. Even if Hydro One did subcontract out these services, NBHDL expects that Hydro One's underlying cost structures would make it more expensive for them to perform this work than the existing approach being taken by NBHDL.

4 – DDR – 24

Reference: Page 41

Preamble:

NBHDL's employee complement, compensation and benefits are set out in Table 4-13 Board Appendix K below. Table 4-13, Board Appendix 2-K does not include NBHDL's Board of Directors, temporary 14 employees, or students.

2010 COS Application – Page 480

The Executive complement in the 2006 EDR was made up of five paid Board of Directors members that were in place in 2004. In 2006 the board was restructured to a voluntary board and therefore the positions have been removed from the employee complement schedule.

2015 COS application Exhibit 1 – Page 107

The NBHDL Board and the NBHDL shareholder identifies and selects new members of the NBHDL Board by advertising vacancies in the local newspaper and interviewing appropriate candidates for nomination. All NBHDL Board members act on a voluntary basis without remuneration.

Question:

When did the reimbursement of directors begin, who authorize or approve this change and what is the total of directors' remuneration?

A former member of city council was recently added to the Board of Directors. Please indicate the date(s) and names of the publication(s) that contained the advertisement for the position and the number of candidates that applied and were interviewed.

Response:

Director stipends and per diems (for meetings) went into effect September 2017 following the release of the Elenchus Report to the OEB on Corporate Governance for Regulated Natural Gas and Electricity Utilities in February 2017.

This process and the procedures that guide them were approved by sole shareholder of NBHDL, specifically the Board of Directors of NBHDL.

The total compensation costs included in the test year are \$41,311 which is below the materiality threshold of \$75,000.

A former councillor was not recently added to the NBHDL Board, nor is there a former or current councillor on the NBHDL Board.

4 – DDR - 25

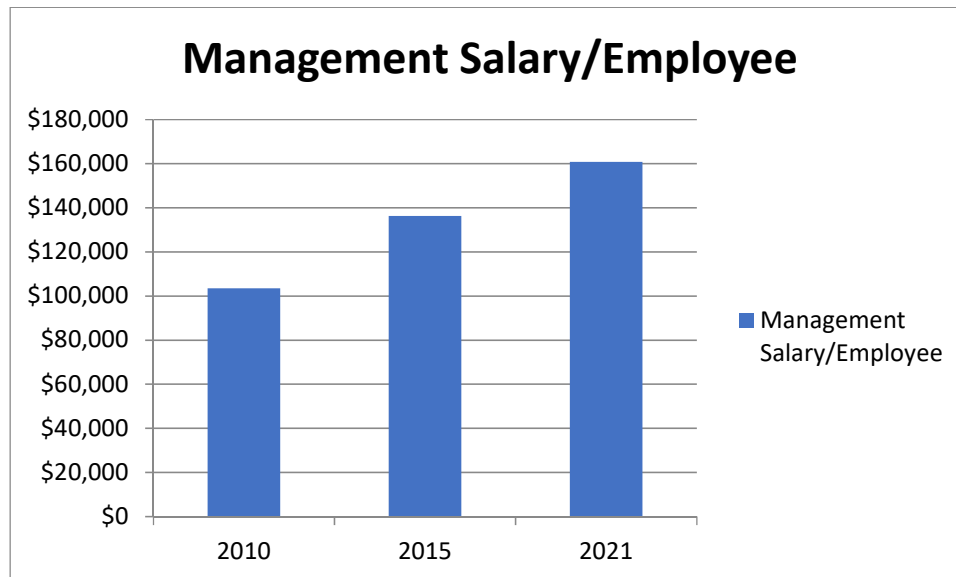
Reference: Page 49-2

Preamble:

Through the 2017-2019 period, NBHDL experienced 82% turnover in management positions, mostly due to retirements. Since the new management team was put in place, the focus has been on recruiting staff, training and development, building a cohesive and highly functional team, gaining experience and confidence with equipment and routines, and working productively and safely.



The graph indicates the level of increases in management salaries since 2015. After a reduction in 2019 during the 82% turnover period salaries returned to 2018 levels in 2020 and took a significant jump in 2021. Based on the fact that the customer base has not changed in decades and the power being delivered has actually decrease, how an increase in the management overhead of this magnitude be supported? The increases are 53% since 2015 and over 83% from 2010 levels.



The graph indicates level of increase in management salaries per employee since 2010. In percentage terms the average salary per management employee has increased by almost 18% since 2015 and over 55% since 2010.

Question:

Please explain the increase in the average in 2021 keeping in mind that the management team is recently hired and in absolute terms for the period 2010 – 2015 based on what level of management expertise is required to operate a system that delivers electricity to connections that have remained unchanged in the past decade.

Response:

The increase in management compensation in the 2021 Test Year as compared to 2015 is driven by the following factors:

- Two new positions created since 2015 - the Operations Coordinator and the Communications Officer
 - o With respect to the addition of a Communications Officer, it is important to note that these costs are partially offset by the elimination of third-party services and the ability to provide support to NBHDL's affiliate, North Bay Hydro Services, providing a further revenue offset
- Succession costs – one position to cover the retirement of two critical positions in the Operations department
- Additional Distribution Engineer added to the management complement, the Engineering department still includes 9 FTEs in total as incorporated in the 2015 Board-Approved FTE count
- Changes to the structure of existing positions and external recruitment
- Inflationary increases, merit progressions, and the formalization of the incentive program for the management team

These factors also contribute to the increase over 2019.

While the customer base has not changed significantly and consumption and demand have declined, this is not the sole driver of workload requirements or management needs and is an overly simplistic view of

the LDC landscape, the proper management of a utility, and how customer demands and expectations on service, reliability, and engagement are addressed. In the last five years alone there has been further regulatory reform, changes in customer service rules, an OEB directed emphasis on cyber security, and a push for greater redundancy and better utilization of expertise within the business. Section 2.1.2.4 in Exhibit 1 provides a summary of all the various aspects of the business where risk has been assessed and mitigation identified. Section 2.1.2.6 of Exhibit 1 aligns NBHDL Core Values to customer benefit, and page 43 summarizes NBHDL plans for the next five years. These are just a few noted sections that NBHDL would point to that reiterate that connections to the NBHDL grid are not the sole driver of the resource pool that NBHDL requires on the management team.

4 – DDR - 26

Reference: Page 79-4 - Table 4-40

Preamble: None.

Questions:

Please confirm that regulatory costs have increased to \$438,000 per year and include \$158,710 for this application.

Please explain the need to employ high priced legal assistance to submit a cost of service application considering all the information is present at NBHDL, the live excel sheets are supplied by OEB and the specific requirements of the application are spelled out in the Handbook for Utilities.

Response:

Regulatory costs in the 2021 test year are \$438,000, which includes \$158,710 related to the costs of this application which will be recovered in rates over the next 5-year period. This represents a \$24,557 decrease from 2015 actuals. The decrease would have been larger, but it was partly offset by an increase in OEB assessment fees of \$33,278.

The right to have legal counsel is a principle of administrative law and a fundamental principle of natural justice. It ensures that persons like NBHDL that are subject to government action and regulation are treated justly. The availability of subject matter expertise in the OEB's requirements and procedures, and familiarity with prior decisions and precedents, provides NBHDL with a valuable service to help navigate the rate process. In this context, we note that various other parties in this proceeding have funding available to pay for their legal counsel. It is unclear why interveners or OEB Staff should have access to legal counsel, but the applicant should be denied the same quality of advice.

4 – DDR - 27

Reference: Page 80-2

Preamble:

Contributions NBHDL makes in the community and for various charities, apart from the LEAP program summarized above are excluded from the revenue requirement calculation...

Question:

Keeping in mind that these contributions are taxpayers' funds, please explain who promotes and authorizes these contributions and how they assist in the delivery of electricity to customers.

Response:

As stated in the above referenced statement, contributions NBHDL makes in the community are not included in the rates and therefore are not charged to the customer.

NBHDL has a donation policy, that has been approved by the NBHDL Board of Directors, in place that reflects the company's commitment to working with local registered charitable organizations that assist the needy, help worthy causes, and/or create partnerships throughout the community. Three key areas of giving that may receive consideration include health and wellness-focused organizations/charities, education, and organizations supporting individuals in need. Donation contributions in any given year cannot exceed 1% of income before PILs without approval of the NBHDL Board of Directors.

The NBHDL Board of Directors is elected at the discretion of NBHDL's shareholder, which ultimately (indirectly) is the City of North Bay which is directly responsible to the residents of the City of North Bay.

4 – DDR - 28

Reference: Page 101-3

Preamble:

NBHDL notes that it pays dividends each year to its shareholders; however, since the shareholder is a municipality and not subject to income taxes, the dividends are treated as non-taxable and do not affect the PILs return.

Question:

Please explain how the tax status of a recipient of a dividend would affect the PIL's return.

Response:

As explained in the referenced statement, the tax status of NBHDL's shareholder does not affect the PILs return.

4 – DDR - 29

Reference: Page 107-14

Preamble:

The total amount requested for recovery is \$246,420, including carrying charges of \$3,427.

Question:

Please confirm that the carrying charges included in LRAMVA recovery are also included in Revenue Requirement calculation. If they are not, please explain the reason for their omission.

Response:

Not confirmed. NBHDL has not recorded the above noted carrying charges in the RRWF's "Other Revenue" and they are not part of the Revenue Requirement calculation. NBHDL has treated carrying charges related to LRAM in the same manner as all carrying charges related OEB accounts described as "Other Assets and Deferred Charges" (Accounts 1505-1595).

6 – DDR – 30

Reference: Page 9-10 - Table 6-6

Preamble:

The table shows that OM&A expenses are budgeted to increase from \$6.4 million in 2015 to \$8.6 million in 2021. This is an increase of 34% in 6 years or 5.7% per year

Question:

Irrespective of information contained in the 1565 pages of exhibits and 18 live excel files in this application, what rational justification could support this level of increase considering that the product has not improved, the customer base has not increased and the service is unchanged?

Response:

The evidence supporting the requested rate increase, inclusive of the proposed OM&A budget for the test year, is contained in the Application (and in particular in Exhibits 1 and 4 for the portion of increase tied to OM&A).

We are unable to respond to an interrogatory that seeks, as its premise, to ignore evidence that is already on the record. The response to such an inquiry would be to re-file all of this evidence again, which is neither productive nor efficient. If you have specific questions about the evidence as filed, NBHDL will respond to relevant interrogatories.

The premise of the question which implies that “the product has not improved, the customer base has not increased and the service is unchanged” is also problematic.

There is ample evidence on the record that the product has changed (smart meters, SCADA, distributed automation, advanced metering infrastructure, customer information systems, outage management software, distribution management software, geographic information systems, accounting and payroll systems, billing and payment solutions, etc.), service expectations of customers have changed (privacy expectations are high, expectations for outage communications are high, expectations for digital services are high, and expectations for engagement are high), the utility itself has also changed, and the regulatory and business environment that the utility operates in has changed.

As several illustrative examples, on March 4, 2021 the Minister of Infrastructure introduced Bill 257 – the *Building Broadband Faster Act, 2021* – which if adopted will create new process requirements and legal obligations on NBHDL and other distribution utilities with regards to the implementation of broadband infrastructure, including 5G infrastructure within the City of North Bay.

These changes are following shortly after the *Building Transit Faster Act, 2020*, which created new process requirements and legal obligations on distributors with regard to the implementation of Metrolinx driven public transit infrastructure in their respective service territory.

These follow-on multiple changes to utility bills and discount programs, which require re-working the billing systems each time, the introduction of Ontario one-call driving up the need for utility locates, the requirement to phase out PCBs, and the need to reseal and verify smart meters that are now expiring.

8 – DDR – 31

Reference: Page 58 – Bill impacts – Customer class

Preamble:

NBHDL is comparing the requested monthly service charge which includes a \$1.31 fixed rate rider credit to the current monthly service charge that has no rate rider credit included. A proper calculation of the impact would exclude the rate rider credit from the equation. This would set the bill impact for residential bills at 17.8% over a one year period.

Question:

What rational justification could support this year over year level of increase considering that the product has not improved, the customer base has not increased and the service is unchanged?

Response:

Please see the response to 6-DDR-30.

RESPONSE TO INTERROGATORIES FROM SCHOOL ENERGY COALITION

SEC-1

Reference: None.

Preamble: None.

Question:

Please confirm that the Application proposes a weighted average distribution rate increase of 20% over current rates. Please identify and describe any analysis, presentations, or other materials, whether for management, for the Board of Directors, for the parent company, or for the City dealing with the overall level of rate increase to be proposed, and the acceptability of that level of increase to the customers.

Response:

Please see CCC-1.

SEC-2

Reference: Exhibit 1, page 15, 33

Preamble: None.

Question:

Please provide a table showing the number and percentage of customers in each rate class that are currently “supplying electricity” to the Applicant’s grid. Please provide details on how the Applicant currently provides “real-time information” to such customers. Please provide details on the cost increase being proposed to increase such information.

Response:

The following Table SEC-2 shows the number of and percentage of customers in each rate class that are currently “supplying electricity” or have the ability to supply electricity to the NBHDL grid.

Table SEC-2 – Number and Percentage of Customers Supplying Electricity

2020 Electricity Suppliers	Quantity	%of Class
MFIT	48	N/A
FIT	2	N/A
Net-Metering (Residential)	6	0.028%

Currently, NBHDL does not provide real-time information to such customers.

There is no specific cost increase being proposed in this rate application to increase such information for customers supplying electricity to the NBHDL grid, although NBHDL is proposing to upgrade its customer portal with hopes of providing more real-time information and also proposing to create a NBHDL app that may also provide real-time information to all customers.

Details of these initiatives can be found in Exhibit 1, section 2.1.7.5.1, page 95.

SEC-3

Reference: Exhibit 1, page 16

Preamble: None.

Question:

Please provide the updated Business Plan referred to as soon as it is available.

Response:

As mentioned in Exhibit 1, section 2.1.2.2.4, the information in the Business Plan will be updated in or around Q2 of 2021. The Business Plan will not be available until on or after June 15, 2021 when NBHDL will meet with NBHHL. As such, it is currently not available at this time and will unlikely be available before the close of this proceeding.

SEC-4

Reference: Exhibit 1, page 36

Preamble: None.

Question:

Please confirm that 2021 is forecast to be the highest capital spending year of the 11 years reported for each of System Renewal and total capex, and that the second highest capital spending year is the year of the last COS application, 2015. Please explain why capital spending is not being paced more evenly throughout the past and future IRM periods.

Response:

Not confirmed. The highest capital spending year of the 11 years reported for each of System Renewal and total capex was 2017.

Further, NBHDL rejects the notion that capital spending is not evenly paced. Through the historical period as well as the forecasted period, the annual total spending fluctuates between +7.5% and -5.6% of the respected period averages. NBHDL considers this to be evenly paced. The following Table SEC-4 provides a comparison of 2021 spending against the average spending between 2015-2019 and 2015-2020:

Table SEC-4 – Comparison of 2021 Spending Against Average Spending

Year	Gross Capital Exp (000s)	2021 Capital	Variance (\$)	Variance (%)
2015	6,682			
2016	6,302			
2017	7,175			
2018	6,615			
2019	6,589			
2020 Forecast	6,388			
2020 Actual	6,185			
2015-2019 Avg	6,673	6,692	19	0.3%
2015-2020 Forecast Avg	6,625	6,692	67	1.0%
2015-2020 Actual Avg	6,591	6,692	101	1.5%

As explained on page 36 of Exhibit 1, NBHDL expects that the operational and service requirements driving its capital expenditures that comprise this DSP will generally remain consistent through the planning horizon. An increase in capital spending has not been requested in this rate application, instead NBHDL is pacing capital investment at a slightly lesser pace than it did in the previous 5 years. It is important to note that when looking at asset life cycle costs in isolation, there is justification to increase spending but when balancing asset life cycle with the work output abilities of the current staff complement, and rate affordability and stability, the proposed spending represents a very balanced, sustainable approach. As evidenced on Table 1-14 on page 36 of Exhibit 1, NBHDL is putting forward a future reduction in average capital expenditures for the forecasted period 2022-2025 that reflects continued pacing that balances renewal requirements and affordability.

SEC-5

Reference: Exhibit 1, page 41

Preamble: None.

Question:

Please confirm that the annual distribution bill for a GS>50 customer with a demand of 100 kW (like a typical school) is forecast to increase from \$6952.08 in 2020 to \$8135.04 in 2021 under this Application, an increase of \$1,182.96 or 17.02%.

Response:

NBHDHDL confirms that the annual (12 months) distribution bill for a GS>50 customer with a demand of 100 kW is forecasted to increase from \$6,952.08 in 2020 to \$8,135.04 in 2021, which represents an increase of \$1,182.96 or 17.02%.

On total monthly bill of \$5,791.74, when factoring in all variables and using a median consumption of 33,000kWh, this represents a total bill increase of \$84.09, or 1.47%.

SEC-6

Reference: Exhibit 1, page 49

Preamble: None.

Question:

Please provide the total cost included in the 2021 Application for the “review of management compensation” that the Applicant agreed to carry out during the last IRM period.

Response:

As evidenced in Exhibit 4, Table 4-3, NBHDL has included \$150,000 in the Test Year to address the need for ongoing annual costs related to corporate initiatives, health and safety, and departmental process and procedure reviews required to effectively and efficiently run the day-to-day operations of the business. A review of the NBHDL’s compensation plan is a 2021 initiative and will be funded from this envelope of dollars. At this time, NBHDL does not have a quote for this specific work. Please also see 1-DDR-8.

SEC-7

Reference: Exhibit 1, page 53

Preamble: None.

Question:

Please confirm that the Chief Administrative Officer of the City of North Bay is invited to all of the Applicant's Board meetings.

Response:

NBHDH confirms that the Chief Executive Officer ("CEO") of NBHHL is invited to all of NBHDH's board meetings. The individual that is currently the CEO of NBHHL is also currently the CAO of the City of North Bay but, when attending NBHDH Board meetings, is acting in the capacity of CEO of NBHHL and not as CAO of the City of North Bay.

SEC-1(2) (Note: Numbers in SEC interrogatory documents repeat starting at 1 again)

Reference: Exhibit 1, page 60

Preamble:

Question:

Please confirm that the Applicant is proposing to increase the total of OM&A, Depreciation and Property Taxes from the Board-approved amount included in rates of \$8,988,681 to \$12,010,992 in 2021, an increase of \$3,022,311, or 33.6%, and that the increase represents a compound annual growth rate over six years of 4.93% per year. Please confirm that, as a result of this proposed increase, none of the decline in the cost of capital, and none of the reduction in working capital, will accrue to the benefit of customers in rates.

Response:

NBHDL confirms an increase in the total of OM&A, Depreciation and Property Taxes from the Board-approved amount included in rates of \$8,988,681 to \$12,010,992 in 2021, an increase of \$3,022,311, or 33.6%, and that the increase represents a compound annual growth rate over six years of 4.95% per year. NBHDL would note that depreciation has a higher compound annual growth of 5.07% than OM&A at 4.90%.

NBHDL does not confirm the second statement. The decline in the cost of capital and the reduction in working capital does accrue to the benefit of customers in rates; without these offsets, the increase in rates based on NBHDL's OM&A requirements, depreciation and property taxes would result in higher rate increases to the customer. The depreciation increase is the result of a prudently paced infrastructure investment plan and the OM&A spending increase is primarily in relation to the staffing needs of the business, increased tree trimming costs to ensure safety of employees and the public in addition to improving reliability, increased customer engagement, and enhanced maintenance programs that are aimed at improving the system.

SEC-2(2)

Reference: Exhibit 1, page 85

Preamble: None.

Question:

Please provide the results of the Phase 3 Customer Engagement Survey referred to.

Response:

Please refer to Attachment F – SEC-2(2) - Phase 3 Customer Engagement Survey Results.

SEC-3(2)

Reference: Exhibit 1, page 112

Preamble: None.

Question:

Please add 2020 actuals to Table 1 – 56.

Response:

NBHDL has updated the requested table with preliminary 2020 ROE results in Table SEC-3(2) below. This is subject to change as NBHDL completes all necessary calculations for the RRR submission to the OEB by May 17, 2021. As expected, the ROE continues to diminish as NBHDL is in year six of its 5-year rate cycle. In addition, in an effort to provide relief to customers NBHDL deferred its May 1, 2021 distribution rate increase until November 1, 2021 and chose to forego the collection of that revenue (approximately \$100k). Late payment charges on arrears balances were also halted. Using a 5-year average, NBHDL lost approximately \$95k in 2020 in relation to this decision. NBHDL will not be seeking recovery of these lost revenues. To date, NBHDL continues to waive these charges.

Table SEC-3(2) – Updated Table 1-56 to include 2020 ROE

Measure/Year	2015	2016	2017	2018	2019	2020
Profitability: Regulatory Return on Equity - Deemed	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%
Profitability: Regulatory Return on Equity - Achieved	10.65%	9.01%	8.56%	10.17%	6.14%	4.72%

SEC-4(2)

Reference: Exhibit 1, Appendix 1-B, page 12

Preamble: None.

Question:

Please reconcile the plan in the current Business Plan to spend \$5.5 to \$6.0 million on capital each year with the proposed capital budget for the Test Year.

Response:

The Business Plan was completed in Q1 of 2020, which was prior to the final budget approval by NBHDL Board and prior to the completion of the DSP. In preparation of the Business Plan, the numbers in 2019 were rolled forward. As such, the numbers and information in this Business Plan are not completely consistent and comparable with that provided in this Application, which reflects the correct and updated approval by the NBHDL Board.

On page 14 of the referenced Appendix 1-B, NBHDL states that projected capital spending will be updated in future plans to reflect the new DSP that will be submitted with the 2021 rate application. The following Table SEC-4(2) provides a summary of the 2020 and 2021 capital spending referenced in the Business Plan as compared to the DSP:

Table SEC-4(2) – Summary of 2020 and 2021 Capital Spending

	2020	2021
Total Spend - Appendix 2-AA	6,388,187	6,692,043
Total Spend - Business Plan	6,622,820	6,377,449
Variance per Year (\$) (DSP vs. BP)	(234,633)	314,594
Variance per Year (%) vs. BP)	-3.5%	4.9%
Total Variance 2020-2021 (\$)		79,961
Total Variance 2020-2021 (%)		0.6%

SEC-5(2)

Reference: Exhibit 1, Appendix 1-B, page 12-3

Preamble: None.

Question:

Current dividend levels appear to be significantly higher than previous dividend levels. Please provide a copy of the current dividend policy, and the prior dividend policies in force in each of 2015, 2016 and 2017.

Response:

In 2017, NBHDL's shareholder requested a special dividend of \$3M as provided for in NBHDL's dividend policy. The last installment towards this request was paid in 2019. NBHDL's historical dividend payments were also impacted by changes in the market valuation of the NBHDL's SWAP instruments. In 2020, the dividend policy was updated to exclude these non-cash accounting entries. Copies of both the dividend policy in effect from 2015 through 2019 and the revised 2020 policy are attached as Attachment G –SEC-5(2) – Dividend Policies.

The board of NBHDL consists of 5 directors, all of whom are independent based on the definitions provided in the OEB's corporate governance guidelines (note the board chair of NBHDL also sits on the board of NBHHL).

All dividends declared were approved by NBHDL's board, which means that in every instance the dividends were approved by the majority of the independent directors of NBHDL.

SEC-6(2)

Reference: Exhibit 1, Appendix 1-H

Preamble: None.

Question:

Please provide the most recent financial statements of the Applicant's parent company.

Response:

NBHDL has provided the financial statements of the utility in the Application, in accordance with Section 2.1.9 of the Chapter 2 Filing Requirements. The financial statements of NBHDL's parent company are not required pursuant to the Chapter 2 Filing Requirements because they relate to a non-regulated legal entity and are irrelevant to the Application.

SEC-7(2)

Reference: Exhibit 1, Appendix 1-H

Preamble:

The 2018 financial statements were authorized for issue by the Board of Directors on March 27, 2019, and the 2019 financial statements were authorized for issue by the Board of Directors on April 7, 2020.

Question:

Please provide the 2020 financial statements as soon as they are available for review by the OEB.

Response:

NBHDL is in the process of finalizing 2020 audited financial statements. These statements will be made available for review by the OEB on or around May 17, 2021, through the annual RRR filing through RESS.

SEC-8

Reference: Exhibit 2, page 3

Preamble:

Question:

With respect to the Rate Base Summary:

- a. Please confirm that the Applicant brought \$1.2 million less assets into service in 2015 than the Board-approved level.
- b. Please confirm that the Applicant is proposing to increase average NPV of PP&E, from 2015 actuals to the Test Year, by \$17.8 million, a 33.6% increase representing a compound annual growth rate of 4.93% per year.
- c. Please confirm that the annual increases in average NBV of PP&E for that period range from 3.55% to 5.87%.
- d. Please provide a forecast of the annual increases in average NBV of PP&E for the period 2022 through 2025.
- e. Please reconcile the high annual PP&E increases with the lack of customer growth in the Applicant's service territory, and the declining load of the Applicant, and the priority of the Applicant's customers to keep electricity costs down.

Response:

- a. NBHDL confirms that the variance for in-service gross assets between 2015 actual and 2015 Board-approved is \$1.2M. As noted in Exhibit 2 (page 38), NBHDL experienced lower costs related to underground projects, as tendering and contractor delays pushed large amounts of work into the spring of 2016. Further, NBHDL increased its CWIP by \$0.6M in 2015 compared to board approved, largely a result of the delayed underground projects that came in to service at a later date.
- b. NBHDL confirms that it proposing to increase the NBV of fixed assets from 2015 actuals to the 2021 test-year by \$17.8M, a 33.6% increase representing a compound annual growth rate of 4.94%. Given the long-life span of distribution assets, NBHDL considers it quite normal that, even for an LDC that is focused largely on asset renewal, the NBV of assets will increase over time. As assets are replaced or upgraded, the newer assets are necessarily more expensive than assets put in to service up to 45 years ago for example. Table 2-32 on page 37 of Exhibit 2 and the summaries that follow provide context and descriptions of gross asset variances. NBHDL considers these expenditures and increases to be prudent in ensuring the long-term health of its distribution system and are aligned with the Distribution System Plan.
- c. NBHDL confirms that the annual increases in NBV range from 3.55% (2021) to 5.87% (2016) for the 2015-2021 period.
- d. NBHDL has provided a high-level forecast in Table SEC-8 below based on DSP capital spending and forecasted disposals and amortization and will be subject to change based

on the outcome of this COS and actual spending in any given year. Based on this high-level estimate, the average NBV of PP&E through the period 2022 to 2025 is:

Table SEC-8 – High-Level Forecast Spending (2021 to 2025)

Description	2021	2022	2023	2024	2025
Gross Fixed Assets, Opening Balance	138,380,869	143,676,696	148,573,643	153,612,604	159,135,859
Gross Fixed Assets, Closing Balance	143,676,696	148,573,643	153,612,604	159,135,859	164,348,926
Average Gross Fixed Assets	141,028,783	146,125,170	151,093,124	156,374,231	161,742,393
Accumulated Depreciation, Opening Balance	69,024,235	71,788,387	74,966,471	78,264,229	81,610,771
Accumulated Depreciation, Closing Balance	71,788,387	74,966,471	78,264,229	81,610,771	84,998,729
Average Accumulated Depreciation	70,406,311	73,377,429	76,615,350	79,937,500	83,304,750
Average Net Book Value	70,622,472	72,747,741	74,477,774	76,436,732	78,437,643

- e. NBHDL has numerous assets that have reached the end of their service life, therefore continuous investments in our system are required to maintain the existing assets in “fair to very good” operating condition to prevent equipment failures and outages. The purpose of a sound asset management strategy is to responsibly replace assets based on a balanced schedule while ensuring continuous operations and minimizing maintenance costs. This ensures that all aging assets get renewed in a cyclical manner and that funding and internal resources can be balanced over multiple years. Based on certain project types, there are some fluctuations in these expenditures. There are instances where assets might be replaced well past their useful life or a little earlier, but these need to proceed to maintain investment and asset replacement pacing. Delaying asset replacements just “kicks the can down the road” and the assets age to a point that maintenance becomes unsustainable and a large-scale renewal program is required.

Section 3.1.2 on page 36 of the DSP discusses the asset management framework and risk-based decision support system that NBHDL utilizes. Figure 3-2 “Risk-Based Decision System Support System” shows how the scope and timing of the investments and prioritizing investments into specific projects are critical in order to minimize the “Total Cost” of assets by reducing risk and risk mitigation initiatives. Using the information NBHDL has obtained, it creates a prioritization matrix for capital expenditures for every year.

NBHDL performed an Asset Condition Assessment to determine the actual condition of all its assets which feeds into the project prioritization tool to determine which projects need to be undertaken. If NBHDL doesn’t continue to replace its assets on a planned basis, irrespective of the number of customers, the overall condition of all the assets will decline and eventually a large-scale investment will be required. This investment would end up having a lot of inefficiencies and will be challenging to deliver as NBHDL would need to hire either more staff and/or external construction contractors. By the same token, underspending now will result in internal resources not being utilized to the most of their ability and will be inefficient. NBHDL’s proposed plan balances the needs of the corporation over multiple years using the resources it has in a responsible and efficient manner.

Following the completion of the voltage conversion project, NBHDL's prioritization tool has identified the aging sub-transmission system as priority for NBHDL's investments. The first and third priority within the nine projects planned for system renewal in 2021 are sub-transmission lines. These lines are typically taller, have multiple circuits with some poles made of composite material to extend their life expectancy. Even a short outage on a sub-transmission line can cause an outage to thousands of people and have a significant impact to reliability metrics.

These asset investments are required irrespective of the load demands on the system. If there are no additional customers in a specific area, or even if some companies shut down, the infrastructure to support the remaining companies is still required and still needs replacement.

SEC-9

Reference: Exhibit 2, page 18, 26, 40

Preamble: None.

Question:

Please explain the negative amount of \$872,145 under the Additions column for Buildings in 2018. Please identify where that amount is described in the variance analysis or elsewhere in the Application.

Response:

NBHDL notes that this this negative amount is due to the review and reallocation of costs in 2018 relating to MS20. As noted on page 40 of Exhibit 2 in the 2018 vs 2017 comparison *"A review of MS20 costs resulted in the reclassification of costs out of Account 1808 and into Account 1820, however, no new costs were added to this station in 2018."* This is a reallocation of costs only; there is not a net reduction in assets.

SEC-10

Reference: Exhibit 4, page 8

Preamble: None.

Question:

Please explain why the new Communications Officer, hired in 2019, did not implement the initiatives “reaching out to the industrial and commercial classes” in 2020, in support of the large rate increases in this Application.

Response:

As mentioned on page 85 of Exhibit 1, a great deal of planned Customer Engagement activities by the Communications Officer (hired December 2019) were postponed due to the pandemic. In March 2020, NBHDL shifted away from planned activities to address the many uncertainties surrounding COVID-19. At that time the Management team committed to ensuring its employees had a safe working environment, focused on ensuring strong reliability of the power grid and implemented new processes to ensure business continuity. This included a commitment to customer service to help all customers negatively impacted by the pandemic. Unfortunately, this shift required other business elements to cease, one of them being the engagement of the GS<50 and GS>50 customers originally planned for April/May. In a time where the province told everyone to stay home and cease interaction, and with some customers struggling, convening customer focus groups and visiting customers seemed to go against the provincial mandate. By the time things started to settle and the business had deployed effective communication technology, the window to engage this group of customers and incorporate their feedback in the COS test year budget had passed. The phase 1 and phase 2 surveys conducted in the fall of 2019 were open to all customers and were well advertised through social media platforms, and the website. As detailed in Exhibit 1, Section 2.1.7.5, page 96, NBHDL plans on engaging this group of customers on an annual basis to seek continual feedback on their wants and needs starting in 2021 so they can be included in future decision making and rate setting.

SEC-11

Reference: Exhibit 4, page 11

Preamble: None.

Question:

With respect to Table 4-4 and Appendix 2-L:

- a. Please advise whether the figure \$5,883,743 for 2020 Actual is actual or forecast. If the latter, please provide the actual figure.
- b. Please confirm that the total amounts included in rates for compensation for all six years 2015-2020 were \$33,373,440, and the amount of compensation actually paid in that same period was \$31,923,273, a shortfall of \$1,400,167 or 4.2%.

Response:

- a. The amount provided in Table 4-4 for the 2020 Bridge Year was based on forecast. The 2020 Actual value is \$5,559,418. As a result of COVID-19, recruitment in 2020 took longer than expected and several positions were not filled until later in the year and early 2021.
- b. The amounts in Table 4-4 utilize the 2015 Board-Approved compensation totals and escalate at NBHDL's IRM rates to show a total compensation incorporated into rates of \$33,373,440. NBHDL's compensation paid from 2015 to 2020 is \$31,973,293 for that same time period; a variance of \$1,399,639.

In 2015, the Board-Approved compensation total of \$5,360,185 represented 45% of the distribution revenue requirement that was approved (excluding other revenue) of \$11,793,143. Utilizing this percentage against NBHDL's actual distribution revenue from 2015-2020 results in compensation of \$32,696,156 covered through rates. As stated above, NBHDL's actual compensation paid through that time period was \$31,973,293; a variance of \$722,862.

The 2016-2020 period, which NBHDL submits is more appropriate given the impact of a COS year on the business, provides the following values utilizing the same methodology – compensation in rates of \$27,335,970 and actual compensation paid of \$27,085,410; a variance of \$250,560.

SEC-12

Reference: Exhibit 4, page 13-4, 26-7

Preamble: None.

Question:

With respect to Regulatory Costs:

- a. Please confirm that the amount included for intervenor costs in the 2015 Appendix 2-M was \$63,000, the total claimed and ordered (net of HST) was \$69,351, and the amount the Applicant has actually collected for that over six years, and using the same escalators as in Table 4-4, is \$78,449.
- b. Please confirm that the figure of \$263,968 on page 27 of the Exhibit is incorrect, and that the correct figure is \$102,879, being the total cost of the Application of \$920,898, less the amount collected in rates of \$131,386 per year, escalated using the same escalators as in Table 4-4, and collected for six years, totalling \$818,019.
- c. Please provide details of the budgeted 2015 COS costs totalling \$656,930, by category, and the actual costs in each category, and provide reasons for any material variances. For each of the categories in which those variances arise, please provide the forecast for the 2021 COS, and the reasons for that forecast.

Response:

- a. Total intervenor costs included in the 2015 COS application were \$63,000; NBHDL also incorporated OEB costs into this estimate. The total intervenor cost claim, excluding OEB costs and HST, was \$73,094. The total actual costs related to intervenors and the OEB were \$84,494.12. NBHDL's OM&A costs were not increased as a result of the actual claims NBHDL was ordered to pay and therefore the amount of \$78,449 is incorrect. Utilizing NBHDL's IRM rate increases, \$65,849 has been collected through rates from 2016-2020 and \$8,400 was collected in 2015. In total, rates have incorporated \$74,249 as of the end of 2020, \$10,245 less than actual costs paid.
- b. NBHDL does not agree with the amounts referenced in this question. Utilizing NBHDL's IRM rate increases, \$686,634 has been collected through rates from 2016-2020 and \$87,591 was collected in 2015. Based on a total incremental cost of \$920,898, NBHDL has still under-collected by \$146,673. However, missing in this context is the fact that NBHDL deferred its COS application by one-year. Had the company gone in as was originally scheduled, NBHDL would have under-collected by \$287,792 using IRM rates. The figure on page 7 of Exhibit 4 of \$263,968 was in reference to absolute costs of the application only.
- c. The details of the budgeted 2015 COS costs totaling \$656,930, by category, the actual costs in each category, and the 2021 costs are included in Appendix 2-M and are provided below in Table SEC-12 for easier reference. Variances in 2015 were a result of the assistance that was required for the development of NBHDL's first DSP, higher than anticipated costs related to the settlement conference and preparation of the agreement, the requirement of a lead/lag study as a result of the WCA policy change that occurred after NBHDL filed its Application but before a final decision was rendered, and overall advisory services that were required by NBHDL throughout the application process. The breakdown of NBHDL's 2021 costs can be found in Exhibit 4, on page 77.

Table SEC-12 – Regulatory Costs – 2015 and 2021

Description	2015 Board Approved	2015 Actual Costs	Variance	2021 Costs
Consultants' costs including Legal	459,215	722,331	263,116	626,300
Incremental operating expenses associated with staff resources	111,273	92,027	(19,246)	82,250
Incremental operating expenses associated with other resources*	23,443	22,045	(1,398)	-
OEB/Intervenor costs	63,000	84,494	21,494	85,000
Total Costs	656,931	920,898	263,967	793,550

* *Temporary Employees*

SEC-13

Reference: Exhibit 4, page 15, 29-30

Preamble: None.

Question:

With respect to Vegetation Management:

- a. Please explain why the Applicant has been unable to achieve the four-year tree trimming cycle anticipated in the 2015 COS.
- b. Please provide all benchmarking and other analysis done by the Applicant since 2015 to show that the Applicant's ability to implement an industry-standard tree trimming cycle is prevented by circumstances unique to the Applicant. If no such analysis has been done, please explain why the Applicant's tree trimming program has had such significant problems.
- c. Please provide, with respect to 17 Trees Inc.:
 - i. A list of the shareholders and their shareholdings.
 - ii. A list of the Board of Directors.
 - iii. A copy of the current Shareholders' Agreement, if any.
 - iv. The most recent financial statements.
- d. Please provide any forecast beyond 2021 of the overall cost of Vegetation Management by the Applicant, and the split of that cost between internal resources, 17 Trees Inc., and other external resources.

Response:

- a. Please see response to 1-DDR-9.
- b. Benchmarking against other LDCs has not been completed and NBHDL would submit that every LDC's tree trimming cycle is unique to their service territory and can vary greatly based on a number of different factors including the amount of rural area in the service territory, the amount of right of way work, the ability to stay on a consistent cycle which ensures ease of removal next time around, the geographic area, the age of system, and customer communication. For example, with respect to the age of a system, a new development in a service territory is typically void of trees (totally removed) where other areas could be 70 years old, which means trees are much more mature and require a lot more attention. If one were to look at the newest areas of urban sprawl in Barrie or Orillia – there are very few trees as the houses are very tightly situated, whereas the City of North Bay has trees throughout the entire urban area. With respect to communication with customers, NBHDL believes this component of our vegetation management program is critical; some programs are set-up with less engagement and simply show up and cut. Please see response to a) above with respect to the explanation around the challenges NBHDL has had with the vegetation management program.
- c. The information requested for 17 Trees Inc. is not relevant to this proceeding. NBHDL interacts with this company in the same manner as other external third-party vendors and the company is not an

affiliate of NBHDL as defined under the OEB's Affiliate Relationships Code and the *Business Corporations Act* (Ontario).

- d. NBHDL plans on continuing to have one internal resource dedicated to the vegetation management program to ensure the program is properly managed and interaction with customers continues. With respect to the external third-party costs, NBHDL plans to tender 50% of the work to local contractors and commit the other 50% to 17 Trees Inc.. Based on the experience NBHDL has with this program, local contractors cannot meet NBHDL's annual tree trimming needs. However, it is extremely important to NBHDL to support the local community and tendering 50% of this work provides that opportunity. Based on how NBHDL has divided the work, with an ability to have dedicated resources from 17 Trees Inc., the goal of completing 5 cycles by 2026 is achievable. NBHDL expects to have a similar level of spending throughout the forecast period.

SEC-14

Reference: Exhibit 4, page 18

Preamble: None.

Question:

Please provide the “detailed submission to the Board on the proposed budget” relating to the budget in this Application.

Response:

Please see response to CCC-1.

SEC-15

Reference: Exhibit 4, page 29

Preamble: None.

Question:

Please describe the ARC flash study in more detail. Please include an explanation as to why the information to be obtained in that study is not available from third party sources already.

Response:

The purpose of an arc flash study is to perform an engineering analysis on NBHDL's distribution system to determine the potential incident energy of an arc flash event at a given point or on a specific piece of equipment. The incident energy is proportional to the available fault current and the duration of the fault before it is cleared. As such, a short circuit study and a coordination study is part of the analysis. An arc flash (electrical arc) is a type of fault where electricity uses air as its medium between two different potentials (phase to ground or phase to phase). The air becomes ionized and becomes a conductor of electricity. An arc flash will expel large amounts of energy in the form of heat and light and can reach temperature as high as 19,400°C (hotter than the surface of the sun). This can cause blindness and severe burns in only fractions of a second.

Ensuring worker safety is the primary and most important benefit of performing an arc flash study. In order to properly assess the risk and hazard of an arc flash, a study must be performed to quantify the incident energy and its ability to injure a person. For example, an incident energy of 1.2 cal/cm² will result in a second degree burn on bare skin while a 8 cal/cm² will result in a third degree burn on bare skin. The arc flash study will provide NBHDL with the information it needs to properly assess the risk, provide up to date hazard information, select appropriate PPE, and update work procedures necessary to keep its workers safe. A secondary benefit of an arc flash study is that the information can be used to ensure that any equipment installed is properly rated and can withstand the available fault current levels without being damaged.

The arc flash study must be performed on NBHDL's system and specifically for each different location where equipment would be operated requiring personnel to be in close proximity. As such, it would not be available from a third-party source. Changes in feeder configuration, efficiency improvements such as conductor upgrades to reduce line losses, and the inclusion of embedded generation and load displacement projects can all affect available fault currents and in turn increase available arc flash energy.

SEC-16

Reference: Exhibit 4, page 42-44

Preamble: None.

Question:

With respect to FTEs and Employee Costs:

- a. Please restate Table 4-13 with an additional line at the bottom showing the total compensation capitalized in each period.
- b. Please confirm that, although having a Board-approved budget for 49.2 FTEs, the Applicant has never reached that level, and only proposes to do so in 2021.
- c. Please confirm that the Applicant proposes to increase Administration personnel by 5 from 2015 to 2021, and increase Engineering by 2, but to keep Operations and Finance at the same levels as in 2015. Please explain why a decline in the percentage of employees directly involved in operating and maintaining the distribution system is appropriate and in the best interests of the customers.

Response:

- a. Table 4-13 is provided below as Table SEC-16 with an additional line at the bottom showing the total capitalized compensation for each fiscal year. NBHDL notes that the salaries and wages amount include all salaries and wages paid, inclusive of incentive pay for management, overtime, vacations, floater holidays, sick leave, bereavement leave, union meetings and other miscellaneous paid leave. These amounts are tied to NBHDL's annual pay registers. For the purposes of incorporating the capitalization of labour, NBHDL has provided total compensation costs capitalized in each fiscal period as reconciled to the financial statements.

Table SEC-16 – Updated Table 4-13

**Appendix 2-K
Employee Costs**

	Last Rebasing Year - 2015- Board Approved	Last Rebasing Year - 2015- Actual	2016 Actuals	2017 Actuals	2018 Actuals	2019 Actuals	2020 Bridge Year	2021 Test Year
Number of Employees (FTEs including Part-Time)¹								
Management (including executive)	10.0	9.0	9.6	10.2	9.9	10.0	11.0	13.0
Non-Management (union and non-union)	39.2	36.9	36.0	36.1	34.6	34.8	38.1	40.0
Total	49.2	45.9	45.5	46.3	44.5	44.8	49.1	53.0
Total Salary and Wages including overtime and incentive pay								
Management (including executive)	\$ 1,099,796	\$ 979,953	\$ 1,164,976	\$ 1,311,168	\$ 1,409,417	\$ 1,255,530	\$ 1,390,483	\$ 1,678,677
Non-Management (union and non-union)	\$ 3,224,921	\$ 2,956,975	\$ 3,007,910	\$ 3,041,437	\$ 2,930,546	\$ 2,968,695	\$ 3,335,071	\$ 3,482,832
Total	\$ 4,324,717	\$ 3,936,928	\$ 4,172,886	\$ 4,352,605	\$ 4,339,963	\$ 4,224,225	\$ 4,725,554	\$ 5,161,508
Total Benefits (Current + Accrued)								
Management (including executive)	\$ 262,792	\$ 224,320	\$ 267,451	\$ 296,192	\$ 318,365	\$ 289,892	\$ 326,695	\$ 410,522
Non-Management (union and non-union)	\$ 772,676	\$ 726,635	\$ 742,759	\$ 746,253	\$ 724,583	\$ 726,492	\$ 831,494	\$ 891,859
Total	\$ 1,035,468	\$ 950,955	\$ 1,010,210	\$ 1,042,446	\$ 1,042,948	\$ 1,016,384	\$ 1,158,188	\$ 1,302,381
Total Compensation (Salary, Wages, & Benefits)								
Management (including executive)	\$ 1,362,589	\$ 1,204,273	\$ 1,432,427	\$ 1,607,361	\$ 1,727,782	\$ 1,545,422	\$ 1,717,178	\$ 2,089,199
Non-Management (union and non-union)	\$ 3,997,597	\$ 3,683,610	\$ 3,750,669	\$ 3,787,691	\$ 3,655,129	\$ 3,695,187	\$ 4,166,565	\$ 4,374,690
Total	\$ 5,360,185	\$ 4,887,883	\$ 5,183,096	\$ 5,395,051	\$ 5,382,911	\$ 5,240,609	\$ 5,883,743	\$ 6,463,889
Capital Labour - per Financial Statements								
	\$ 1,805,642	\$ 1,424,347	\$ 1,520,518	\$ 1,768,901	\$ 1,586,002	\$ 1,573,628	\$ 1,655,284	\$ 1,781,639

- b. NBHDL did not obtain a "Board approved" number of FTEs in 2015. 49.2 FTEs was the forecasted number of employees based on the original Application which was based on a budgeted OM&A cost of \$7,004,844 in 2015. Ultimately in the OEB approved settlement proposal, OM&A costs were reduced to \$6,422,379 (a reduction of \$582,465). To abide by the terms of the OEB approved settlement proposal, there was no possibility NBHDL would ever achieve 49.2 FTEs in 2015 or in the years immediately thereafter.

NBHDL proposed to reach the 2015 Board-approved budget in 2020, however, two of the anticipated 2020 hires have start dates in 2021; March and April respectively. Exhibit 1, pages 10 through 13, provide a summary of the significant changes that have occurred in the business between 2017 thorough to 2021. The management team has spent the last 3 years:

- establishing its leadership team
- back-filling a number of positions as a result of the executive retirements in 2017 and internal movement
- developing, building, and strengthening the IT department and address cyber security
- created the Communications Officer position to address the gap that was evident within the business and the leadership team's focus on continuing to improve customer engagement, interaction, address public relations, and build relationships with our customers in the business community
- assessing the gaps and future needs of the business as part of 2021 COS process
- the preparation and submission of this COS application

Ensuring we have the people in place to deliver on the outcomes stated in this application are a top priority and NBHDL continues to develop the resource complement and is committed to do so, so the business can move forward as described throughout the application.

- c. The 2021 FTE count proposes a net increase of 5 FTEs in the Administrative area as compared to 2015 Actuals. This is inclusive of 3 new employees in the IT department and 2 new positions that have been created since the last COS application. Section 2.4.1.1.1 provides a detailed overview of the evolution of NBHDL's IT department and pages 45-46 provide further details on these roles. It is important to note that while there are 3 new employees in this department, from a cost perspective, one employee is offset by the elimination of third-party contract costs. Section 2.4.1.1.2 provides a description of the Communications Officer and Administrative Assistant roles.

There is an increase of 2 FTES in the Engineering department as compared to 2015 Actuals, however, as is evidenced in Table 4-14 and explained in Section 2.4.3.2.2 the department experienced varying levels of recruitment as a result of resignations and retirements throughout 2015-2018 and the 2015 Board-Approved complement has been in place since 2019. NBHDL respectfully disagrees with the inference that this department is not directly involved in operating and maintaining the distribution system. The Engineering team is a critical component to the safe and reliable operation of the distribution system.

While the Operations department FTE count remains the same as 2015 Actuals, Table 4-14 provides the new structure of the department. The compliment that NBHDL has in the Lines, Substations, Metering, and Stores positions are the level that is needed to deliver the operations and capital programs set out in the application. The increase in Operations Administration is explained on pages 9 and 46.

NBHDL confirms that the Finance department has no change in FTE count from 2015 Actuals.

SEC-17

Reference: Exhibit 4, page 63

Preamble: None.

Question:

Please provide the most recent financial statements of North Bay Hydro Services, an affiliated company.

Response:

The financial statements of North Bay Hydro Services are not relevant to this proceeding.

SEC-18

Reference: Exhibit 4, page 102

Preamble: None.

Question:

In the event that the 2020 financial statements of the Applicant are not yet available in response to our previous interrogatory (#7 above), please provide the financial statements used to calculate the "Net Income Before Taxes" of \$432,438 for 2020 in Table 4-60.

Response:

NBHDL submits the below pro-forma statement for 2020:

Description	2020 Bridge	Source	Notes
Revenue			
Distribution Revenue	12,391,015	OEB Accts 4080-4090	
Other Operating Revenue (Net)	588,415	OEB Accts 4205-4245	
Total Revenue	12,979,430		
Costs and Expenses			
Administrative & General, Billing & Collecting	4,470,983	OEB Accts 5305-5340, 5605-5695	
Operation & Maintenance	2,981,844	OEB Accts 5005-5096, 5105-5195	
Donations - LEAP	15,560	OEB Accts 6205	
Depreciation & Amortization	3,120,296	OEB Accts 5705-5740	
Property Taxes	93,665	OEB Accts 6105	
Deemed Interest	1,864,643	Calc'd on Rate Base	
Total Costs and Expenses	12,546,992		
Utility Income Before Income Taxes	432,438		Adjs made for Net Loss & Transportation

SEC-19

Reference: Exhibit 4, page 104

Preamble: None.

Question:

With respect to the accelerated CCA:

- a. Please confirm that any additional CCA available to the Applicant under the accelerated CCA program reduces dollar for dollar the total amount of CCA available for those same assets in the future.
- b. Please describe the kinds of “rate base implications” that the Applicant believes could arise if the accelerated CCA program is ended.

Response:

- a. As CCA is a fixed amount of tax offset, driven by yearly capital spending, then yes, it would necessarily be the case that if a dollar of CCA is used in one year, it would no longer be available in future years.
- b. Rates are set for a period with a number of fixed assumptions. One of those assumptions is how much needs to be built into rates to cover an LDC's tax obligations and this is estimated using the OEB's PILS model. For the current rate period, this model is built with accelerated CCA, which increases the amount of CCA available for current year purchases to offset tax obligations. If the accelerated program were to end, the actual taxes paid by LDCs would increase, as a result of the lowered offset. This tax expense would be based on a calculation not part of the rate setting assumptions.

While it is true that in the long run, the same fixed amount of CCA does not change, in the shorter rate setting cycles (5+ years) it has an impact. NBHDL submits that this is the inverse of the reasoning behind setting up Account 1592. As stated on page 19 of Exhibit 9, NBHDL is planning to continue the use of account 1592, for both 2020 and after the program ends to account for differences in the calculations used for CCA between rate setting and actual future tax returns.

SEC-20

Reference: Exhibit 1, page 34, 67

Preamble: None.

Question:

Please confirm that the Applicant has been able to keep OM&A increases from 2015 to 2020 to a compound annual growth rate of 1.85% per year, and plans to keep increases to 1.95% for the period 2022 to 2025, but proposes that in 2021 the increase from the prior year should be 14.93%. Please reconcile this history and forecast with the statement on page 67 "NBHDL attempts to control costs within inflation however this is challenging to do with the many industry changes since 2015."

Response:

NBHDL is unable to confirm the compound growth rates referenced above, but confirms there is 14.94% increase in 2021 Test Year OM&A costs over 2020. A summary of the major drivers of the increase is provided in Table 4-3 and provided below for ease of reference. A few of the major drivers of this increase are the addition of 3 FTEs, increased customer engagement, tree trimming, and enhanced maintenance programs.

Table 4 - 3: 2021 Test Year Drivers

OM&A	2015 Board Approved	2020 Bridge Year	Core Values
Opening Comparative OM&A	\$ 6,429,729	\$ 7,452,827	
Salaries, Wages & Benefits	1,259,091	403,004	All
Customer Engagement	102,820	98,030	1,4,5
Corporate Policies, Initiatives, and Strategy	150,000	40,000	All
Regulatory Applications and Assessments	48,127	130,182	5
IT Systems & Maintenance	52,278	43,450	1,4,5,6
Vegetation Management	260,033	106,353	2,3,4
Locates	140,248	55,495	4
Operational and Maintenance Programs	198,525	205,525	2,3,4
Other Miscellaneous programs	(74,914)	31,072	4
2021 Test Year OM&A	\$ 8,565,938	\$ 8,565,938	

NBHDL acknowledges that the proposed 2021 Test Year OM&A costs result in a significant increase and is not easily comparable to the historical spending, however, the business has evolved since 2015 and as referenced throughout the application and reiterated in SEC-16, the last 3 years have seen a significant transition in the leadership team and the direction the business will take over the next 5 years. This rate application does not simply incorporate inflationary increases on historical costs.

The proposed OM&A budget includes several incremental costs over the 2015 OM&A budget including OEB cost assessment, cyber security, enhanced annual customer engagement, improved customer interaction tools, an increase in the amount of vegetation management work, investment in the updating and creation of new policies, initiatives, and strategy, enhanced maintenance programs, an Arc Flash study, the addition of three new resources, and succession for critical management roles in the Operations department. NBHDL is unable to pursue these important initiatives if they are not funded in rates.

NBHDL's rate proposal for 2021 enables the company to achieve the outcomes that are included in this rate application; once rates are reset, NBHDL expects to operate through the proceeding IRM period in

accordance with the rate regime the company is in. The forecasted OM&A costs referenced for 2022-2025 reflect this.

SEC-21

Reference: Exhibit 8, page 7-8

Preamble: None.

Question:

Please confirm that, if the fixed charge for GS>50 is kept at the current level of \$315.75, the volumetric rate would be \$3.4369/kW, and for a customer in that class with 100kW of demand their annual distribution bill would be reduced by \$221.78 or about 2.7%. Please provide a similar calculation if the fixed charge is reduced to \$76.84, the Minimum System with PLCC Adjustment.

Response:

NBHDL is unable to confirm that, if the fixed charge for GS>50 is kept at \$315.75, the volumetric rate would be \$3.4369/kW. However, NBHDL has completed its own analysis and has calculated that if the fixed charge for GS>50 is kept at \$315.75, the volumetric rate would be \$3.4154/kW. For a customer in that class with 100kW of demand, the annual distribution bill would be reduced by \$247.56 or about 3.0%.

NBHDL has calculated that if a fixed charge for GS>50 is updated to \$76.84, the volumetric rate would be \$4.9152/kW. For a customer in that class with 100kW of demand, the annual distribution bill would be reduced by \$1,067.16 or about 13.1%. On total monthly bill of \$5,667.94, when factoring in all variables and using a median consumption of 33,000kWh, this represents a decrease of \$39.72, or 0.70%.

RESPONSES TO INTERROGATORIES FROM VULNERABLE ENERGY CONSUMERS COALITION

1.0 ADMINISTRATION (EXHIBIT 1)

1.0-VECC-1

Reference: Exhibit 1, page 85

Preamble: None.

Question:

a) Has NBHDL filed the Phase 3 Consumer Engagement Survey discussed at page 85 of the evidence and which it intended to undertake in January of this year?

Response:

Please see SEC-2(2).

1.0-VECC-2

Reference: Exhibit 1, page 89

Preamble:

NBHDL found in its survey that 87.84% of its customers support adding incentives to switch to paperless billing.

Question:

How is the Utility implementing that finding?

Response:

NBDHL had initially intended to offer a prize of a small and reasonably priced vacation package to a draw winner, chosen from those who made a confirmed transition to paperless billing. With the onset of the pandemic, health and safety risks, and restrictions on travel, NBHDL will be re-evaluating the prize portion of the incentive ensuring safety is paramount. NBHDL will look to begin marketing the paperless billing incentive in 2021 and the costs incorporated into this are contemplated within the customer engagement budget.

Please also see 1-Staff-6.

1.0-VECC-3

Reference: Exhibit 1, page 89

Preamble: None.

Question:

- a) The NBDHL sponsored survey shows customers have a strong preference for social media or email to inform them of unplanned outages. What system does the Utility currently employ to inform customers of unplanned outages?
- b) What system does NBDHL use to inform customers of planned outages?
- c) Only 37% of customers survey found NBHDL's outage information very effective. What steps are being taken to improve outage information?

Response:

- a) NBHDL currently manages multiple mediums to provide updates on unplanned outages. Information is pushed to NBHDL social media accounts (Facebook and Twitter), NBHDL's website outage map, and responding to phone calls through the Operations Department. Local media outlets have been informed that in an effort be to as efficient and as accurate as possible, they are to pull messaging directly from NBHDL's social media pages which are a direct connection to the customer.
- b) Customers are notified of planned outages by way of individual door knockers placed at each home or business affected by the outage as well as NBHDL's social media accounts. Each leave-behind at customer locations consists of detailed information as well as a point of contact for any questions or concerns. NBHDL's out map on its website also provides up to date information on all outages, both planned and unplanned.
- c) NBHDL would note that while only 37% of customers found NBHDL very effective, 73.85% of respondents felt that NBHDL was effective. However, NBHDL believes this is an area that requires improvement and social media management software was implemented in 2020 to increase the effectiveness and efficiency in delivering timely updates to customers. The Communications Officer works with the Operations Department directly to apply the tool to each unplanned outage situation. NBHDL is confident that this tool, along with dedicated internal communications, will assist in timely updates that will appease customer expectations and increase the "very effective" response moving forward. Section 2.1.7.5 in Exhibit 1 outlines the investments and dedicated customer engagement commitments that NBHDL intends to put in place to improve customer interactions and meet the needs and expectations of customers. Without this funding, NBHDL will be unable to deliver on these initiatives.

1.0-VECC-4

Reference: Exhibit 1, page 107

Preamble:

At the above reference it states : “NBHDL has always operated without a 24/7 control room, trading longer outage durations in after-hour events for lower overall operating costs.”

Question:

- a) Does NBHDL collect statistics to understand the difference in response time and outage during and after business hours? If so please provide the last five years data and comment on the differences.

Response:

While NBHDL does review the general details (such as the restoration response) of an outage in management debriefing meetings to identify opportunities for improvements, it does not explicitly collect data on outages to produce statistics on response time to an outage. Upon analysis of outage data and a broad assumption that on average, an after-business hours response to an outage will add about an hour to the restoration time, the following information in Table 1.0-VECC-4 can be estimated:

Table 1.0-VECC-4 – Estimated Response Time

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>
Number of After Hour Outage Occurrences	33	59	49	50	68	49
Total Number of Customer Interruptions After Hours	5632	15192	9441	11796	6793	7961
SAIDI Contribution from After Hours Response Time	0.233	0.628	0.39	0.487	0.281	0.329

From the table above, after hour response time does contribute a significant SAIDI value, however; NBHDL's overall SAIDI still remains good and NBHDL continues to meet its targets annually. The improvement to restoration time realized from a 24/7 control room would require a significant increase to staffing resources (2 to 3 additional employees) and an associated increase to O&M cost.

1.0-VECC-5

Reference: Exhibit 1, page 109

Preamble: None.

Question:

a) Please update tables 1-49 and 1-50 to include 2020 results.

Response:

These values are not calculated by LDCs. Through the annual RRR submission, the data of all LDCs are collected and the PEG report is updated with applicable data. This information is typically released in August and 2020 actual results will be unavailable until August 2021. However, based on preliminary calculations, using the most recently released OEB supplied 2021 Benchmarking Forecast Model, NBHDL submits the following Table 1.0-VECC-5.

Table 1.0-VECC-5 – Cost per Customer and Cost per KM Line from 2015 to 2020

Measure/Year	2015	2016	2017	2018	2019	2020
Total Cost per Customer	\$ 675	\$ 659	\$ 672	\$ 695	\$ 732	\$ 754
Total Cost per KM Line	\$ 28,297	\$ 27,680	\$ 28,233	\$ 29,208	\$ 30,928	\$ 31,869

1.0-VECC-6

Reference: Exhibit 1, page 119

Preamble:

Question:

a) Please update Table 1-57 (PEG Summary Table) to show the results for 2015 to 2018 and the 2021 actual total costs results.

Response:

Table 1-57 has been updated to provide results for 2015 to 2018. 2021 actual results are not available. Based on preliminary calculations and using the most recently released OEB supplied 2021 Benchmarking Forecast Model, NBHDL submits the following Table 1.0-VECC-6 which includes an update for available 2020 actuals:

Table 1.0-VECC-6 – Updated Table 1-57

Cost Benchmarking Summary	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Bridge	2021 Test	2022 Forecast	2023 Forecast	2024 Forecast
Actual Total Cost	16,186,108	15,860,761	16,206,020	16,794,774	17,721,539	18,261,014	20,483,290	20,942,284	21,412,578	21,930,036
Predicted Total Cost	15,094,161	15,355,279	15,341,396	16,251,685	16,873,219	17,499,899	18,238,195	18,991,975	19,771,992	20,586,998
Difference	1,091,947	505,482	864,624	543,089	848,320	761,115	2,245,095	1,950,309	1,640,586	1,343,038
% Difference (Performance)	7.0%	3.2%	5.5%	3.3%	4.9%	4.3%	11.6%	9.8%	8.0%	6.3%
Three-year Average Performance			5.2%	4.0%	4.6%	4.1%	6.9%	8.5%	9.8%	8.0%
Stretch Factor Cohort										
Annual Result	3	3	3	3	3	3	4	3	3	3
Three-year Average			3	3	3	3	3	3	3	3

1.0-VECC-7

Reference: Exhibit 1, pages 124-, Appendix 1-B: NBHDL's 5 Year Business Plan

Preamble:

The Business Plan contains a number of targets and the OEB's mandated Scorecard.

Question:

- a) Please explain the way in which these targets correspond to management and non-management employee compensation.

Response:

As explained on Page 39 of Exhibit 4, NBHDL's workforce is comprised of both unionized and non-unionized management employees. Overall compensation for all employees is designed to be competitive and equitable to attract and retain qualified personnel in an industry that is very competitive for skilled resources. The compensation for unionized employees is negotiated through the collective bargaining process and includes both office and trade workers. The compensation negotiated is not tied directly to the targets referenced in the Business Plan in the sense that should a target be missed in any given year, negotiated increases will be held. That being said, many of these targets form the day-to-day operational requirements and impact the assessment of job performance. At a broader level several of the targets, for example the OEB ROE, continuously improving efficiency and productivity, positioning the business for change, are all taken into consideration when CBA negotiations take place.

Also explained on Page 39-40 of Exhibit 4, The Hay system is utilized for job evaluation and management compensation. The Hay system is an industry standard job evaluation system used to develop and maintain pay structures by comparing similarities and differences in the content and value of jobs. The system establishes pay differentials between jobs, establishes fair and equitable compensation programs, identifies and eliminates wage inequities, and establishes a sound foundation for consistent pay administration. The Hay evaluation process includes job analysis, job descriptions, job evaluation and job structure or ordering of jobs based on their relative value or content. Job evaluation factors include know-how, problem solving, accountability and working conditions. Within each factor are several sub-factors with a defined number of points available. The points are assessed and totaled for each job and the Hay system divides the total range of points into an appropriate number of grades. An external consultant assigns pay rates to each of the grades based on their experience and compensation from similar sized businesses in the LDC sector. Each grade level includes a minimum, midpoint, and maximum pay level. Progression within the grade is assessed annually, but is not automatic. Progression is based on performance, merit, individual growth, and contribution to goals/objectives. When progression is awarded, the changes go into effect in April. Outside of progression, the structure is inflated annually at the same rate of the cost-of-living increases included in the union CBA, which is always tested against an affordability.

The targets referenced in the Business Plan are primarily tied to the day-to-day operations of the business and form the overall review of progression movement in a role. These targets are inherently incorporated into the budget process on an annual basis and the costs incorporated into this application are required in order to achieve the outcomes NBHDL has put forward. In addition, the incentive structure explained on Page 118 of Exhibit 1 also ties in the OEB ROE, overall infrastructure investment, operational requirements and shareholder value.

1.0-VECC-8

Reference: Exhibit 1, pages 124-, Appendix 1-B: NBHDL's 5 Year Business Plan

Preamble: None.

Question:

Please explain why the Business Plan capital expenditures (page 14) are different from those found in Appendix 2-AA and 2-AB.

Response:

Please see SEC-4(2).

1.0-VECC-9

Reference: Exhibit 1, Appendix 1-F

Preamble: None.

Question:

Please update the OEB Scorecard to include 2020 results.

Response:

At this time NBHDL has been primarily focused on its fiscal year-end and this application. As such, much of the 2020 RRR data that would drive the Scorecard will not be available until closer to the RRR filing submission date of May 17, 2021. However, based on preliminary calculations, NBHDL can provide the following Table 1.0-VECC-9 with Cost Control and Financial measures:

Table 1.0-VECC-9 – Cost Control and Financial Ratios 2020

Performance Category	Measure	2020
Cost Control	Efficiency Assessment	3
	Total Cost per Customer	754
	Total Cost per Km of Line	31,869
Financial Ratios	Liquidity (Current Ratio)	2
	Leverage (Debt to Equity)	1
	Achieved ROE	4.72%

2.0 RATE BASE (EXHIBIT 2)

2.0-VECC-10

Reference: Exhibit 2, pages 3, 21

Preamble: None.

Question:

- a) Please update Table 2-1 to show 2020 actual results.
- b) Please update Table 2-19 (Fixed Asset Continuity) as at December 31, 2020.
- c) The forecast Work in Progress for 2021 of \$229,450 is significantly lower than in all other years except 2015. How is that estimate derived for 2021?

Response:

- a) NBHDL submits the following updated Table 2-1 as Table 2.0-VECC-10.1 with 2020 actual results. These results are then carried through the Test Year as submitted.

Table 2.0-VECC-10.1 – Updated Table 2-1

Description	2015 OEB Approved	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Bridge Year	2021 Test Year
Reporting Basis	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS	MIFRS
Gross Fixed Assets, Opening Balance	106,852,867	106,852,867	112,354,333	117,032,985	121,322,449	127,363,833	133,293,031	138,323,447
Gross Fixed Assets, Closing Balance	113,541,517	112,354,333	117,032,985	121,322,449	127,363,833	133,293,031	138,323,447	143,619,274
Average Gross Fixed Assets	110,197,192	109,603,600	114,693,659	119,177,717	124,343,141	130,328,432	135,808,239	140,971,360
Accumulated Depreciation, Opening Balance	55,798,816	55,798,816	57,675,286	59,769,779	61,386,005	63,848,896	66,250,083	68,922,432
Accumulated Depreciation, Closing Balance	57,764,248	57,675,286	59,769,779	61,386,005	63,848,896	66,250,083	68,922,432	71,686,584
Average Accumulated Depreciation	56,781,532	56,737,051	58,722,533	60,577,892	62,617,451	65,049,490	67,586,257	70,304,508
Average Net Book Value	53,415,660	52,866,549	55,971,127	58,599,825	61,725,691	65,278,943	68,221,982	70,666,853
Working Capital	71,805,594	64,814,706	69,286,042	62,970,878	61,420,501	64,739,421	72,963,231	74,733,510
Working Capital Allowance (%)	10.31%	10.31%	10.31%	10.31%	10.31%	10.31%	10.31%	7.50%
Working Capital Allowance	7,403,157	6,682,396	7,143,391	6,492,298	6,332,454	6,674,634	7,522,509	5,605,013
Rate Base	60,818,817	59,548,945	63,114,517	65,092,123	68,058,144	71,953,577	75,744,491	76,271,866

Please also see 2-Staff-14 and 1-Staff-1 working capital changes.

- b) NBHDL submits the following updated Table 2-19 as Table 2.0-VECC-10.2.

Table 2.0-VECC-10.2 – Updated Table 2-19

Fixed Asset Continuity Schedule (Distribution & Operations)										
As at December 31, 2020										
OEB	Description	Cost				Accumulated Depreciation				
		Opening Balance	Additions	Disposals	Closing Balance	Opening Balance	Additions	Disposals	Closing Balance	Net Book Value
1611	Computer Software	1,662,300	29,290		1,691,589	1,567,600	37,657	-	1,605,256	86,333
1805	Land	505,305			505,305	-	-	-	-	505,305
1806	Land Rights	-			-	-	-	-	-	-
1808	Buildings and Fixtures	966,190	38,247		1,004,437	402,351	18,882		421,233	583,204
1810	Leasehold Improvements	-			-	-			-	-
1815	Transformer Station Equipment - Normally Primary above 50 kV	-			-	-			-	-
1820	Distribution Station Equipment - Normally Primary below 50 kV	21,226,264	578,986		21,805,250	6,493,390	535,935		7,029,325	14,775,925
1825	Storage Battery Equipment	-			-	-			-	-
1830	Poles, Towers and Fixtures	27,652,711	1,281,925	95,333	28,839,303	12,794,735	470,509	85,201	13,180,043	15,659,260
1835	Overhead Conductors and Devices	20,443,104	697,694	117,478	21,023,321	9,623,326	250,150	99,959	9,773,517	11,249,804
1840	Underground Conduit	2,728,943	672,013		3,400,956	357,248	60,322		417,570	2,983,386
1845	Underground Conductors and Devices	8,609,085	286,762	40,454	8,855,393	5,185,476	134,959	38,059	5,282,376	3,573,017
1850	Line Transformers	19,823,104	604,426	138,932	20,288,599	10,592,475	331,471	126,363	10,797,583	9,491,015
1855	Services	23,431,606	1,331,602		24,763,208	9,686,727	545,397		10,232,125	14,531,083
1860	Meters	6,370,684	71,918		6,442,602	3,837,541	398,699		4,236,241	2,206,362
1865	Other Installations on Customer's Premises	-			-	-			-	-
1905	Land	86,551			86,551	-			-	86,551
1906	Land Rights	-			-	-			-	-
1908	Buildings and Fixtures	3,648,165			3,648,165	1,923,817	109,611		2,033,428	1,614,737
1910	Leasehold Improvements	-			-	-			-	-
1915	Office Furniture and Equipment	393,914			393,914	354,160	9,712		363,873	30,042
1920	Computer Equipment - Hardware	1,390,644	242,694		1,633,337	1,053,105	93,636		1,146,741	486,597
1930	Transportation Equipment	3,485,797		32,462	3,453,335	2,418,721	257,472	32,462	2,643,731	809,604
1935	Stores Equipment	142,493			142,493	79,010	2,692		81,701	60,792
1940	Tools, Shop and Garage Equipment	1,473,156	144,385		1,617,541	1,307,769	42,768		1,350,538	267,004
1945	Measurement and Testing Equipment	-			-	-			-	-
1950	Power Operated Equipment	-			-	-			-	-
1955	Communication Equipment	204,627	869		205,496	165,175	9,277		174,451	31,045
1960	Miscellaneous Equipment	21,010	27,472		48,482	19,954	293		20,247	28,235
1970	Load Management Controls - Customer Premises	403,931			403,931	403,931			403,931	-
1975	Load Management Controls - Utility Premises	165,151			165,151	165,151			165,151	-
1980	System Supervisory Equipment	1,944,674	5,538		1,950,213	1,385,483	60,358		1,445,841	504,371
1985	Sentinel Lighting Rentals	-			-	-	-	-	-	-
1990	Other Tangible Property	53,060			53,060	34,671	1,630	-	36,301	16,759
1995	Contributions and Grants	(9,298,809)	-	-	(9,298,809)	(3,251,111)	(212,507)	-	(3,463,618)	(5,835,191)
2440	Deferred Revenue	(4,240,628)	(558,748)	-	(4,799,376)	(350,621)	(104,532)	-	(455,153)	(4,344,223)
2005	Property under Capital Lease	-	-	-	-	-	-	-	-	-
	Total before Work in Process	133,293,030	5,455,075	424,659	138,323,447	66,250,083	3,054,393	382,044	68,922,432	69,401,015
	Work in Process	1,334,696	164,955	-	1,499,651	-			-	1,499,651
2070	Other Utility Plant - assets not in use		-	-	-				-	-
	Total after Work in Process	134,627,726	5,620,030	424,659	139,823,098	66,250,083	3,054,393	382,044	68,922,432	70,900,666

- c) The statement made that CWIP in 2021 is \$229,450 is incorrect. \$229,450 represents the net changes in CWIP (additions less subtractions) in 2021. The closing CWIP balance included in the 2021 Test Year is \$1,904,252. NBHDL submits that this value is well within the range of the historical period (\$896,580 to \$2,611,071) and is an appropriate amount to exclude from rate base calculations.

CWIP estimates are completed through a review by the Engineering department of prior year work orders (jobs) that are still in CWIP and determining which jobs are expected to be in-service at year end of 2021. The same determination is completed with 2021 jobs to determine expected timing of completions. Jobs that will continue into 2022 are included in CWIP.

2.0-VECC-11

Reference: Exhibit 2, Appendix 2-AA

Preamble:

Question:

- a) Please update Appendix 2-AA for 2020 actual results.
- b) Please identify the amount of work in progress at the end of 2020

Response:

- a) The updated 2-AA with 2020 actual results for capital project spending is provided in the live excel model "NBHDL_Ch2_Appendices_20210401" filed with these interrogatories
- b) Work in Progress at the end of 2020 is \$1,499,651.

2.0-VECC-12

Reference: Exhibit 2, Table 2-37 (Appendix 2-AB), page 55

Preamble: None.

Question:

- a) Please explain how the capital contribution forecasts for 2021 through 2025 was estimated.
- b) What were the actual capital contributions in 2020?
- c) Are all capital contributions attributable to the System Access category of capital spending? If not please show the apportionment of contributions to each of the capex category in Appendix 2-AB.

Response:

- a) The estimate for capital contributions for 2021 was determined by various project category related to customer demand work (primarily System Access jobs) including Road Relocations, Subdivisions, Primary Services, Secondary Services and Transformers. This type of work is typically subject to capital contributions and NBHDL applied varying percentages to the gross cost of the underlying demand work values which are estimated using historical averages.
- b) Actual capital contributions for 2020 was \$558,748.
- c) Capital contributions are primarily related to System Access work, however, the 2021 Test Year includes estimated contributions for jobs that are apportioned to other DSP categories. The following Table 2.0-VECC-12 provides this breakdown. Please see also 2-Staff-29(b),

Table 2.0-VECC-12 – Breakdown of Capital Contributions in 2021

Capital Contributions: 2021 Test Year	
System Renewal	136,908
System Service	11,279
System Access	402,957
Total	551,144

2.0-VECC-13

Reference: Exhibit 2, Appendix 2-A, DSP, page 10

Preamble: None.

Question:

- a) Please explain in more detail what the potential North Bay City “south side development” is and what potential capital programs are being considered.

Response:

The “South Side Development” refers to a City of North Bay initiative to promote development in the southern part of the city also referred to as the West Ferris Area. More specifically, this involves potential developments of two Industrial Subdivisions, a Condo Development, and the rezoning of a Rural area to Industrial / Commercial to accommodate more growth. Many of these plans are in the very early stages of development, however some are currently underway with new restaurants and a casino under construction and plans for a hotel and a new sports arena underway. No System Service improvements are required for the existing planned developments listed above.

If the City of North Bay is successful in their initiative to attract additional businesses and push development, this area could potentially experience an increase in demand large enough that NBHDL would have to invest in upgrading its system. The system currently has a radial primary supply only which provides no alternatives to feed power in the event of an outage. System improvements for that area could include the upgrade of a single-phase circuit to a 3-phase circuit to provide redundancy. Potential sub-transmission circuit improvements might also be part of a longer-term plan. This work is currently in the early stages of development and there are no definitive plans or timelines yet.

Since the infrastructure in this area is also very old and at the end of life, some of the system upgrades will coincide with system renewal work. The prioritization of these projects will be based on the pace of development in this area. NBHDL will ensure that future developments requiring additional capacity contribute to the improvement of the system. At this stage, it is too early to make a determination on what kind of growth the area will experience, but it is an important consideration for NBHDL’s future planning.

3.0-VECC-14

Reference: Exhibit 2, Appendix 2-A, DSP, page 19

Preamble: None.

Question:

- a) Please explain why the target SAID and SAIFI measures are significantly higher (less ambitious) than the past average.
- b) How is the compensation of NBHDL employees impacted by meeting, exceeding or failing to meet these targets?

Response:

- a) The target include in Table 2-5 comes directly from the OEB's utility specific target in the annual scorecard. This target is derived from NBHDL's 5-year average from 2010-2014. The scorecard trending results (directional arrows) are then based on the comparison of the current 5-year rolling average to the fixed 5-year (2010 to 2014) average distributor-specific target. An upward arrow indicates decreasing reliability while downward indicates improving reliability.
- b) The compensation of NBHDL employees is not impacted by these targets.

2.0-VECC-15

Reference: Exhibit 2, Appendix 2-A, DSP, page 20-21

Preamble:

Table 2-7: Number of Outages by cause codes (2015-2019) – Excluding MEDS

Cause Code	2015	2016	2017	2018	2019	Total Outages	Percent Share	Percent Share Excluding LoS
0-Unknown/Other	7	13	13	18	10	61	7.47%	7.67%
1-Scheduled Outage	5	14	4	19	13	55	6.73%	6.92%
2-Loss of Supply	-	1	4	3	14	22	2.69%	---
3-Tree Contacts	30	17	24	25	43	139	17.01%	17.48%
4-Lightning	3	-	4	2	0	9	1.10%	1.13%
5-Defective Equipment	36	37	12	47	27	159	19.46%	20.00%
6-Adverse Weather	6	10	10	1	6	33	4.04%	4.15%
7-Adverse Environment	-	1	-	-	-	1	0.12%	0.13%
8-Human Element	2	8	5	4	15	34	4.16%	4.28%
9-Foreign Interference	52	79	60	48	65	304	37.21%	38.24%

Question:

- a) The 2nd leading cause of outages are due to defective equipment. Please explain what are the most common defective equipment outages.
- b) How these are addressed in the DSP.
- c) What is NBHDL's DSP target for outages due to defective equipment?

Response:

- a) The most frequent cause of a defective equipment outage is the failure of conductors and their supporting equipment. The most common occurrences of this comes in the form of failed insulators, crossarms, arresters, line tap connections, and sleeves. These failures are associated with the degradation of the assets that occurs as they age. Poles are typically replaced when they fail an inspection. In-service failures where a pole actually breaks and ends up on the ground is rare.
- b) Since the nature of these equipment failures are mainly due to aged pole assets in poor condition, these failures are addressed in the DSP through system renewal projects. Despite it being the second leading cause, the defective equipment failures are still relatively acceptable in respect to how they impact NBHDL's overall reliability performance targets. NBHDL's system renewal projects will have their benefits realized through an avoidance of an increase to defective equipment outages.
- c) NBHDL only has set targets for the overall system performance and does not have specific targets for each cause code. NBHDL does manage its overall performance targets by actively reviewing each cause code and, as a strategy, will focus on the most significant risks (greatest

contributors) such as defective equipment and tree contacts to ensure the overall system targets are met.

2.0-VECC-16

Reference: Exhibit 2, Appendix 2-A, DSP, page 23

Preamble:

Table 2-9: Customer Hours Interrupted by cause codes (2015-2019) – Excluding MEDs

Cause Code	2015	2016	2017	2018	2019	Total CHI	Percent Share	Percent Share Excluding LoS
0-Unknown/Other	183	1,127	1,399	1,671	726	5,106	2.41%	2.77%
1-Scheduled Outage	377	687	283	232	3,126	4,705	2.22%	2.55%
2-Loss of Supply	-	1,703	5,355	5,914	14,489	27,461	12.96%	---
3-Tree Contacts	11,660	18,710	12,043	13,349	7,991	63,753	30.10%	34.58%
4-Lightning	108	-	1,063	506	0	1,677	0.79%	0.91%
5-Defective Equipment	6,899	20,054	5,438	27,660	5,747	65,798	31.06%	35.69%
6-Adverse Weather	3,314	3,171	1,493	10	878	8,866	4.19%	4.81%
7-Adverse Environment	-	3	-	0	0	3	>0.01%	>0.01%
8-Human Element	47	1,225	321	1,777	870	4,240	2.00%	2.30%
9-Foreign Interference	3,950	10,554	4,736	2,184	8,800	30,224	14.27%	16.39%

Question:

- With respect to Scheduled Outages please explain the reason(s) for the large number of customer hour outages experienced in 2019.
- What target metric is being adopted for customer hours interrupted by scheduled outages?
- What programs are being proposed in the DSP to reduce outage time for scheduled outages?

Response:

- The large number of customer hours caused by scheduled outages in 2019 were mainly due to a specific line rebuild project and voltage conversion projects. In both cases, the scheduled outages were necessary and could not be avoided.
- There are no target metrics for scheduled outage interruptions. The nature of scheduled outages is for work that cannot safely be completed while electrical energy is present or when limits of approach cannot be maintained. NBHDL determines the need for scheduled outages through risk assessment and will only perform a scheduled outage when necessary. While NBHDL strives to keep these outages as short as possible, NBHDL will never risk the safety of its crews in pursuit of a performance target. No target for scheduled outages is being adopted.
- There are no specific programs in the DSP to reduce outage time for scheduled outages. The number of planned outages should decrease beyond 2021 when the conversion of the 4.16kV system to 12.47kV is complete. In order to ensure the shortest planned outage times, NBHDL prepares a plan, visits customers impacted to advise them of the time of the outage, prepares

all equipment and discusses the work in detail with the crews prior to the outage. NBHDL balances resource utilization with the required work in efforts to minimize scheduled outage time.

2.0-VECC-17

Reference: Exhibit 2, Appendix 2-A, DSP, page 25

Preamble:

Table 2-10: Worst Performing Feeder analysis (2018-2019)

Ten Worst Performing Feeders Based on CI – 2018-2019			Ten Worst Performing Feeders Based on CHI – 2018-2019		
Feeder	CHI	CI	Feeder	CHI	CI
15M3	3,542	12,273	18M5	8,652	8,982
18M2	7,816	11,185	14F2	8,311	3,147
18M5	8,652	8,982	18M2	7,816	11,185
17F1	5,686	3,551	17F2	6,079	2,116
11F1	2,528	3,383	18M8	5,902	1,531
14F2	8,311	3,147	17F1	5,686	3,551
10F2	2,265	2,755	13F2	5,615	2,316
15M2	313	2,550	14F3	4,732	2,096
13F2	5,615	2,316	15M3	3,542	12,273
17F2	6,079	2,116	14F1	2,842	1,218

Question:

- a) Feeders 18M2 and 18M5 appear to be poorly performing. What programs are incorporated into this DSP to address those feeders?

Response:

- a) To provide context to the information in Table 2-10 any feeder with the “M” designation is a 44kV sub transmission feeder that supplies multiple distribution stations which supply a significant number of customers. Any failure on these lines will have a significant impact to both CHI and CI. As such, the reliability of these feeders is critical to maintain performance targets. The two largest overhead projects in 2021 (Wallace Road and MS10 to Hwy 11 South) both address sections of line in poor condition that pose reliability and redundancy risks to the 18M2. Sections of the 18M5 will be addressed with priority in subsequent years.

In Table 2-10 above, it can be observed that three 44kV Sub Transmissions (18M2, 18M5, 15M3) tops the list. These feeders however only represent 2.6% (9 of 340) of the total outage occurrences, but account for 40% (26,330 of 65,510) and 26% (19,350 of 75,043) of the total CI and CHI respectively for the period of the table (2018-2019). NBHDL’s Project Prioritization Tool takes into account the CI and CHI values and identifies a risk-cost to every project. As evident by the values identified above, any outage on these 44kV feeders will have a significant impact to reliability metrics and the tool will prioritize 44 kV feeders in poor condition ahead of other lines with lower consequences in the event of failure.

2.0-VECC-18

Reference: Exhibit 2, Appendix B – Scorecard NBH

Preamble: None.

Question:

- a) Please update the Scorecard to include 2020 results.

Response:

This question appears to be similar to VECC-9. NBHDL does not have 2020 scorecard results at this time. These results will be compiled and available upon submission of the RRR filing requirement to the OEB by May 17, 2021. The OEB does not release the Scorecard itself until September.

2.0-VECC-19

Reference: Exhibit 2, Appendix C, Metsco Asset Condition Report 2020, pages 8-9

Preamble: None.

Question:

- a) For each of the asset types shown in Table 0-2 what are the expected proportion of assets that will be in “very good “ and “good “ condition at the end of the DSP period (i.e., in 2025)?

Response:

- a) Not including station or building assets, NBHDL’s system renewal investments are estimated to replace approximately 1.7% to 1.8% of its system assets every year. At this pace, NBHDL expects the proportion of assets that will be in the “very good” and “good” condition category to either remain the same or only marginally increase at the end of the DSP period. This is because the expected pace of which NBHDL turns “poor” and “very poor” assets into “very good” assets is estimated to be the same pace at which the number of “very good” and “good” assets degrade into “good” and “fair” respectively and “fair” assets degrade to “poor or very poor”.

2.0-VECC-20

Reference: Exhibit 2, Appendix C, Metsco Asset Condition Report 2020, pages 66-

Preamble: None.

Question:

- a) At section 5.1 of the Asset Condition Assessment Metsco offers 10 areas for health index improvements. Please describe how (if) these recommendations for additional condition parameters will be incorporated in to the next asset condition assessment.
- b) At section 5.2 Metsco makes a number of recommendations on improvements to data collection. Please comment on how (if) these recommendations are to be incorporated into the capital planning of NBHDL.

Response:

- a) NBHDL will collect additional condition parameters to improve the Health Index. Many of the data improvements require investments in O&M in order to hire a third party to perform the test. Aside from the testing initiatives that are already included in the DSP application, NBHDL will concentrate its efforts with the recommendations that offer the highest impacts. NBHDL will then perform a cost-benefit analysis to determine which inspections and tests should proceed to ensure the investment has end-result value to the customers. Some of the simple tests such as Visual Inspections will be performed for all assets within a category, or a sample size based on a resource allocation-benefit analysis.

The following is the planned methodology to incorporate the health index improvement recommendations in the next asset condition assessment:

- a. Underground Cable:
 - a. Field testing will be conducted on sample sizes if funding approval is provided in this application.
 - b. Time Domain Reflectometry will be investigated.
- b. Overhead Distribution Transformer:
 - a. Visual Inspection of overhead transformers will have little impact on the asset replacement strategy since NBHDL runs transformers to failure. NBHDL does not perform maintenance on overhead transformers. This will not be performed.
- c. Underground Pad-Mount Transformers:
 - a. An IR scan would provide additional data, however like overhead transformers, underground transformers are also run to failure, therefore the benefit of this IR scan would be limited and will not be performed.
- d. Underground Distribution Vault Transformer
 - a. The Visual Inspection and Condition of Civil Structure will be performed.
 - b. An IR Scan for these transformers will be investigated.
- e. Distribution Overhead Switch:
 - a. IR Scans are performed every 3 years and will continue.
 - b. Visual inspections will be performed on sample sizes of switches based on resource availability.
- f. Switchgear:

- a. Contact resistance tests, timing tests and arc chutes will be investigated.
- g. Reclosers:
 - a. Resistance tests, timing tests and oil analysis tests will be investigated.
- h. Protection Relays:
 - a. Defect and Test Reports and Mean Time Between Failures will be investigated.
- i. Station Overhead Switch:
 - a. Contact resistance tests will be investigated.
- j. Ground Grid:
 - a. Testing for the ground grids will not be performed to limit testing costs unless there are indications of an issue following substation inspections.

Doing any of the above-mentioned work is dependent on the funding received from this rate application.

- b) NBHDL will incorporate additional data collection through its current inspections programs and perform increased visual inspections on all asset classes. It will also develop a plan following some of the recommendations in the ACA in order to collect better data for future submissions. Part of this plan is dependent on the approval of the costs included as part of this application.

Many of these initiatives are listed under the Maintenance and Safety Inspections section of the DSP, on page 51-56. They include the following:

- Complete the inspection of every pole prior to the next ACA.
- Complete pole testing on high voltage carrying poles that are over 10 years old.
- Underground cable testing.

NBHDL will evaluate the use of various grade levels for their condition analysis to further differentiate between the various conditions.

One limitation is NBHDL's limited ability to keep and utilize the data it collects due to the limits of its GIS system, however NBHDL is planning to upgrade its ESRI based GIS software (new licensing agreement) in 2021. NBHDL has been using the GIS to store valuable information such as asset technical and locational data and is now moving to use it to store valuable asset condition information collected in the field. It is also being used to start storing outage information and equipment failures. Using the GIS, NBHDL will be able to better represent the conditions of its system to geographical areas which can be used by engineering personnel to understand which areas need addressing. This visual representation is an invaluable tool that will paint a very clear picture to even relatively inexperienced staff. NBHDL's current non-server-based GIS version has seen a significant decrease in performance to the point where it has been described as "frustrating" to use by staff. Slow data loading, freezes, and crashes are some of the issues experienced with increased frequency through the importation of additional data. The amount of data that can be inputted is near capacity and is at risk to become "unusable" due to performance issues. The upgraded GIS will not only solve the performance issues but open up access to data collecting applications which will allow field personnel to directly import the data, such as pole testing results, into the GIS seamlessly. It will also open up access to additional engineering and operations staff who can use it with the new licensing agreement. Without an upgrade to the GIS, NBHDL will not be able to store and use the additional data collected and there will be no benefit in collecting additional data. The investment requested to upgrade the

GIS is critical to allow for enhanced data collection and better tracking of assets over the next 5 years that will aid in the improvement of NBHDL's asset management program.

2.0-VECC-21

Reference: Exhibit 2, Appendix G, IT Strategy through 2025

Preamble:

CAPEX	2020	2021	2022	2023	2024	2025	5-Yr Total	5-Yr Avg
**	354,470	244,950	106,600	110,350	269,650	295,620	1,027,170	205,434
Servers	189,350	-	70,000	46,000	194,300	189,350	499,650	99,930
Facilities	70,100	3,600	-	-	4,800	8,000	16,400	3,280
Printers/Office Eq	6,400	-	27,500	16,000	26,100	6,400	76,000	15,200
Workstations	46,200	8,200	6,100	48,350	33,900	49,450	146,000	29,200
Enterprise Software	-	183,350	-	-	8,000	-	191,350	38,270
Networking/Cyber	41,170	7,800	3,000	-	2,550	41,170	54,520	10,904
Licenses	1,250	42,000	-	-	-	1,250	43,250	8,650

Question:

- a) Please reconcile the 2021 IT budget from the IT Strategy (above) and the amounts shown under General Plant in Appendix 2-AA.

Response:

- a) NBHDL submits the following Table 2.0-VECC-21 as a reconciliation between the above table and App2-AA:

Table 2.0-VECC-21 – Reconciliation with Appendix 2-AA

2021 IT Capital	App 2AA Location
Facilities 3,600	Building & General Office Upgrades, Including Furniture
Workstations 8,200	Servers, PC, Other Hardware
Enterprise Software 108,350	Software
Enterprise Software 75,000	Customer Portal (Stand Alone)
Networking/Cyber 7,800	Software
Licenses 42,000	Software
Total 244,950	

3.0 OPERATING REVENUE (EXHIBIT 3)

3.0-VECC-22

Reference: Exhibit 3, pages 2, 3 and 22

Preamble:

The Application (page 2) states:

"Revenue for each of the actual years is from NBHDL's audited Financial Statements which reconcile to the annual filings with the OEB. The 2020 Bridge year is comprised of actual revenue from January to May 2020. The remainder of the year is based on a seven month projection of distribution revenue from existing distribution rates and other distribution revenue. The 2020 distribution revenue estimate is reflective of NBHDL's decision to defer May 1, 2020 increases to November 1st and forego recovery of increased revenue from May through October."

Question:

- a) For purposes of Table 3-1 are the revenues for January to May 2020 based on actual loads or weather normalized loads?
- b) For purposes of Table 3-1, what is the basis for the forecast loads and customer counts used to determine the 2020 revenues by rate class for the months of June to December 2020?
- c) Are the forecast distribution revenues by rate class for 2020 as set out in Table 3-1 (page 3) based on the 2020 sales by rate class as set out in Table 3-11 (page 22).

Response:

- a) The revenues from January to May 2020 are based on actual loads.
- b) The forecasted customer counts are derived from a review of historical actuals, and since NBHDL's customer base is stable, held constant for forecasting purposes. The forecasted load is based on a review of the prior three years' averages and making adjustments based on January to May actuals.
- c) The forecasted distribution revenues in Table 3-1 are not based on the sales by rate class in Table 3-22 on page 22. As stated on page 2 of Exhibit 3 and noted in the above preamble, the revenues are actual revenue from January to May 2020. The remainder of the year is based on a seven-month projection of distribution revenue by rate class from existing distribution rates and other distribution revenue. The 2020 distribution revenue estimate is reflective of NBHDL's decision to defer May 1, 2020 increases to November 1 and forego recovery of increased revenue from May through October.

3.0-VECC-23

Reference: Exhibit 3, page 4

Preamble:

The Application states:

“As mentioned above, NBHDL used the regression analysis used to support the load forecast in the 2015 COS application as a starting point and addressed these concerns in the load forecast used in this Application. As a result, the previously used variable of a “North Bay Economy” flag was tested and not used as it was found to have a decreasing predictive output.”

Question:

Please provide the results of the regression analysis (i.e., regression model results similar to those on page 9 (lines 19-24) and Table 3-5) along with the resulting predicted purchases for 2010 to 2021 (similar to Table 3-6)) based the regression model that also included the “North Bay Economy” flag as an explanatory variable.

Response:

The following Table 3.0-VECC-23.1 highlights the tested regression model results to illustrate the 15-year scenario that was rejected, which included the “North Bay Economy” flag.

Table 3.0-VECC-23.1 – Tested Regression Model Results Using Rejected 15-year Regression

Statistic	5 Year - Applied	15-Year - REJECTED	15-Year - REJECTED - NBE Flag
R Square	95.7%	79.6%	91.6%
Adjusted R Square	95.4%	79.2%	91.3%
F Test	307.3	171.2	377.3
MAPE (Monthly)	2.3%	6.3%	3.7%
T-stats by Coefficient			
Heating Degree Days	29.3	20.5	31.5
Cooling Degree Days	8.9	5.3	7.3
Number of Days in Month	3.8	3.3	5.5
Spring Fall Flag	(5.1)	(3.2)	(5.4)
North Bay Economy			(15.7)
Constant	1.0	0.5	0.9

NBHDL notes that the referenced Table 3-6, contains incorrect “Predicted” values for the years 2010-2014. As Stated in Exhibit 3, NBHDL used a 5-year analysis to develop its predictive model. Because of this, only the historical years 2015-2016 are relevant to this table with respect to “Actual” vs. “Predicted”.

The following Table 3.0-VECC-23.2 demonstrates the predicted purchases using the rejected 15-year regression that included the “North Bay Economy” variable.

Table 3.0-VECC-23.2 – Predicted Purchases Using Rejected 15-year Regression

Year	Actual	Predicted	% Difference
Purchased Energy (GWh)			
2005	606.4	601.9	(0.7%)
2006	585.8	586.2	0.1%
2007	598.6	596.9	(0.3%)
2008	594.9	591.9	(0.5%)
2009	580.3	592.6	2.1%
2010	592.1	589.4	(0.5%)
2011	593.7	592.9	(0.1%)
2012	572.6	526.8	(8.0%)
2013	573.2	536.5	(6.4%)
2014	561.2	536.4	(4.4%)
2015	538.3	536.0	(0.4%)
2016	509.0	534.6	5.0%
2017	500.7	529.8	5.8%
2018	514.9	544.5	5.8%
2019	514.1	539.4	4.9%
2020 Bridge - Normalized		535.2	
2021 Test - Normalized		534.1	

While the regression statistics in the first table are reasonable (+90% R-Square), this scenario was ultimately rejected due to the model's predictive output in the more recent historical years. Between 2016 and 2019, the model is predicting purchases 4.9% to 5.8% higher than actual on annual basis. NBHDL rejected this model as it would likely lead to the similar over calculations in the bridge and test years.

3.0-VECC-24

Reference: Exhibit 3, page 8

Preamble:

The Application states:

"The regression model uses monthly kWh and monthly values of independent variables from January 2015 to December 2019 to determine the monthly regression coefficients.

While a five-year regression analysis is shorter than the more common ten, fifteen, and twenty-year regressions, NBHDL submits that this is appropriate. When analyzing data and the proposed variables to be used in the forecast NBHDL found that there was a sharp decline in the predictive capability of weather variables when looking back past five years. NBHDL conducted regression models using both ten and fifteen years in addition to the submitted five-year analysis."

Question:

Please provide the results of the regression analysis (i.e., regression model results similar to those on page 9 (lines 19-24) and Table 3-5) along with the resulting predicted purchases for 2010 to 2021 (similar to Table 3-6)) based the regression model that used 10 years of historical data.

Response:

- a) The regression analyses discussed in the preamble are already included in the referenced Table 3-5.

The following Table 3.0-VECC-24 provides the predicted purchases for 2010 to 2021 that used 10 years of historical data.

Table 3.0 VECC-24 – Predicted Purchases Using 10 Years Historical Data

Year	Actual	Predicted	% Difference
Purchased Energy (GWh)			
2010	592.1	542.1	(8.4%)
2011	593.7	544.8	(8.2%)
2012	572.6	540.7	(5.6%)
2013	573.2	548.1	(4.4%)
2014	561.2	547.1	(2.5%)
2015	538.3	548.8	1.9%
2016	509.0	547.7	7.6%
2017	500.7	541.3	8.1%
2018	514.9	558.3	8.4%
2019	514.1	550.9	7.2%
2020 Bridge - Normalized		547.8	
2021 Test - Normalized		546.8	

3.0-VECC-25

Reference: Exhibit 3, page 8, Load Forecast Model, Purchased Power Model Tab, Column B

Preamble: None.

Question:

- a) Do the historical purchased power values used in the regression model include embedded generation purchases (e.g., FIT and microFIT) by NBHDL?
- b) If not, please revise the Load Forecast model so as to include these purchases in the historical data used.

Response:

- a) The historical purchased power values used in the regression model include embedded generation purchases.
- b) Not applicable.

3.0-VECC-26

Reference: Exhibit 3, pages 12-13, Load Forecast Model, Purchased Power Mode Tab, Column B

Preamble: None.

Question:

- a) Are the historical customer/connection counts based on year end values or annual averages? If based on annual averages, please explain how the average was calculated.
- b) Please provide the 2020 customer/connection counts for each class as of December 31, 2019, June 30, 2020 and December 31, 2020.

Response:

- a) The historical customer/connection counts are based on annual averages. This average is based on a "Sold kWh" listing that includes account number, class and consumption by month. Any customer who has consumption in a month is deemed to be a customer in that month. These are then totaled by class and by month and a 12-month average is calculated. See Table 3.0-VECC-26.1 below for the 2019 calculation of the Residential class as an example.

Table 3.0-VECC-26.1 – 2019 Calculation of Residential Class Customer Counts

Residential	Count
Jan	21,180
Feb	21,119
Mar	21,173
Apr	21,209
May	21,286
Jun	21,378
Jul	21,397
Aug	21,470
Sep	21,323
Oct	21,315
Nov	21,280
Dec	21,232
Annual Average	21,280

- b) The customer counts for December 31, 2019, June 30, 2020 and December 31, 2020 are in the following Table 3.0-VECC-26.2.

Table 3.0-VECC-26.2 – Customer Counts

Customer Count at Date			
Class	31-Dec-19	30-Jun-20	31-Dec-20
Residential	21,232	21,260	21,285
GS<50	2,652	2,660	2,662
GS>50-2999	266	265	264
GS3000-4999	1	1	1
Street Light	5,424	5,424	5,424
Sentinel Lights	416	414	411
UMSL	9	9	9

3.0-VECC-27

Reference: Exhibit 3, pages 17-18 / Load Forecast Model, Rate Class Energy Model Tab LRAMVA Workform. 2015-2020 LRAM Tab

Preamble:

The Application includes the following table with respect to the actual savings from CDM programs offered between 2015 and 2019 and their persistence into 2021:

Table 3 - 15: CDM Results (2016-2019) and persistence to 2021

Former CFF 6 year (2015-2020) kWh Target: 20,260,000 kWh							
	2015	2016	2017	2018	2019	2020	2021
2015 CDM Programs	16,748,850	16,682,974	16,674,278	16,670,505	16,663,767	16,660,104	16,656,981
2016 CDM Programs		4,554,824	4,554,804	4,554,783	4,554,761	4,554,740	4,554,740
2017 CDM Programs			6,401,725	5,503,683	5,502,829	5,501,975	5,501,832
2018 CDM Programs				4,027,457	2,917,353	2,907,174	2,907,174
2019 CDM Programs					1,827,951	1,946,094	2,199,926
Total in Year	16,748,850	21,237,798	27,630,807	30,756,427	31,466,661	31,570,087	31,820,653

The Application also includes the following table setting out the determination of the manual adjustment to the load forecast for 2019 CDM programs.

Table 3 - 16: Manual Adjustment

Year	Residential	GS < 50 kW	GS 50 to 2,999 kW	TOTAL
2021 Manual adjustment kWh	19,861	107,439	972,664	1,099,963
Less CEP	-	-	(777,539)	-777,539
Total	19,861	107,439	195,125	322,424
NBHDL CEP Adj	-	-	2,322,262	2,322,262
Total Manual Adjustment	19,861	107,439	2,517,387	2,644,686
2021 Manual adjustment kW	-	-	1,372	1,372
Less CEP	-	-	(990)	-990
Total	-	-	382	382

Question:

- Please explain the basis for the savings attributed to 2018 CDM programs in Table 3-15. Neither the savings from 2018 CDM programs shown for 2018 nor those shown for 2020 appear to match the savings from 2018 CDM programs as reported in the IESO's Participation and Cost Report.
- Please explain how the savings from 2019 CDM programs for the years 2019, 2020 and 2021 (per Table 3-15) were derived. In doing so please explain how the values are related to the results from 2019 programs as reported in the IESO's Participation and Cost Report and provide copies of any supporting reports/references relied on to derive the results.
- With respect to Table 3-16, please explain the basis for the 990 kW CEP adjustment.
- For the GS 50-2,999 class please undertake the following: i) set out the kWh savings in 2021 from 2019 CDM programs per the LRAMVA Workform and ii) explain how these savings are reflected in Table 3-16.

Response:

- a) The savings from 2018 programs in 2018 and 2020 are consistent with those in the LRAMVA workform filed with the application. The 2018 value of 4,027,457 consists of 2,576,388 kWh as reported at Cell BD107 of the LDC progress tab of the P&C report, and 351,144 kWh from Retrofit program projects completed subsequent to the April 2019 P&C report, as shown at cell D676 on Tab 5 of the LRAMVA workform. Those are projects that were approved under the Conservation First Framework prior to the termination of the CFF on April 1, 2019, but which were finalized after the April 2019 P&C report. Gross savings for these are captured in NBHDL's CDM databases, and in IESO databases. As recommended by the OEB, net savings of these projects are estimated using net-to-gross (NTG) and realization rate (RR) factors from the 2017 final verified results report. Persistence of the 2018 in 2020 is reported for the savings in the P&C report. The same rate of persistence seen there for Retrofit projects was applied to post-P&C retrofit projects.
- b) These were calculated in the same way as 2018 results, as described in a) above. A workbook calculating the results is appended as "NBHDL_VECC27b_Project Analysis_20210401". The exception is the Community Energy Project for which savings are calculated from NBHDL's shadow load analysis. A summary of savings appears on the LRAMVA workform dated 2020-11-16, a copy of the live excel spreadsheet is attached as "NBHDL_VECC27b_LRAMVA_20201116_20210401".
- c) With respect to Table 3-16, the 990kW adjustment represents the CEP's share of the overall manual adjustment to the load forecast for kW. Like in the adjustment for kWh, NBHDL has removed the CEP's share of the 2019 CDM adjustment. However, unlike kWh, NBHDL has only removed the CEP's kW and not added back a manual calculation. Since it is expected that the CEP will continue to peak normally due to shutdowns. Therefore, the 990kW represents half the annual forecast of the CEP's kW $((165\text{kW} * 12\text{months})/2 = 990)$.
- d) kWh savings in 2021 from CDM programs totalled 2,199,926. Of those, 39,722 were for the Residential class (Cell Y954) and 214,877 were for the GS<50 rate class (Z954) leaving 1,945,327 for the GS>50 rate class. The Chapter 2 appendices at App_2-1 LF_CDM!F73:F75 show weight factors of 0.5, 1 and 0.5 for 2018, 2019 and 2020, but should have shown those for 2019, 2020, and 2021 respectively which were the values used in the calculation. 1,945,327 kWh in 2019 times 0.5 is 972,664 which is shown on in the first data row for Table 3-16 for the GS 50 to 2,999 kW column.

3.0-VECC-28

Reference: Exhibit 3, page 20, Load Forecast Model, Rate Class Load Model Tab

Preamble:

The Application states:

"For the General Service > 50 to 2,999 kW and the Sentinel Lighting classes, the average ratio for 2017 to 2019 was applied to the weather normalized billed energy forecast in Table 3-18 but is adjusted by a reduction of 382 kW as shown in Table 3-16 and an addition of 6,602 kW which represents the model driven effect of manual adjustment for CEP (2,322,262 kWh)."

Question:

a) Please provide the derivation of the 6,602 kW adjustment.

Response:

a) This adjustment was to account for the calculation of the class's kW prior to making adjustments for the CEP. It is NBHDL's contention that the CEP will not have a material effect on demand into 2021. Since the kW estimate is based on a historical relationship between kWh and kW, NBHDL did not want the adjustment for the CEP's kWh to affect the forecasted demand. To facilitate this NBHDL recorded the model driven kW prior to any CEP or CDM adjustments. The result was an initial calculation of 528,913 and a later calculation of 522,311. The difference being 6,602kW, which has been added back to the forecast once final. NBHDL notes the LRAMVA workform projects as 2021 savings of approximately 2,000 kW.

3.0-VECC-29

Reference: Exhibit 3, page 36, Appendix 2-H, Exhibit 8, pages 11-12

Preamble: None.

Question:

- a) Table 3-44 (page 36) shows Interest & Dividend Income (USOA 4405) for 2021 of \$161,771 while Appendix 2-H shows a value of \$184,331. Please reconcile.
- b) Table 3-44 shows no Gain or Loss on Disposal of Utility Property (USOA 4355 & 4362) for 2021 while Appendix 2-H shows no Gain but a Loss on Disposal of Utility Property of \$69,191. Please reconcile.
- c) If the \$69,191 Loss on Disposal of Utility Property is to be included in Other Revenues for 2021, please explain the basis for the loss.
- d) Please explain the basis for the foreign exchange losses forecast for 2020 and 2021.
- e) Please confirm that the 2021 rent from electric property is based on a pole attachment charge of \$44.50.
- f) Are the revenues for USOA 4082 and 4084 based on the rates set out in Exhibit 8, page 12 or on those set out in the proposed Tariff Sheet (Tab 5)?

Response:

- a) In Table 3-44 in Exhibit 3, NBHDL has removed RSVA Interest Revenue (\$22,560).
- b) The \$69,191 included in 2-H is the forecasted distribution asset disposal loss which is based on historical averages (\$615,624 – \$546,432). This value it is not included in Table 3-44, as it is not part of “Other Revenue” for rate setting purposes. For rate setting purposes, this value is included in the net depreciation portion of the revenue requirement.
- c) Please see b) above.
- d) NBHDL utilizes a forecasted amount of \$15,000 as a budget for foreign exchange losses. This value is an immaterial placeholder as foreign exchange impacts are unknown.
- e) NBHDL did not use \$44.50 in the 2021 Test Year. An inflationary assumption of 2% was made in the Test Year budget. NBHDL intends to use all OEB default values in 2021 and the foreseeable future for Pole Attachments. NBHDL has updated the 2021 test year forecast models and rates in 1-Staff-1 with the OEB prescribed values.

Apart from this update, NBHDL also proposes the following changes:

In its Application, NBHDL had originally requested for the discontinuance of Account 1508 – Pole Attachment Revenue Variance, however, this was before the introduction of Bill 257 on March 4, 2021.

The recent Bill 257, *Supporting Broadband and Infrastructure Expansion Act, 2021*, if passed, would enact the *Building Broadband Faster Act, 2021* (“BBFA”) and would result

in possible increases in utility costs to facilitate broadband attachments as well as possible changes to Pole Attachment charges for broadband connections.

As the prescribed rules are yet to be known, NBHDL is proposing a new DVA to track any variances related to changes in utility costs as well as changes in Pole Attachment charges arising as a result of the BBFA.

Due to the relevant recency of the proposed legislative amendments, NBHDL is still processing the changes and will propose a draft accounting order for the new DVA prior to settlement.

- f) As explained on Page 12 of Exhibit 8, the revenues are based on NBHDL's internal budget that incorporated a 2% increase, however, NBHDL intends to use the board prescribed standard rates. NBHDL has updated Account 4082 and 4084 for the 2021 Test Year and is included in the updates referenced in 1-Staff-1.

4.0 OPERATING COSTS (EXHIBIT 4)

4.0-VECC-30

Reference: Exhibit 4

Preamble: None.

Question:

a) Please update Table 1-57 (PEG Summary Table) to show the results for 2015 to 2018 and the 2021 actual total costs results.

Response:

This appears to be a duplicate question; please see VECC-6.

4.0-VECC-31

Reference: Exhibit 4, Section 2.4.1.1.1, pg. 6/Section 2.4.1.5/ Section 2.4.2.10 pg. 27

Preamble:

Table 4 - 7: IT Systems & Maintenance

IT Systems & Maintenance Costs	2015 Board Approved	2020 Bridge Year	2021 Test Year	2021 vs. '2015 Board Approved	2021 vs. '2020 Bridge Year
Central Square (NBHDL's Software Platform)	120,850	173,849	173,849	52,999	-
CNB IS Services	104,903	-	-	(104,903)	-
Cyber Security	6,047	62,149	40,442	34,395	(21,707)
Internet (including redundancy)	40,926	33,960	51,828	10,902	17,868
Software Licenses / Support / Maintenance	22,956	37,613	80,523	57,567	42,910
Network Mtn	-	-	3,054	3,054	3,054
Server Mtn	18,837	6,168	7,776	(11,061)	1,608
IT Items	1,300	10,908	10,625	9,325	(283)
Total	315,819	324,647	368,097	52,278	43,450

"It is important to note that the majority of cyber security related costs are allocated to internal labour which is not represented in Table 4-7 below. The table represents external costs only."

Question:

- a) Is the amount of \$34,395 identified as the incremental cost of implementing the mandated Cyber Security Framework in 2021 include both internal and external OM&A costs? If not please provide the total incremental OM&A cost of meeting the cyber security requirements

Response:

- a) As noted in the italicized note, the \$34,395 costs referenced in Table 4-7 are external costs that are required by NBHDL as part of addressing on-going costs related to cyber security. As explained on Page 8 of Exhibit 4, 1.5 FTEs are focused on addressing the enhanced cyber security requirements at all times. The total incremental OM&A cost of meeting cyber security requirements are approximately \$205,000.

4.0-VECC-32

Reference: Exhibit 4, Section 2.4.2.4

Preamble: None.

Question:

- a) Of the three positions added (Communications Officer, Admin Assistant and Operations Coordinator) were any of these employees formerly employed to work on CDM initiatives?

Response:

- a) None of these employees were formerly employed by NBHDL to work on CDM initiatives.

4.0-VECC-33

Reference: Exhibit 4, Section 2.4.1.4 / 2.4.3.6, pages 77- Table 4-40

Preamble: None.

Question:

- a) Please provide the actual 2020 OEB Annual Assessment amount and the actual OEB Section 30 costs for the same year.
- b) Please separate legal costs from the Consultants costs in Table 4-40.
- c) Please show the actual costs to-date for each category of application costs.
- d) Please explain how incremental operating costs for staff resources for this application was derived.

Response:

- a) The actual 2020 OEB Annual Assessment amount was \$102,904; \$30,566 was recorded in the deferral account. Section 30 costs were \$1,214.
- b) Page 70 of Exhibit 4 breaks down the \$626,300 in consultant and legal costs included in the 2021 rate application costs; \$430k has been budgeted for legal/consulting work. These costs are billed together and NBHDL has not segregated.
- c) Please see 4-Staff-46. As of the end of December, NBHDL has spent \$340k as follows:

Description	2021 Budget	2020
Consultants' costs including Legal	626,300	310,012
Incremental operating expenses associated with staff resources	82,250	30,735
Incremental operating expenses associated with other resources*	-	-
OEB/Intervenor costs	85,000	-
Total	793,550	340,747

**Temporary Employees*

- d) Incremental costs for internal resourcing were developed utilizing 2015 actual costs and incorporates overtime, training, and travel costs.

4.0-VECC-34

Reference: Exhibit 4, Section 2.4.1.3

Preamble: None.

Question:

- a) Are all the incremental Corporate Policies, Initiatives and Strategy costs (\$110k in 2020 and \$150k in 2021) made up of only incremental internal labour costs (as compared to 2019 and prior years)? If not please provide the non-labour costs and describe what type of costs these are.

Response:

- a) The incremental Corporate Policies, Initiatives and Strategy costs are external costs only and do not include internal resource costs.
Please also see 1-DDR-8, SEC-6, and 4-Staff-45.

4.0-VECC-35

Reference: Exhibit 4, Section 2.4.1.6/2.4.2.12 Vegetation Management.

Preamble: None.

Question:

- a) For each year 2015 to 2021 (forecast) please provide the number of kilometers cleared.
- b) What are the total kilometers to be maintained?
- c) Who are the other two Utilities co-owning the vegetation management company?

Response:

- a) Shown in Table 4.0-VECC-35 below are the kilometers of trees cleared for 2015 through to 2020 and the forecast for 2021.

Table 4.0-VECC-35 – Kilometers of Trees Cleared

<u>Year</u>	<u>km of Line Cleared</u>	<u>Comments</u>
2015	45.0	Urban
2016	27.4	Rural
2017	39.4	Rural / Urban Mix
2018	35.6	Rural
2019	22.1	Rural (Very Heavy)
2020	19.0	Rural (Very Heavy)
2021	33.7	Rural

- b) NBHDL has 408km of linear pole lines to be cleared and maintained in the entire service territory. The goal is to complete this entire area in the next 5 years.
- c) NBHDL collaborated with two Northern LDCs in the conception and development of the company, but the LDCs themselves do not own the company. Please see 4-DDR-23, 4-Staff-53, and SEC-13.

4.0-VECC-36

Reference: Exhibit 4, Section 2.4.3 Table 4-11 OM&A Programs (Appendix 2-JC)

Preamble: None.

Question:

- a) It is unclear to us what the negative values in the row entitled "*Miscellaneous, Fleet Depn*" is showing. Why is fleet depreciation been recorded as an OM&A offset and how is it relevant to showing controllable OM&A costs?

Response:

- a) NBHDL incorporates total fleet costs (including maintenance, fuel, insurance, and depreciation) into a run hour rate that is then expensed or capitalized directly to the specific project through the timesheet process by work order (see Page 73 of Exhibit 2 for further details). With the exception of depreciation all costs flow through OM&A, however, the offsetting total fleet charge-out is credited to OM&A. Annual amounts vary depending on total fleet costs and the actual time spent in maintenance and capital activities. This allocation is a component of overall OM&A costs.

4.0-VECC-37

Reference: Exhibit 4, Section 2.4.3.1.1, page 34

Preamble:

With respect to the 2019 to 2021 variance in Overhead Operations NBHDL states: *"The variance of \$275,685 is reflective of increased labour and overhead costs which is attributable to the allocation of time between capital and maintenance activities...."*

Question:

- a) How much of the \$275k variance is due to changes in the amounts capitalized rather than expensed between 2019 and 2021?

Response:

- a) \$62,270 is due to the allocation of time between capital and maintenance activities.

4.0-VECC-38

Reference: Exhibit 4, Section 2.4.3.2., Appendix 2-k

Preamble:

With respect to the 2019 to 2021 variance in Substation Maintenance, Load Dispatching, SCADA NBHDL states *"The variance of \$324,333 is reflective of increased labour and overhead costs which is attributable to the addition of a Substation Electrician Learner, the allocation of time between capital and maintenance activities..."*

Question:

- a) How much of the \$324,333 variance is attributable to changes in the amounts capitalized rather than expensed between 2019 and 2021?

Response:

- a) \$126,945 is due to the allocation of time between capital and maintenance activities.

4.0-VECC-39

Reference: Exhibit 4, Section 2.4.3.2., Table 4-14

Preamble: None.

Question:

- a) Of the 53 full-time employees identified in Table 4-14 how many are currently employed by the Utility and how many positions are vacant?
- b) For any vacant position please describe the current stage of recruitment.
- c) What is the annual employee churn rate at NBHDL?

Response:

- a) Of the 53 full-time employees identified in Table 4-14, NBHDL currently employs 49, and there are four vacancies.
- b) The current stage of recruitment for the remaining vacant positions are as follows:
 - An employment letter has been signed for the position of Accountant, and the employee will begin their employment on April 12, 2021.
 - The positions of Administrative Assistant, Operations Coordinator, and succession planning in the operations department will begin in the second quarter of 2021.
- c) The following Table 4.0-VECC-39 provides the annual employee churn rate at NBHDL from 2015 to 2020.

Table 4.0-VECC-39 – Annual Employee Churn Rate

2015 Actuals	2016 Actuals	2017 Actuals	2018 Actuals	2019 Actuals	2020 Actuals
4%	10%	24%	32%	13%	4%

The average annual employee churn rate is 14.5% from 2015 to 2020. As evidenced in the application, 2017 and 2018 were years of significant transition for the business with the retirement of the President and CEO and the Manager of Finance causing a cascading effect on internal movement and external recruitment to round out the team. When removing 2017 and 2018 from this table, the average annual churn rate during this same period is 7.8%.

4.0-VECC-40

Reference: Exhibit 4, page 76, Table 4-39

Preamble: None.

Question:

- a) If NBHDL is a member of the EDA please provide the annual fees paid (or estimated) for each of the years 2015 through 2021.

Response:

- a) The fees paid to the EDA for 2015-2019 and 2020 and 2021 estimates incorporated into OM&A are as follows:

Year	Cost
2015	47,800
2016	48,300
2017	48,800
2018	49,800
2019	50,800
2020	51,800
2021	52,904

4.0-VECC-41

Reference: Exhibit 4, pages 77-78 / Appendix 4-K LRAMVA Workform

Preamble: None.

Question:

- a) Based on the values used in the LRAMVA Workform please provide a summary of the historic CDM savings from 2015-2019 programs (total for all customer classes) in the following format:

Impact of Historical Annualized CDM (kWh)					
Calendar Year/ CDM Program Year	2015	Columns for Each Subsequent Year up to 2020			2021
2015 CDM Program Impacts					
Actual CDM impacts for each year to 2018 – one row per year					
2019 CDM Programs Impacts					
Total					

Response:

The following table is the same as Table 3-15 which can be found in Exhibit 3. The originally filed LRAMVA workform did not include energy savings (kWh) for the CEP project, which for lost revenue purposes only affects demand savings (kW).

CDM program year	Impact of historical annualized CDM (kWh)						
	2015	2016	2017	2018	2019	2020	2021
2015	16,748,850	16,682,974	16,674,278	16,670,505	16,663,767	16,660,104	16,656,981
2016		4,554,824	4,554,804	4,554,783	4,554,761	4,554,740	4,554,740
2017			6,401,725	5,503,683	5,502,829	5,501,975	5,501,832
2018				4,027,457	2,917,353	2,907,174	2,907,174
2019					1,827,951	1,946,094	2,199,926
Total	16,748,850	21,237,798	27,630,807	30,756,427	31,466,661	31,570,087	31,820,653

7.0 COST ALLOCATION (EXHIBIT 7)

7.0-VECC-42

Reference: Exhibit 7, page 3

Preamble:

The Application states: *“General Service 50 to 2999 kW and General Service 3000 to 4999 kW involves significantly more work than Residential and GS < 50 kW servicing both from a design and construction perspective, but due to the ownership rules for these services, NBDHL does not own the assets that would be charged against the Services account and therefore these customer categories have been assigned a weighting factor of 0.0.”*

Question:

- a) Please confirm that GS 50-2999 kW and GS 3000-4999 kW customers own and maintain their Services assets (as opposed to the assets being owned by NBHDL and paid for by the customer through a capital contribution).

Response:

NBHDL confirms that GS 50-2999 kW and GS 3000-4999 kW customers own and maintain their Services assets (as opposed to the assets being owned by NBHDL and paid for by the customer through a capital contribution).

7.0-VECC-43

Reference: Exhibit 7, pages 4-5 / Cost Allocation Model, Tab I5.2

Preamble:

The Application states: *"In determining the weighting factors for Billing and Collecting, an analysis of Accounts 5315 and 5320, was conducted and costs were assigned to each class based on the specific nature of the costs."* Page 5 of the Application sets out the following:

Table 7 - 3: Weighting Factors for Billing and Collection

Meter Type	Weighting Factors for Billing and Collection
Smart Meter - Residential	1.0
General Service < 50 kW	1.3
General Service 50 to 2999 kW	2.2
General Service 3000 to 4999 kW	1.8
Street Lighting	1.8
Sentinel Lighting	0.6
Unmetered Scattered Load	0.6

However, Tab I5.2 uses the following Billing and Collecting weights:

1	2	3	5	7	8	9
Residential	GS <50	GS > 50 to 2,999 kW	GS >3,000 to 4,999 kW	Street Light	Sentinel Lighting	Unmetered Scattered Load
1.0	1.000	2.2000	1.8000	1.8000	0.0600	0.0600

Question:

Please explain which set of Billing and Collecting weighting factors are correct – those in Table 7-3 of the Application for Tab I5.2 of the Cost Allocation Model.

Response:

- NBHDL notes that there is an error in both Table 7-3 as well as the cost allocation model. As per the Table 7.0-VECC-43.1 below, the weighting factor should read 1.0 for General Service <50kW, and 0.6 for Sentinel Lights and UMSL. The correct factor of 1.0 for GS<50 was utilized in the submitted cost allocation model, while the incorrect value of 0.06 was used for Sentinel Lights and UMSL.

Table 7.0-VECC-43.1 – Corrected Weighting Factors

Description	Allocator	Residential	GS < 50 kW	GS > 50 to 2,999 kW	GS >3,000 to 4,999 kW	Street Lighting	Sentinel	Unmetered Scattered Load	Total Costs
Billing Costs - Account 5315:									
Postage / Delivery Costs	# of bills/year	177,196	21,984	2,232	8	8	1,602	75	203,105
ODS Costs	# of customers	41,373	5,133	-	-	-	-	-	46,506
Internal Staffing Costs	# of customers	240,991	29,898	14,208	53	53	2,178	102	287,482
		459,561	57,015	16,440	61	61	3,780	176	537,094
Other	% per Class	4,165	517	149	1	1	34	2	4,868
Total Billing Costs by Class		463,726	57,531	16,589	62	62	3,814	178	541,962
Collecting Costs - Acct 5320:									
Postage / Delivery Costs	# of customers	17,224	2,137	217	-	-	-	-	19,578
3rd Party Costs	# of customers	56,532	7,014	712	-	-	-	-	64,258
Internal Staffing Costs	# of customers	176,655	21,916	2,226	-	-	-	-	200,796
Total Collecting Costs by Class		250,411	31,067	3,155	-	-	-	-	284,632
		88%	11%	1%					
Total Billing & Collecting Costs by Class:									
Total Costs		714,137	88,598	19,744	62	62	3,814	178	
# of bills issued / year - (I6.2-CA Model)		256,224	31,788	3,228	12	12	2,316	108	
Cost / bill		2.79	2.79	6.12	5.14	5.14	1.65	1.65	
Weighting factor - relative to Resi Class		1	1.0	2.2	1.8	1.8	0.6	0.6	

NBHDL has corrected the cost allocation model and provides Table 7.0-VECC-43.2 below that summarizes the information included in the application, NBHDL's revised cost allocation proposal and the net effect of the error. While the effect of the typo in Tab "I5.2" of the cost allocation is immaterial with respect to total dollars, it does have a significant effect on the Sentinel Light class specifically, given that there are so few customers and a relatively smaller allocation of costs.

Below is a summary of the error's net effect on rates, given the reallocation proposed by NBHDL. NBHDL notes that a further \$12,219 is now allocated to Sentinel Lights in the revenue requirement (unchanged overall). To account for this change to the class and to reduce the overall impact, NBHDL has set the revenue to cost ratio at 80% (Board Target Low). The remaining effects would then be absorbed through the other classes.

Table 7.0-VECC-43.2 – Summary Revised Cost Allocation Proposal and the Net Effect of Error

Rate Design as Proposed	Revenue Requirement	Allocated Misc Revenue	Proposed Revenue to cost Ratio	Proposed Base Revenue	Fixed Rate	Variable Rate
Residential	9,707,908	763,862	98.92%	8,839,633	\$ 34.50	\$ -
GS<50	2,716,667	187,925	103.90%	2,634,802	\$ 28.49	\$ 0.0219
GS>50-2999	2,947,558	232,301	98.92%	2,683,554	\$ 371.19	\$ 3.0673
GS>3000-4999	121,265	10,372	100.73%	111,780	\$ 7,673.78	\$ 1.3268
Street Lights	147,193	28,722	120.00%	147,909	\$ 1.55	\$ 8.3008
Setinel Lights	43,983	5,162	98.92%	38,348	\$ 6.57	\$ 22.9051
UMSL	1,013	121	120.00%	1,095	\$ 5.51	\$ 0.0127
	15,685,587	1,228,466		14,457,121		
Rate Design as Corrected	Revenue Requirement	Allocated Misc Revenue	Proposed Revenue to cost Ratio	Proposed Base Revenue	Fixed Rate	Variable Rate
Residential	9,697,062	763,245	99.00%	8,836,670	\$ 34.49	\$ -
GS<50	2,715,321	187,849	103.95%	2,634,802	\$ 28.49	\$ 0.0219
GS>50-2999	2,947,257	232,284	99.00%	2,685,447	\$ 371.45	\$ 3.0694
GS>3000-4999	121,264	10,372	100.73%	111,780	\$ 7,673.78	\$ 1.3268
Street Lights	147,192	28,722	120.00%	147,908	\$ 1.55	\$ 8.3008
Setinel Lights	56,202	5,857	80.00%	39,104	\$ 6.70	\$ 23.3571
UMSL	1,288	136	120.00%	1,409	\$ 7.09	\$ 0.0163
	15,685,587	1,228,466		14,457,121		
Net Effect in Isolation	Revenue Requirement	Allocated Misc Revenue	Proposed Revenue to cost Ratio	Proposed Base Revenue	Fixed Rate	Variable Rate
Residential	(10,846)	(617)	0.07%	(2,963)	\$ (0.01)	\$ -
GS<50	(1,346)	(76)	0.05%	-	\$ (0.00)	\$ (0.0000)
GS>50-2999	(301)	(17)	0.07%	1,893	\$ 0.26	\$ 0.0021
GS>3000-4999	(1)	(0)	0.00%	-	\$ 0.00	\$ (0.0000)
Street Lights	(1)	(0)	0.00%	(1)	\$ (0.00)	\$ (0.0001)
Setinel Lights	12,219	695	-18.92%	757	\$ 0.13	\$ 0.4520
UMSL	275	16	0.00%	314	\$ 1.58	\$ 0.0036

NBHDL notes that the table above is meant to account for the cost allocation effect in isolation. This correction will be part of the overall update to 1-Staff-1 and will be part of the full model update.

8.0 RATE DESIGN (EXHIBIT 8)

8.0-VECC-44

Reference: Exhibit 8, page 8 / Cost Allocation Model, Tabs I6.2 and I8

Preamble:

The Application states: *"For the General Service 3,000 to 4,999 kW class the kW volumetric charge of \$0.7268 per kW will increase by \$0.60 per kW to a total of \$1.3268 per kW to recover the amount of the Transformer Allowance over all kW in the General Service".*

Question:

- a) Why is it necessary to provide a transformer ownership allowance to customers in the GS 3000-4999 kW class, when the class is not allocated any transformer costs (per the class' CCLT and LTNCP4 values in Tabs I6.2 and I8)?

Response:

- a) NBHDL acknowledges that it would be unnecessary to have transformer ownership allowance in the GS 3000-4999 class when no transformer costs are allocated to that class. This is a class with only one customer, and they own their transformer, so the standard practice of calculating an offset when designing rates is unnecessary. This does not however change the total costs allocated to that class and the effect of transformer allowance is offset in the rate design. That is, the rates put forward are higher due to the built-in allowance, but have nil effect overall on the costs charged to the customer. This is likely a legacy design flaw from when there was more than one customer within that class. Since there is a scenario where NBHDL could acquire a new customer in this class during the rate period, this rate design feature could still prove useful in the case where a new customer does not own its transformer and NBHDL would need to differentiate between customers in this class.

8.0-VECC-45

Reference: Exhibit 8, page 11 / RTSR Workform, Tabs 3, 4 and 5

Preamble: None.

Question:

- a) Please confirm that the RRR data used in Tab 3 is based on the same year as the billing units values set out in Tab 5.

Response:

- a) NBHDL confirms that the RRR data used in Tab 3 is based on the same year as the billing units values set out in Tab 5.

8.0-VECC-46

Reference: Exhibit 8, pages 11-12 / Tariff Schedule and Bill Impact Model, Tab 5

Preamble: None.

Question:

- a) Please confirm that NBHDL is proposing the Retail Service Charges as set out in the Tariff Sheet (Tab 5) as opposed to those set out in Exhibit 8, page 12.

Response:

As previously addressed through the OEB's preliminary exploration of potential errors, the values in Table 8-10 are transposed between Network and Connection. Please see 8-Staff-67 for updated RTSR rates. The updated models are filed with these interrogatory responses as "NBHDL_2021_Tariff_Schedule_and_Bill_Impact_Model_NO_GS_3000-5000_20210401", "NBHDL_2021_Tariff_Schedule_and_Bill_Impact_Model_GS_3000-5000_ONLY_20210401"

With respect to Table 8-6 on Page 12 of Exhibit 8, NBHDL intends to use the default retail service charges in the updated Bill Impact Model.

9.0 DEFERRAL AND VARIANCE ACCOUNTS (EXHIBIT 9)

9.0-VECC-47

Reference: Exhibit 9, page 5, 20

Preamble: None.

Question:

- a) Please provide the current balance in the COVID-19 account 1509

Response:

- a) Please see 2-Staff-11 and 4-Staff-42.

9.0-VECC-48

Reference: Exhibit 9, Tables 9-1/9-6

Preamble: None.

Question:

a) Why are accounts 1588 RSVA-Power (-\$128,916); 1589 RSVA Global Adjustment (\$170,956) and 1595 Refund of Regulatory Balance 2018 (\$29,138) not being disposed of?

Response:

a) Please see section 2.9.12.1 for the explanation of why NBHDL is not including these accounts for disposition.

Regarding 1595 balances for 2018 rate riders, NBHDL points VECC to the OEB supplied model "DVA Continuity Schedule". 1595 (2018) balances are not eligible for disposition in 2021 rate applications.

³ The individual sub-accounts as well as the total for all Account 1595 sub-accounts is to agree to the RRR data. Differences need to be explained. For each Account 1595 sub-account, the transfer of the balance approved for disposition into Account 1595 is to be recorded in "OEB Approved Disposition" column. The recovery/refund is to be recorded in the "Transaction" column. Any vintage year of Account 1595 is only to be disposed once on a final basis. No further dispositions of these accounts are generally expected thereafter, unless justified by the distributor.

Refer to Filing Requirements for disposition eligibility of the sub-accounts. Select "yes" column BU if the sub-account is requested for disposition. Note that Accounts 1595 (2018) and (2019) will not be eligible for disposition in the 2021 rate application.

9.0-VECC-49

Reference: Exhibit 9, pages 17-/ Exhibit 4, page 104

Preamble: None.

Question:

- a) NBHDL is proposing to credit only 50% of the Accelerated Investment Incentive program (AIIP) in account 1592. However, the AIIP advances CCA meaning less CCA is available in the future. Given that ratepayers will then have to pay more taxes in rates in the future why is not more appropriate for the entire 100% AIIP balance be disposed of them now?
- b) At Exhibit 4, page 104 NBHDL requests *“that any rate base implications from the phase out [of AIIP] to be tracked in a 1592 sub-account to be recovered at the next Cost of 19 Service Application.”* What are the expected “rate base implications”?

Response:

- a) Please see 9-Staff-73 and 9-Staff-72.
- b) Please see SEC-19.

Attachment A – 1-Staff-2 – Response to Letters of Comment



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P.O. Box 3240
North Bay, Ontario
P1B 8Y5

Tel. (705) 474-8100
Fax: (705) 495-2756 Administration
Fax: (705) 474-3138 Engineering/Purchasing
Fax: (705) 474-8579 Customer Services/Accounting
Fax: (705) 474-4634 Operations

March 29, 2021

Mr. Stephen Hamilton,

Thank you for taking the time to provide your letter of comment. We at North Bay Hydro Distribution Limited ("NBHDL") can certainly appreciate your concerns surrounding the rise in the cost of electricity. We can also understand that during these unforeseen times, times are difficult for many. We want to ensure you that we work very hard every day to keep the portion of the bill we have control over, as low as possible. However, in an effort to continue to distribute electricity safely and reliably over the next 5 years, we must invest in the renewal of assets and the on-going maintenance of the system while meeting the evolving needs and expectations of our customers, resulting in the increase requested in our application.

We have taken steps such as deferring our Ontario Energy Board (OEB) approved May 1, 2020 rate increase 6 months to assist our community and will continue to explore other options that may result in benefit to our customers. Concerns surrounding electricity costs continue to be a significant concern for most in Ontario. In an effort to address those concerns, several programs have been made available to ease the burden caused by their electricity bills. Some examples of these programs are as follows:

CEAP and CEAP-SB (COVID-19 Energy Assistance Program – Residential and Small Business)

The Government of Ontario has made funding available to support residential, small business and charitable organization customers that are struggling to pay their energy bills as a result of the COVID-19 emergency. CEAP recipients receive a one-time, on-bill credit to eligible residential electricity customers to help them catch up on their energy bills and resume regular payments.

More information can be found here: northbayhydro.com/ceap-information-page/ 705-474-8100

The Ontario Electricity Support (OESP)

If you are a customer of an electricity utility and in a lower-income home, you may qualify for a reduction on your electricity bill. OESP will reduce the cost of your household electricity bill by applying a monthly credit directly to your bill. The credit amount will depend on how many people live in your home and your combined household income.

More information can be found here: OntarioElectricitySupport.ca 1-855-831-8151

The Low-Income Energy Assistance Program (LEAP)

The LEAP program is a year-round, province-wide emergency financial assistance developed by the Ontario Energy Board for low-income electricity customers who are experiencing difficulty paying their energy bills.

More information can be found here: www.lipinipissing.com 705-472-1337

NBHDL appreciates you taking the time to provide the feedback that helps shape the future of our business. Please know, we continue to prioritize keeping our rates as low as possible, while ensuring we deliver safe and reliable power to each and every customer in North Bay and meeting the necessary needs of the business.

Best regards,

Neil Russell
Communications Officer
North Bay Hydro Distribution Limited

Attachment B – 1-Staff-4 - Phase 1 and 2 Customer Engagement Survey Results



Customer Engagement

PRIVILEGED AND CONFIDENTIAL

2019 SURVEY RESULTS

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Executive Summary

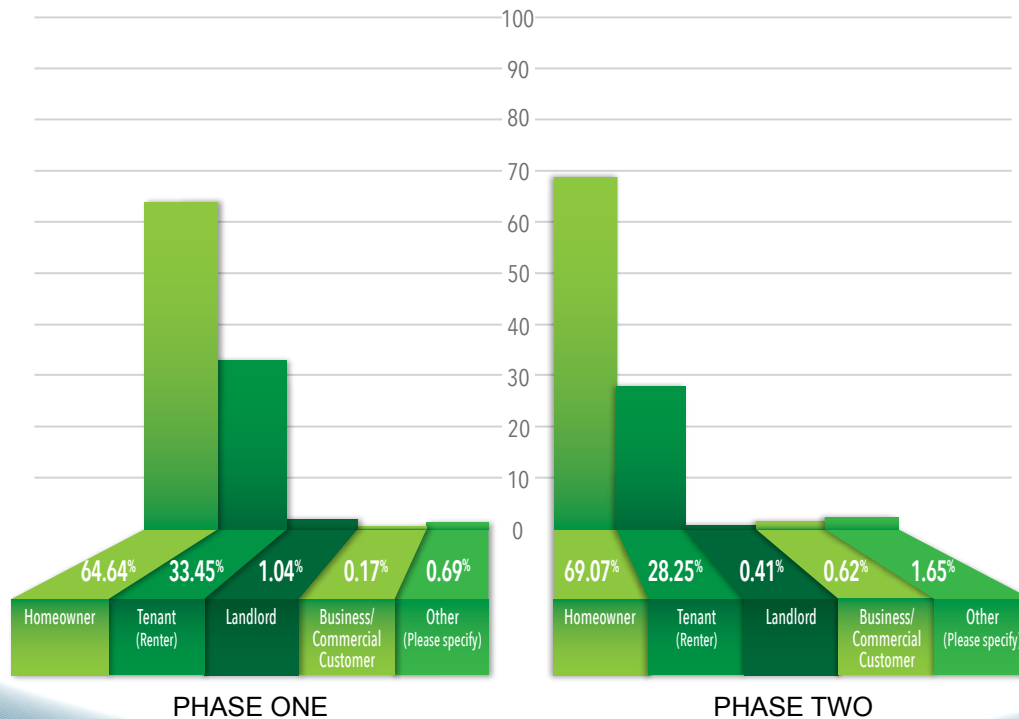
In this section, we will provide a high-level overview of North Bay Hydro customers' needs and preferences.

This overview is from customers who participated in the telephone survey by UtilityPULSE, as well as an online survey. The online survey was offered in two phases, with the second phase devoted to obtaining more specifications in regards to questions asked in phase one.

For the telephone survey, the sample of phone numbers were drawn randomly to ensure that both residential and business numbers had an equal chance at being chosen, and stratified so that 85% of the interviews were with residential customers and 15% with businesses. From the list, supplied by North Bay Hydro, interviewers reached 2,173 households and businesses; the 400 who completed the interview represent an 18% response rate.

The online survey was hosted by a temporary survey service and advertised on the North Bay Hydro website, as well as through paid advertising on Facebook. For each phase of the survey, the opportunity to win a television was offered, chosen randomly to encourage participation. To this end, there was approximately 500 people who responded to phase one, and only slightly fewer responses to phase two. A majority of responses are from **Residential Homeowners**, with 0.17% describing themselves as **Business/Commercial Customer** in phase one, and 0.62% in phase two.

Which of the following best describes you?



Customer Needs

Overall satisfaction across consultation phases

Overall, customers are satisfied with North Bay Hydro and, aside from issues with cost of services, there were little to no additional concerns, with many of the respondents to the online survey citing no changes needed whatsoever. When a response was given outside of cost of services, or no changes needed, the concerns were around hours of customer service availability, communication preferences, climate change concerns, and hopes for more information regarding decreasing consumption, all of which are pursued further in phase two of the survey.

The telephone survey found that 84% of interviewees were overall “very” or “fairly” satisfied with their most recent experience with North Bay Hydro. As well, 86% of respondents would “definitely” or “probably” recommend North Bay Hydro to a friend or colleague, a significant increase from 69% in 2017.

Additionally, the telephone survey questioned overall customer satisfaction, both pre and post interview, in order to avoid bias. There was no significant change here, with respondents rating their satisfaction at 92% pre interview and 93% post, but the percentage of electricity bill payers who are “very” or “fairly” satisfied climbed from the 87% rating in 2017, to 93% in 2019.

UtilityPULSE also measured customer engagement using the Customer Centric Engagement Index (CCEI), which values how customers think, feel, and act towards North Bay Hydro. Customers who are engaged are less likely to let costs impact their perception of the Local Distribution Company (LDC), tending more towards value-based decisions. North Bay Hydro scored well with 86%. That is higher than both the national and provincial averages.

Electricity bill payers who are 'very or fairly' satisfied with...

	2019	2017	2014
NORTH BAY HYDRO	92%	87%	87%
NATIONAL	91%	90%	89%
ONTARIO	91%	85%	83%

Base: Total respondents pre interview

Electricity customers' loyalty: ... is a company that you would recommend to a friend or colleague

	NORTH BAY HYDRO	NATIONAL	ONTARIO
Top 2 boxes: 'Definitely + Probably' would recommend	86%	76%	70%
Definitely would recommend	54%	41%	37%
Probably would recommend	32%	35%	33%
Might or might not recommend	2%	6%	5%
Probably would not recommend	4%	7%	9%
Definitely would not recommend	4%	4%	8%

Satisfied with reliability of service during outage problem

While 32% of telephone survey respondents experienced an outage problem in the past 12 months — a smaller percentage than previous years (37% in 2017, 39% in 2014) and lower than the national and provincial averages — overall 93% of respondents agree, either strongly or somewhat, that the utility's standard of reliability is consistent with their expectations. This is echoed in the online survey results, where 84.94% of respondents felt that North Bay Hydro reacted well to power outage and 87.44% felt they restored power quickly. In terms of providing information about the outage, 73.85% rated North Bay Hydro somewhat or very effective.

Those numbers change slightly in relation to available information on the website and updating social media, where a larger portion of respondents “don't know” the effectiveness, or were indifferent to the question. However, even with this change, the number of those who felt the website information and social media updating were sufficient was 56.9% and 64.02% respectively.

How would you rate NBHDL's overall effectiveness during outages?

	DON'T KNOW	VERY INEFFECTIVE	SOMEWHAT INEFFECTIVE	NEITHER EFFECTIVE OR INEFFECTIVE	SOMEWHAT EFFECTIVE	VERY EFFECTIVE
Responding to the power outage	6.90%	1.26%	2.09%	4.81%	34.52%	50.42%
Restoring power quickly	5.44%	0.84%	1.67%	4.60%	35.98%	51.46%
Using media channels for providing updates	9.83%	3.97%	5.02%	10.46%	28.24%	42.47%
Providing information about the outage	7.53%	3.97%	6.90%	7.74%	36.61%	37.24%
Maintaining information on the website e.g., outage map	24.06%	2.93%	6.49%	9.62%	27.82%	29.08%
Updating social media	18.20%	3.14%	5.23%	9.41%	26.36%	37.66%

Customers have few additional suggestions

In the online survey, an open-ended question regarding what North Bay Hydro could do to better meet their customer's needs and preferences resulted in the somewhat expected request to lower rates, but while that was a primary focus, a large portion of respondents either had no improvements to suggest, or complimented North Bay Hydro on their current service.

Outside of these two areas, there were minimal suggestions, largely surrounding types of communication that could become available — notably a live chat feature on the website — as well as increased customer service hours, more payment options, vegetation management and investment in infrastructure.

Customer Preferences

Communication methods and information quality

The method of communication preferred by customers varied depending on the information conveyed. Overall, the telephone survey found that 82% of those interviewed were satisfied with the communication from North Bay Hydro, including the amount of information available to them, the quality of that information, and the timeliness of its arrival.

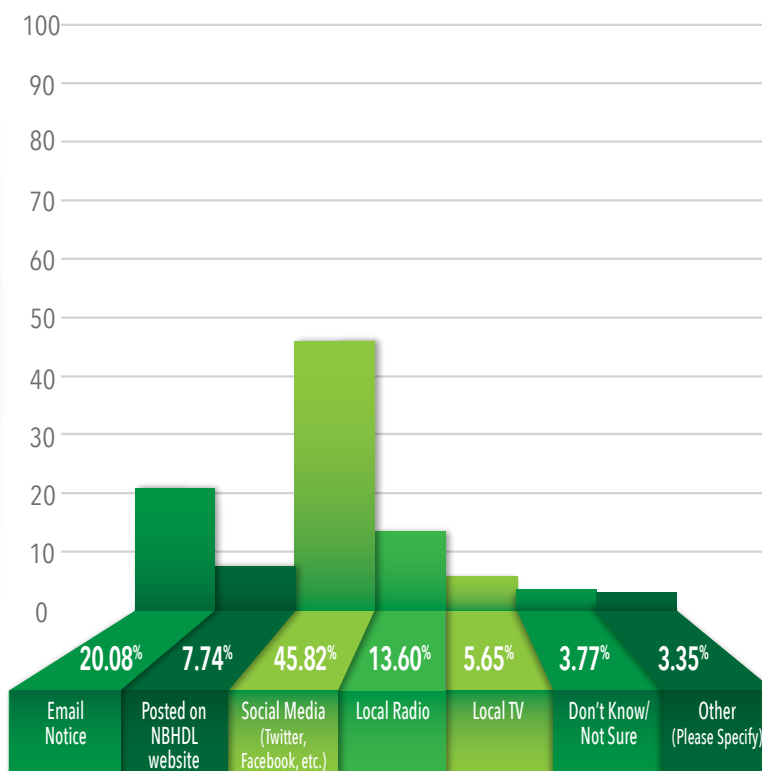
Unplanned outages

For customer preferences regarding updates on unplanned outages, a majority of those who answered the online survey chose “social media” as their preferred medium for information — with 45.82% choosing this method. Second to this, at 20.08%, is “email notice,” followed closely at 13.60% choosing announcement by “local radio.” Conversely, 33% of telephone respondents chose a “recorded telephone message” to notify them of an outage, followed by 17% choosing “email notice,” and 10% “local radio.”

The online survey did not include the option for texting notices, but it was included by several respondents under the “other” option. Texting as an option was included in the telephone survey, and garnered 23% support for the outage communication method.

In phase two of the online survey, a follow-up question was asked regarding an investment in the ability to offer texting as a method of communication during unplanned outages, but the respondents were fairly split on the idea. When told that a text notification system would require “a substantial investment for system upgrades,” 55.26% said yes, they would be interested in the search for a way to offer this convenience, while 44.74% did not feel it was necessary.

Which is your preferred method for NBHDL to provide you information about the outage?



General information

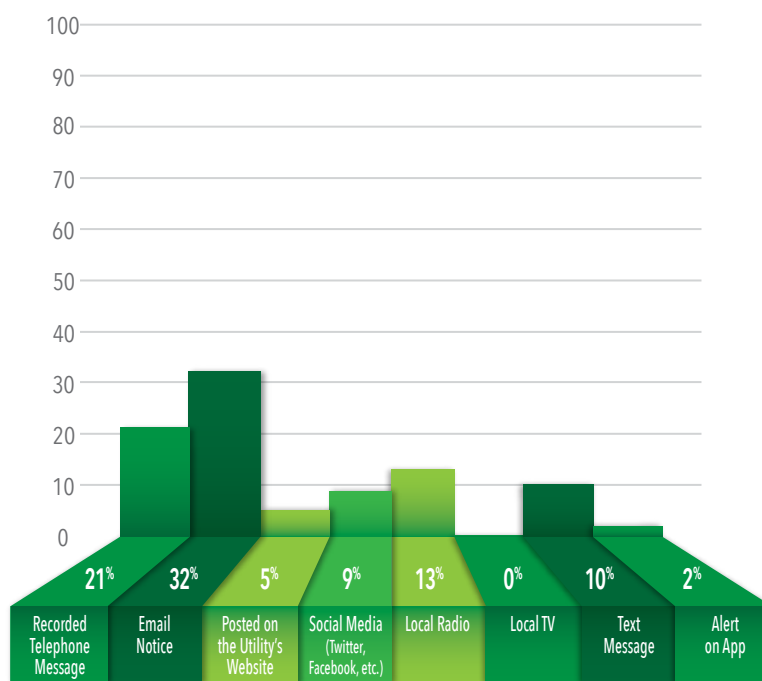
For general information, online respondents were fairly mixed in their preferred methods, 40% choosing “email notices,” while the rest were almost equal between “recorded telephone message,” “local radio,” and “text messaging;” “social media” was the closest second to email at 21.46%. Telephone respondents also chose “email notice” as their most preferred, but more of them chose “recorded telephone message” — 21% — and only 9% of respondents chose “social media.” “Local radio” did better with telephone respondents, with 13% choosing the method.

Billing and new projects

Telephone respondents were given the opportunity to choose their preferred method for billing information, and telephone ranked very high, with 61% of respondents choosing this method. Second choice was email at 27%, and the rest divided amongst voice mail, text, and “don’t know.”

The online survey included the option to choose the communication method best for information related to projects happening “near your home or business.” Email or push notification was clearly preferred — with 58.0% support — and was followed by direct mail, 17.56%; and signage in area, 11.78%. An open house forum, phone and “couldn’t be bothered” made up the rest of the list.

Method of communication customers prefer their LDC uses about general news



TELEPHONE RESPONSES

Which is your preferred methods for communicating general news, rank them from most preferred (#1) to least preferred (#5)

	1	2	3	4	5	SCORE
Recorded Telephone Message	13.98%	12.45%	10.92%	15.71%	46.93%	2.31%
Email Notice	40.04%	22.42%	19.16%	11.69%	6.70%	3.77%
Local Radio	11.11%	20.88%	26.44%	25.29%	16.28%	2.85%
Social Media	21.46%	22.41%	24.71%	24.14%	7.28%	3.27%
Text Messaging	13.41%	21.84%	18.77%	23.18%	22.80%	2.80%

Answered: 522 Skipped: 55

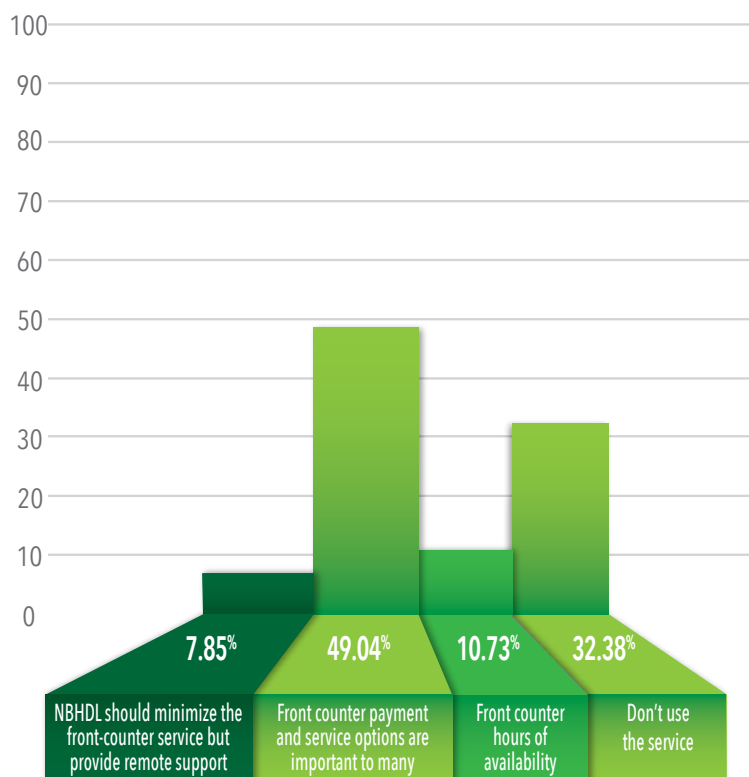
PHASE ONE RESPONSES

Convenience of services

Those who took the online survey were asked to rate their satisfaction with the convenience of services, particularly the response rate, online and call centre availability. Though a large portion of the respondents reported they “didn’t know,” particularly when it came to online self-serve options and response rate to digital avenues, such as email and social media — almost half were very or fairly satisfied with the availability of call centre, and most of the rest either did not know, or were indifferent. As it relates to in-person service, half of respondents pointed to “front counter payment and service options are important to many customers. This should be maintained as is.” The other largest portion, 32%, had never used in-person customer service.

Those who responded to the telephone survey gave North Bay Hydro an average rating of 83% of convenience of services, based mostly on their support for the availability of call centre staff, the 24/7 availability of system operators and the ability to “walk-in” for customer service.

As it relates to the services provided in-person at the front-counter (i.e. accepting payments), which of the following statements is closest to your viewpoint?



PHASE ONE — ONLINE RESPONSES

Access to services

TOP 2 BOXES: "VERY + SOMEWHAT SATISFIED"	NORTH BAY HYDRO	ONTARIO LDCs
The availability of call centre staff Monday to Friday from 9:00 a.m. to 4:30 p.m.	83%	76%
The 24/7 availability of system operators to respond to outages	88%	77%
The online self-serve options for managing your account	67%	63%
The online self-serve options for request services	64%	56%
The ability to walk in for customer service Monday to Friday from 9:00 a.m. to 4:30 p.m.	82%	0%

Base: An aggregate of respondents from Fall 2018 participating LDCs / total respondents from the local utility

Customer Priorities

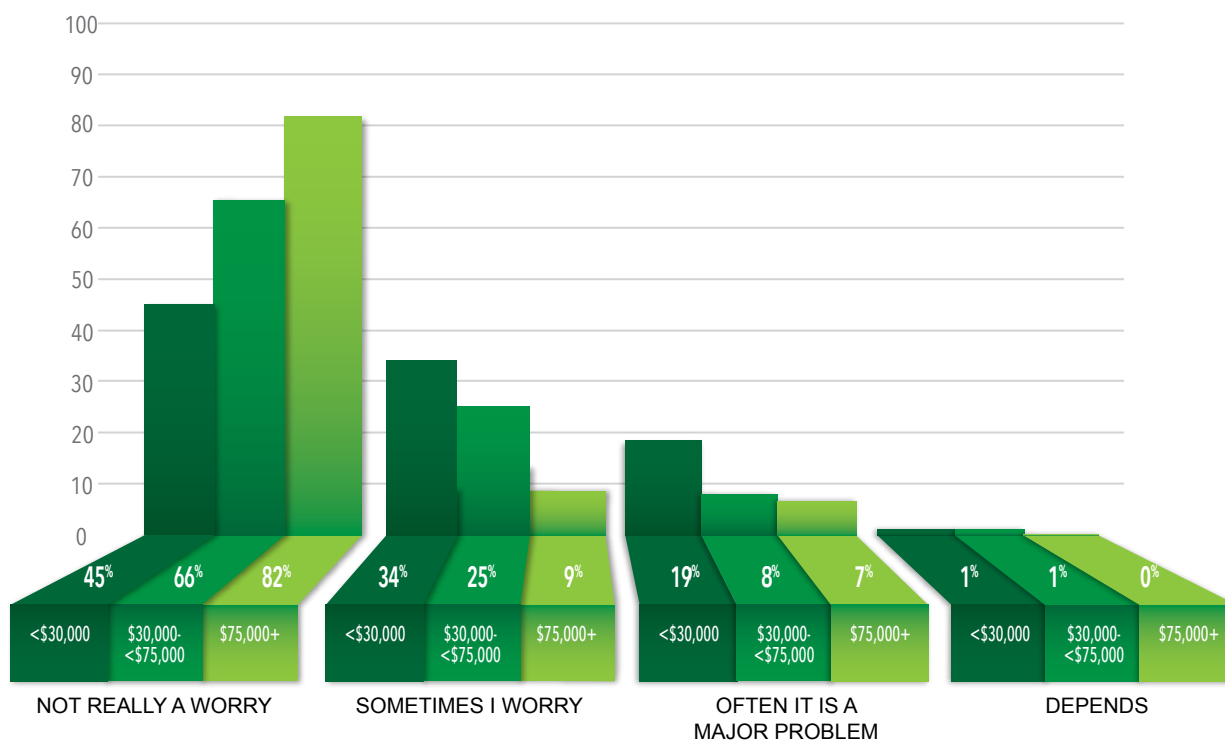
Cost of services

Though 21% of customers who took part in the telephone survey said that one of the most important things their local utility could do to improve service was “better prices/lower rates,” 67% of North Bay Hydro respondents felt that paying for electricity was “not a worry.” That number fell amongst those with an average income of less than \$30,000, but rose significantly among the \$75,000 and over income group, reaching 82%.

Cost of electricity was also commented on in the Corporate Image portion of the telephone survey, finding that 61% of respondents felt cost of electricity is reasonable when compared to other utilities, such as gas, cable or telephone, and 70% felt that North Bay Hydro operates a cost effective electricity distribution system.

When presented with the opportunity to reduce costs, through North Bay Hydro’s offering of incentives to encourage customers to go paperless, saving on supplies and postage, 87.84% of customers agreed with the notion.

Is paying for electricity a worry or a major problem?



Priority investments

The UtilityPULSE telephone survey found that priority planning for the next five years centred mainly on maintenance and upgrading of equipment, both in proactive measures and in response to outages and response times, as well as educating customers, and developing better technological systems and supports. The online surveys furthered the specificity of these themes.

Proactively maintaining and upgrading equipment was considered “very high” or “high” priority for 90% of those interviewed within the telephone survey. It was additionally referenced in the online survey, where customers were asked to rate their priorities, 49.31% of respondents felt modernizing the electrical system to support the reduction of greenhouse gases — especially in regards to net-metering and electric vehicles — was their most important priority, and 28% made it their second most important priority.

Reliability and response time

Customers, within the telephone survey, felt that reducing response time (80%) and number of outages (78%) were important priorities, and this was echoed in the online survey during phase two of its engagement.

Priority Planning within the next 5 years

TOP 2 BOXES: “VERY HIGH + HIGH PRIORITY”	NORTH BAY HYDRO	RESIDENTIAL	BUSINESS
Pro-actively maintaining and upgrading equipment	90%	90%	90%
Reducing response times to outages	80%	80%	82%
Investing more in the electricity grid to reduce outages	78%	77%	80%
Educating the public as it relates to electricity safety	74%	75%	72%
Investing more in tree trimming to help reduce the number of outages	69%	69%	68%
Educating customers about energy conservation	69%	67%	77%
Burying overhead wires	56%	55%	57%
Providing sponsorships to local community causes	48%	48%	50%
Developing a SMART phone application to allow you to view usage and pay your bill	42%	41%	43%
Providing more self-serve services on the website	35%	35%	33%
Making better use of social media (such as Twitter, Facebook, etc.)	25%	25%	28%

Base: Total respondents

Survey takers were asked about the automation of the electrical grid, a measure that would improve reliability, as well as their feelings towards an investment based on five specific scenarios regarding investment versus potential to lower costs.

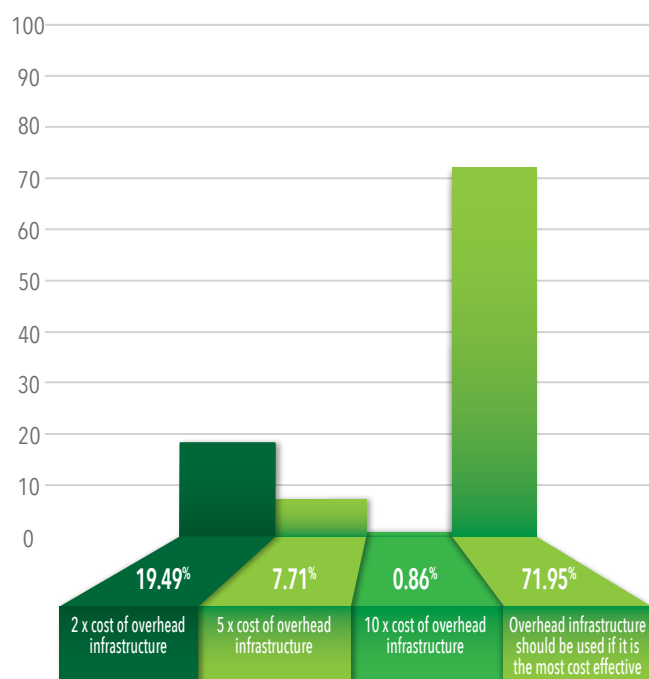
Of the responses, 79.45% answered the question with an affirmative answer, but preferences for payback period and timing of lowered consumer costs varied, while 20.56% of respondents felt the current reliability of the network was acceptable.

As to reduced response times, respondents to phase two of the online survey were asked for their feelings regarding unexpected outages outside of normal business hours and the handling of that situation. Survey takers were informed of the Lineman/Operator system currently in place, as well as the cost savings within this system, and asked if they would like to see a control room monitored 24/7 in the hope it would reduce duration of the outages, even with the increased associated costs. There was an almost equal split in answers, with 52.68% responding “no,” but 47.32% responding “yes.”

Additionally in relation to outages, 69% of telephone respondents rated “investing more in tree trimming to help reduce the number of outages” as high or very high priority. In phase two of the online survey, customers received a detailed explanation of the Vegetation Management program at North Bay Hydro. When asked if they were aware of the program that includes tree-trimming, tree removal and consultation, etc., prior to reading said explanation, 62.74% of respondents said “no.”

Customers completing the online and telephone survey were asked questions regarding burying overhead wires, namely, the importance of doing so, and at what cost. While 56% of telephone respondents believed that burying overhead wires should be a five-year priority, phase two of the online survey found that number changed, based on the price point of the underground cabling. And though 19.4% said that they would consider “2 times the cost of overhead infrastructure,” as the price point they are comfortable with, 71.95% felt that overhead infrastructure should be used, if it is the most cost effective.

**At what price point would you like to see NBHDL consider underground cabling versus overhead wires?
Please choose one answer:**



PHASE TWO — ONLINE RESPONSES

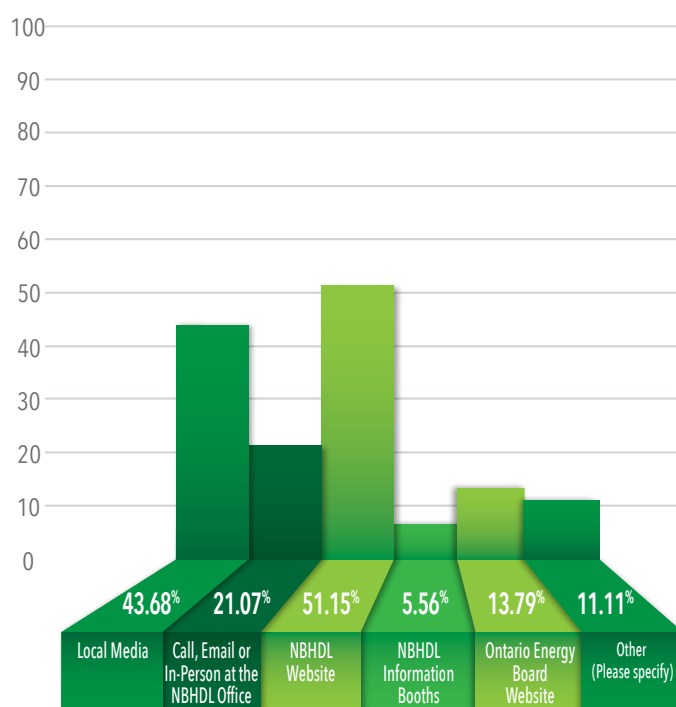
Educating the public

The UtilityPULSE survey results reveal that educating the public, as it relates to safety and to energy conservation, are priority planning opportunities — 74% and 69% of customers, respectively. (See Priority Planning chart on page 10.)

In terms of priorities, 46.84% of online survey respondents rated “Helping customers with electricity conservation and efficient usage” to be their most important priority, with 35.36% rating it their second. This trend continued with phase one and two of the online survey — 51% of phase one participants mentioned they find information regarding conservation and safety on the North Bay Hydro website. When asked in phase two if they would like to see a further investment in the website, to ensure the information is easier and quicker to locate, 78.97% of respondents answered “yes.”

In addition to information on the website, 66.09% of online participants believed North Bay Hydro should invest more in advertising when it comes to programs available to help reduce consumption, such as the Affordability Program, and 81.80% of respondents felt that North Bay Hydro should develop a package for new customers that provides wide-ranging information on outages, the benefits of My Account, as well as vegetation management and communication channels.

Where do you currently find information on topics such as: Electricity rates, conservation tips and consumption/usage information?



Included in the list of priority planning for the next five years, created by the telephone respondents, are ideas pertaining to smartphone application development, providing more self-service on the website, and making better use of social media. This brings to light the need to protect personal information, and it was shown to be of great importance to online respondents. In phase one, respondents were asked how they would like to see North Bay Hydro invest in the effort. While 7.09% said basic protection was all that was required, 38.31% felt that North Bay Hydro should go above that minimum, but that those protection tools are used only to a cost effective level. However, 54.60% felt that North Bay Hydro should invest significantly in the best tools and resources in order to properly protect information.

Overall Customer Experience

According to the UtilityPULSE Customer Experience Performance Rating (CEPr), 89% of customers have a belief that they will have a good to excellent experience when dealing with North Bay Hydro professionals. The telephone survey found that not only did North Bay Hydro meet or exceed the average performance values in “company image” and “management operations” for Canada and Ontario, but scored higher than both the national and provincial results in “price and value,” and in “customer service.” UtilityPULSE also measured North Bay Hydro by a Credibility and Trust Index — a combination of the North Bay Hydro’s knowledge, involvement and integrity as seen by the customers — and asked questions on themes, such as overall quality of services, promises kept, focus on customers, as well as trustworthiness. Of the respondents, 87% felt that North Bay Hydro met these measures, once again, more than the provincial and national average.

North Bay Hydro's UtilityPULSE Report Card®			
<i>Performance</i>			
CATEGORY	NORTH BAY HYDRO	NATIONAL	ONTARIO
CUSTOMER CARE	A	B+	B+
Price and value	B+	B	B
Customer service	A	A	B+
COMPANY IMAGE	A	B+	B+
Company leadership	A	B+	B+
Corporate stewardship	A	A	B+
MANAGEMENT OPERATIONS	A+	A	A
Operational effectiveness	A+	A	A
Power quality and reliability	A+	A	A
OVERALL	A	A	B+

Base: Total respondents

Customer Survey: Telephone

Summary

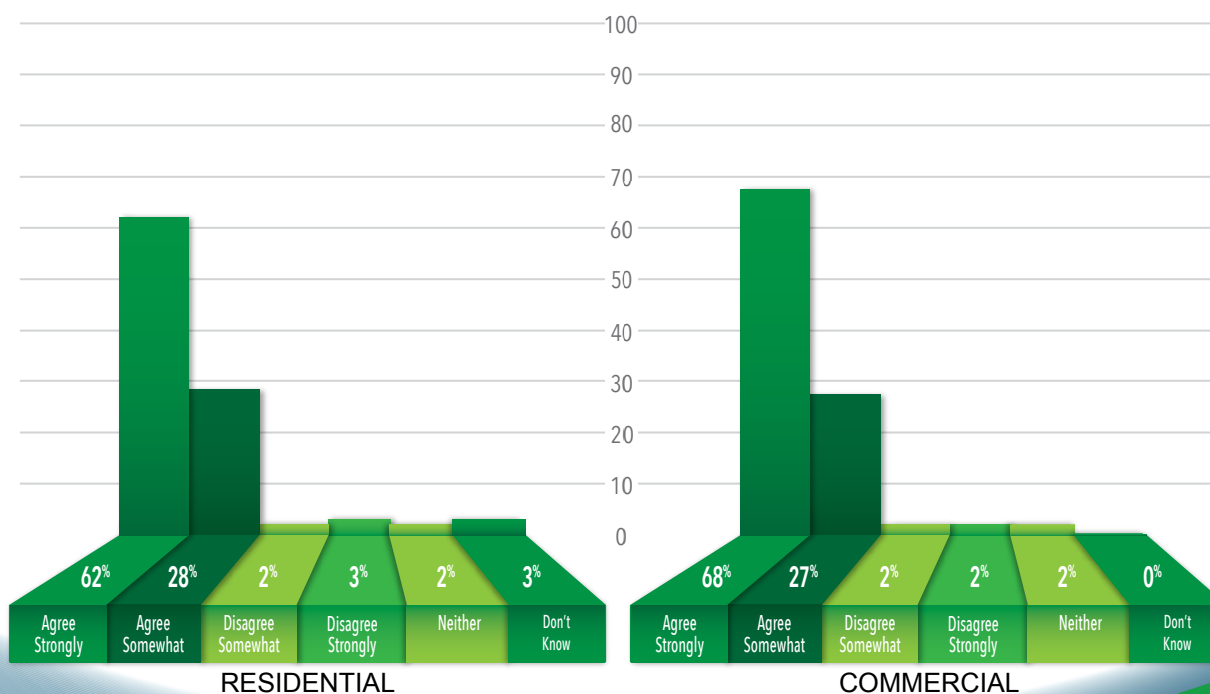
Overall, respondents — both commercial and residential — had a 92% satisfaction rate.

When asked again, post-survey, the overall satisfaction number increased to 93% with residential customers, and 95% with commercial customers.

Customer service

- Of those who contacted North Bay Hydro in the 12 months prior to the survey, more than 80% were satisfied with their treatment and outcome.
- Age became a factor when discussing online services, with 90% of those 18 to 34-year-olds satisfied with the offerings, and a large portion of those 55 and older choosing “don’t know” or refusing to answer, causing the average level of satisfaction to drop to 64%.
- When customers were asked if North Bay Hydro is a company they would like to continue to do business with, 91% of the 400 total respondents agreed — with 63% choosing “agree strongly.” As far as commercial customers, 95% said they would “continue to do business with” North Bay Hydro.

Is North Bay Hydro a company that you would like to continue to do business with?



Reliability and cost of service

Of the respondents asked about their overall opinions, (i.e. “Tell me if you agree or disagree: Overall the utility provides excellent quality services”) 93% of the total respondents agreed with the statement, and that agreement level was 100% with commercial customers who were asked.

-  96% of the group agrees that the utility quickly handles outages and restores power, and when the same question is posed to a group of commercial consumers 95% agreed, 0% disagreed, and 5% “don’t know.”
-  Of those commercial customers who answered, 100% agreed that North Bay Hydro delivers on its service commitments.
-  97% of the total respondents agreed with the statement: “Provides consistent and reliable electricity.” (97% residential; 100% commercial)
-  67% of customers do not consider their hydro payment to be burdensome.

Communication methods

When asked, it appeared that preferred methods varied along age demographics primarily, as well as type of information to convey; most common answers were telephone and email.

-  78% were satisfied with the information available when outages occur (90% among 18 to 34-year-olds; commercial customers: 87%)
-  For non-outage information, 82% of all respondents were satisfied with the timeliness and relevance of the information provided; 95% among those aged 18 to 34.
-  As to satisfaction with information available regarding energy conservation, 86% of residential respondents, and 90% of commercial, were happy with what they received.

Corporate image

Of the respondents, 90% of commercial customers and 89% of residential customers would recommend North Bay Hydro to a friend or family member.

-  95% of commercial customers (89% overall) felt that North Bay Hydro is a “trusted and trustworthy company.” Of the selected residential customers, 90% agreed that North Bay Hydro is a respected company in the community.

Priority planning

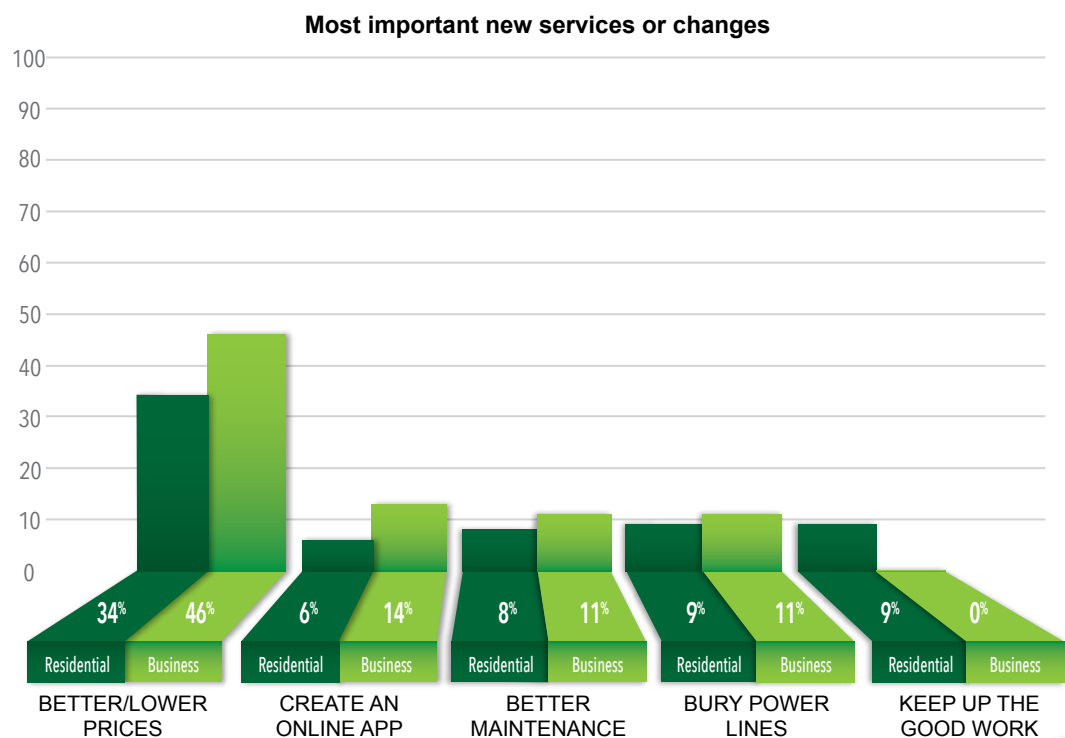
Out of the total respondents, 90% felt proactively maintaining and upgrading equipment was a “high priority,” and 23% of those felt it was a “very high priority.”

-  — Just over half of commercial and residential customers considered burying overhead wires a priority: 55% residential and 57% commercial.
-  — Lower priority was given to social media (25%), even among 18 to 34-year-olds who showed a clear preference for online activities (28%). However, the group gave “high priority” to smartphone application creation (67%), while on the whole, 41% of respondents felt the same. Only 25% of those 55 or older prioritized app creation.

Suggestions for improvement

In regards to suggestions, of the 400 total respondents, 20% either said “none/nothing/satisfied” (15%) or “good/like it/satisfied/keep up the good work” (5%).

-  — Better or lower prices was the most suggested improvement by residential (34%) and commercial (46%) customers, followed by commercial customers favouring the creation of an “online mobile app” (14%), and “better maintenance” (14%). Residential customers showed a preference for “burying power lines” (9%), and “good/like it/satisfied/keep up the good work” (9%).



Methodology

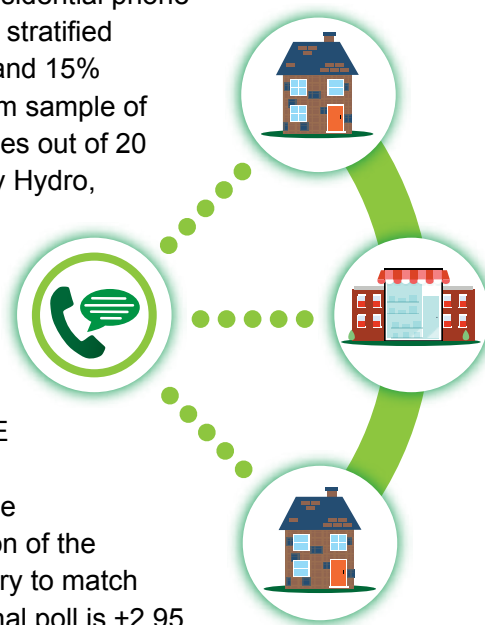
Field and Design

For the quantitative section of the customer consultation, North Bay Hydro enlisted UtilityPULSE to conduct a telephone survey of its customers. The survey was conducted between March 25 and April 3, 2019, and its findings reflect their contact with 400 respondents who pay or look after the electricity bills.

The list of residential and small to medium business customers was supplied by North Bay Hydro, from which a sample of numbers was chosen to ensure each business or residential phone number had an equal chance of being included. That sample was then stratified so that 85% of interviews were conducted with residential consumers and 15% represented commercial customers. Under sampling theory, the random sample of 400 customers will differ no more than ± 4.90 percentage points, 19 times out of 20 — the same as if you were able to interview all customers of North Bay Hydro, while keeping 85% residential and 15% commercial.

During the survey conduction period, 2,173 households and businesses from the list were contacted, and the 400 that completed the interview represent an 18% response rate.

The findings for the national and provincial interviews that UtilityPULSE included as a measure are similarly obtained, the same allotments for residential (85%) and commercial (15%) customers are kept. Telephone interviews are conducted with a sampling method to ensure each region of the country is represented — the data weighed in each region of the country to match the regional shares of the population. The margin of error on the national poll is ± 2.95 percentage points.



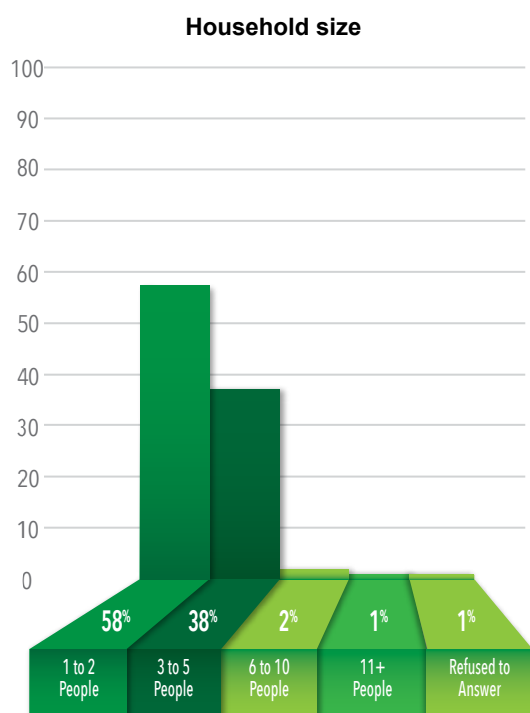
Content Covered

The objective of UtilityPULSE's telephone survey was to "provide information to support discussions about improving care at every level," and hoping to capture the state of mind or perception of customer's needs and wants. This too was in aid of guiding discussions around improvement. In addition to the enhancement of their report, with inclusion of numbers from their 2018 database, the survey posed an overall satisfaction question at both the beginning and end of the call. At the beginning of the call, the question generates a spontaneous reaction and avoids bias. Asked after the interview and the answer could reflect a more thoughtful and informed opinion.

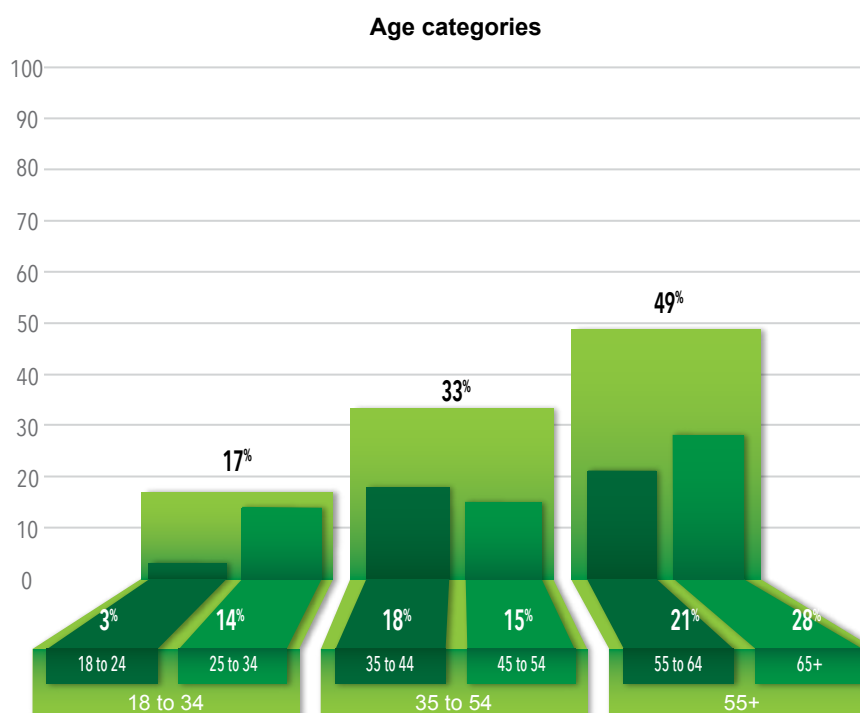
Demographics

Looking at the demographic breakdown of North Bay Hydro's 340 (residential only) telephone respondents (total respondents 400):

- Gender: 52% of telephone respondents identify as women (men: 48%).
- Age: The largest age group to respond to telephone survey was the 55+ group with 49% of respondents (21% were 55 to 64-year-olds; 28% were 65 or older); next largest age group was 35 to 54-year-olds with 33% (18% of were 35 to 44-year-olds; 15% were 45 to 54-year-olds). Only 3% of respondents were between the ages of 18 and 24; and 14% were between 25 and 34 years of age. Three respondents declined to answer.
- Household size: A one to two person household was most common among residential respondents (58%); while the next largest group was households with three to five members (38%). There were eight respondents with between six and 10 people (2%); two respondents with more than 11 people in household (1%); five refused to answer (1%).



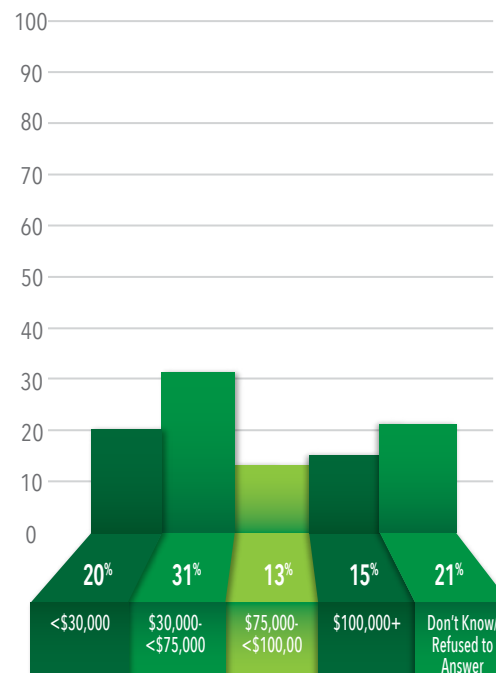
Base: 340 residential respondents



Base: 340 residential respondents

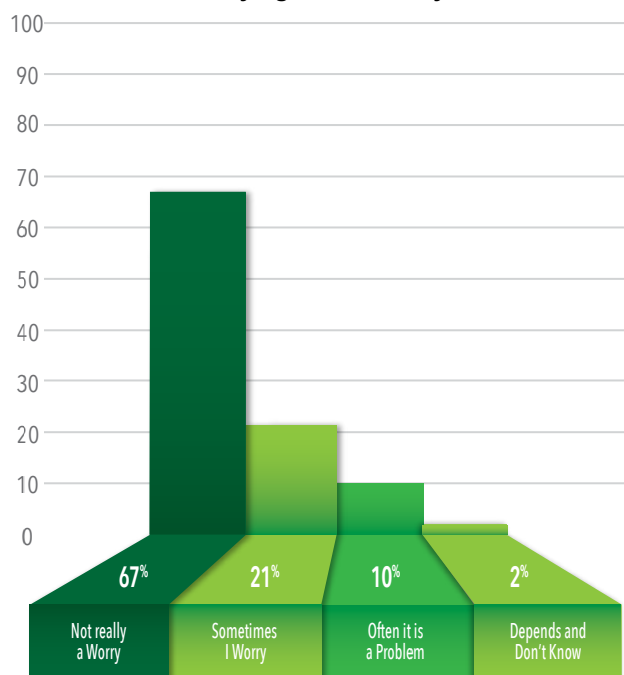
- Economic status:** 20% of residential respondents reported a total annual income (net) of less than \$30,000. In the \$30,000 to less than \$75,000 group were 31% of respondents; 13% earned more than \$75,000 to \$100,000; and 15% of respondents earned more than \$100,000. Seventy respondents either did not know, or preferred not to answer (21%).
- Economic difficulty:** Of the 400 total respondents — both commercial and residential — 269 (67%) said that paying for electricity is not really a worry; 21% of respondents sometimes worry about paying; and 10% feel it is a major problem; 2% either don't know or answered "depends."
- Usage:** UtilityPULSE segmented respondents into three groups of "average kWh usage groups." Group one is the lowest, 25% of kWh (100 respondents); group two is the middle 50% (200 respondents); and group three is the top 25% (100 respondents).

Total annual income



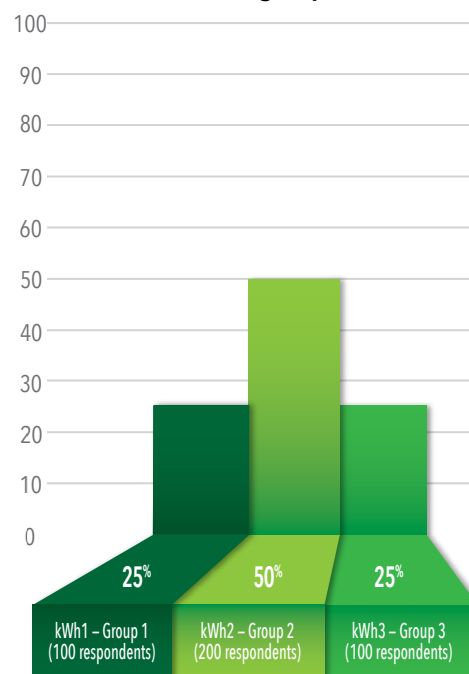
Base: 340 residential respondents

Paying for electricity



Base: Total respondents

kWh group



Base: Total respondents

Respondent Feedback

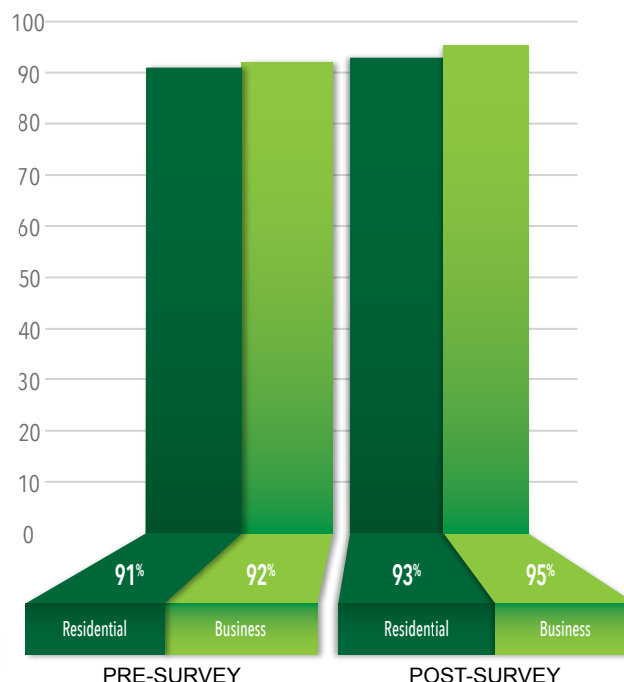
Overall Satisfaction and Customer Service

Summary

This first section of respondent feedback outlines customers' overall satisfaction with North Bay Hydro, as well as their opinions on aspects of customer service — both from those who recently contacted the utility, and those with general opinions.

- Respondents, both commercial and residential, had a 92% overall satisfaction rate pre-survey.
- When asked again post-survey, the overall satisfaction number increased to 93% with residential customers, and 95% with commercial customers.
- Of those who contacted North Bay Hydro in the 12 months prior to the survey, more than 80% were satisfied with their treatment and outcome.
- Age became a factor when discussing online services, with 90% of those 18 to 34-year-olds satisfied with the offerings, and a large portion of those 55 and older choosing “don’t know,” or refusing to answer, causing the average level of satisfaction to drop to 64%.
- When customers were asked if North Bay Hydro is a company they would like to continue to do business with, 91% of the 400 total respondents agreed — with 63% choosing “agree strongly.” As far as commercial customers, 95% said they would “continue to do business with” North Bay Hydro.

Customer overall satisfaction



Base: Total respondents

Would continue to do business with

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	91%	90%	95%
Agree strongly	63%	62%	68%
Agree somewhat	28%	28%	27%
Disagree somewhat	2%	2%	2%
Disagree strongly	2%	3%	2%
Neither	2%	2%	2%
Don't know	3%	3%	0%

Base: Total respondents

Customer Service

Billing issues

As billing is an important aspect of North Bay Hydro services, respondents were asked about the accuracy of their bill, any billing issues they have had, and if any, how did they respond. When the total base (residential and commercial) was asked if they agree or disagree as to whether or not North Bay Hydro has “accurate billing,” 64% agree strongly, 27% agree somewhat — showing 91% agree with the statement — and 3% disagree somewhat, 2% disagree strongly.

These numbers were similar with commercial customers specifically, as 57% strongly agreed, 33% agreed somewhat — again, 90% of respondents generally agreed with the statement — and 3% disagreed somewhat.

When asked “In the past 12 months have you experienced any problems with your electricity bill?” only 25 respondents — or 6% — experienced an issue. Of the 25 original respondents, nine (15%) were commercial customers.

When those who had an issue with their bill (6% of total respondents) were asked what types of billing problems they had, 62% of the residential respondents and 78% of commercial customers said the amount was too high. The next most common complaint – according to 12% of residential and 11% of commercial customers – was a payment incorrectly recorded, or not at all.

Among the 15% of commercial customers with a billing issue (9 out of 25 people who had an issue: 25 of 400 total respondents) 11% mentioned a bill that was difficult to understand; 11% added a bill that had arrived late. Residential customers also mentioned “complaint or inquiry about rates or charges” (12%); “too many extra charges” (6%); “did not receive the bill” (6%); and “missed payments/power cut off/threats to cut power” (6%). An additional 12% fell into “no problem with billing.”

Of those who had a billing issue (25 of 400 respondents), only seven of the residential customers attempted to contact North Bay Hydro (44%), and three of the commercial customers (33%).

Accurate billing

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	91%	91%	90%
Agree strongly	64%	65%	57%
Agree somewhat	27%	26%	33%
Disagree somewhat	3%	3%	3%
Disagree strongly	2%	2%	0%
Neither	1%	1%	0%
Don't know	4%	3%	7%

Base: Total respondents

Types of billing problems

	2019 TOTAL	RESIDENTIAL	BUSINESS
Amount too high	68%	62%	78%
Difficult to understand	4%	0%	11%
Payment record incorrect/not recorded	12%	12%	11%
Bill arrived late/not yet	4%	0%	11%
Complaint/inquiry about rates/changes	8%	12%	0%
Too many extra charges	4%	6%	0%
Did not receive bill	4%	6%	0%
No problem with billing	8%	12%	0%
Missed payment/power cut off	4%	6%	0%

Base: 25 of 400 respondents had issues (16 residential; 9 business)

Non-billing issues

All respondents, both residential and commercial, were asked if they contacted their utility for any reason other than a power outage or billing issue; 32 residential respondents (9%) and 10 commercial respondents (17%) said “yes.” Their reasons for contacting North Bay Hydro included the following: Moving or setting up a new account; maintenance or repair request; billing issues; changing account information; payment arrangements; move/relocate/remove equipment.

Residential respondents had some additional reasons for contacting North Bay Hydro: Ways to save energy, or incentives for conservation; forestry concern; disconnection/cancellation; e-billing; downed line/power out; meter-related issues; hot water tank/heater; other/don't know/refused: 9% residential.

If the respondent did not wish to include this specific information, they were simply asked if the issue was a problem “other than billing or outage.”

The respondents who experienced an issue of any kind and contacted the utility (Billing: 44% residential with an issue contacted; 33% commercial with an issue contacted; All other reasons: 9% residential with issue contacted; 17% commercial with an issue contacted) were asked what method they used to contact North Bay Hydro.

The majority of those who contacted North Bay Hydro did so by telephone (83%); 9% used an online feature (4% email; 5% website); 6% went in person to handle their issue; and 1% “did nothing.”

Problems other than power failure/billing

	RESIDENTIAL	BUSINESS
Moving or setting up new account	12%	30%
Maintenance or repair request	3%	20%
Billing issues	16%	10%
Changing account information	3%	30%
Payment arrangements	3%	10%
Move/relocate/remove equipment	0%	20%

Base: 42 of 400 respondents had issues (32 residential; 10 business)

Additional reasons for contacting

	RESIDENTIAL
Ways to save energy/incentives for conservation	12%
Forestry concern	6%
Disconnection/cancellation	3%
E-billing	6%
Downed line/power out	3%
Meter-related issues	3%
Hot water tank/heater	25%
Other/don't know/refused	9%

Method used to contact

	RESIDENTIAL	BUSINESS
Telephone	83%	83%
E-mail	5%	0%
Utility's website	5%	6%
In person	7%	6%
None/nothing	0%	6%

Base: 77 of 400 respondents had issues (59 residential; 18 business)

Overall satisfaction with most recent contact

The respondents who did have contact with someone from North Bay Hydro were asked their satisfaction level with this most recent experience.

The 77 respondents who contacted North Bay Hydro (77 total: 59 residential; 18 commercial) were first questioned about the time it took to contact someone, and whether they were satisfied, or dissatisfied, with the period. Of the residential respondents, 83% were “very” or “fairly” satisfied (44% and 39%, respectively); and only 8% of the respondents who had contacted North Bay Hydro were unsatisfied (fairly dissatisfied: 5%; very dissatisfied: 3%). The remaining didn’t know, or refused (8%).

Of the commercial respondents, 89% were “very” or “fairly” satisfied (50% and 39% respectively); 0% were dissatisfied; and 12% chose either “don’t know” or “neither satisfied nor dissatisfied.”

Still in terms of time, respondents were asked if they were satisfied with the “time it took someone to deal with your problem.”

In total, 84% of total respondents were satisfied with the time it took (85% residential; 83% commercial). That number was higher among women (92%) and among those with a household income lower than \$30,000, and who consider their bill to be “often a problem” (both 100%). Of the residential respondents, 10% were dissatisfied; 5% didn’t know or refused to answer. With commercial customers, 11% were dissatisfied; 6% didn’t know or refused to answer.

When asked about the helpfulness of the staff they dealt with, 86% of residential respondents, and 78% of commercial respondents were satisfied. This number was higher among those residential respondents between the ages 18 to 34 (100%); and 35 to 44-year-olds (91%). A total of 9% felt dissatisfied; 6% were indifferent, didn’t know or refused.

Commercial respondents equally replied “didn’t know” or “refused to answer” (12%) as dissatisfied (6% very; 6% fairly).

A strong majority of residential respondents were satisfied with the staff’s knowledge (85%) and 5% were dissatisfied. (10% refused, didn’t know, or were indifferent.) The average satisfaction rate of commercial consumers was 78%, but more commercial respondents chose “very satisfied” than residential. (56% vs. 47%).

Levels of courtesy were also measured, and again, respondents on the whole are satisfied (90%). Of the residential customers, 54% were “very” satisfied; 36% were fairly satisfied; for commercial, 56% and 33% respectively. More of the total respondents didn’t know/were indifferent or refused (6%) than were dissatisfied (4%).

A total of 86% of respondents felt “very” or “fairly” satisfied with the quality of information provided by staff; more commercial customers were “very satisfied” (61%) than residential (47%). Again, a small number are dissatisfied (7% residential; 11% commercial) and didn’t know/refused/indifferent (6% of commercial).

Overall, 83% of residential and 89% of commercial respondents were satisfied with their most recent experience; 80% of residential and 89% of commercial interviewees considered their problem solved. A few respondents did not consider the problem solved (17% residential; 6% commercial); and the rest fell into didn’t know, or refused to answer (4% residential; 6% commercial).

Most recent contact with North Bay Hydro

	VERY SATISFIED		FAIRLY SATISFIED		FAIRLY DISSATISFIED		VERY DISSATISFIED		NEITHER SATISFIED NOR DISSATISFIED		DON'T KNOW/REFUSED	
	RESIDENTIAL	BUSINESS	RESIDENTIAL	BUSINESS	RESIDENTIAL	BUSINESS	RESIDENTIAL	BUSINESS	RESIDENTIAL	BUSINESS	RESIDENTIAL	BUSINESS
Time it took to contact someone	44%	50%	39%	39%	5%	0%	3%	0%	0%	6%	8%	6%
Time it took someone to deal with your problem	47%	56%	37%	28%	8%	6%	2%	6%			5%	6%
The helpfulness of the staff who dealt with you	53%	50%	34%	28%	5%	6%	3%	6%	0%	6%	5%	6%
The knowledge of the staff who dealt with you	47%	56%	37%	22%	2%	0%	3%	11%	0%	6%	10%	6%
The level of courtesy of the staff who dealt with you	54%	56%	36%	33%	2%	0%	2%	6%	0%	6%	7%	0%
The quality of information provided by the staff who dealt with you	47%	61%	39%	22%	5%	6%	2%	6%	0%	6%	7%	0%
Overall, how satisfied or unsatisfied are you with your most recent experience	46%	56%	37%	33%	8%	6%	5%	6%	3%	0%		

Base: 77 of 400 respondents (59 residential; 18 business)

In-person customer service

Many North Bay Hydro customers still utilize and enjoy receiving person-to-person customer service, so the UtilityPULSE telephone survey asked all respondents — even those who had not contacted the utility in the last 12 months — their opinions on in-person availability and call centre operations.

All respondents were asked their satisfaction level with the “ability to walk in for customer service, Monday to Friday, from 9:00 a.m. to 4:30 p.m.” More than half were “very satisfied” (51%), and many were “fairly satisfied” (31%), creating a combined approval of 82%; 9% didn’t know or refused to answer; and 3% were neither satisfied nor dissatisfied.

As to call centre availability hours, 82% of residential and 90% of commercial customers were “very” or “fairly” satisfied with the Monday to Friday 9:00 a.m. to 4:30 p.m. timeline, and both were fairly even in their dissatisfaction (8% and 5% respectively). In terms of the 24/7 availability of the system operators in the event of an outage, 88% of the total were satisfied (87% of residential; 90% commercial). Only 4% of residential customers, and 0% commercial customers were dissatisfied. Thirty respondents didn’t know or refused to answer (7% residential; 10% commercial).

Walk-in customer service

	RESIDENTIAL
Very satisfied	51%
Fairly satisfied	31%
Fairly dissatisfied	3%
Very dissatisfied	4%
Neither satisfied/nor dissatisfied	3%
Don't know/refused	9%

Base: 394 residential respondents

Availability of call centre staff

	RESIDENTIAL	BUSINESS
Very satisfied	41%	43%
Fairly satisfied	41%	47%
Fairly dissatisfied	5%	5%
Very dissatisfied	3%	0%
Neither satisfied/nor dissatisfied	3%	0%
Don't know/refused	7%	5%

Base: 400 respondents (340 residential; 60 business)

Availability of system operators to respond to outages

	RESIDENTIAL	BUSINESS
Very satisfied	51%	52%
Fairly satisfied	36%	38%
Fairly dissatisfied	3%	0%
Very dissatisfied	1%	0%
Neither satisfied/nor dissatisfied	2%	0%
Don't know/refused	7%	10%

Base: 400 respondents (340 residential; 60 business)

Online self-serve options

On the whole, 64% of respondents were satisfied with the online self-serve options for requesting service, but this did vary by age group and household income level. For instance, 75% of those in the \$75,000 + income level, expressed satisfaction; by age, younger people — those aged 18 to 34 — expressed 90% satisfaction in the online self-serve options for accounts; and by number of people in dwelling, 81% of those who live with three to five people expressed satisfaction.

A higher than average number of respondents in the 55+ age category chose “don’t know” or “refuse to answer” (36%).

More than half of those considered commercial customers expressed satisfaction (53%), and this number is lower due to a higher than average number of respondents who “don’t know” or “refused to answer” (43%).

This satisfaction level amongst certain groups continued when asked about the online self-serve options for managing their accounts. Satisfaction rated high among those aged 18 to 34 (91%); and those with more than three people in home (3-5: 80%; 6+:80%). The 55+ age group is lower than the average residential satisfaction level (57%), but again, has a higher than average response rate to the answer “don’t know” or “refused to answer”(28%).

Residential customers were 69% satisfied, with 6% choosing dissatisfied, and higher numbers of those refusing or answering “don’t know” or indifferent (25%); this is echoed in the commercial results, with 42% saying don’t know/refused, but with an overall satisfaction rate of 55% (3% disagreed).

**Online self-service option
for managing your account**

	RESIDENTIAL	BUSINESS
Very satisfied	39%	25%
Fairly satisfied	30%	30%
Fairly dissatisfied	4%	2%
Very dissatisfied	2%	2%
Neither satisfied/nor dissatisfied	7%	0%
Don't know/refused	17%	42%

Base: 400 respondents (340 residential; 60 business)

General customer service

Of those who were asked if North Bay Hydro “deals professionally with customers’ problems,” overall 80% of the respondents “agreed,” with 14% saying “don’t know.” Only 3% disagreed with the statement, and 5% were indifferent. (Residential specific: 77% agree; 3% disagree; 20% don’t know, neither). This number was much higher with those commercial customers who were asked, with 95% agreeing and only 5% choosing “don’t know.”

Among a selection of residential customers, when asked if North Bay Hydro is customer-focused and treats customers “as if they’re valued,” 75% of those who responded agreed; 44% of those “agreed strongly,” 4% answered “don’t know,” and some did not agree with the statement (21%). Variations were found with those aged 18 to 34 who agreed strongly (59%); and with those in a home with three to five people in the household, only 60% of those respondents agreed with the statement; and 21% disagreed somewhat; 12% disagree strongly.

Once again, this question posed to the selection of commercial respondents brought 95% agreement; and 5% answering “disagree somewhat.”

In regards to customer service, those asked if North Bay Hydro deals quickly with issues that affect customers, respondents either agreed strongly (46%), or somewhat (36%) with the statement. More people aged 18 to 34 strongly agreed (65%); and with those living in a household with six or more people, fewer responded “agree strongly” (20%); and more chose “agree somewhat” (80%). The belief that the utility quickly deals with issues is clear with those who “sometimes worry about paying their bill,” as 92% of that group agreed with the statement. Amongst commercial customers: 85% agreed; 5% disagreed; 10% don’t know.

Of a selection of residential respondents 65% agreed strongly or somewhat with the statement “Adapts well changes in customer services,” with only 18% disagreeing, and 15% remarking “don’t know.” Among commercial customers selected, 65% agree strongly or somewhat, with a higher than usual percentage saying “don’t know” (30%); 5% disagreed.

Customer-focused and treats customers as if they’re valued

	RESIDENTIAL	BUSINESS
Agree strongly	44%	65%
Agree somewhat	30%	30%
Disagree somewhat	14%	5%
Disagree strongly	7%	0%
Don’t know	4%	0%

Base: 135 respondents (115 residential; 20 business)

Quickly deals with issues that affect customers

	RESIDENTIAL	BUSINESS
Agree strongly	44%	65%
Agree somewhat	30%	30%
Disagree somewhat	14%	5%
Disagree strongly	7%	0%
Don’t know	4%	0%

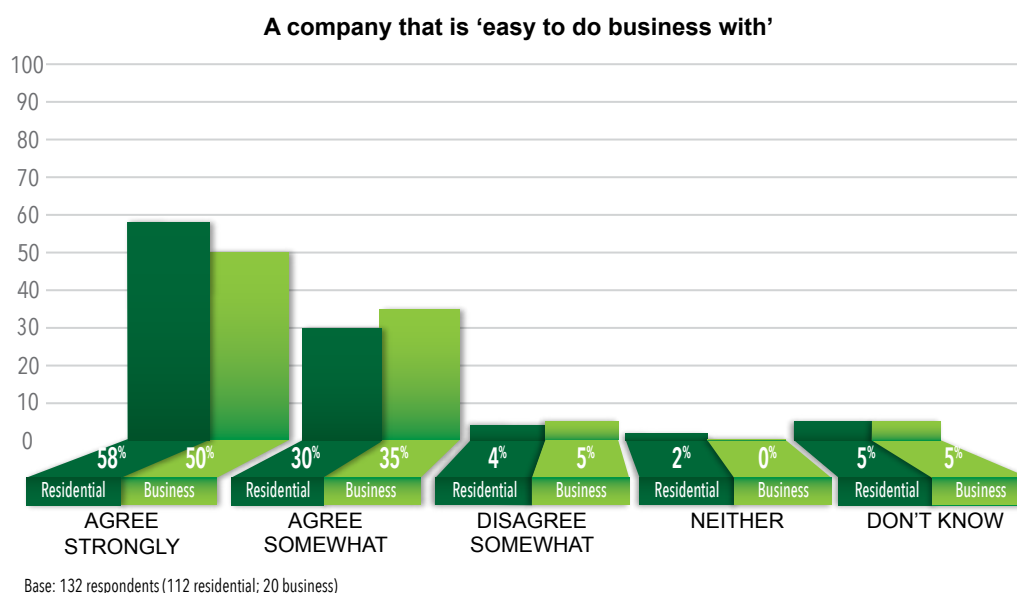
Base: 135 respondents (115 residential; 20 business)

Adapts well to changes in customer expectations

	RESIDENTIAL	BUSINESS
Agree strongly	32%	35%
Agree somewhat	33%	30%
Disagree somewhat	12%	0%
Disagree strongly	6%	5%
Neither	2%	0%
Don’t know	15%	30%

Base: 135 respondents (115 residential; 20 business)

When asked to agree or disagree with the statement: “North Bay Hydro is a company that is easy to do business with,” a majority of residential and commercial respondents agreed (88% and 85% respectively). Only 4% of residential stated “disagree;” 7% were indifferent or didn’t know; 5% of commercial respondents chose “disagree;” with 10% either replying “don’t know” or “neither.”



On the whole, high customer service satisfaction rates point to customers wanting to continue to “do business with” a company. When customers were asked if North Bay Hydro is a company they would like to continue with, 91% of the 400 total respondents agreed — with 63% choosing “agree strongly.” Only 5% disagreed with the statement; and 5% chose “don’t know,” or “neither disagreed nor agreed.” As far as commercial customers specifically, 95% said they would “continue to do business with” North Bay Hydro; and only 3% disagreed (2% were indifferent).

Would continue to do business with

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	91%	90%	95%
Agree strongly	63%	62%	68%
Agree somewhat	28%	28%	27%
Disagree somewhat	2%	2%	2%
Disagree strongly	2%	3%	2%
Neither	2%	2%	2%
Don't know	3%	3%	0%

Base: Total respondents

Reliability and Cost of Services

Summary

This section outlines opinions on the reliability of service and whether or not customers of North Bay Hydro feel their utility is meeting their expectations and standards, as well as understanding what affect the cost of services has on their budget, and if they believe North Bay Hydro is cost-effective and operationally prudent.

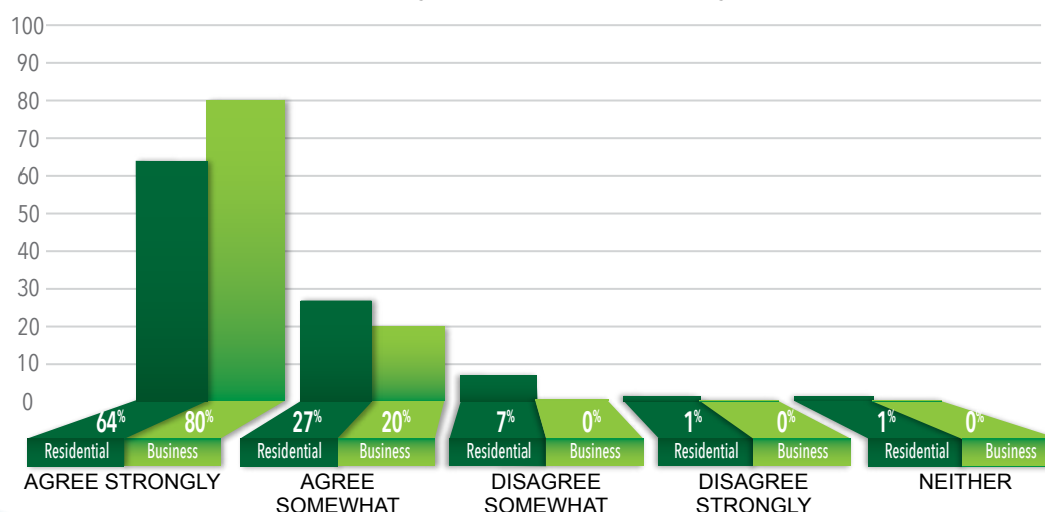
-  — Out of the residential group, 96% agrees that the utility quickly handles outages and restores power, and when the same question is posed to a group of commercial consumers, 95% agreed; 0% disagreed; and 5% “don’t know.”
-  — Of those commercial customers who answered, 100% agreed that North Bay Hydro delivers on its service commitments.
-  — When asked, 97% of the total respondents agreed with the statement “Provides consistent and reliable electricity.” (97% residential; 100% commercial.)
-  — Of the respondents asked about their overall opinions, i.e. “Tell me if you agree or disagree: Overall the utility provides excellent quality services,” 93% of the total respondents agreed with the statement; and that agreement level was 100% with commercial customers who were asked.
-  — Of the customers, 67% do not consider their hydro payment to be burdensome.

Quickly handles outages and restores power

	RESIDENTIAL	BUSINESS
Agree strongly	65%	60%
Agree somewhat	31%	35%
Disagree somewhat	1%	0%
Don't know	3%	5%

Base: 132 respondents (112 residential; 20 business)

Overall the utility provides excellent quality services



Base: 135 respondents (115 residential; 20 business)

Reliability of Services



Issues and outages

To determine the respondents' views on the reliability of services with North Bay Hydro, all were asked if, in the last 12 months, they had a problem with power failures or outages, billing, or other issues — and then if they did have a power outage specifically, did they contact the utility.

Of the total respondents, 32% had a problem within the last 12 months (33% of commercial interviewees had an issue). Of that 32%, or 126 of the 400 respondents, 41 said they contacted North Bay Hydro (33%) and 67% said they did not. Half (50%) of the commercial respondents who had an issue contacted the utility.

Last 12 months: Have you experienced problems with outages, billing, or other?

	RESIDENTIAL	BUSINESS
Yes	31%	33%
No	66%	65%
Don't know	1%	2%
Refused	1%	0%

Base: 400 respondents (340 residential; 60 business)

Did you try to contact your utility about a power outage?

	RESIDENTIAL	BUSINESS
Yes	29%	50%
No	70%	50%
Don't recall/don't know	1%	0%

Base: 126 respondents (160 residential; 20 business)

Standard of reliability and customer expectations

The selection of respondents that were asked about whether or not North Bay Hydro delivers on its service commitments to customers, respondents largely agreed that it does (93%), with 65% of them choosing "agree strongly." Only those who have an annual income of less than \$30,000 differed significantly from the average, and even then 82% agreed with the statement.

Of those commercial customers who answered, 100% agreed that North Bay Hydro delivers on its service commitments.

Delivers on its service commitments

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	93%	91%	100%
Agree strongly	65%	63%	80%
Agree somewhat	27%	29%	20%
Disagree somewhat	4%	4%	0%
Disagree strongly	1%	1%	0%
Neither	1%	1%	0%
Don't know	2%	3%	0%

Base: 135 respondents (115 residential; 20 business)

In terms of North Bay Hydro's handling of outages, 96% of the group agrees that the utility quickly handles outages and restores power; only 1% disagree; and 3% chose "don't know." When the same question is posed to a group of commercial consumers, 95% agreed; 0% disagreed; and 5% "don't know."

When asked if North Bay Hydro "Efficiently manages the electricity system," again, the majority of both residential and commercial groups agreed with the statement, with 87% of the residential group and 75% of the commercial group, either agreeing "strongly" or "somewhat." While only 4% of residential disagreed with the statement, no commercial respondents from the group said they disagreed; and 25% replied they didn't know; 8% residential group chose "didn't know."

Of the total respondents, 97% agreed with the statement: "Provides consistent and reliable electricity." (97% residential; 100% commercial)

All respondents were also asked if North Bay Hydro has a standard of reliability that meets their expectations, and once again, 97% of the total residential respondents and 100% of all commercial respondents agreed with the statement.

The respondents were asked about their overall opinions, i.e. "Tell me if you agree or disagree: Overall the utility provides excellent quality services," 93% of the total respondents agreed with that statement and of those, 67% agreed strongly. That agreement level was once again 100% with commercial customers who were asked.

Quickly handles outages and restores power

	RESIDENTIAL	BUSINESS
Agree strongly	65%	60%
Agree somewhat	31%	35%
Disagree somewhat	1%	0%
Don't know	3%	5%

Base: 132 respondents (112 residential; 20 business)

Efficiently manages the electricity system

	RESIDENTIAL	BUSINESS
Agree strongly	53%	35%
Agree somewhat	34%	40%
Disagree somewhat	3%	0%
Disagree strongly	1%	0%
Neither	2%	0%
Don't know	8%	25%

Base: 132 respondents (112 residential; 20 business)

A standard of reliability delivering electricity that meets your needs

	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	97%	100%
Agree strongly	72%	78%
Agree somewhat	24%	22%
Disagree somewhat	1%	0%
Disagree strongly	1%	0%
Neither	1%	0%
Don't know	1%	0%

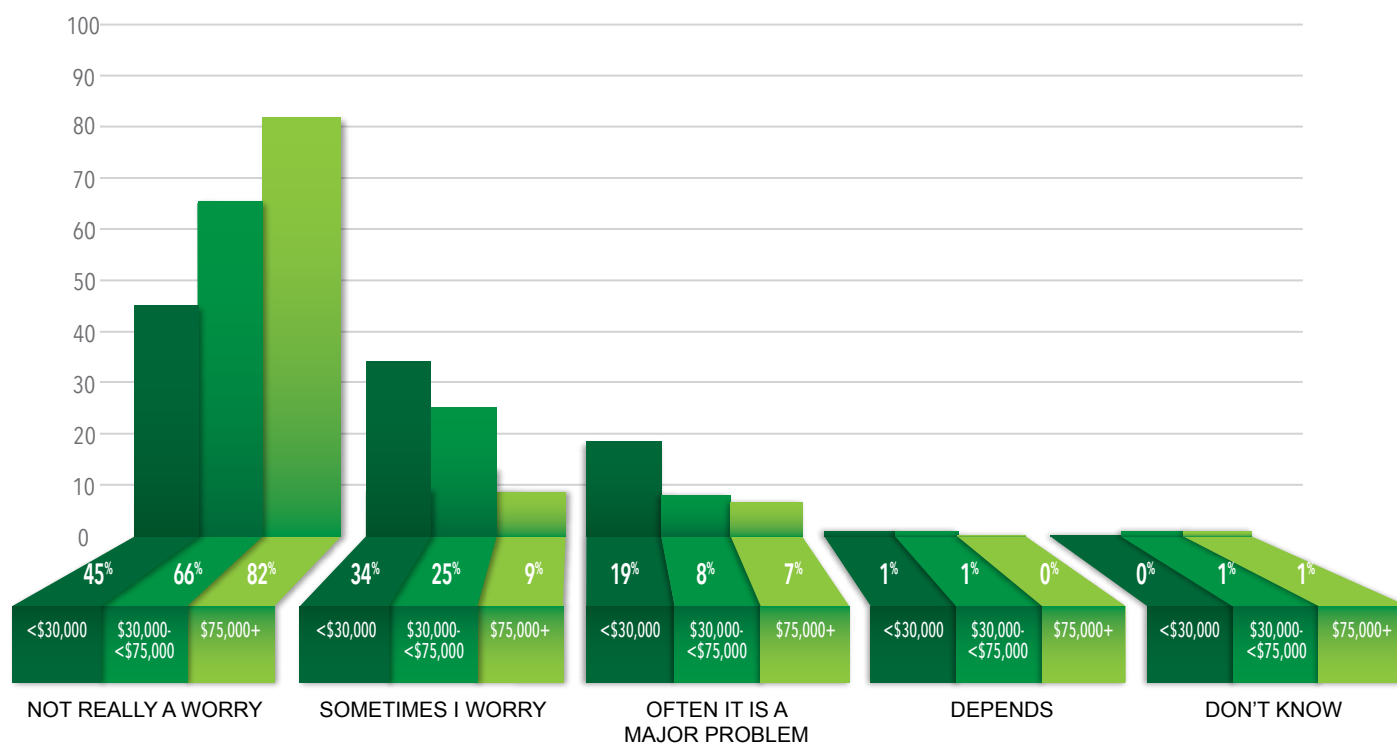
Base: 400 respondents (340 residential; 60 business)

Cost of Services

Burden of payment

Though the cost of hydro services is often contentious, the most notable of the telephone survey questions surrounding cost is that 67% of customers do not consider their hydro payment to be burdensome. While 21% found it “sometimes a worry” — and that number climbed to 34% for those making less than \$30,000 a year — and 10% considered it a major problem (19% of less than \$30,000); 82% of those who made more than \$75,000 in annual income, considered it “not a worry.”

Paying for electricity: Which one comes closest to your own feelings?



Operational opinions

As well, when asked if North Bay Hydro “provides good value for your money,” 74% of total respondents agreed with the statement, and surprisingly, 84% of those earning less than \$30,000 also agreed.

The percentages were lower when asked of those who already consider paying their bill sometimes or commonly a problem, with 61% and 56%, respectively, agreeing with the statement. Of all respondents, 22% disagreed; 4% didn’t know or refused to answer.

And while 70% of a selection of respondents felt that North Bay Hydro operates a cost effective distribution system, the percentages again varied amongst income levels and concern about paying electricity bills. For instance, that number fell to 59% with those consuming the most — the top 25% of kWh usage grouping, and with those who worry about paying (59% often; 56% sometimes) — but rose significantly with those aged 18 to 34, of whom 88% agreed with the statement. This was also asked of a selection of commercial customers, 55% agreed; 30% disagreed; and 15% registered as “don’t know.”

Those who answered “agree” or “disagree” to the statement the North Bay Hydro “spends money prudently to keep the electricity system reliable and up-to-date,” again had responses that differed, based on their demographic. While 73% of answers agreed with the statement, that number rose to 88% and 87% with those aged 18 to 34; and those with three to five people in their dwelling, respectively. As well, though 10% disagreed with the statement, 17% chose “don’t know.” There was a similar occurrence within the commercial grouping, as 55% agreed with the statement — and 5% disagreed — a large number of respondents chose “don’t know” (40%).

Provides good value for your money

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: ‘Agree strongly’ + ‘Agree somewhat’	74%	73%	80%
Agree strongly	33%	34%	30%
Agree somewhat	41%	39%	50%
Disagree somewhat	8%	7%	10%
Disagree strongly	14%	16%	5%
Neither	2%	3%	0%
Don’t know	2%	1%	5%

Base: 132 respondents (112 residential; 20 business)

Spends money prudently to keep the electricity system reliable and up-to-date

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: ‘Agree strongly’ + ‘Agree somewhat’	73%	77%	55%
Agree strongly	33%	33%	30%
Agree somewhat	41%	44%	25%
Disagree somewhat	7%	7%	5%
Disagree strongly	3%	4%	0%
Neither	17%	12%	40%

Base: 132 respondents (112 residential; 20 business)

And when asked if the cost of electricity is reasonable compared to other utilities, and given comparisons to gas, cable or telephone, the demographic of the respondent again provided results with remarkable differences. While 61% of the respondents asked agreed with the statement — 45% among commercial respondents — the rate of agreement dropped with those in the highest usage category (45%), and with those who have worried about paying their bill (48% sometimes; 41% often) — but rose to 71% when the question was asked of those answering from the 18 to 34-year-old age group.

Cost of electricity is reasonable when compared to other utilities (gas, cable or television)

	RESPONDENTS			ABILITY TO PAY			AGE		
	2019	RESIDENTIAL	BUSINESS	NOT A WORRY	SOMETIMES WORRY	OFTEN A PROBLEM	18-34	35-44	55+
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	61%	64%	45%	71%	48%	41%	71%	65%	62%
Agree strongly	24%	26%	15%	30%	15%	12%	18%	24%	30%
Agree somewhat	37%	38%	30%	41%	33%	29%	53%	41%	33%
Disagree somewhat	17%	16%	20%	19%	22%	0%	6%	12%	21%
Disagree strongly	17%	13%	35%	6%	26%	53%	6%	21%	11%
Bottom 2 boxes: 'Disagree somewhat' + 'Disagree strongly'	33%	29%	55%	24%	48%	53%	12%	32%	33%
Neither	2%	2%	0%	0%	0%	0%	6%	0%	0%
Don't know	5%	5%	0%	5%	4%	6%	12%	3%	5%

Base: 133 respondents (113 residential; 20 business)

Communication and Corporate Image

Summary

This section of the report will cover the communication preferences and satisfaction levels for customers — do they feel the information made available to them is sound, and speedy, and which communication channels they prefer. As well, it will outline the responses to questions posed regarding customers' opinions on North Bay Hydro's corporate image.

-  — Preferred method of communication varied with demographics and type of information to convey; most common answers were telephone and email.
-  — Out of the respondents, 78% were satisfied with the information available when outages occur (90% among 18 to 34-year-olds; 87% commercial customers)
-  — As to satisfaction with information available regarding energy conservation, 86% of residential respondents, and 90% of commercial were happy with what they received.
-  — Of the commercial customers, 95% (89% overall) felt that North Bay Hydro is a “trusted and trustworthy company.” From the selected residential customers, 90% agreed that North Bay Hydro is a respected company in the community.
-  — **When asked, 90% of commercial customers, and 85% of residential customers, would recommend North Bay Hydro to a friend or family member.**

The amount of information available to you about energy conservation

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	86%	86%	90%
Agree strongly	44%	45%	40%
Agree somewhat	42%	41%	50%
Disagree somewhat	7%	6%	8%
Disagree strongly	3%	3%	0%
Neither	0%	0%	0%
Don't know/refused	4%	4%	2%

Base: 400 respondents (340 residential; 60 business)

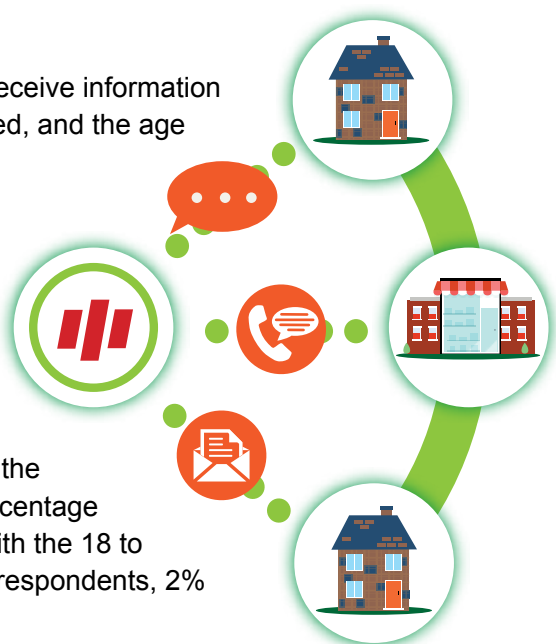
Communication

Preferred channels of communication

The method of communication preferred by customers, for when they receive information from North Bay Hydro, varied mostly by the type of information conveyed, and the age of the person who is receiving that information.

Billing

When it comes to information about billing — such as the example given to respondents “the potential of receiving a high bill” — 61% of all respondents chose to be contacted by “telephone,” and 27% by “email.” Out of those respondents, 65% of the commercial customers chose “telephone,” but 33% chose “email.” There were fewer people in the 18 to 34 age group who chose telephone (40%), but a much higher percentage of those 55+ who would prefer a phone call for a billing issue (69%). With the 18 to 34-year-olds, 41% would prefer “email,” and 16% said “text.” Out of all respondents, 2% chose “voice mail,” and 2% said “don’t know.”



Primary method for North Bay Hydro to contact you

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Telephone	61%	60%	65%	40%	58%	69%
Voice mail	2%	2%	0%	2%	3%	2%
Text	7%	8%	2%	16%	12%	3%
Email	27%	26%	33%	41%	27%	20%
Don't know/not sure	2%	3%	0%	2%	0%	5%

Base: 400 respondents (340 residential; 60 business)

Unplanned outages

All of the respondents were asked which channel of communication they would prefer for learning of an unplanned outage, and were given the following options:

- Recorded telephone message
- Email notice
- Posted on the utility's website
- Social media – Twitter, Facebook, etc.
- Local radio
- Text message
- Alert on app
- All of the above
- Telephone (not recorded)
- Door-to-door/in person
- Don't know

The majority of the total respondents chose “recorded telephone message” (33%), particularly those 55 and older (43%); with “text message” (23%); “email” (17%); and “local radio” (10%) creating the top four choices. “Social media” was chosen by 7% of respondents and the remaining had negligible results.

Those aged 18 to 34 and 35 to 44-year-olds seemed slightly more likely to prefer non-telephone channels, as only 21% and 24% chose telephone, and 34% and 28% preferred a “text message.”

Among commercial customers, “recorded telephone message” was also the first choice with 33% of all respondents, but this time a slightly higher proportion chose text messaging (27%); this was followed by “email” (18%). Commercial customers also differed in their preference for radio versus social media, with 3% choosing “local radio,” 12% choosing “social media” (2% chose alert on app; 3% chose website).

Preferred method for you to learn of unplanned outages

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Recorded telephone message	33%	33%	33%	21%	24%	43%
Email	17%	17%	18%	21%	21%	13%
Social media	7%	6%	12%	9%	11%	3%
Local radio	10%	11%	3%	7%	10%	14%
Text message	23%	22%	27%	34%	28%	14%

Base: 400 respondents (340 residential; 60 business)

General news

For information about general North Bay Hydro news, the options given changed slightly. The option for door-to-door/in person was removed, and other choices were added to receive news by letter: “Mail,” “on/in/with bill,” or through placement in a “newspaper.”

For general news, the preference went to “email” (32%), rather than “recorded telephone message” (21%); and those choices once again varied by demographic, with those 55 and older more likely to choose telephone (31%); those younger choosing non-telephone means. “Local radio” (13%) and “text message” (10%) were also popular followed by “social media” (9%) and posted on North Bay Hydro website (5%). Commercial customers chose: Email (40%); telephone (17%); radio (10%); social media (10%); website (7%); alert on app (5%); and the rest were negligible amounts.

Preferred method for you to receive general news

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Recorded telephone message	21%	22%	17%	12%	13%	31%
Email	32%	30%	40%	38%	38%	23%
Website	5%	5%	7%	10%	5%	2%
Social media	9%	9%	10%	14%	10%	5%
Local radio	13%	13%	10%	9%	10%	17%
Text message	10%	11%	7%	14%	15%	8%
Alert on app	2%	1%	5%	3%	2%	0%
Mail	2%	1%	3%	0%	1%	2%
On/in/with the bill	2%	3%	2%	0%	3%	4%
Newspaper	0%	0%	0%	0%	0%	1%

Base: 400 respondents (340 residential; 60 business)

Satisfaction with information provided

All respondents to the telephone survey were asked if they were satisfied with information available to them when outages occur, as well as the timeliness and relevance of non-outage-related information, such as planned outages, construction activity, or tree trimming.

As far as outages and the information provided, 78% of all respondents were satisfied, and that number was much higher amongst those aged 18 to 34 (90%). For commercial customers, 87% said they were satisfied, and only 8% were dissatisfied. Of the commercial customers 5% chose “don’t know,” refused to answer or were indifferent; 9% of residential customers.

For non-outage information, 82% of all respondents were satisfied with the timeliness and relevance of the information available; that number again rose with those aged 18 to 34 (95%). Only 10% were dissatisfied; the rest chose neither satisfied nor dissatisfied, refused to answer or “don’t know.”

Specifically of the commercial customers, 85% were satisfied with the timeliness and relevance, and 5% were dissatisfied — though they chose “fairly dissatisfied” rather than “very dissatisfied.”

In terms of the education North Bay Hydro provides, regarding electricity safety, 80% of residential and 85% of commercial customers were satisfied; 11% and 7%, respectively, were dissatisfied; and 8% from each grouping chose “don’t know,” refused to answer, or were neutral.

How satisfied are you about the quality of information available during outages?

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Very satisfied' + 'Fairly satisfied'	78%	77%	87%	90%	76%	73%
Very satisfied	36%	36%	35%	43%	33%	35%
Fairly satisfied	42%	41%	52%	47%	43%	38%
Fairly dissatisfied	10%	11%	8%	5%	13%	11%
Very dissatisfied	3%	4%	0%	2%	4%	4%
Neither	1%	1%	0%	0%	1%	1%
Don't know/refused	7%	8%	5%	3%	5%	11%

Base: 400 respondents (340 residential; 60 business)

How satisfied are you about the timeliness and relevance of information for non-outages?

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Very satisfied' + 'Fairly satisfied'	82%	81%	85%	95%	76%	81%
Very satisfied	40%	40%	40%	45%	31%	45%
Fairly satisfied	42%	41%	45%	50%	45%	36%
Fairly dissatisfied	8%	8%	5%	0%	12%	8%
Very dissatisfied	2%	2%	0%	2%	4%	1%
Neither	2%	1%	2%	2%	1%	1%
Don't know/refused	7%	7%	8%	2%	7%	9%

Base: 400 respondents (340 residential; 60 business)

Tools for cost, consumption and conservation

Several respondents were asked whether they agreed or disagreed with a number of statements in regards to what North Bay Hydro offers in terms of “tools” to help with reducing cost, energy consumption, and energy conservation.

Of the respondents asked, 77% agreed with the statement “provides information to help customers reduce their electricity costs,” (70% commercial); that number was higher among those in the middle kWh usage group (84%); the lower of the two income levels (\$30,000 and below: 84% and \$30,000-<\$75,000: 85%); and especially with those who find their ability to pay “often a problem” (88%); 15% of those asked disagreed with the statement; and 9% “didn’t know” or were indifferent. In the commercial group, 25% disagreed with the statement, and 5% said “don’t know.”

Providing information to help customers reduce their electricity costs

	RESPONDENTS			GROUP			INCOME		
	2019	RESIDENTIAL	BUSINESS	kWh1	kWh2	kWh3	<\$30K	\$30K-<\$75K	\$75K+
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	77%	78%	70%	68%	84%	69%	84%	85%	76%
Agree strongly	40%	41%	35%	39%	48%	21%	52%	42%	34%
Agree somewhat	37%	37%	35%	29%	36%	48%	32%	42%	41%
Disagree somewhat	8%	5%	20%	10%	7%	7%	0%	2%	3%
Disagree strongly	8%	8%	5%	13%	4%	10%	16%	8%	7%
Neither	2%	2%	0%	0%	1%	3%	0%	0%	7%
Don't know	7%	7%	5%	10%	4%	10%	0%	5%	7%

Base: 133 respondents (113 residential; 20 business)

When asked if they agree or disagree with the statement: “North Bay Hydro provides information and tools to help manage electricity consumption,” 80% of the selected respondents agreed; with 13% disagreeing; and 7% saying they “don’t know.” Amongst the commercial group, there was almost total agreement, with 90% agreeing “strongly” or “somewhat;” and 10% choosing “don’t know.”

In regards to satisfaction levels related to “The amount of information available to you about energy conservation” from North Bay Hydro, 86% of all residential respondents and 90% of all commercial respondents were satisfied; 10% of residential and 8% of commercial disagreed; and the rest chose “don’t know” or refused to answer. **(See chart page 35.)**

Online account awareness

A specific question was asked to the respondents regarding online account awareness, namely: “Online account awareness regarding no charge services offered on sign up.” As with many of the questions, the younger demographics response to Internet-based activities is noticeable. While 63% of the total respondents chose satisfied, 91% of those aged 18 to 34 felt the same. Among the total respondents, 12% were dissatisfied; 2% were neither satisfied nor dissatisfied; and 23% “don’t know or refused.” That number could be higher than average due to the dissatisfaction of the 55 and older demographic, which was 32%.

Online account awareness regarding no charge services offered on sign up

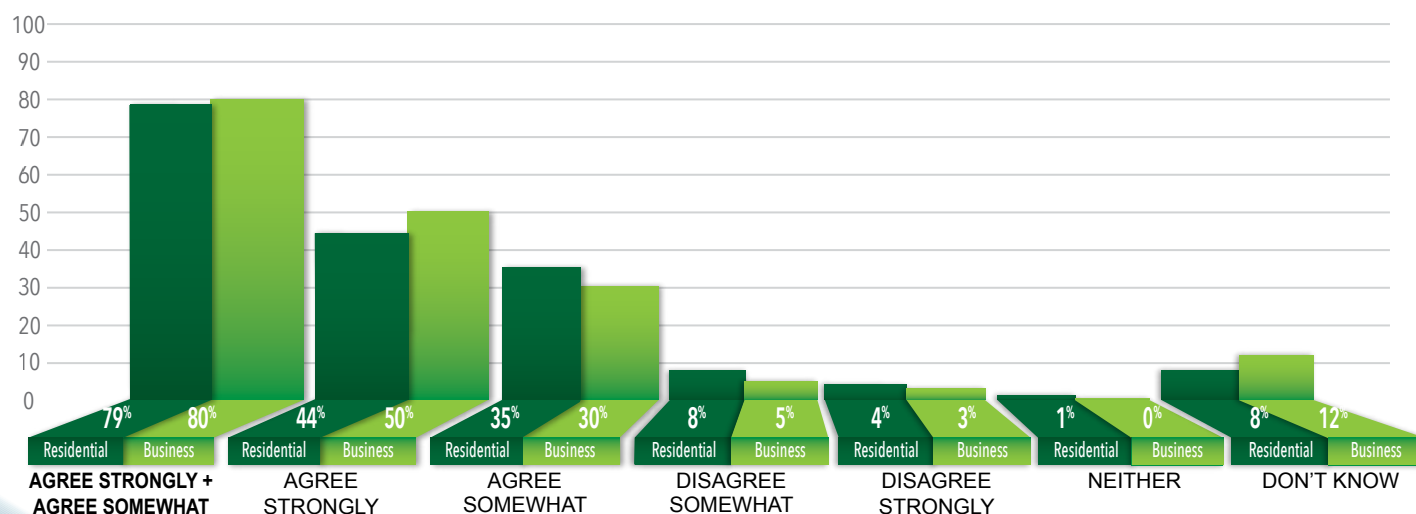
	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Very satisfied' + 'Fairly satisfied'	63%	64%	0%	91%	59%	59%
Very satisfied	28%	28%	0%	47%	25%	24%
Fairly satisfied	35%	36%	0%	44%	34%	34%
Fairly dissatisfied	6%	6%	0%	3%	15%	2%
Very dissatisfied	6%	6%	0%	3%	8%	5%
Neither	2%	2%	0%	0%	3%	2%
Don't know/refused	23%	22%	100%	3%	15%	32%

Base: 394 respondents (388 residential; 6 business)

Pro-active communication

Finally, all respondents were asked if they felt North Bay Hydro is “Pro-active in communicating changes and issues which may affect your electricity service” — 79% of residential and 80% of commercial respondents agreed; 11% disagreed (8% commercial); and 9% “don’t know” or were indifferent (12% commercial).

Pro-active in communicating changes and issues which may affect electricity service



Base: 400 respondents (340 residential; 60 business)

Corporate Image

How customers view their utility as a company, and especially as a company in their community, is important to understanding their loyalty, and their service satisfaction. This is true in every city or town, but more so in smaller communities, such as North Bay. This is why North Bay Hydro and UtilityPULSE included questions regarding trustworthiness and integrity.

Customer loyalty

Respondents who were asked about whether or not North Bay Hydro is a “trusted and trustworthy company,” felt that yes, they agreed with the statement (89%). Though some disagreed with the trustworthiness of the company (9%); within the commercial respondents there was 95% agreement with the statement. There was no disagreement; 5% said “don’t know” (2% of all respondents in group said “don’t know”).

As to the level of respect respondents hold, of those residential customers asked, 90% agreed with the statement: “North Bay Hydro is a respected company in the community,” and that rate of agreement was highest with those earning <\$30,000 (96%), and the <\$75,000 (98%) annual income categories, as well as in the 55+ category (95%). Only 6% of these respondents disagreed — of that, all “disagreed somewhat,” and the rest chose “don’t know,” or were neutral. Of the commercial respondents asked to agree or disagree with the statement, 85% agreed — 60% of that group “agreed strongly” — and 15% disagreed (10% of those “disagreed somewhat.”)

Is a trusted and trustworthy company

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	89%	88%	95%
Agree strongly	59%	57%	75%
Agree somewhat	30%	31%	20%
Disagree somewhat	6%	7%	0%
Disagree strongly	3%	3%	0%
Don't know	2%	2%	5%

Base: 135 respondents (115 residential; 20 business)

Is a respected company in the community

	RESPONDENTS			AGE			INCOME		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+	<\$30K	\$30K-<\$75K	\$75K+
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	89%	90%	85%	88%	85%	95%	96%	98%	76%
Agree strongly	62%	62%	60%	71%	53%	66%	60%	68%	55%
Agree somewhat	28%	28%	25%	18%	32%	30%	36%	30%	21%
Disagree somewhat	7%	6%	10%	0%	12%	5%	0%	0%	17%
Disagree strongly	1%	0%	5%	0%	0%	0%	0%	0%	0%
Neither	1%	1%	0%	0%	0%	0%	0%	0%	3%
Don't know	2%	3%	0%	12%	3%	0%	4%	2%	3%

Base: 133 respondents (113 residential; 20 business)

Selected respondents were asked if North Bay Hydro keeps its promises to customers and the community, and 79% agreed with the statement; and that number escalated in the \$30,000 to <\$75,000 income range (90%); and among households with three to five people. A large number of those asked replied “don’t know” (14%). This occurred again with the commercial customers asked, 65% agreed with the statement, but 20% said “don’t know” (15% disagreed with the statement).

Keeps its promises to customers and the community

	RESPONDENTS			# PEOPLE DWELLING			INCOME		
	2019	RESIDENTIAL	BUSINESS	1-2	3-5	6+	<\$30K	\$30K-<\$75K	\$75K+
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	79%	81%	65%	88%	90%	100%	88%	90%	76%
Agree strongly	41%	45%	15%	43%	48%	100%	44%	50%	48%
Agree somewhat	38%	36%	50%	35%	42%	0%	44%	40%	28%
Disagree somewhat	2%	2%	5%	3%	0%	0%	0%	2%	0%
Disagree strongly	3%	2%	10%	3%	0%	0%	0%	2%	3%
Neither	2%	3%	0%	1%	0%	0%	0%	2%	7%
Don't know	14%	12%	20%	14%	10%	0%	12%	2%	14%

Base: 133 respondents (113 residential; 20 business)

When it comes to the well-being of contractors and employees, 76% of residential customers and 75% of commercial customers felt this to be true, and most agreed strongly (53% and 60% respectively.) And while very few disagreed or were indifferent (1% and 5%), many residential and commercial customers chose “don’t know” (22% and 20%).

And in the true test of company loyalty, all respondents were asked if they felt “North Bay Hydro is a company I would recommend to a friend or colleague.” Of the 400 total respondents, 344 (86%) agreed with the statement — with half of them agreeing “strongly” (54%); 9% disagreed; and 5% chose “don’t know,” or “neither disagreed nor agreed.”

Of the commercial customers, 90% agreed they would recommend North Bay Hydro (5% said disagree; 5% said “don’t know,” or were indifferent).

Makes electricity safety a priority for employees and contractors

	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	76%	75%
Agree strongly	53%	60%
Agree somewhat	23%	15%
Disagree somewhat	1%	0%
Disagree strongly	0%	5%
Neither	1%	0%
Don't know	22%	20%

Base: 133 respondents (113 residential; 20 business)

Conservation and social responsibility

Increasingly included in customer's view of their favourite companies is a demand for social responsibility and ensuring that all measures are taken to protect the environment and the community itself.

When asked about North Bay Hydro's role in conservation, namely, do respondents feel the utility is "a leader in promoting energy conservation," — 79% of these residential respondents agreed with the statement; (6% "don't know" and 15% disagreed); no commercial customers disagreed — 85% of those asked agreed, and the rest chose "don't know" (15%).

Of those asked about the social responsibility that the company shows, age demographics once again were a determining factor. While the group asked had a 79% agreement rate, that number was lower among the 35 to 44-year-olds (66%), but much higher among those aged 18 to 34 (88%), and 55 and older (87%); 8% of those asked disagreed; and 12% said they "didn't know." (For those aged 35 to 44-year, 23% disagreed, and 11% "didn't know.")

Only 70% of commercial customers said they agree with the statement, but that is reflective of all the rest selecting "don't know" (30%).

A leader in promoting energy conservation

	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	79%	85%
Agree strongly	43%	55%
Agree somewhat	36%	30%
Disagree somewhat	10%	0%
Disagree strongly	5%	0%
Don't know	6%	15%

Base: 135 respondents (115 residential; 20 business)

Is a socially responsible company

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Agree strongly' + 'Agree somewhat'	79%	80%	70%	88%	66%	87%
Agree strongly	44%	46%	35%	46%	34%	53%
Agree somewhat	35%	35%	35%	42%	31%	34%
Disagree somewhat	6%	7%	0%	4%	20%	0%
Disagree strongly	2%	3%	0%	0%	3%	4%
Neither	1%	1%	0%	4%	0%	0%
Don't know	12%	9%	30%	4%	11%	9%

Base: 132 respondents (120 residential; 20 business)

Priority Planning and Suggestions for Improvement

Summary

-  — Of the total respondents, 90% felt proactively maintaining and upgrading equipment was a “high priority,” and 23% of those felt it was a “very high priority.”
-  — Just over half of commercial and residential customers considered burying overhead wires a priority: 55% residential and 57% commercial.
-  — Lower priority was given to “social media” (25%), even among those aged 18 to 34 who showed a clear preference for online activities (28%). However, the group gave high priority to smartphone application creation (67%), while on the whole, 41% of respondents felt the same. Only 25% of those 55 or older prioritized app creation.
-  — Better or lower prices was the most suggested improvement by residential (34%) and commercial (46%) customers; followed by commercial customers favouring the creation of an online mobile app (14%); and better maintenance (11%). Residential customers showed a preference for burying power lines (9%); and “good/like it/keep up the good work” (9%).
-  — In regards to suggestions, of the 400 total respondents, 20% either said “none/nothing/satisfied” (15%), or “good/like it/satisfied/keep up the good work” (5%).

Priority level to proactively maintaining and upgrading equipment

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Very high priority' + 'High priority'	90%	90%	90%
Very high priority	23%	24%	18%
High priority	67%	66%	72%
Low priority	2%	2%	2%
Neither	6%	5%	8%
Don't bother	0%	0%	0%
Don't know	2%	2%	0%

Base: 400 respondents (340 residential; 60 business)

Most important new services or changes that could do to improve

	RESIDENTIAL	BUSINESS
Better prices/lower prices	34%	46%
Create an online/mobile app	6%	14%
Better maintenance	8%	11%
Bury power lines	9%	11%
Good/like it/satisfied/keep up good work	9%	0%
Better communications	8%	7%

Base: 238 respondents (210 residential; 28 business)

Priority Planning

Customers who participated in the UtilityPULSE telephone survey were asked to look forward to the next five years, and assign a priority level to a list of items given. They were given the options to choose from: Very high priority, high priority, low priority, or very low priority. Additionally, respondents had the option to choose “neither high nor low priority.”

Equipment investment and maintenance

Respondents felt that investing in the electricity grid to reduce outages and increase reliability and safety was a priority, as 77% of residential and 80% of commercial customers rated this a five-year priority: 20% residential and 17% commercial chose “very high,” and 57% of residential and 63% of commercial respondents felt it was a “high priority.”

In terms of proactively maintaining and upgrading equipment, 90% of all respondents felt this was a priority. For most, it was a “high priority,” with 66% of residential customers and 72% of commercial respondents choosing this option, for some, a “very high priority” — 24% and 18% respectively. Only 2% of each group felt it was a “low priority,” and 5% residential (8% commercial) gave it neither high nor low priority.

Reducing response time to outages was also a priority, with an equal percentage of residential and commercial customers considering it a “very high priority” (25%); 55% and 57%, respectively, felt this was a “high priority,” and while only 6% disagreed with this as a priority (7% commercial), 12% said neither high nor low (10% commercial); 2% of each chose “don’t know.”

Invest in the electricity grid to reduce outages/increase reliability and safety

	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Very high priority' + 'High priority'	77%	80%
Very high priority	20%	17%
High priority	57%	63%
Low priority	6%	8%
Very low priority	1%	0%
Neither	12%	12%
Don't bother	1%	0%
Don't know	2%	0%

Base: 400 respondents (340 residential; 60 business)

Reducing response times to outages

	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Very high priority' + 'High priority'	80%	82%
Very high priority	25%	25%
High priority	55%	57%
Low priority	4%	5%
Very low priority	1%	2%
Neither	12%	10%
Don't bother	1%	0%
Don't know	2%	2%

Base: 400 respondents (340 residential; 60 business)

When a group of respondents was asked about investing in projects to reduce the environmental impact of the utility's operations, 73% of them felt this was a "high priority," with 23% of those feeling it a "very high priority;" 23% of the group felt it was a "low priority;" and 5% said "neither."

Telephone respondents placed less of a priority on the greater investment in tree trimming to reduce the number of outages, as 69% of the total felt this was a priority — 53% high, and 16% very high; 11% felt this was a "low priority;" and 16% felt neither high nor low priority level should be assigned; 3% "don't know." These numbers differed only slightly with commercial consumers, as 68% felt it was a priority (12% very high; 57% high); and 12% did not; 18% thought it was neither high nor low.

Burying overhead wires is high or very high priority for just over half of the respondents — 55% of residential and 57% of commercial interviewees. It was deemed "low priority" by 16% of residential customers (20% commercial); and was neither high nor low with 21% and 18% respectively; and on average between both sets, 6% said "don't bother this is a waste of money."

Investing more in tree trimming to help reduce the number of outages

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Very high priority' + 'High priority'	69%	69%	68%
Very high priority	16%	16%	12%
High priority	53%	53%	57%
Low priority	10%	10%	10%
Very low priority	1%	1%	2%
Neither	16%	16%	18%
Don't bother	1%	1%	2%
Don't know	3%	3%	0%

Base: 400 respondents (340 residential; 60 business)

Burying overhead wires

	2019 TOTAL	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Very high priority' + 'High priority'	56%	55%	57%
Very high priority	14%	14%	17%
High priority	41%	41%	40%
Low priority	15%	14%	20%
Very low priority	2%	2%	0%
Neither	21%	21%	18%
Don't bother	6%	6%	5%
Don't know	2%	2%	0%

Base: 400 respondents (340 residential; 60 business)

Customer service and communication

Along with their thoughts on electrical system investment, customers were asked about their priorities related to public education, their customer service interactions with North Bay Hydro, and community involvement.

Of the respondents, 75% residential and 72% of commercial customers felt that “educating the public as it relates to electricity safety” was a priority; and this number was lower among those aged 35 to 44 (62%). While more than half deemed it a “high priority” (53% residential; 58% commercial — 22% and 13% chose very high — an average of 10% of all respondents felt it was a “low priority,” and 14% said it was neither high nor low (17% commercial).

Commercial and residential customers differed more significantly on their views of “educating customers about energy conservation” than previous questions, with 67% of residential customers and 77% of commercial customers choosing this as a priority— but more residential customers felt it was a “very high priority” (20%) than commercial customers (12%). (High: 48% residential; 65% commercial); 14% of residential customers gave it a “low priority” (8% commercial); and 15% said “neither” (12% commercial); the rest fell into “don’t know” or “don’t bother.”

Educating the public as it relates to electricity safety

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Very high priority' + 'High priority'	74%	75%	72%	79%	62%	82%
Very high priority	21%	22%	13%	28%	16%	25%
High priority	54%	53%	58%	52%	46%	57%
Low priority	9%	9%	10%	3%	15%	7%
Very low priority	0%	0%	0%	0%	0%	1%
Neither	14%	14%	17%	16%	19%	10%
Don't bother	1%	1%	2%	2%	3%	0%
Don't know	1%	1%	0%	1%	1%	1%

Base: 400 respondents (340 residential; 60 business)

Educating consumers about energy conservation

	RESIDENTIAL	BUSINESS
Top 2 boxes: 'Very high priority' + 'High priority'	67%	77%
Very high priority	20%	12%
High priority	48%	65%
Low priority	12%	8%
Very low priority	2%	0%
Neither	15%	12%
Don't bother	2%	3%
Don't know	2%	0%

Base: 400 respondents (340 residential; 60 business)

Providing sponsorships to local community causes was not a top priority for many, though the households with three to five people felt more strongly in favour of it as a “high priority” (59%) than the rest of the total respondents (48%); 50% of the commercial respondents felt it was a priority; while 23% of both commercial and residential customers felt it was “neither;” 21% residential (25% commercial) felt it was a “low priority.”

Of “low priority” for the respondents is North Bay Hydro making better use of social media, such as Twitter, Facebook, and others. Of residential customers, only 25% pointed to this as a “high priority,” and even in the age group that has tended to look for more online options — the 18 to 34-year-olds group — this was not a priority (28%). While several respondents chose “neither” (27% residential; 23% commercial) many chose “low priority” — 33% and 37%, respectively; 5% of both categories chose “don’t know;” and 10% residential (7% commercial) chose “don’t bother, this is a waste of money.”

Providing sponsorships to local community causes

	RESPONDENTS			# PEOPLE DWELLING		
	2019	RESIDENTIAL	BUSINESS	1-2	3-5	6+
Top 2 boxes: 'Very high priority' + 'High priority'	48%	48%	50%	40%	59%	50%
Very high priority	7%	8%	3%	6%	10%	20%
High priority	41%	40%	47%	34%	49%	30%
Low priority	19%	18%	25%	22%	12%	0%
Very low priority	3%	4%	0%	5%	2%	0%
Neither	23%	23%	23%	24%	20%	40%
Don't bother	3%	4%	2%	3%	5%	0%
Don't know	4%	5%	0%	6%	2%	10%

Base: 400 respondents (340 residential; 60 business)

Making better use of social media (Twitter, Facebook, etc)

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Very high priority' + 'High priority'	25%	25%	28%	28%	21%	26%
Very high priority	4%	5%	2%	3%	2%	7%
High priority	21%	20%	27%	24%	20%	19%
Low priority	28%	26%	33%	29%	26%	26%
Very low priority	6%	7%	3%	3%	10%	6%
Neither	26%	27%	23%	31%	29%	25%
Don't bother	10%	10%	7%	9%	12%	10%
Don't know	5%	5%	5%	0%	2%	8%

Base: 400 respondents (340 residential; 60 business)

Those aged 18 to 34 were much more interested in a smartphone application than the rest, with 67% giving high or very high priority to an application that would allow them to view electricity use and pay their bill. On the whole, 41% of residential customers felt this was a priority; that dropped further with those in the 55+ age group, where 28% deemed it a priority; 27% of residential customers decided it was of “low priority,” and 20% said it was neither high nor low. Of the commercial customers, 43% felt it was of “high priority,” 30% said “low priority,” and 18% said “neither” (9% said “don’t know,” or “don’t bother”).

The 18 to 34-year-olds were again more interested than the rest of the respondents in more self-serve services on the website — 35% of the total respondents placed a “high priority” on it, versus 53% of the youngest demographic; 27% of residential customers felt it was a “low priority,” and 24% felt it was “neither.” As to commercial customers, 33% chose it as a “high priority,” 32% chose low; and 27% chose neither high nor low. (“Don’t know” or “don’t bother:” 13% residential; 9% commercial.)

Developing a smartphone application to allow you to view electricity use and pay your bill

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Very high priority' + 'High priority'	42%	41%	43%	67%	50%	28%
Very high priority	13%	14%	7%	33%	17%	7%
High priority	28%	27%	37%	34%	33%	21%
Low priority	20%	19%	25%	9%	20%	23%
Very low priority	7%	8%	5%	2%	8%	9%
Neither	20%	20%	18%	19%	16%	23%
Don't bother	8%	8%	7%	2%	4%	11%
Don't know	4%	4%	2%	2%	2%	7%

Base: 400 respondents (340 residential; 60 business)

Providing more self-serve service on the website

	RESPONDENTS			AGE		
	2019	RESIDENTIAL	BUSINESS	18-34	35-44	55+
Top 2 boxes: 'Very high priority' + 'High priority'	35%	35%	33%	53%	38%	28%
Very high priority	7%	7%	5%	7%	6%	8%
High priority	28%	28%	28%	47%	32%	20%
Low priority	24%	24%	27%	10%	28%	25%
Very low priority	4%	4%	5%	2%	5%	4%
Neither	25%	24%	27%	34%	21%	23%
Don't bother	6%	7%	2%	0%	5%	10%
Don't know	6%	6%	7%	0%	2%	10%

Base: 400 respondents (340 residential; 60 business)

Suggestions for Improvement

All respondents to the telephone survey were asked if they had suggestions for improvement — new services or changes — and UtilityPULSE then offered percentages based on the total respondents priorities, as well as only those who offered a suggestions to show more clearly the priority level.

The categories and percentages given focus on those residential and commercial customers who offered suggestions — 238 of the 400 total respondents — and the total group percentages (when relevant) included beside.

Better prices/lower prices: 36% of those who had a suggestion felt their most important priority was the cost of services and how that can be lowered. This was the top response for commercial customers as well (46%).

Larger variations within these numbers occurred with those making more than \$75,000 (only 25% felt this was a priority); and for those who consider paying “often a worry,” 55% rated it a priority. (Total respondents: 21% residential; 47% commercial)

New services or changes that could do to improve

	RESPONDENTS			INCOME			ABILITY TO PAY			
	2019	RESIDENTIAL	BUSINESS	<\$30K	\$30K-<\$75K	\$75K+	NOT A WORRY	SOMETIMES WORRY	OFTEN A PROBLEM	DEPENDS
Better prices/ lower prices	36%	34%	46%	36%	41%	25%	29%	41%	55%	33%

Base: 21% residential; 47% commercial

Commercial customers have different needs than residential, their suggestions were as follows: Create an online/mobile app (14%); better maintenance/repair street lights (11%); bury the power lines (11%); incentives for businesses to upgrade lighting (7%); better communication/be proactive (7%).

For residential customers who had a suggestion, those remaining included: Burying power lines (9%); good/like it/satisfied/keep up the good work (9%); better communications/be proactive (8%); better maintenance/repair street lights (8%); more energy conservation information (7%); better power reliability/less outages (6%); create an online/mobile app (6%); delivery charges (4%); educate customers more/provide more education/awareness (4%).

Based only on those who gave a suggestion, the rest of the commercial suggestions centre around: Educate customers more/provide more education/information/awareness (4%); better access for rural/remote communities (4%); accuracy (4%); get involved with green energy (4%); ability to compare bills with neighbours (4%); better information on outages when they occur (4%); better power reliability (4%); improve billing/simplify bill (4%); accuracy (4%); more options for properties/tenants/moving in and out/splitting bills (4%); better website (4%); access to household meter to track usage (remote monitoring) (4%); green energy (4%); setup a social media account (4%); better technology (4%); focus on safety (4%).

The rest of the suggestions had negligible results (less than 3%), with the only the respondent who suggested it in agreement.

Notably, of the 400 total respondents, 20% either said “none/nothing/satisfied” (15%) or “good/like it/satisfied/keep up the good work” (5%).

Most important new services or changes that could do to improve

BUSINESS	
Create an online/mobile app	14%
Better maintenance/repair street lights	11%
Bury the power lines	11%
Incentives/businesses to upgrade	7%
Better communications/be pro-active	7%
Educate customers more/provide more education	4%
Better access to rural/remote communities	4%
Accuracy	4%
Get involved with green energy	4%
Ability to compare bills with neighbours	4%
Better information on outages	4%
Better power reliability	4%
Improve billing/simplify bill	4%
More options for properties/tenant/splitting bills	4%
Better website	4%
Access to household meter to track usage	4%
Green energy	4%
Setup a social media account	4%
Better technology	4%
Focus on safety	4%
RESIDENTIAL	
Bury the power lines	9%
Good/like it/satisfied/keep up the good work	9%
Better communications/be pro-active	8%
Better maintenance/repair street lights	8%
More energy conservation information	7%
Better power reliability/less outages	6%
Create an online/mobile app	6%
Delivery charges	4%
Educate customers more/provide more education	4%

Base: 238 respondents (210 residential; 28 business)

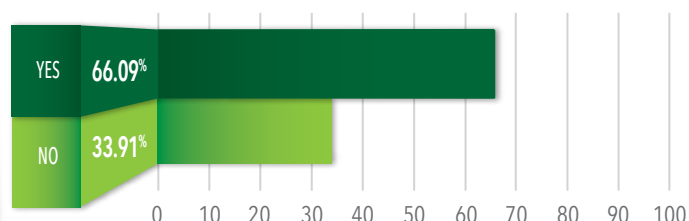
Customer Survey: Online

Summary

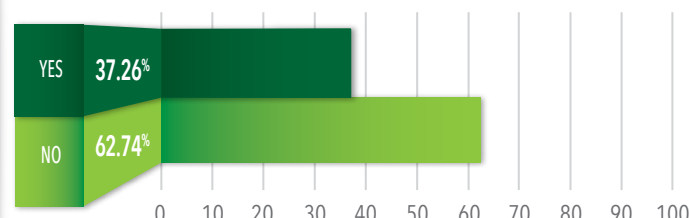
Communication and customer service

- In phase two, 55.26% respondents were willing to invest in a system that would allow North Bay Hydro to add text notifications regarding outages to its current communication system, offering to “push notifications like outages to you.”
- Respondents were asked if North Bay Hydro should “invest more money on advertising programs, such as the Affordability Fund, that can assist our residents in reducing their consumption and save you money,” 66.09% of respondents said “yes,” 33.91% said “no.”
- In 2018, issues with trees accounted for 25% of customer hours of interruption. The way in which North Bay Hydro seeks to manage this issue is with its vegetation management program. A majority of those who answered were not aware of this program (62.74% “no,” 37.26% “yes”). Nor were they aware of the “Right Tree, Right Place Campaign” — 22.53% said “yes” they were aware, but a large majority said “no:” 77.47%.
- As a result of the information received regarding customer awareness of available services, respondents in phase two were asked about an option for increasing awareness. Specifically, would customers see a benefit in the development of an information package for new customers, which would include contacts, social media accounts, vegetation management information, as well as the benefits of the “My Account” section on the website and outage information. Of the respondents 81.80% saw a benefit to this welcome package. (18.20% did not.)

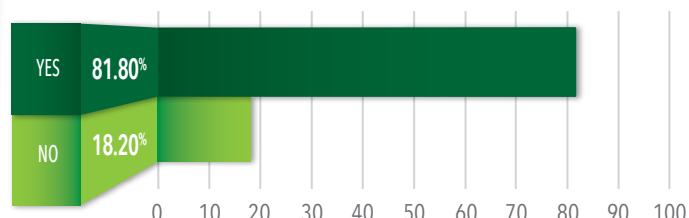
Invest more money on advertising programs, such as the Affordability Fund



Familiar with the NBHDL's Vegetation Management program



Do you see a benefit in NBHDL developing a package for new customers?



Reliability of service

-  When asked to rate North Bay Hydro's reliability of electrical service, 72.18% respondents were pleased; 37.45% of those respondents rating the utility "excellent," and 34.73% said "above average."

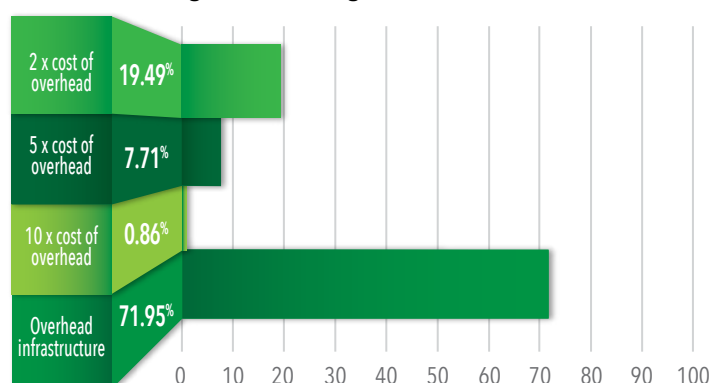
Preferences and priorities

-  Though pricing was a consistently-raised suggestion, almost an equal amount of respondents felt that there was nothing that North Bay Hydro should do to improve. Many responses included compliments and notes of encouragement, such as "keep up the great work."
-  Another focus for North Bay Hydro customers, is that the utility continue to invest in infrastructure, as well as "continue to provide" the reliability of service that they currently maintain.
-  Delivering reasonable electricity prices was the most important priority — 84.60% of respondents, and 11.81% indicated it as the second most important priority. Additionally, customers are willing to invest in infrastructure. The specific question about the investment in underground wires, rather than overhead, showed that 19.49% would like to change to underground if the cost was two-times that of overhead infrastructure; and 7.71% would tolerate five-times the cost.

How should NBHDL set their priorities moving forward

	MOST IMPORTANT	SECOND MOST IMPORTANT	THIRD MOST IMPORTANT
Delivering reasonable electricity prices	54%	41%	37%
Ensuring reliable electrical service	54%	41%	37%
Ensuring the safety of electrical infrastructure	32%	35%	33%
Providing enhanced customer service	2%	6%	5%
Helping customers with electricity conservation and efficient usage	4%	7%	9%
Modernizing the electrical system (e.g. electric vehicles)	4%	4%	8%

The price point you would like to see NBHDL consider underground cabling versus overhead wires



Methodology

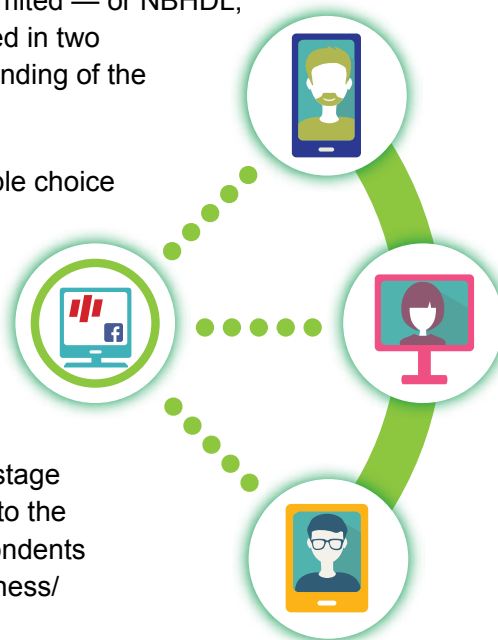
Field and Design

In 2019, two online surveys of customer engagement were undertaken to understand customer feelings, needs and preferences when it comes to North Bay Hydro Distribution Limited — or NBHDL, as it is referred to throughout the surveys. These two surveys were offered in two consecutive phases, which allowed phase two to form a deeper understanding of the results from phase one of the survey process.

The surveys were a combination of demographic, open-ended and multiple choice questions; phase one had approximately double the questions of phase two. Several phase two questions include a reference to the phase one survey (and results) before probing deeper for a more specific response.

Both phases of the survey were hosted online, with a temporary survey service. Participation in the surveys was encouraged through the North Bay Hydro website and paid Facebook advertising. There was also an incentive offered, an opportunity to win a television by completing either stage of the survey. In phase one, 577 North Bay Hydro customers responded to the survey; and 485 responded to phase two. In phase one, 64.64% of respondents were homeowners; 33.45% were tenants; 1% landlords; and 0.17% business/commercial; 0.69% chose “other.”

Phase one of the survey ended in September 2019; phase two ran from Oct. 8 to Oct. 17, 2019.



Content Covered

Phase one

In addition to obtaining demographic information, such as household makeup, age and gender, there were questions regarding role in paying the electricity bill, as well as their primary source of heating. However, the responses were not further broken into groupings based on their demographic responses, so the percentages given within this report reflect the answers of all respondents — both commercial and residential customers; all age groups, etc.

The questions then moved into topics, such as communication; customer service; distribution of electricity, i.e. reliability and cost of service (including billing); vegetation management — of particular interest to customers in North Bay as 25% of customer hours of interruptions in 2018 were from tree contacts — and what other information customers would like to know or feel is important.

Phase two

Demographic information was also obtained from participants in phase two of the survey, but less specific information. Namely, the respondents were not asked about their household size or primary source of heating, but only age, gender, and “best description” — e.g. homeowner, tenant, landlord, business/commercial, or other.

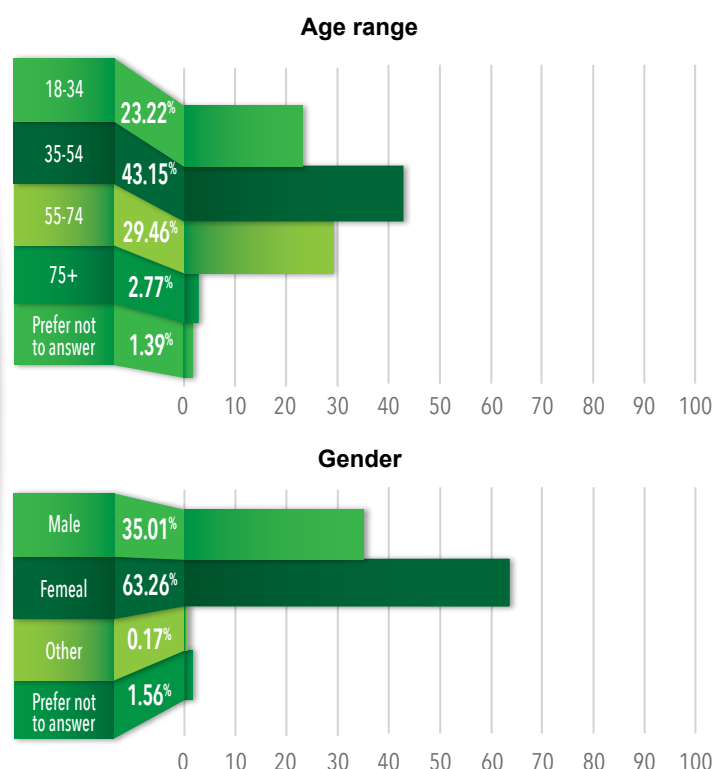
A majority of the questions begin with a reference to the first survey (phase one), and all but four questions — as well as the demographic questions — are given only “yes” or “no” as options.

Demographics

The demographic breakdown of the respondents to both phases is as follows:

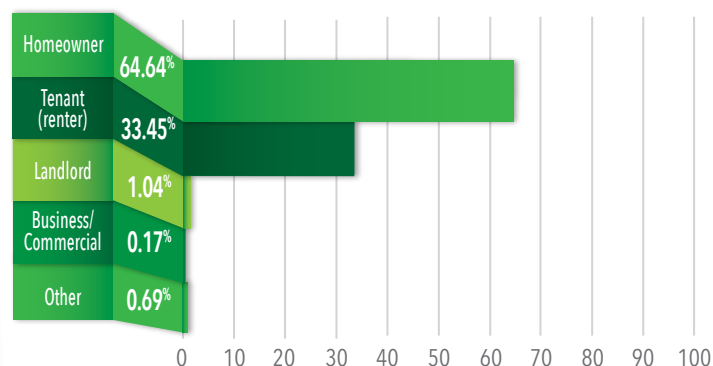
Phase one: 577 respondents

- **Age:** The largest group of respondents fell into the 35 to 54-year-old age range (43.15%); and the next largest is 55 to 74-year-olds, representing 29.46% of the respondents. Within the 18 to 34-year-old age group, it fell to 23.22% of those who took the survey; and 2.77% of respondents were 75 and older. (1.39% chose “prefer not to answer.”)
- **Gender:** The survey had a higher proportion of women to men answer (63.26% “women vs. 35.01% “men”); and 1.73% chose “other” or “prefer not to answer.”

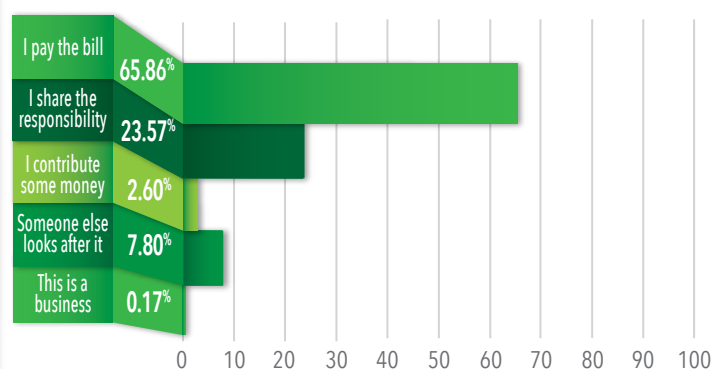


- **Best description:** Of the respondents, 64.64% were “homeowners;” 33.45% were “tenants;” 1.04% were “landlords;” and 0.17% considered themselves a “business/commercial customers;” 0.69% chose “other.” (When asked to specify other, respondents wrote: Ontario housing, landlord and renter, half owner, and health care.)
- **Bill paying responsibility:** The majority of the respondents to phase one are responsible for paying their electricity bill (65.86%); with a further (23.57%) sharing the responsibility with another; 7.80% said that “someone else looks after the bill;” 2.60% said they “contribute some money to someone else in household;” and 0.17% said “this is a business/commercial account.”
- **Receipt of bill — method:** The responses were split almost evenly between mail (54.98%) and email (45.02%).
- **Size of household (or workplace for commercial respondents):** The question is specifically: “Including yourself, how many people live in your household or work in your business?” There is no specification between homes and workplaces. The most popular choice was two (35.18%) with four people (21.66%) next; 16.29% said three people; 13.86% chose five or more; and 13.00% chose one.
- **Best description of residence:** Most of the respondents to phase one live in single-family homes (77.64%); while 13.52% live in an apartment complex; and 8.15% live in a multi-family home; 0.69% chose “small commercial.”

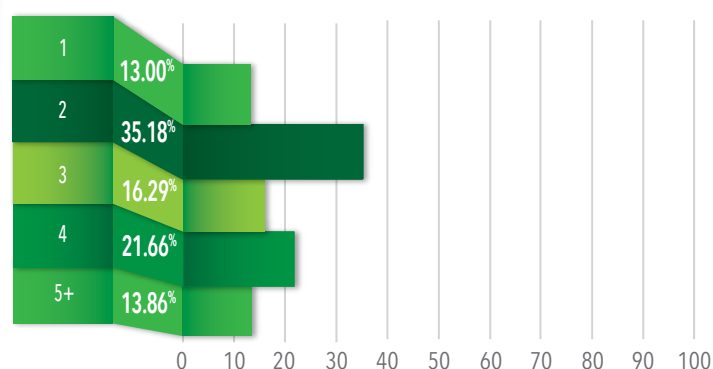
Best describes you



Pays the electric bill



Size of household (or workplace)

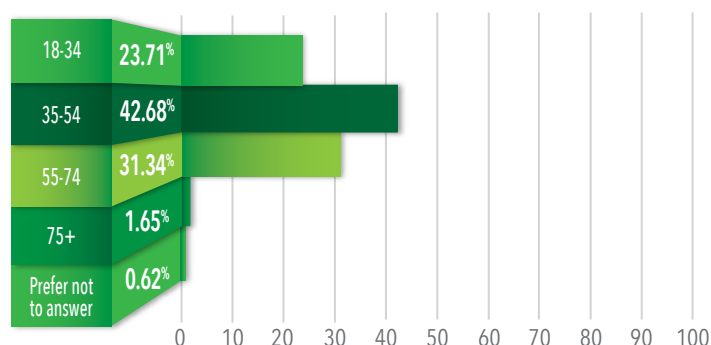


- **Primary source of heating:** While electricity was chosen by 27.90% of North Bay Hydro customers, most of the respondents use natural gas as their primary heating source (62.56%); 2.60% of respondents use propane; 2.95% are unsure; 1.04% use oil; and 0.87% use wood; 2.08% chose “other” as an option and then specified their unique situation: Most were hot water heating — written as either hot water, water boiler, or hot water heating. One respondent chose geothermal; and two use a combination of gas and electric.

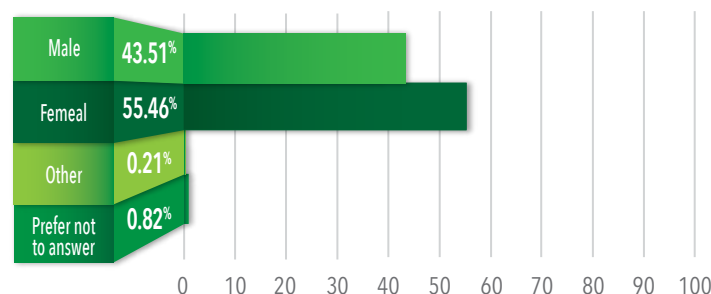
Phase two: 485 respondents

- **Age:** The average age groups of the respondents to phase two of the survey were similar to phase one, in that the largest group was again 35 to 54-year-olds (42.68%); then 55 to 74-year-olds (31.34%); followed by 18 to 34-year-olds (23.71%); and 75 and older (1.65%); 0.62% chose “prefer not to answer.”
- **Gender:** Once again a majority of respondents were “women” (55.46%); and 43.51% were “men;” 1.03 chose “other” or “prefer not to answer.”
- **Best description:** The respondents to phase two are again mostly “homeowners” (69.07%); and “tenants” (28.25%); 0.41% identified as “landlords;” 0.62% were commercial/business respondents; and 1.65% chose “other.”

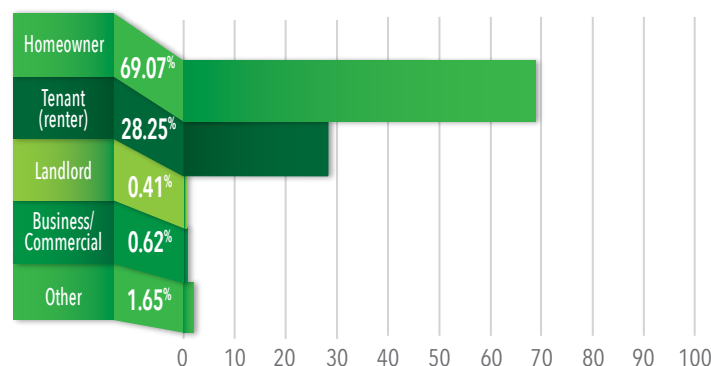
Age range



Gender



Best describes you



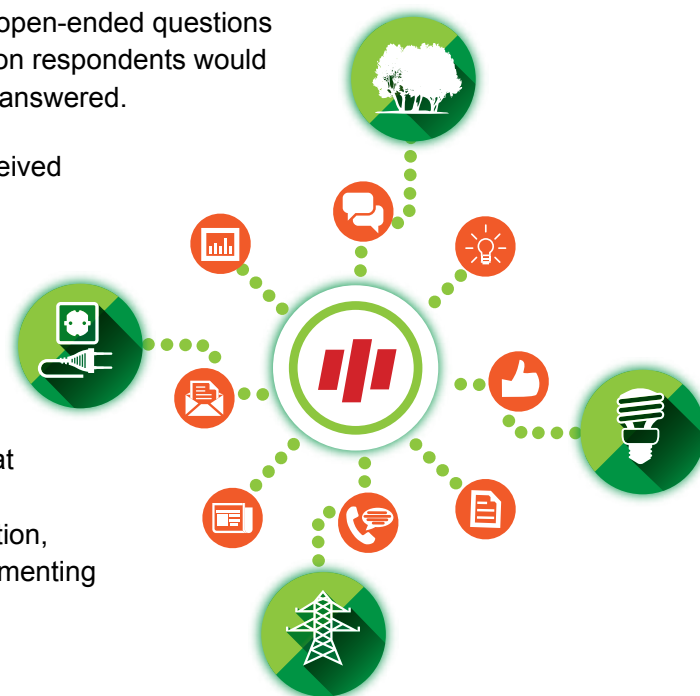
Survey Comprehension and Desired Content

At the end of phase one, respondents were asked three open-ended questions about: The amount of information received; the information respondents would like to have seen; and any questions they would still like answered.

For the question regarding the volume of information received — whether it was too much, not enough, or just right — 472 of the 577 respondents answered (105 skipped). Of those 472, 443 respondents felt the information level was “just right.” The remaining chose “too much” (15 respondents); “not enough” (11 respondents); and “don’t know” (3 respondents).

The next question was to find out if there was content that they would like to have seen included in the survey. Once again, 472 of 577 respondents answered the question, with most satisfied with the information and many complimenting the survey and company; 54 of them had a suggestion. Those suggestions fell into these broad categories:

- **Pricing:** Delivery charges; fees; comparisons to other provinces; option to take a free month with credit in equal billing.
- **Energy conservation:** Offer more tips; recommendations on heating systems.
- **Vegetation management:** How often are trees checked; free tree; distance tree to line.
- **Rental programs and services:** For appliances; “people should know, it was a godsend for us at our previous home.”
- **Billing/time of use:** Health issues with smart meters; thorough explanation of bill/fees; more smart meter information.
- **Company information (pay/performance):** Financials; board of director’s information; number of people employed; salaries.



- ||— **Subsidies and funds available:** Promotions and grants; payment plans; what the customer consumer can get or use; energy board subsidy.
- ||— **Issues with the survey:** Videos used should have closed captioning/subtitles for hearing impaired; more specification of slightly effective and very effective (would prefer effective only); flaws/glitches; needs links to follow up on information presented.
- ||— **Reliability/outages:** Increase in power outages; problems with power.
- ||— **Contacting company:** Dislike of “stuck in loop of automated messages when contacting re: outage.”
- ||— **Information on infrastructure:** Painting green yard boxes; “How is our infrastructure? How does it rate with other LDCs.”

The final question of the online survey in phase one, asked respondents: “Is there anything that you would still like answered?” There were again 472 of 577 respondents who answered (105 skipped), and all but a few wrote “no,” — many were highly complimentary. But in this case, many who made a comment simply re-stated their issue from the previous question. Though a total of 41 suggestions were made, 10 of them were repetitions and so they have been removed from this reporting. Therefore, 31 of 472 respondents offered original suggestions, and they fell into similar categories to the previous question:

- ||— **Pricing:** Pricing is expensive; national and provincial rate comparisons; more about pricing; delivery charges; fees and timeline of disconnection notices.
- ||— **Energy conservation:** Renewable initiatives; climate change and influx of air condition use — what preparations made.
- ||— **Vegetation management:** A specific question regarding a neighbour’s tree and land easement; tree-trimming; “How do I get a tree?”; where to call for this service.
- ||— **Rental programs and services:** Raise awareness of option; appliance protection.
- ||— **Billing/time of use:** Why seasonal changes to TOU; education on breakdown of bill; request for printed time of use charts; better online payment methods; TOU punishes shift workers.

-  **Company information (pay/performance):** “Important educational information about your company;” question about utilities as monopolies; requested explanation of NBHDL’s purchase of Espanola’s utility; size of team and comparison of administrative costs; transparency of financial information.
-  **Subsidies and funds available:** Include consideration for rent (expenses) when considering income level for assistance programs; Affordability Fund; low income subsidies.
-  **Issues with the survey:** Would like further reminders of content covered in survey — future communications on these topics.
-  **Reliability/outages:** Increase in power outages; problems with power.
-  **Contacting company:** Difficult to speak to someone in person “Fort Knox;” difficulty emailing company.
-  **Information on infrastructure:** What is being done to maintain and upgrade grid; why not extended to West Nipissing.



The questions for phase two were designed around some answers from phase one questions; specifically, the answers that inspired the need for deeper understanding, or these final two questions about further questions or needed content.

Respondent Feedback

Communication and Customer Service

This first section is an overview of the online respondent's feelings regarding their current level of customer service and communication from North Bay Hydro. Phase one for the online survey is discussed first, with follow up from phase two where applicable.

Summary

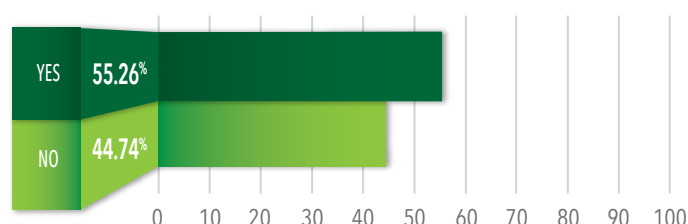
Because of the response to text messaging as a format for communicating outages to customers, this was a topic pursued in phase two of the survey. The phase two question explained that text notifications would require a substantial investment for system upgrades and account updates — then asked if respondents are interested in a way “to push notifications like outages to you;” 55.26% of respondents said “yes” to the investment; 44.74% said “no.”

Respondents were asked if North Bay Hydro should “invest more money on advertising programs, such as the Affordability Fund, that can assist our residents in reducing their consumption and save you money;” 66.09% of respondents said “yes;” 33.91% said “no.”

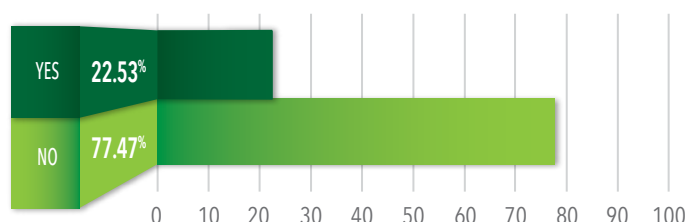
Respondents were given a short paragraph to read, regarding the number of outages caused by tree contacts (in 2018 it was the cause of 25% of customer hours of interruption) and the ways in which North Bay Hydro seeks to manage this issue — tree trimming, tree removal, tree consultation, and tree planting. A majority of those who answered were not aware of this program (62.74% “no;” 37.26% “yes”). Nor were the aware of the Right Tree, Right Place Campaign, as 22.53% said “yes” they were aware, but a large majority said “no” — 77.47%.

As a result of the information received regarding customer awareness of available services, respondents to phase two were asked about an option for increasing awareness, specifically, would customers see a benefit in the development of an information package for new customers. It would include contacts, social media accounts, vegetation management information, as well as the benefits of the My Account section on the website and outage information — 81.80% of respondents saw a benefit to this welcome package; 18.20% did not.

Would you be interested in a way to push notifications like outages to you



Were you aware that you can request a tree, at no charge, through the Right Tree Right Place campaign?



Communication

Communication was a focus of the online survey, with questions moving from awareness of the utility online to the benefit of creating new customer packages.

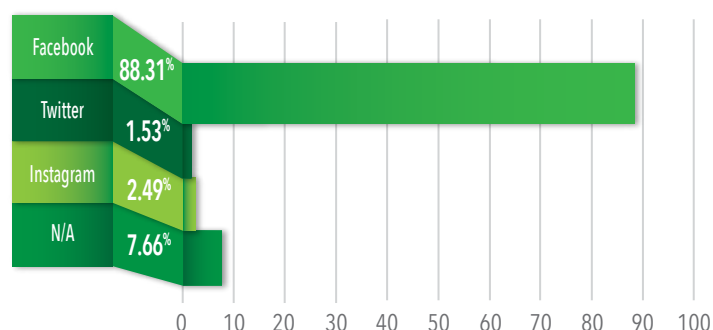
Social media awareness

The respondents to phase one of the online survey were asked what social media accounts they monitor regularly, and the vast majority noted “Facebook” most often (88.31%). “Instagram” was the choice of 2.49% of survey respondents and “Twitter” was chosen by 1.53% — but second to “Facebook” was actually “N/A” with 7.66%.

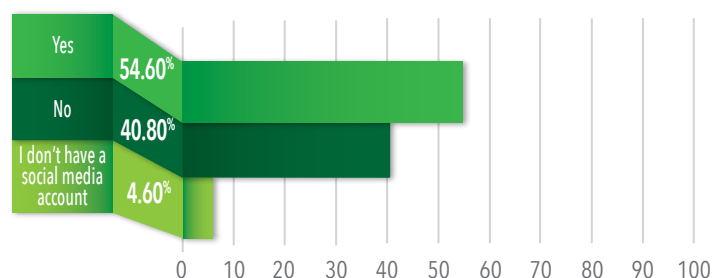
Only 522 of the 577 respondents answered a question related to North Bay Hydro and social media (55 skipped); namely, had they ever seen a post from North Bay Hydro on social media, and if so, what was the subject of that post. Of respondents, 54.60% said they had seen a post (40.80% “no,” 4.60% “don’t have account”).

When asked the subject of the post, 517 respondents answered. While many of them selected “N/A” (43.13%), the rest were divided between “outage” (37.33%); “community information” (8.12%); “conservation” (6.58%); and a “public service message,” i.e. potential scams (4.84%).

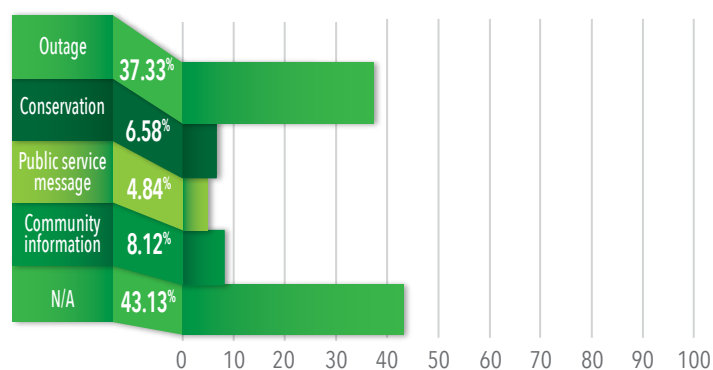
Social media accounts monitored regularly



Have you seen a post on social media from NBHDL?



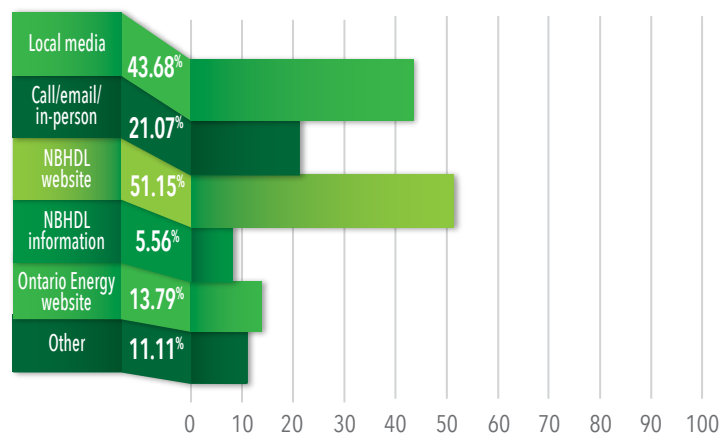
What was the subject of the social media post?



Information sourcing

When asked where they currently find their information on topics, such as electricity rates; conservation tips and consumption/usage information, respondents were offered the chance to choose each answer that applied, as well as the ability to specify if they chose “other” as their response.

Where do you currently find information on topics, such as electricity rates, conservation tips

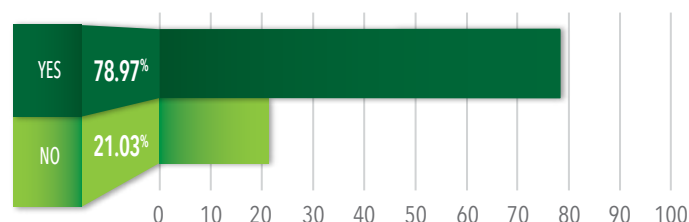


Of the pre-selected response options, 51.15% said North Bay Hydro’s website, and 43.68% said local media. The remaining responses were: “Call/email/in person” at North Bay Hydro office (21.07%); the “Ontario Energy Board website” (13.79%); and “North Bay Hydro information booths,” i.e. home/trade shows (5.56%). The remaining chose “other” and wrote in responses. They fell into the following categories:

- ||— Online/Google/other websites
- ||— With bill/mail/flyers
- ||— Social media/YouTube
- ||— Government
- ||— Do not seek out this information.

In phase two of the survey, all respondents were asked about sourcing information. Specifically, and because a majority chose the North Bay Hydro website, would the respondents appreciate an investment in the site to allow the sourcing of the information to be easier and faster. A large majority of the customers said “yes” (78.97%), and only 21.03% said “no.”

Would you appreciate the investment in the website, to ensure finding information is easier and faster?



Preferred methods of communication

North Bay Hydro customers who filled out the survey were asked about their preferred method for receiving information, and those who completed phase two were asked about their level of awareness for these methods, as well as if they would like an investment into new methods.

Outages

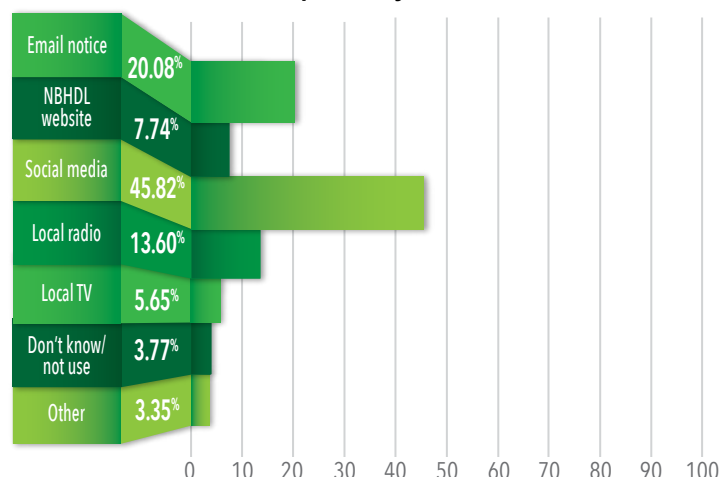
When an outage occurs, respondents were asked to select their preferred method for learning of it. There were pre-selected choices available, as well as “other,” and a chance to specify. The top three answers were: “Social media” (45.82%); “email notice” (20.08%); and “local radio” (13.60%). The remaining respondents chose: Posted on “North Bay Hydro website” (7.74%); “local TV” (5.65%); and “don’t know/not sure” (3.77%). Those who chose “other” (3.35%) mention the following methods:

-  — Text message (this was the preference for 11 of 16 of these respondents).
-  — All options (3)
-  — Mobile phone (2)

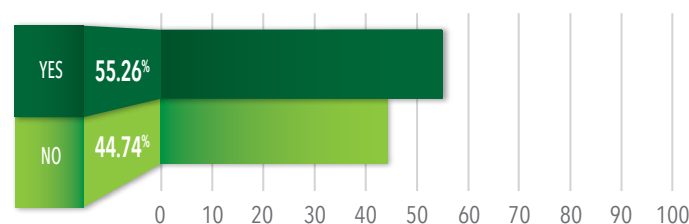
Because of the response to text messaging as a format for communicating outages to customers, this was a topic pursued in phase two of the survey. The phase two question detailed the responses to the phase one questions — noting preferences for social media first, then email — and then noted the higher than expected response of “text.”

The phase two question explained that text notifications would require a substantial investment for system upgrades and account updates — then asked if respondents are interested in a way “to push notifications like outages to you;” 55.26% of respondents said “yes;” 44.74% said “no.”

When an outage occurs, which is your preferred method for NBHDL to provide you information?



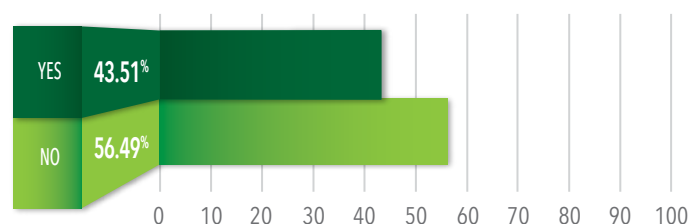
Would you be interested in a way for us to push notifications, such as outages to you?



Respondents in phase two were also asked to consider information from phase one before answering a question related to communicating an outage to North Bay Hydro via the website.

As less than a quarter of phase one respondents said they contacted North Bay Hydro when experiencing an outage, they were alerted to a form in the outages section of the website, which when filled out sends a message to the utility. They were then asked if previous to the explanation, were they “aware” of the outage-communication method. The answers were almost split, but 56.49% of respondents were not aware (chose “no”) and 43.51% were aware (chose “yes”).

Were you aware of the outage form on the NBHDL website?



General news and project information

Phase one survey respondents were asked to rank their preferred methods for receiving general news from five options: Recorded telephone message, email notice, local radio, social media, and text messaging. Out of a total of 577 respondents, 522 answered the questions, and 55 skipped it.

“Email notice” was the preferred method (40.04%) of those who answered; “social media” next with 21.46 selecting it as their preferred method; 13.98% chose a “recorded telephone message” — but many chose this as their fifth most preferred (46.93%); “text messaging” was favoured by 13.41% of respondents; and 11.11% “local radio.”

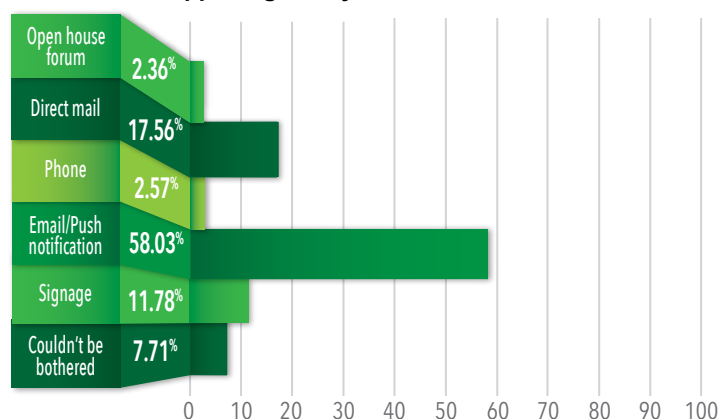
**The preferred methods for communicating general news
— most preferred (#1) to the least preferred (#5)**

	1	2	3	4	5
Recorded telephone message	13.98%	12.45%	10.92%	15.71%	46.93%
Email notice	40.04%	22.41%	19.16%	11.69%	6.70%
Local radio	11.11%	20.88%	26.44%	25.29%	16.28%
Social media	21.46%	22.41%	24.71%	24.14%	7.28%
Text messaging	13.41%	21.84%	18.77%	23.18%	22.80%

Phase two noted the tendency towards email as a preference, and asked if the respondents would be willing to add their name to an email subscription list; 74.23% said “yes;” 25.77% said “no.”

Phase two also asked respondents their communication preferences regarding new projects near their homes or businesses. Clearly, the most preferred method would be “email/push notification” (58.03%); followed by “direct mail” (17.56%); “signage” in area (11.78%); “phone” or “open house” forum garnered 2.57% and 2.36% support, respectively. The remaining respondents chose “couldn’t be bothered” (7.71%).

Your preferred method to learn about projects happening near your home/business



Program and service awareness

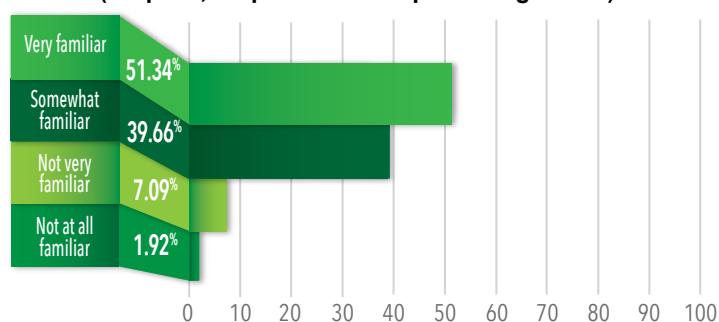
This section of the online survey sought to understand customer’s familiarity with Time-of-Use pricing, the Affordability Fund, the services available to customers, and vegetation management programs, as well as their beliefs on future investments to increase awareness.

Time-of-Use and Affordability Fund

When asked their familiarity with Time-of-Use information — e.g. holidays are off peak, lieu of days etc. — 51.34% said they were “very familiar,” and 39.66% said they were “somewhat familiar.” Only 7.09% of the respondents chose “not very familiar;” 1.92% “Not at all familiar.”

When asked about the Affordability Fund — specifically, had survey takers seen or heard any advertisements referencing the fund — slightly more than half of the respondents said they had (53.64%), and 46.6% said they had not seen any advertising related to the fund. They were then asked if they felt North Bay Hydro provided enough education about this fund, as well as Time-of-Use pricing; 66.28% said “yes,” and 33.72% said “no.”

How familiar are you with the Time-of-Use information (off-peak, on-peak and mid-peak usage rates)?



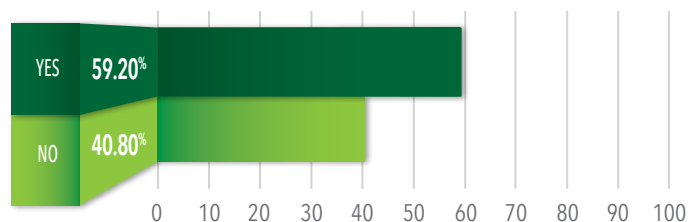
Respondents then had the option to share their feelings regarding an investment in this education; namely, do they believe North Bay Hydro should: “Invest more money on advertising programs, like the Affordability Fund, that can assist our residents in reducing their consumption and save you money.” — 66.09% of respondents said “yes,” 33.91% said “no.”

Conservation and usage

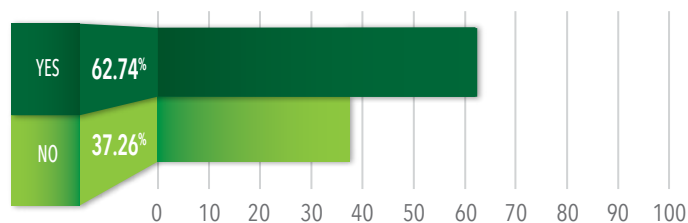
North Bay Hydro also utilized the online survey to determine the level of awareness for a free service under My Account on the utility’s website — one that provides hourly usage to help customers conserve electricity. Slightly more than half were aware (59.20% said “yes”) and the rest were not (40.80% said “no”).

Also in this vein, was a portion of the survey’s phase two where respondents were asked if they would see a benefit to the creation of interactive videos from North Bay Hydro experts — such as safety videos, live videos, conserving energy and upgrade work, “just to name a few.” A majority of the respondents felt that “yes” they would like to see this (62.74%); and 37.26% said “no.”

Are you aware of the free online service available in My Account?



Would you benefit in seeing more interactive or demonstrative videos from NBHDL experts?



Vegetation management

Customers in this section of the survey were asked about their level of awareness regarding North Bay Hydro’s vegetation management program.

Respondents were given a short paragraph to read, regarding the number of outages caused by tree contacts, (in 2018 it was the cause of 25% of customer hours of interruption) and the ways in which North Bay Hydro seeks to manage this issue with tree trimming, tree removal, tree consultation, and tree planting. A majority of those who answered were not aware of this program (62.74% “no,” 37.26% “yes.”)

They were then offered information about the Right Tree, Right Place campaign, and their ability to request a tree, at no charge, each year while supplies last. Very few people were aware of this program (22.53% said “yes”), and a large majority (77.47%) said “no.”

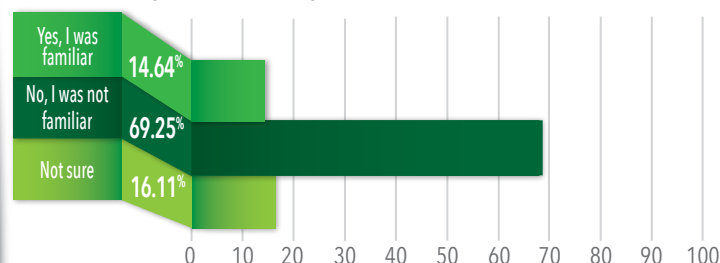
Understanding billing

Respondents were asked about their familiarity with the breakdown of their bill, in both phase one and phase two of the online survey. In phase one, they were first asked about their awareness of the bill's allocations: "Before this survey, how familiar were you with the percentage of your electricity bill that went to NBHDL?" Of the respondents, 69.25% were not familiar with this information; 16.11% were "not sure;" and 14.64% has existing knowledge (were familiar).

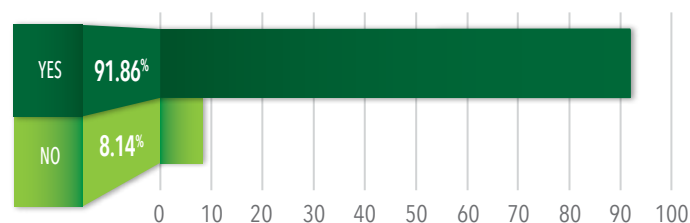
Of the respondents who answered, 55.44% were interested in learning more details "of what NBHDL does with the 29%," 44.56 chose "no" they are not interested.

In phase two, the level of understanding is once again investigated when respondents were asked: "Did we provide a detailed enough breakdown regarding the amount of your bill and where each portion goes?" A resounding 91.86% of respondents said "yes" the breakdown was detailed enough; 8.14% said "no."

Before the survey, how familiar were you with the percentage of your electricity bill that went to NBHDL?



Did we provide a detailed enough breakdown regarding the amount of your bill and where each portion goes?

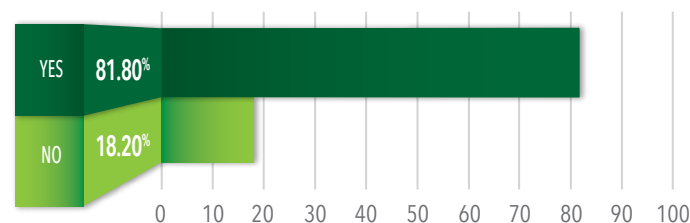


New customer information packages

As a result of the information received, regarding customer awareness of available services, respondents to phase two were asked about an option for increasing awareness. Specifically, would customers see a benefit in the development of an information package for new customers, which would include contacts, social media accounts, vegetation management information, as well as the benefits of the My Account section on the website and outage information.

Of the respondents, 81.80% saw a benefit to this welcome package; 18.20% did not.

Do you see a benefit in NBHDL developing a package for new customers?

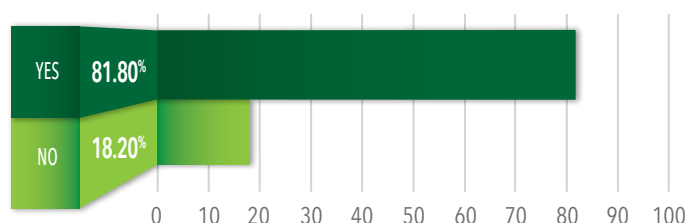


Customer Service

When asked in phase one if they had ever visited the North Bay Hydro customer service department in person, 261 respondents said they had; and 261 respondents had not — a 50/50 split.

When asked if they had visited www.northbayhydro.com, the answers varied more so than the in person contact: 70.88% said they had visited the site; and 29.12% had not.

Do you see a benefit in NBHDL developing a package for new customers?



Respondents were then asked to comment on the services provided in-person at the front counter, with the statement: “Which of the following statements is closest to your viewpoint?” They were as follows:

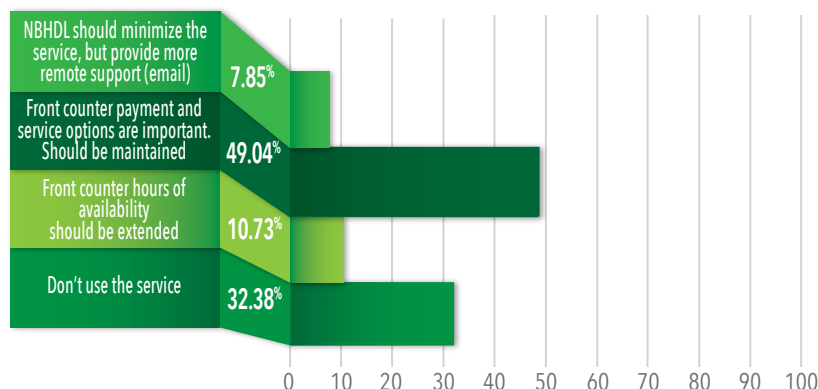
— Front counter payment and service options are important to many customers. This should be maintained as is. — A majority felt this was their viewpoint, with 49.04% choosing this option.

— Do not use the service. — 32.38% of respondents.

— Front counter hours of availability should be extended. — 10.73% agreed.

— NBHDL should minimize the front counter service but provide more remote support (email/chat/ social media). — 7.85% said this is closest to their viewpoint.

As it relates to the services provided in-person at the front counter, which is closest to your viewpoint?



Convenience of services

Respondents were then offered the chance to relay their satisfaction levels for a series of topics related to the convenience of accessing North Bay Hydro's services.

As to the availability of call centre staff, Monday to Friday from 8:30 am to 4:30 pm, many fell into the category of "don't know" or "indifferent" — 17.24% and 25.10%, respectively; 16.86% were "very satisfied;" 30.65% were "fairly satisfied;" and the rest were either very or fairly dissatisfied (3.26%; 6.90%).

The response rate to social media questions or requests again received a large percentage of those who chose indifferent (neither satisfied nor dissatisfied: 24.14%); or "don't know" (40.61%); 29.70% were satisfied (19.16% fairly; 10.54% very); and 5.55% were dissatisfied (2.87% fairly; 2.68% very). The response satisfaction to email questions was similar, with 23.18% satisfied (very: 8.62%; fairly: 14.56%); and 72.60% said they "don't know" (49.23%), or felt "neither satisfied nor unsatisfied" (23.37%); 4.21% were very or fairly dissatisfied, 1.72% and 2.49% respectively.

For online offerings, 48.28% of respondents were "very" (20.69%) or "fairly" (27.59%) satisfied with the self-service options for managing their accounts; though 27.59% said they "don't know;" and 17.62% were indifferent; 2.68% were "very dissatisfied;" and 3.83% were "fairly dissatisfied."

For requesting services using the online self-serve options, 63.41 were either indifferent or chose "don't know" — 23.18% and 40.23%, respectively — and 31.23% were satisfied (fairly: 19.54%; very: 11.69%); 2.87% were "very dissatisfied;" and 2.49% were "fairly" dissatisfied."

As it relates to the convenience of accessing services, for each of the following topics, how satisfied are you?

	DON'T KNOW	VERY DISSATISFIED	FAIRLY DISSATISFIED	NEITHER SATISFIED NOR DISSATISFIED	FAIRLY SATISFIED	VERY SATISFIED
Availability of call-centre staff	17.24%	3.26%	6.90%	25.10%	30.65%	16.86%
Response rate to social media questions/requests	40.61%	2.68%	2.87%	24.14%	19.16%	10.54%
Response to email questions	49.23%	1.72%	2.49%	23.37%	14.56%	8.62%
Online self-serve options for managing account	27.59%	2.68%	3.83%	17.62%	27.59%	20.69%
Online self-serve options for requesting service	40.23%	2.87%	2.49%	23.18%	19.54%	11.69%

Reliability of Service



Within the two phases of the online surveys, respondents were asked for information and perceptions regarding North Bay Hydro's reliability of service, including their opinions as to whether the standard of reliability met their expectations, and specific information about experiences with outages.

Summary

When asked to rate North Bay Hydro's reliability of electrical service, 72.18% respondents were pleased: 37.45% of those respondents rating the utility "excellent," and 34.73% said "above average."

Reliability of Service



Outages

Participants in phase one of the online survey were asked if they experienced an outage in the previous 12 months, and if so, did they contact North Bay Hydro. Just over half of customers who took the survey answered "no" they did not contact the utility when the outage occurred (52.51%); 23.43% said "yes" they did; 10.25% chose the option "do not recall," and 13.81% chose "N/A."

When asked to rate the overall effectiveness of North Bay Hydro during outages, the participants were given several circumstances to consider:

-  Responding to outages
 - A majority felt that North Bay Hydro was "very effective" (50.42%); and 34.52% said "somewhat effective;" 6.90% said "don't know;" 4.81% indicated "neither effective nor ineffective;" and 3.35% chose very or somewhat ineffective — 10.26% and 2.09%, respectively.
-  Restoring power quickly
 - Respondents again felt North Bay Hydro was effective, with 51.46% choosing "very effective;" and 35.98 choosing "somewhat effective;" 5.44% chose "don't know;" 4.60% "neither effective nor ineffective;" and 2.51% said ineffective (0.84% very; 1.67% somewhat).
-  Use of media channels for providing updates
 - North Bay Hydro's use was considered "very effective" by 42.47% of respondents; "somewhat effective" by 28.24%; and somewhat or very ineffective by 8.99% (3.97% very; 5.02% somewhat.) The remaining chose either "don't know" (9.83%); or "neither effective nor ineffective" (10.46%).

-  Providing information about the outage
 - Out of the respondents, 73.85% felt that North Bay Hydro was effective (36.61% somewhat; 37.24% very); and 10.87% said ineffective (6.9% somewhat; 3.97% very). The remaining respondents chose “don’t know” (7.53%); or “neither effective nor ineffective” (7.74%).
-  Maintaining information on the website, e.g. the outage map
 - A larger proportion of respondents chose “don’t know” then in previous outage questions (24.06%). However, slightly more than half felt North Bay Hydro was effective in maintaining website information, with 27.82% selecting “somewhat effective;” and 29.08% choosing “very effective;” 9.62% chose “neither effective nor ineffective;” 2.93 chose “very ineffective;” and 6.49% said “somewhat ineffective.”
-  Updating social media
 - Respondents chose a response to their feelings surrounding North Bay Hydro’s effectiveness in updating social media during outages. Again, a higher than usual amount of respondents chose “don’t know” (18.20%). Many of the respondents felt the utility is “very effective” (37.66%); and 26.36% feel they are “somewhat effective;” 9.41% chose “neither effective nor ineffective;” and 8.37% chose ineffective (5.23 somewhat; 3.14% very).

How would you rate NBHDL’s overall effectiveness during outages?

	DON'T KNOW	VERY INEFFECTIVE	SOMEWHAT INEFFECTIVE	NEITHER EFFECTIVE NOR INEFFECTIVE	SOMEWHAT EFFECTIVE	VERY EFFECTIVE
Responding to the power outage	6.90%	1.26%	2.09%	4.81%	34.52%	50.42%
Restoring power quickly	5.44%	0.84%	1.67%	4.60%	35.98%	51.46%
Using media channels for providing updates	9.83%	3.97%	5.02%	10.46%	28.24%	42.47%
Providing information about the outage	7.53%	3.97%	6.90%	7.74%	36.61%	37.24%
Maintaining information on the website	24.06%	2.93%	6.49%	9.62%	27.82%	29.08%
Updating social media	18.20%	3.14%	5.23%	9.41%	26.36%	37.66%

Overall reliability

In order to measure customer opinions regarding North Bay Hydro’s overall reliability of service, respondents were asked to signal their agreement or disagreement with a series of statements.

More than half of the respondents agree strongly that North Bay Hydro provides consistent reliable electricity, with 57.95% selecting it and another 31.17% felt that they “agree somewhat” with the statement. And while 2.09% chose “don’t know,” and 6.90% chose “neither agree nor disagree,” only a small percentage chose strongly or somewhat disagree: 0.63% and 1.26%, respectively.

In terms of billing its customers, 74.43% strongly or somewhat agree that North Bay Hydro is accurate (38.16%; 36.27%). A fair number of the respondents chose “don’t know” (6.29%) and “neither agree nor disagree” (15.09%), and 4.19% disagree with the statement about the accuracy of the utility’s billing (0.84% strongly; 3.35% somewhat).

When asked if North Bay Hydro “has a standard of reliability that meets your expectations,” 42.68% agreed strongly, and 39.33% agree somewhat. The remaining respondents chose “neither agree nor disagree” (12.13%); “don’t know” (2.72%); and either strongly or somewhat disagree — 1.67% and 1.46%, respectively.

In terms of speed, 88.26% said that North Bay Hydro “quickly handles outages and restores power,” with 49.90% of those choosing “agree strongly;” 38.36% “somewhat agree;” 5.87% of participants chose “neither agree nor disagree;” 3.35% chose “don’t know;” and 2.52% chose disagree (1.05% strongly; 1.47% somewhat).

When it comes to communication of information about construction and investment activities, a large portion of the respondents chose either “don’t know” (14.44%) or “neither agree nor disagree” (23.01%). Many agreed strongly (19.67%) and even more agreed somewhat (30.33%), marking a full half of respondents agreeing with the statement. For those who disagreed, 3.14% did so strongly; and 9.41% did so somewhat.

To understand customer opinions on the overall reliability of service they feel North Bay Hydro provides, participants were asked to choose between variations on poor, average or excellent for the question: North Bay Hydro reliability of service is ... More than half of the respondents rated the company “excellent” (37.45%) or “above average” (34.73%), and the next largest portion of respondents rated the utility “average” (26.78%). Only 0.84% felt it was “poor;” and 0.21% said “very poor.”

Overall reliability of NBHDL service

	DON'T KNOW	DISAGREE STRONGLY	DISAGREE SOMEWHAT	NEITHER EFFECTIVE NOR INEFFECTIVE	AGREE SOMEWHAT	AGREE STRONGLY
Provides consistent, reliable electricity	2.09%	0.63%	1.26%	6.90%	31.17%	57.95%
Accurately bills its customers	6.29%	0.84%	3.35%	15.09%	36.27%	38.16%
Has a standard of reliability delivering electricity that meets your expectations	2.72%	1.67%	1.46%	12.13%	39.33%	42.68%
Quickly handles outages and restores power	3.35%	1.05%	1.47%	5.87%	38.36%	49.90%
Communicates information on construction and investment activities	14.44%	3.14%	9.41%	23.01%	30.33%	19.67%

Preferences and Priorities

This section from the two online surveys of respondent feedback covers topics related to the preferences of North Bay Hydro customers, offered through open-ended questions to obtain suggestions, as well as the opportunity to rate priorities for the future of the utility — including infrastructure, reliability and customer service, among others.

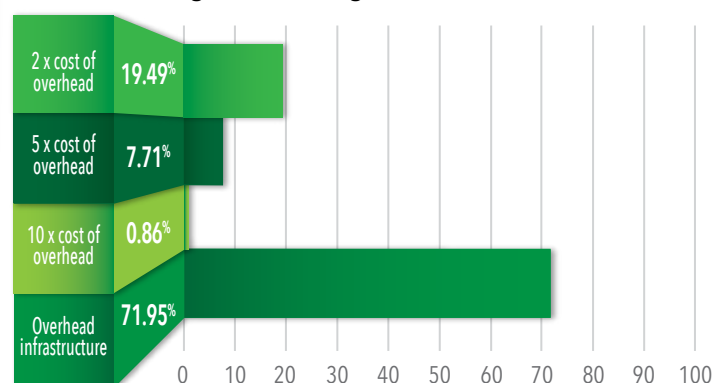
Summary

-  — Though pricing was a consistently-raised suggestion, almost an equal amount of respondents felt that there was nothing that North Bay Hydro should do to improve, and many included compliments and notes of encouragement, such as “keep up the great work.”
-  — Another focus for North Bay Hydro customers is that the utility continue to invest in infrastructure, as well as “continue to provide” the reliability of service that they currently maintain.
-  — Delivering reasonable electricity prices was the most important priority to 84.60% of respondents, and a second most important priority to 11.81%.
-  — Additionally, customers are willing to invest in infrastructure, and a specific question about the investment in underground wires, rather than overhead, showed that 19.49% would like to change to underground if the cost was “2 x that of overhead” infrastructure, and 7.71% would tolerate “5 x the cost overhead.”

In an effort to better understand how we should set our priorities moving forward, please answer the following (importance to you):

	MOST IMPORTANT	SECOND MOST IMPORTANT	THIRD MOST IMPORTANT
Delivering reasonable electricity prices	84.60%	11.81%	3.59%
Ensuring reliable electrical service	67.38%	29.42%	3.20%
Ensuring the safety of electrical infrastructure	61.28%	22.12%	16.59%
Providing enhanced customer service	33.73%	47.88%	18.40%
Helping customers with electricity conservation and efficient usage	46.84%	35.36%	17.80%
Modernizing the electrical system (e.g. electric vehicles)	49.31%	28.11%	22.58%

The price point you would like to see NBHDL consider underground cabling versus overhead wires



Preferences and Priorities



In both phase one and two of the online survey, respondents were asked about their needs, preferences and priorities when it comes to customer service, communication, reliability and cost of service, as well as future investments.

Preferences

Within phase one of the survey, an open-ended question asked what the customers responding to the survey would like to see from the utility; specifically, “What can North Bay Hydro focus on to meet your needs and preferences as a customer?”

The most common answer was reduce prices — inclusive of those asking for a reduction in delivery fees (at least two are asking about delivery charges for each meter in multiple tenant buildings), rates, lower prices or affordable prices, as well as those looking for less restriction on those who qualify for subsidies.

However, pricing is closely followed by a number of people who said there was nothing that North Bay Hydro could do to improve — they were satisfied — or in many cases customers were quite complimentary, including notes of gratitude and encouragement to “keep up the great work.”

Several respondents requested changes to in-person customer service, namely the hours of operation. When respondents were asked to share their views on North Bay Hydro customer service (included in online survey section one — Customer Service, page 70), they were asked specifically about whether or not customer service hours should be extended: 10.73% of respondents said “yes” and this is similar to the number who requested longer hours in this preferences open-ended question.

Another focus for many of the respondents is reliability of service, with respondents asking North Bay Hydro to invest in infrastructure, and to increase reliability by limiting outages — with one customer even adding an issue with a preponderance of squirrels. Many of the comments regarding reliability were phrased as “continue to provide,” implying that the service is satisfactory, and that maintaining that standard should be a focus.



The next most common preferences surround a combination of energy conservation, climate change and green energy. Many respondents were hoping for more information regarding ways to save electricity or to conserve electricity, but it is not always clear whether they are hoping that this information will aid them in lowering costs, or to limit their environmental contributions. A few customers noted the importance of climate change planning and green energy initiatives.

Some customers requested a focus on billing-related items, such as the period of time before shut off of services, and an increase in the available payment methods. As well, customers requested more consideration for “special circumstances,” i.e. inability to pay bill on time for a specific or temporary reason.

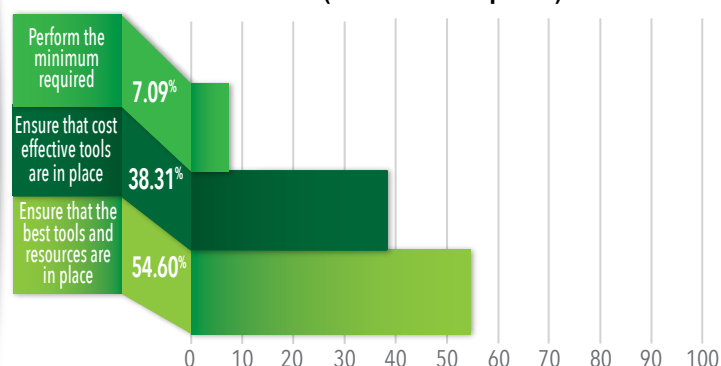
A focus on updates to the online offerings from North Bay Hydro — including online chat options, quicker responses to emails, an app, and online payment system. (Customers had a more in depth opportunity to provide information on this topic in the survey, this information can be found in the online feedback section one, starting on page 53.)

The remaining suggestions for needs and preferences fell into the categories of “more information,” with the inclusion of specifics like “on rates,” “services offered,” “increase” and “communication methods.” A few customers also requested more information on Time-of-Use pricing; additionally in relation to Time-of-Use, some of the respondents asked for a change in the off-peak times.

Also in terms of communication, one respondent requested a focus on “protecting our information.” This topic was also a part of the phase one survey, with the question “North Bay Hydro continues to invest in cyber security to keep your information safe and secure. How would you like to see us invest in this effort?” Respondents were then asked to choose from a list of options. The most popular answer was, “ensure that the best tools and resources are in place to protect our information,” with 54.60% of respondents choosing this option. This was followed by, “ensure that cost effective tools are in place to protect our information, above what is required to provide basic protections,” (38.31%); and “perform the minimum required to provide basic protections,” which was favoured by only 7.09% of respondents.



Cyber security: How would you like to see us invest in this effort? (Choose one option.)



Priorities

In order to identify priorities and then probe deeper into their specifics, questions related to customers concerns regarding future investments were included in both phase one and phase two of the survey.

In phase one, customers were asked to rate the importance to them from a list of items. “Delivering reasonable electricity prices” was the most important priority in the minds of 84.60% of customers; with 11.81% rating it their second most important priority; and 3.59% rating it third.

“Ensuring reliable electrical service” was most important to 67.38% of respondents; followed by 29.42% deeming it second most important (3.20% said “third most important”).

Safety was foremost for 61.28% of respondents choosing “ensuring the safety of infrastructure” as their most important priority; (22.12% second most important; 16.59% third most important.)

And while they were not the most important priority for a majority of customers, “providing enhanced customer service,” and “helping customers with electricity conservation and efficient usage” had the most number of respondents choosing them as second most important: 47.88% and 35.36%, respectively; 33.73% did feel enhanced customer service was their most important priority; and 46.84% said conservation and energy usage information was their first priority as well. While 18.40% rated customer service enhancements third; and 17.80% rated helping customers with efficiency as their third most important priority.

Respondents were also asked about “modernizing the electrical system, e.g. electric vehicles, net-metering etc.,” to support the reduction of greenhouse gases and lessen climate change. This was the most important priority to 49.31% of respondents; second most important to 28.11%; and the third most important priority to 22.58%.

When respondents selected “other,” which three did, they were asked to specify. One did not offer a specification, one wrote “communication with us,” and the third wished the utility would “look into acquiring electric vehicles for North Bay Hydro usage. To help combat greenhouse emissions.”

In an effort to better understand how we should set our priorities moving forward, please answer the following (importance to you):

	MOST IMPORTANT	SECOND MOST IMPORTANT	THIRD MOST IMPORTANT
Delivering reasonable electricity prices	84.60%	11.81%	3.59%
Ensuring reliable electrical service	67.38%	29.42%	3.20%
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Modernizing the electrical system (e.g. electric vehicles)	49.31%	28.11%	22.58%

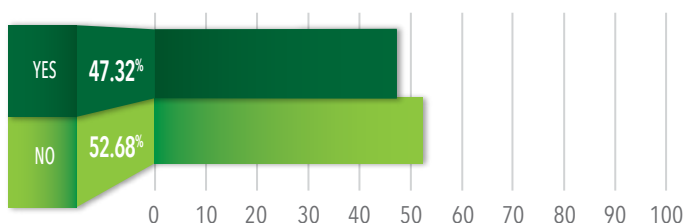
Several of phase two questions, looking to obtain more specific information, were also shaped around understanding customer priorities.

Respondents were asked questions in regards to investment in the electrical system to aid in reliability. The questions are phrased so as to briefly detail the existing situation, then positioning it against an alternative — and featuring the alternative's costs or requirements. Then, customers were asked if they felt the investment would be worth the benefits offered by the alternative or upgrade solution.

Participants in the survey were given information about the current set up of North Bay Hydro's control room. As it stands: The operator who manages the grid does so only during business hours; when an unexpected outage occurs outside of these hours, an on-call lineman is notified and an operator would need to travel to the office. The respondents are then told that while this current system saves cost, it can increase the duration of unplanned outages (outside business hours) and they are asked their opinion: "Would you like to see North Bay Hydro increase resourcing costs by providing 24/7 control room presence in the hope it would reduce the duration of after hour outages?"

The results were almost equal: 47.32% said "yes" they would like to see costs increased; 52.68% said "no."

Would you like to see NBHDL increase resourcing costs by providing 24/7 control room presence in the hope it would reduce the duration of after hour outages?



Automation of the electrical grid — or distribution automation — was also discussed. It as detailed as an investment that a number of electrical utilities are making, or investigating, to improve reliability. While North Bay Hydro has automated parts of their grid, the next step requires a significant investment. The survey then offered the current state of reliability, based on annual reporting from 2018 of average customer experience — for context, 1.4 sustained outages (longer than one minute) and total outage duration of 1.95 hours over the year — and once again, offered a question in regards to updating the current setup; namely, "With the implementation of the next step of distribution automation there is potential to see some improvement to our current reliability. Would you like to see North Bay Hydro invest further into distribution automation of the network?"

One answer option was direct: "No do not invest further. The current reliability of the network is acceptable." — 20.56% chose this option.

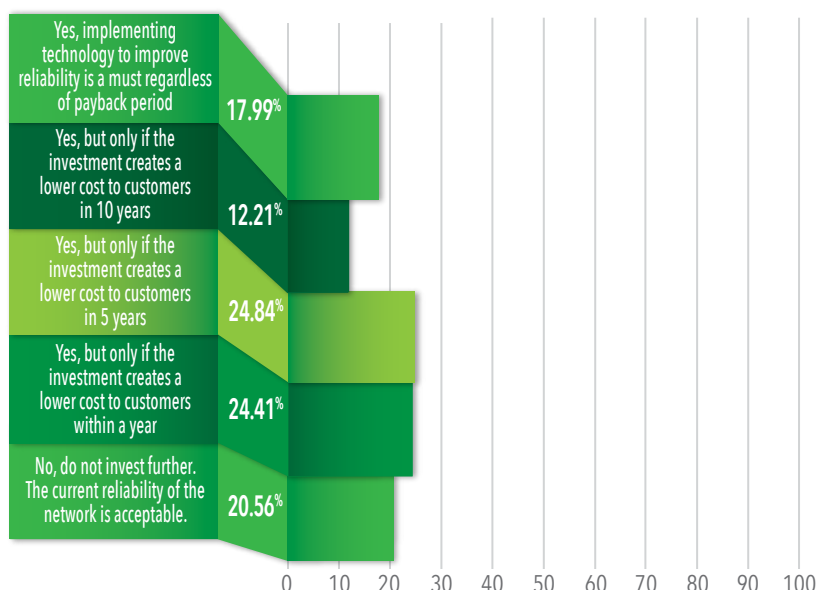
The rest of the options were “yes,” but included conditions; 24.84% of customers said “yes, but only if the investment creates a lower cost to customers in five years;” 24.41% felt that the initiative should proceed, only if “the investment creates a lower cost to customers within a year.” This answer option was also offered with the time period of 10 years for lowering costs to customers, and 12.21% chose this option; 17.99% said yes, with the included “implementing technology to improve reliability is a must, regardless of payback period.”

An investment in infrastructure was also discussed, once again offering respondents information about the current situation against a possible alternative. It is mentioned in the question’s pretext that North Bay Hydro often receives feedback about the preference for underground infrastructure, but that installation and maintenance of this preference would be expensive. Customer respondents are then given several price points and asked: “At what price point would you like to see North Bay Hydro consider underground cabling versus overhead wires? Please choose one answer.”

A majority of customers felt that overhead infrastructure should be used if it is the most cost effective (71.95%), but 19.49% felt that if it was “2x the cost of overhead infrastructure” that they would like to change to underground; 7.71% would tolerate “5x cost of infrastructure” in order to bury the lines; and 0.86% would change even at “10x cost of overhead infrastructure.”

As well, to help with costs savings, respondents were offered a very simple solution: Paperless billing. It is explained that one of North Bay Hydro’s most opportune areas for reducing costs over time is in postage costs — which are increasing every year — and the majority of North Bay Hydro customers remain on paper billing. And so, customers were asked: “Would you like to see North Bay Hydro provide incentives to encourage more customers to switch to paperless billing?” — 87.84% of respondents said “yes” they would like incentives to switch to paperless; 12.16% said “no.”

Would you like to see NBHDL invest further into distribution automaton of the network?



UtilityPULSE Ratings and Report Cards

Credibility and Trust

A combination of knowledge, integrity and involvement make up the metrics for the UtilityPULSE Credibility and Trust Index. It is important to every customer that North Bay Hydro is demonstrating an adherence to a code of conduct, and doing so consistently, to believe that the utility is aware of industry, regulatory and economic changes that could impact customers, and to show that they are loyal to the area they service — using their resources to benefit customers and community.

North Bay Hydro's UtilityPULSE Report Card®			
<i>Performance</i>			
CATEGORY	NORTH BAY HYDRO	NATIONAL	ONTARIO
CREDIBILITY AND TRUST	87%	82%	81%

Base: Total respondents

Customer Experience Performance Rating (CEPr)

The focus of this rating by UtilityPULSE is four questions:

-  — 1. Are interactions with the organization professional and productive?
-  — 2. Is the organization “easy to deal with?”
-  — 3. Does the organization effectively meet your needs?
-  — 4. Does the organization provide high quality services?

These metrics together form the CEPr, and a high rating would suggest that a very large majority of customers have a belief they will have a good to excellent experience.

Customer Experience Performance rating (CEPr)			
	NORTH BAY HYDRO	NATIONAL	ONTARIO
CEPr: All respondents	89%	84%	83%

Customer Centric Engagement Index (CCEI)

UtilityPULSE identifies the six key dimensions of what defines customer engagement, and they are that customers feel: Empowered, valued, connected, inspired, future oriented, and performance oriented. Engagement can often be based on emotions — the way that customer feel, think and act towards the utility. Therefore, engagement should be based on whether customers feel they are satisfied with the services provided, as well as emotionally connected to the utility and its brand.

The Utility Customer Centric Engagement Rating is based on this metric.

Customer Centric Engagement Index (CCEI)			
	NORTH BAY HYDRO	NATIONAL	ONTARIO
CCEI: All respondents	86%	80%	81%

Customer Loyalty

UtilityPULSE considers customer loyalty an important metric for determining the health of a company and its customers. They believe that loyalty is based on three realities:

- Anticipation: What the customer anticipates or expects;
- Interaction: What actually occurred; and
- Reaction: How did the customer respond, or how did it make them feel.

It's about a focus on solving problems quickly, friendliness, approachability, personal customer service with a focus on treating customers "right," as well as easily accessible information and demonstrating that the utility "cares."

Additionally, UtilityPULSE considers three categories to reflect the concept of customer loyalty:

- Participation, including things like signing up for consumer programs;
- Compliance or influence, like asking the utility for advice on purchases or energy related issues; and
- Advocacy, such as providing testimonials or supporting the utility's positions.

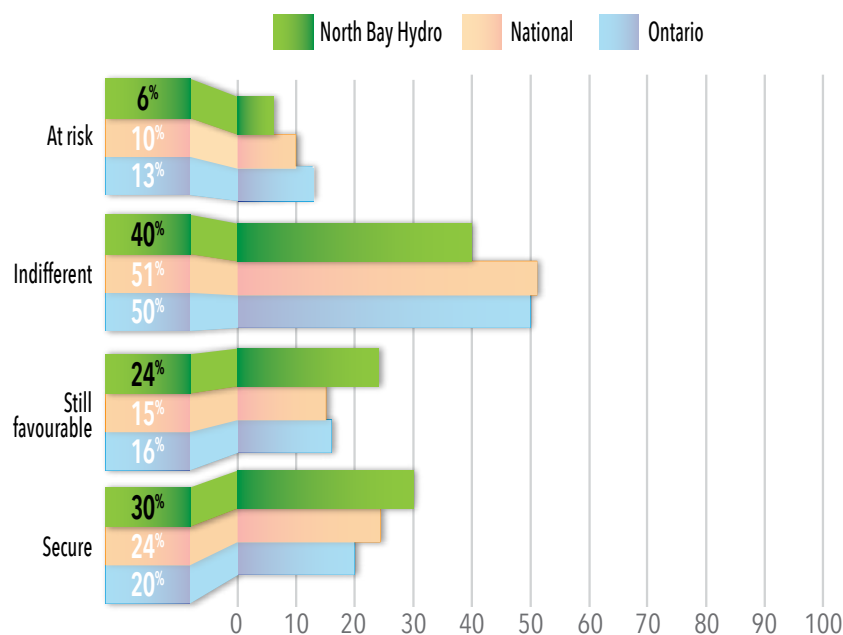
All considered important areas of consideration when addressing customer loyalty. Based on these metrics, UtilityPULSE offered groupings based on customer loyalty, and their potential to continue to enjoy overall satisfaction with their service.

Customer Loyalty Groups

North Bay Hydro				
	SECURE	FAVOURABLE	INDIFFERENT	AT RISK
2019	30%	24%	40%	6%
2017	18%	18%	50%	13%
2014	23%	8%	59%	10%

Base: Total respondents

The Loyalty Factor



UtilityPULSE Report Card for North Bay Hydro



Using categories, such as customer care, company image and management operations, as well as interdependent drivers such as: Price and value, customer service, company leadership, corporate stewardship, operational effectiveness and power quality and reliability — **the overall rating was: A.**

North Bay Hydro's UtilityPULSE Report Card®			
<i>Performance</i>			
CATEGORY	NORTH BAY HYDRO	NATIONAL	ONTARIO
CUSTOMER CARE	A	B⁺	B⁺
Price and value	B ⁺	B	B
Customer service	A	A	B ⁺
COMPANY IMAGE	A	B⁺	B⁺
Company leadership	A	B ⁺	B ⁺
Corporate stewardship	A	A	B ⁺
MANAGEMENT OPERATIONS	A⁺	A	A
Operational effectiveness	A ⁺	A	A
Power quality and reliability	A ⁺	A	A
OVERALL	A	A	B⁺

Base: Total respondents

Attachment C –CCC-1 – 2021 Final Budget Presentation dated July 29, 2020



2021 Final Budget

29-Jul-20

Confidential

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ASSUMPTIONS / DRIVERS - FINAL 2021 BUDGET

Rate Setting Assumptions:

- Cost of Service application for May 2021 rates
- High level estimation of apprx. 15% increase in distribution revenues (\$1.96M) ~ <5% increase to total bill (rate mitigation >10% total bill) ~ similar revenue deficiency/% increase as '15 application
 - Residential total monthly bill impact - approx. \$4.13 (2.84%) ~ small business total bill impact - apprx. \$7.70 (2.08%) ~ large commercial & industrial total bill impact - apprx. \$347.96 (1.30%)
 - Revenue deficiency based on ROE of 8.52% and working capital of 7.5% (current rates incorporate ROE of 9.3% and working capital 10.3%)

Preliminary 2021 Budget Assumptions:

- Preliminary 2021 OM&A costs were \$7.56M, \$285k higher than 2020 budget and included following incremental costs:
 - \$102k in communications related costs (CX engagement outcome) ~ \$600k in tree trimming work (\$40k more than '19) ~ full cost of add't employee in Finance ~ use of contractor for locates/re-tasking current employee
- Prelim 2021 capital spending included \$5.48M for construction (including the final section of Ski Club, MacBeth UG, Hwy# 11, and Wallace Rd.) and general plant of \$891k
 - \$130k quonset hut for backyard ~ \$130k in bldg repairs (assessment completed in 2019)

Final 2021 Budget Assumptions:

Incremental Spending - Final 2021 Budget vs. Prelim 2021 Budget

- Additional incremental spending proposed in final 2021 budget includes OM&A costs of **\$770k** and capital of **\$304k**

OM&A - Cost Description	Dpmt	\$
OEB Assessments	Admin	32,520
Conditions of Service Engagement	Admin	50,000
GIS License Upgrades	IT	35,063
Smart Meters	IT	20,096
Administrative Assistant	HR	58,015
Health and Safety/Corporate Policies	Ops	40,000
Policies/Process Mapping/Best Practices Review (Billing)	Ops	50,000
Operations - Succession/Add't Manager	Ops	162,504
Tree Trimming	Ops	69,500
Joint Use Costs	Ops	24,100
Pole Testing - OH Mtn Work	Ops	33,900
Cable Testing - UG Mtn Work	Ops	41,625
Arc Flash Study - System & Stations	Ops	110,000
Substation - Electricity Costs	Ops	28,240
TOTAL OM&A COSTS		755,563

Capital - Cost Description	Dpmt	\$
Operations - Succession/Add't Manager	Ops	139,148
Transformer Costs - Average 5YR Spend	Ops	176,724
Other Adjustments	Ops	(18,871)
Fleet - Trk# 43 (Boom & Aerial Device)	Ops	214,084
Fleet - Trk# 34 (2021-Cab & Chassis / 2022-Aerial Device)	Ops	(224,841)
Overall cost increase \$120k due to truck type		
IT	IT	28,350
TOTAL CAPITAL COSTS		314,594

General Assumptions

- Borrowing of \$6.2M - interest rate impacts on COS
- Revenue - flat consumption & customer growth for distribution revenue ~ updated w/ load forecast info
 - Other revenue increased **\$238k** due to changes in treatment of OEB approved rate increases (for third party attachments) - offset to distribution revenue for rate purposes
- Actuarial revaluation (every 3 years) - will have OCI impacts / Future Tax impacts - no assumptions budgeted at this time
- SWAP - assumption used as no change in valuation
- Taxes - methodology utilized 5YR average % of current PILs vs. Future (future taxes result in net \$0 impact on P&L) ~ budget freezes regulatory assets/liabilities and EFB which can have material impacts on calculation - will change based on rate models and final roll-up
- Cost of Service application for May 2021 rates - application costs approx \$790k - expensed over following 5 years (2021-2025)
- Normal dividends per policy forecasted at \$578k in 2021
- OEB ROE forecasted at 6.75% in 2021
- Proposed rate impacts are for distribution revenue only (fixed / variable rates) ~ does not incorporate rates for deferral account dispositions

ASSUMPTIONS / DRIVERS - FINAL 2021 BUDGET

2022-2025 Projections

- Cost of Service application for May 2021 rates
 - ROE 8.52% ~ working capital 7.5% (current = ROE 9.3% / working capital 10.3%)
- Capital infrastructure costs expected to remain flat - prelim DSP as follows with comparatives to prior DSP filed with OEB in 2015

Distribution System Plan - Prelim							
Category	2015-2019		2021-2025	Variance vs. Actual (2015-2019)		Variance vs. DSP (2015-2019)	
	DSP	ACTUAL	DSP	\$	%	\$	%
System Renewal	21,923,084	20,897,709	20,252,031	(645,678)	-3%	(1,671,054)	-8%
System Service	931,450	3,688,963	1,585,110	(2,103,853)	-57%	653,660	70%
System Access	5,587,006	5,531,467	4,745,807	(785,660)	-14%	(841,199)	-15%
General Plant	2,686,703	3,245,130	3,661,348	416,218	13%	974,645	36%
Total Capital Spending	31,128,243	33,363,269	30,244,295	(3,118,974)	-9%	(883,948)	-3%

- O&M increases remain relatively stable YoY with staffing in place, tree trimming costs allow for 4YR cycle to begin in 2026 (for next COS) at lower overall costs, preventative maintenance program in place
- Labour increases per CBA over term @ 2% from 2020-2023
- Annual borrowing of \$5.6M-\$6.2M
- Normal dividends per policy of \$735k / year over 5YR period
- ERH not included in projections

Summary of 2019 / 2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	<u>2019 Actual</u>	<u>2020 Budget</u>	<u>2020 Forecast</u>	<u>Variance</u>	<u>Prelim 2021 Budget</u>	<u>Final 2021 Budget</u>	<u>Variance</u>	<u>Variance - '20 Forecast</u>
<u>Statement of Earnings</u>								
Customer Billings	70,498,828	85,974,325	78,382,092	(7,592,233)	87,288,261	87,286,811	(1,450)	8,904,719
Other Revenue	649,219	585,582	596,271	10,689	599,065	836,774	237,709	240,503
Total Revenue	71,148,048	86,559,907	78,978,363	(7,581,544)	87,887,326	88,123,585	236,259	9,145,222
Net Distribution Revenue	12,551,811	12,629,384	12,480,836	(148,547)	13,943,320	14,139,209	195,889	1,658,373
Cost of Power	57,947,018	73,344,941	65,901,255	(7,443,686)	73,344,941	73,147,601	(197,340)	7,246,346
OM&A	6,618,346	7,290,136	7,290,136	-	7,575,882	8,346,684	770,802	1,056,548
Depreciation	2,981,841	3,264,084	3,230,932	(33,152)	3,416,402	3,427,178	10,776	196,246
(Gain)/loss on disposal of PP&E	90,272	47,391	47,391	0.00	47,391	69,191	21,800	21,800
Property Taxes, Donations, Exchange	122,825	143,365	143,365	-	146,644	146,644	-	3,278
Total Operating Expenses	67,760,302	84,089,918	76,613,080	(7,476,838)	84,531,260	85,137,298	606,038	8,524,218
Income from Operating activities	3,387,746	2,469,989	2,365,283	(104,706)	3,356,066	2,986,287	(369,780)	621,004
Finance Income	392,466	313,022	239,320	(73,701)	313,148	321,517	8,370	82,197
Finance Costs	1,205,365	1,211,471	1,197,901	(13,570)	1,258,253	1,247,525	(10,729)	49,624
Investment Income	605,148	-	85,000	85,000	-	-	-	(85,000)
Gain/(Loss) Unrealized Loss on Swap	(681,401)	-	-	-	-	-	-	-
Income before payment in lieu of taxes	2,498,595	1,571,539	1,491,702	(79,838)	2,410,961	2,060,279	(350,681)	568,578
Payment in lieu of taxes	122,584	78,577	74,585	(3,992)	120,548	103,014	(17,534)	28,429
Future	411,365	334,738	311,378	(23,360)	513,535	438,839	(74,695)	127,461
Income Taxes	533,949	413,315	385,963	(27,352)	634,083	541,853	(92,229)	155,890
Profit before net movement in regulatory deferral account balances	1,964,646	1,158,224	1,105,738	(52,486)	1,776,878	1,518,426	(258,452)	412,687
Net movement in regulatory accounts	167,860	333,654	216,428	(117,226)	505,107	421,370	(83,738)	204,942
Other comprehensive income (EFB adjustment)	(194,340)	-	-	-	-	-	-	-
Profit for the year and net movement in regulatory account balances	1,938,166	1,491,878	1,322,166	(169,712)	2,281,985	1,939,795	(342,190)	617,629
EBITDA	6,458,726	5,859,979	5,570,195		6,882,016	6,535,165		
EBITDA (Rev - COP)	49%	44%	43%		47%	44%		
<u>Balance Sheet</u>								
Cash	11,244,114	8,168,013	8,202,172		8,941,277	8,486,233		
Working Capital	11,688,015	11,184,985	11,803,307		11,437,058	11,330,168		
% of OM&A Plus Power	18%	14%	16%		14%	14%		
Gross Capital Spending	6,589,160	6,622,820	6,388,186		6,377,449	6,692,043		
Net Fixed Assets	72,267,652	75,559,020	75,377,515		78,472,675	78,573,189		
Annual increase Net Fixed Assets					104%	104%		
New Borrowing - Capital	5,500,000	6,000,000	6,000,000		5,800,000	6,200,000		
Principle Balances	40,438,655	42,425,104	42,426,113		43,823,309	44,208,317		
Dividends Per Policy	779,025	492,877	359,466		637,189	544,881		
Special Dividends	550,000	-	-		-	-		
Total Shareholders Equity	39,169,036	40,476,971	40,131,736		42,121,768	41,526,651		

Summary of 2019 / 2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	<u>2019 Actual</u>	<u>2020 Budget</u>	<u>2020 Forecast</u>	<u>Variance</u>	<u>Prelim 2021 Budget</u>	<u>Final 2021 Budget</u>	<u>Variance</u>	<u>Variance - '20 Forecast</u>
<u>Covenants</u>								
<u>OEB</u>								
Achieved ROE %	6.25%	2.91%	2.42%		7.23%	6.31%		
Deemed ROE %	9.30%	9.30%	9.30%		8.52%	8.52%		
Difference - max deadband 3%	-3.05%	-6.39%	-6.88%		-1.29%	-2.21%		
Debt 60% (based on rate base)	56%	55%	56%		57%	58%		
Equity 40% (based on rate base)	44%	45%	44%		43%	42%		
OEB Scorecard Leverage Debt/Equity <1.5	1.03	1.05	1.02		1.04	1.07		
OEB Scorecard Liquidity Current Ratio >1	1.70	1.69	1.69		1.68	1.72		
<u>Infrastructure Ontario</u> <i>loan repaid 2021</i>								
Debt 60%	52%	52%	52%					
Equity 40%	48%	48%	48%					
Debt Service Coverage >1.30:1	1.4	1.2	1.1					
Current Ratio	1.71	1.69	1.83					
Surplus over loan balance	11,426,823	11,089,954	11,686,640					
<u>TD</u>								
Debt 60%	45%	46%	46%		45%	46%		
Equity 40%	55%	54%	54%		55%	54%		
Debt Service Coverage >1.20:1	1.34	1.12	1.12		1.21	1.16		
Free Cash Flow	178,012	138,980	289,583		529,351	365,283		

Summary of 2019 / 2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	<u>2020 Forecast</u>	<u>Final 2021 Budget</u>	<u>2022 Forecast</u>	<u>2023 Forecast</u>	<u>2024 Forecast</u>	<u>2025 Forecast</u>	<u>5 Year Total</u>
<u>Statement of Earnings</u>							
Customer Billings	78,382,092	87,286,811	91,480,179	95,154,309	98,994,827	103,027,421	475,943,547
Other Revenue	596,271	836,774	854,817	867,969	881,148	894,176	4,334,883
Total Revenue	78,978,363	88,123,585	92,334,996	96,022,278	99,875,975	103,921,597	480,278,430
	12,480,836	14,139,209	14,907,377	15,022,752	15,139,120	15,274,481	74,482,940
Cost of Power	65,901,255	73,147,601	76,572,802	80,131,557	83,855,708	87,752,939	401,460,607
OM&A	7,290,136	8,346,684	8,282,799	8,448,706	8,600,305	8,739,081	42,417,574
Depreciation	3,230,932	3,427,178	3,717,764	3,845,378	3,864,259	3,907,957	18,762,535
(Gain)/loss on disposal of PP&E	47,391	69,191	69,191	69,191	69,191	69,191	345,957
Property Taxes, Donations, Exchange	143,365	146,644	149,552	152,548	155,633	158,811	763,187
Total Operating Expenses	76,613,080	85,137,298	88,792,108	92,647,380	96,545,095	100,627,979	463,749,861
Income from Operating activities	2,365,283	2,986,287	3,542,888	3,374,897	3,330,880	3,293,618	16,528,569
Finance Income	239,320	321,517	317,026	322,603	328,280	334,059	1,623,484
Finance Costs	1,197,901	1,247,525	1,276,305	1,309,811	1,343,668	1,318,562	6,495,871
Investment Income	85,000	-	-	-	-	-	-
Gain/(Loss) Unrealized Loss on Swap	-	-	-	-	-	-	-
Income before payment in lieu of taxes	1,491,702	2,060,279	2,583,609	2,387,689	2,315,492	2,309,114	11,656,183
Payment in lieu of taxes	74,585	103,014	129,180	119,384	115,775	115,456	582,809
Future	311,378	438,839	550,309	508,578	493,200	491,841	2,482,767
Income Taxes	385,963	541,853	679,489	627,962	608,974	607,297	3,065,576
Profit before net movement in regulatory deferral account balances	1,105,738	1,518,426	1,904,120	1,759,727	1,706,517	1,701,817	8,590,607
Net movement in regulatory accounts	216,428	421,370	532,839	491,108	475,730	474,371	2,395,417
Other comprehensive income (EFB adjustment)	-	-	-	-	-	-	-
Profit for the year and net movement in regulatory account balances	1,322,166	1,939,795	2,436,958	2,250,835	2,182,247	2,176,189	10,986,024
EBITDA	5,570,195	6,535,165	7,661,869	7,627,069	7,607,609	7,619,824	37,051,537
EBITDA (Rev - COP)	43%	44%	49%	48%	47%	47%	47%
<u>Balance Sheet</u>							
Cash	8,202,172	8,486,233	9,151,972	9,156,574	8,632,244	7,892,495	
Working Capital	11,803,307	11,330,168	11,788,343	11,585,324	11,216,102	10,694,586	
% of OM&A Plus Power	16%	14%	14%	13%	12%	11%	
Gross Capital Spending	6,388,186	6,692,043	5,902,311	5,645,613	5,811,702	6,192,626	30,244,295
Net Fixed Assets	75,377,515	78,573,189	80,688,545	82,419,588	84,297,840	86,513,318	
Annual increase Net Fixed Assets		104%	103%	102%	102%	103%	
New Borrowing - Capital	6,000,000	6,200,000	5,900,000	5,600,000	5,800,000	6,200,000	29,700,000
Principle Balances	42,426,113	44,208,317	45,138,260	45,120,670	44,740,635	44,594,342	
Dividends Per Policy	359,466	544,881	701,258	686,418	658,789	653,220	3,244,566
Special Dividends	-	-	-	-	-	-	
Total Shareholders Equity	40,131,736	41,526,651	43,262,351	44,826,768	46,350,226	47,873,194	

Summary of 2019 / 2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	<u>2020 Forecast</u>	<u>Final 2021 Budget</u>	<u>2022 Forecast</u>	<u>2023 Forecast</u>	<u>2024 Forecast</u>	<u>2025 Forecast</u>	<u>5 Year Total</u>
<u>Covenants</u>							
<u>OEB</u>							
Achieved ROE %	2.42%	6.31%	7.64%	6.91%	6.58%	6.29%	
Deemed ROE %	9.30%	8.52%	8.52%	8.52%	8.52%	8.52%	
Difference - max deadband 3%	-6.88%	-2.21%	-0.88%	-1.61%	-1.94%	-2.23%	
Debt 60% (based on rate base)	56%	58%	57%	56%	54%	53%	
Equity 40% (based on rate base)	44%	42%	43%	44%	46%	47%	
OEB Scorecard Leverage Debt/Equity <1.5	1.02	1.07	1.04	1.01	0.97	0.93	
OEB Scorecard Liquidity Current Ratio >1	1.69	1.72	1.71	1.66	1.62	1.58	
<u>Infrastructure Ontario</u>							
Debt 60%	52%						
Equity 40%	48%						
Debt Service Coverage >1:1	1.1						
Current Ratio	1.83						
Surplus over loan balance	11,686,640						
<u>TD</u>							
Debt 60%	46%	46%	46%	45%	44%	43%	
Equity 40%	54%	54%	54%	55%	56%	57%	
Debt Service Coverage >1.20:1 Unfinanced Capex	1.12	1.16	1.26	1.12	1.03	1.02	
Free Cash Flow	289,583	365,283	895,277	148,994	(413,395)	(529,147)	

2020 Forecast / Final 2021 Budget - Capital Summary

	<u>Budget</u> 2020	<u>Forecast</u> 2020	<u>Variance</u> 20F v 20B	<u>Prelim</u> 2021	<u>Final</u> 2021	<u>Variance</u> 21Pro v 21Pre	<u>Variance</u> 21Pro v 20F
<u>DISTRIBUTION SYSTEM ASSETS</u>							
GENERATOR CONNECTIONS	-	-	-	-	-	-	-
MAJOR BETTERMENTS	2,985,675	2,985,675	-	3,218,441	3,379,837	161,395	394,162
VOLTAGE CONVERSION	165,807	165,807	-	-	-	-	(165,807)
MINOR BETTERMENTS	589,185	589,185	-	589,410	558,674	(30,736)	(30,511)
PRIMARY SERVICES	341,409	341,409	-	341,291	330,867	(10,424)	(10,542)
SECONDARY SERVICES	284,691	284,691	-	284,334	296,184	11,850	11,492
SUBDIVISIONS	111,006	111,006	-	87,410	83,756	(3,653)	(27,250)
TRANSFORMER PURCHASES - 850 & 851	205,071	205,071	-	154,394	331,118	176,724	126,046
METERING	142,738	142,738	-	131,234	130,134	(1,100)	(12,604)
SUBSTATION UPGRADES - 815	427,540	427,540	-	574,371	572,999	(1,372)	145,459
ROAD PROJECTS	105,113	105,113	-	105,061	99,378	(5,683)	(5,735)
TOTAL DISTRIBUTION SYSTEM ASSETS	5,358,236	5,358,236	-	5,485,946	5,782,947	297,001	424,711
<u>GENERAL ASSETS</u>							
OFFICE UPGRADES / FURNITURE	306,964	306,964	-	290,413	290,413	-	(16,551)
TRANSPORTATION EQUIPMENT	544,536	309,902	(234,634)	344,490	333,733	(10,757)	23,831
TOOL REQUIREMENTS	58,614	58,614	-	40,000	40,000	-	(18,614)
IT REQUIREMENTS	354,470	354,470	-	216,600	244,950	28,350	(109,520)
TOTAL GENERAL ASSETS	1,264,584	1,029,950	(234,634)	891,503	909,096	17,593	(120,854)
TOTAL CAPITAL SPENDING	6,622,820	6,388,186	(234,634)	6,377,449	6,692,043	314,594	303,857
CONTRIBUTED CAPITAL	(560,311)	(560,311)	-	(540,176)	(551,144)	(10,968)	9,166
TOTAL NET CAPITAL SPENDING	6,062,510	5,827,876	(234,634)	5,837,273	6,140,899	303,626	313,023

Distribution Rate Impacts (Subject to Change)

TOTAL BILL IMPACTS									
	Residential			GS <50			GS >50		
	Current	Proposed	Variance	Current	Proposed	Variance	Current	Proposed	Variance
Fixed Rate	29.19	34.20	5.01	25.00	28.84	3.84	315.75	315.75	-
Variable Rate	-	-	-	0.0192	0.0222	0.0030	2.6359	3.7975	1.1616
Distribution Revenue Increase - \$	29.19	\$34.20	\$5.01	\$64.80	\$74.84	\$10.04	\$1,564.68	\$2,093.21	\$528.53
Distribution Revenue Increase - %			17.16%			15.49%			33.78%
Total Bill, excluding HST / Ontario Energy Rebate - \$	\$145.40	\$149.53	\$4.13	\$369.42	\$377.12	\$7.70	\$26,855.95	\$27,203.91	\$347.96
Total Bill, excluding HST / Ontario Energy Rebate - %			2.84%			2.08%			1.30%
Annual Impact			49.56			92.40			4,175.52

TOTAL BILL IMPACTS									
	Intermediate			Sentinel Lights			Street Lights		
	Current	Proposed	Variance	Current	Proposed	Variance	Current	Proposed	Variance
Fixed Rate	6,734.18	6,734.18	-	5.10	6.20	1.10	5.06	2.17	(2.89)
Variable Rate	1.2378	1.7636	0.5258	17.7881	21.6138	3.8257	27.1545	5.9003	(21.2542)
Distribution Revenue Increase - \$	10,459.94	\$11,721.86	\$1,261.92	22.89	\$27.81	\$4.92	\$40,208.06	\$14,560.04	(\$25,648.02)
Distribution Revenue Increase - %			12.06%			21.49%			-63.79%
Total Bill, excluding HST / Ontario Energy Rebate	\$185,140.80	\$185,126.23	(\$14.57)	\$47.88	\$52.64	\$4.76	\$63,129.57	\$35,970.62	(\$27,158.95)
Total Bill, excluding HST / Ontario Energy Rebate - %			-0.01%			9.94%			-43.02%
Annual Impact			(174.84)			57.12			(325,907.40)

TOTAL BILL IMPACTS			
	Unmetered Scattered Load		
	Current	Proposed	Variance
Fixed Rate	5.53	6.39	0.86
Variable Rate	5.5300	6.3900	0.8600
Distribution Revenue Increase - \$	7.44	\$8.59	\$1.15
Distribution Revenue Increase - %			15.46%
Total Bill, excluding HST / Ontario Energy Rebate - \$	\$30.47	\$31.45	\$0.98
Total Bill, excluding HST / Ontario Energy Rebate - %			3.22%
Annual Impact			11.76

	2015 Application	2015 Decision & Order	2021 Application
Revenue Deficiency	1,663,101	800,632	1,965,266
Distribution Revenue (Current)	11,031,906	10,992,511	12,731,316
Distribution Revenue Increase - %	15.08%	7.28%	15.44%
**doesn't take into account DVAs (significant in 2015 re; 1576) + NW/CN incorporates reduction in loss factor			

2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	2020 Forecast	Final 2021 Budget - w/ COS	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2020 - 2025
<u>Income Statement</u>	12,480,836	14,139,209	14,907,377	15,022,752	15,139,120	15,274,481	86,963,776
Revenue							
Customer Billings	78,382,092	87,286,811	91,480,179	95,154,309	98,994,827	103,027,421	554,325,638
Other operating revenue	596,271	836,774	854,817	867,969	881,148	894,176	4,931,154
Total Revenue	78,978,363	88,123,585	92,334,996	96,022,278	99,875,975	103,921,597	559,256,793
Operating expenses							
Cost of Power	65,901,255	73,147,601	76,572,802	80,131,557	83,855,708	87,752,939	467,361,863
Operations	3,336,359	3,925,431	3,836,853	3,878,458	3,905,336	3,904,203	22,786,639
Finance	1,813,628	2,034,877	2,065,400	2,108,224	2,152,201	2,197,367	12,371,697
Engineering	0	20,000	20,000	20,000	20,000	20,000	100,001
Human Resources	352,092	434,725	434,250	470,620	504,462	554,415	2,750,563
Administration	1,788,057	1,931,651	1,926,296	1,971,404	2,018,306	2,063,095	11,698,810
Depreciation and amortization	3,230,932	3,427,178	3,717,764	3,845,378	3,864,259	3,907,957	21,993,467
Gain/(loss) on disposal of property, plant & equipment	47,391	69,191	69,191	69,191	69,191	69,191	393,348
Gain/(loss) on foreign exchange	15,000	15,000	15,000	15,000	15,000	15,000	90,000
Property taxes	93,665	96,944	99,852	102,848	105,933	109,111	608,353
Charitable donation	34,700	34,700	34,700	34,700	34,700	34,700	208,200
Total Operating	76,613,080	85,137,298	88,792,108	92,647,380	96,545,095	100,627,979	540,362,941
	7,290,136	8,346,684	8,282,799	8,448,706	8,600,305	8,739,081	49,707,710
Income from Operating activities	2,365,283	2,986,287	3,542,888	3,374,897	3,330,880	3,293,618	18,893,852
Finance Income	239,320	321,517	317,026	322,603	328,280	334,059	1,862,804
Finance Costs	1,197,901	1,247,525	1,276,305	1,309,811	1,343,668	1,318,562	7,693,772
Investment Income	85,000	-	-	-	-	-	85,000
Change in Market to Market Interest - SWAP	-	-	-	-	-	-	-
Income before payment in lieu of taxes	1,491,702	2,060,279	2,583,609	2,387,689	2,315,492	2,309,114	13,147,884
Payment in lieu of taxes	74,585	103,014	129,180	119,384	115,775	115,456	657,394
Future	311,378	438,839	550,309	508,578	493,200	491,841	2,794,145
Income Taxes	385,963	541,853	679,489	627,962	608,974	607,297	3,451,539
	26%	26%	26%	26%	26%	26%	
Profit before net movement in regulatory deferral account balances	1,105,738	1,518,426	1,904,120	1,759,727	1,706,517	1,701,817	9,696,345
Net movement in regulatory account balances	216,428	421,370	532,839	491,108	475,730	474,371	2,611,845
Profit for the year and net movement in regulatory account balances	1,322,166	1,939,795	2,436,958	2,250,835	2,182,247	2,176,189	12,308,190
Other comprehensive Income							
Remeasurement of defined benefit plan	-	-	-	-	-	-	-
Remeasurement of sick leave accrual	-	-	-	-	-	-	-
Other comprehensive Income	-	-	-	-	-	-	-
Net income for the period	1,322,166	1,939,795	2,436,958	2,250,835	2,182,247	2,176,189	12,308,190
Retained earnings, beginning of the year	19,657,436	20,620,136	22,015,050	23,750,751	25,315,168	26,838,626	19,657,436
Net income	1,322,166	1,939,795	2,436,958	2,250,835	2,182,247	2,176,189	12,308,190
Dividends	(359,466)	(544,881)	(701,258)	(686,418)	(658,789)	(653,220)	(3,604,032)
Retained earnings, end of month	20,620,136	22,015,050	23,750,751	25,315,168	26,838,626	28,361,594	28,361,594
EBITDA	5,570,195	6,535,165	7,661,869	7,627,069	7,607,609	7,619,824	42,621,732
EBITDA % of Revenue	42.6%	43.6%	48.6%	48.0%	47.5%	47.1%	46.4%

2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	2020 Forecast	Final 2021 Budget - w/ COS	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast
<u>Balance Sheet</u>						
<u>ASSETS</u>						
Current assets						
Cash and short-term investments	8,202,172	8,486,233	9,151,972	9,156,574	8,632,244	7,892,495
Accounts receivable	7,368,769	7,778,531	8,127,040	8,432,317	8,751,672	9,087,260
Unbilled revenue	7,963,217	8,592,237	9,005,018	9,366,688	9,744,737	10,141,692
Intercompany loan receivable	829,094	829,094	829,094	829,094	829,094	829,094
Inventory	684,788	684,788	698,484	712,454	726,703	741,237
Prepaid expenses	997,763	588,359	586,162	587,582	589,032	590,491
Prepaid Payments in lieu of taxes	-	-	-	-	-	-
Total current assets	26,045,804	26,959,243	28,397,771	29,084,709	29,273,483	29,282,269
Property, plant and equipment						
Electrical distribution assets	129,115,917	134,280,062	139,080,917	143,881,773	148,682,628	153,483,484
General assets	14,065,891	14,748,716	15,201,027	15,396,640	15,758,342	16,500,968
WIP	1,674,803	1,904,252	1,904,252	1,904,252	1,904,252	1,904,252
Gross Assets	144,856,611	150,933,031	156,186,197	161,182,665	166,345,223	171,888,704
Accumulated depreciation	(69,479,096)	(72,359,842)	(75,497,652)	(78,763,077)	(82,047,383)	(85,375,386)
Total property, plant and equipment	75,377,515	78,573,189	80,688,545	82,419,588	84,297,840	86,513,318
Other Assets - Financial Instruments	513,527	513,526	513,526	513,526	513,526	513,526
Long Term Prepaid	-	529,033	370,323	211,613	52,903	-
Future Income Taxes	1,014,049	575,210	24,901	(483,677)	(976,877)	(1,468,718)
TOTAL ASSETS	102,950,894	107,150,200	109,995,065	111,745,760	113,160,875	114,840,395
Regulatory Deffered Account Debit Balances	2,421,856	914,223	914,223	914,223	914,223	914,223
Total Assets and Regulatory Deferral Account Balances	105,372,750	108,064,423	110,909,288	112,659,982	114,075,098	115,754,618

2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	2020 Forecast	Final 2021 Budget - w/ COS	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast
LIABILITIES						
Current liabilities						
Accounts payable and accrued liabilities	8,975,187	9,826,508	10,159,327	10,486,840	10,878,577	11,311,885
Deferred Revenue	583,606	583,606	583,606	583,606	583,606	583,606
Payments in lieu of taxes	32,305	-	-	-	-	-
Current portion of long-term customer deposits	94,281	94,281	94,281	94,281	94,281	94,281
Current portion of Smart Meter	116,667	-	-	-	-	-
Current portion of Capital Loan 2014	419,492	432,661	446,243	382,552	-	-
Current portion of Capital Loan 2015	608,366	623,440	638,886	654,716	557,971	-
Current portion of Capital Loan 2016	493,932	505,712	517,776	530,129	542,776	511,367
Current portion of CNB Loan replacement	842,871	864,186	886,040	908,447	931,420	954,974
Current portion of Capital Loan 2017	479,548	493,542	507,946	522,769	538,025	553,726
Current portion of Capital Loan 2018	395,442	424,494	439,811	455,681	472,124	489,160
Current portion of Capital Loan 2019	508,061	520,263	532,728	545,492	558,561	571,944
Current portion of Capital Loan 2020	538,116	551,008	564,210	577,728	591,570	605,744
Current portion of Capital Loan 2021	-	554,751	568,326	582,233	596,480	611,076
Current portion of Capital Loan 2022 - 2025	-	-	515,623	1,020,288	1,557,366	2,145,296
Inter Company	154,623	154,623	154,623	154,623	154,623	154,623
Total current liabilities	14,242,497	15,629,075	16,609,428	17,499,385	18,057,381	18,587,683
Long-term liabilities						
Customer deposits	676,663	676,663	676,663	676,663	676,663	676,663
Employee future benefits	4,316,342	4,316,342	4,316,342	4,316,342	4,316,342	4,316,342
Sick Leave Accrual	220,400	220,400	220,400	220,400	220,400	220,400
Deferred Revenue Contributed Capital	4,346,075	4,780,626	5,177,336	5,562,269	5,935,424	6,296,802
Capital Loan 2014	1,261,456	828,795	382,552	-	-	-
Capital Loan 2015	2,475,013	1,851,573	1,212,687	557,971	-	-
Capital Loan 2016	2,607,581	2,102,048	1,584,272	1,054,143	511,367	-
CNB Loan replacement	15,425,765	14,561,579	13,675,538	12,767,092	11,835,672	10,880,698
Capital Loan 2017	3,089,771	2,596,228	2,088,283	1,565,514	1,027,488	473,762
Capital Loan 2018	3,327,447	2,888,684	2,448,872	1,993,191	1,521,067	1,031,907
Capital Loan 2019	4,374,703	3,853,228	3,320,500	2,775,008	2,216,447	1,644,503
Capital Loan 2020	5,461,884	4,910,876	4,346,666	3,768,937	3,177,367	2,571,624
Capital Loan 2021	-	5,645,249	5,076,923	4,494,690	3,898,209	3,287,133
Capital Loan 2022 - 2025	-	-	5,384,377	9,964,089	14,206,724	18,261,428
Total long-term liabilities	47,583,099	49,232,291	49,911,411	49,716,309	49,543,171	49,661,262
Shareholder's equity						
Capital stock	19,511,601	19,511,601	19,511,601	19,511,601	19,511,601	19,511,601
Retained earnings, beginning of year	19,657,435	20,620,135	22,015,050	23,750,750	25,315,167	26,838,625
Dividends	(359,466)	(544,881)	(701,258)	(686,418)	(658,789)	(653,220)
Net Income	1,322,166	1,939,795	2,436,958	2,250,835	2,182,247	2,176,189
Retained earnings, end of year	20,620,135	22,015,050	23,750,750	25,315,167	26,838,625	28,361,593
Total shareholder's equity	40,131,736	41,526,651	43,262,351	44,826,768	46,350,226	47,873,194
TOTAL LIABILITIES AND SHAREHOLDER'S EQUITY	101,957,331	106,388,017	109,783,190	112,042,462	113,950,778	116,122,139
Regulatory Liability - Future Income Taxes	1,014,049	575,210	24,901	(483,677)	(976,877)	(1,468,718)
Regulatory liabilities	2,401,370	1,101,197	1,101,197	1,101,197	1,101,197	1,101,197
Total Regulatory Deferral account credit balances and deferrals	3,415,419	1,676,407	1,126,098	617,520	124,321	(367,521)
Total Equity, Liabilities and Regulatory Deferral Account Balance	105,372,750	108,064,423	110,909,288	112,659,983	114,075,098	115,754,618

2020 Forecast / Final 2021 Budget / 2022-2025 Forecast

	2020 Forecast	Final 2021 Budget - w/ COS	2022 Forecast	2023 Forecast	2024 Forecast	2025 Forecast	2020 - 2025
<u>Cash Flow</u>							
CASH PROVIDED BY (USED IN):							
OPERATING ACTIVITIES							
Net income for the period	\$ 1,322,166	\$ 1,939,795	\$ 2,436,958	\$ 2,250,835	\$ 2,182,247	\$ 2,176,189	\$ 12,308,190
Adjustments for:							
Adjustments to reconcile income to net cash used in operating activities:							
Amortization of property, plant & equipment(net of amortization of contributions in aid of construction	3,230,932	3,427,178	3,717,764	3,845,378	3,864,259	3,907,957	21,993,467
Amortization of contributions in aid of construction	(104,244)	(116,593)	(133,289)	(145,067)	(156,845)	(168,623)	(824,661)
Future Income Taxes	311,378	438,839	550,309	508,578	493,200	491,841	2,794,145
Gain/loss on sale of property, plant and equipment	47,391	69,191	69,191	69,191	69,191	69,191	393,348
Change in Ecobility	360,120	-	-	-	-	-	360,120
Unrealized gain/loss on Investments	(1)	1	-	-	-	-	-
Accrual for employee future benefits	-	-	-	-	-	-	-
Sick Leave Expense	-	-	-	-	-	-	-
	5,167,743	5,758,411	6,640,933	6,528,915	6,452,052	6,476,555	24,716,419
Change in non-cash operating working capital:							
Accounts receivable	2,154,009	(409,762)	(348,509)	(305,277)	(319,355)	(335,587)	435,519
Unbilled revenue	(1,953,207)	(629,019)	(412,782)	(361,670)	(378,048)	(396,956)	(4,131,682)
Inventory	(5,604)	-	(13,696)	(13,970)	(14,249)	(14,534)	(62,053)
Prepaid expenses	(389,760)	409,404	2,197	(1,420)	(1,450)	(1,459)	17,511
Accounts payable and accrued liabilities	(2,552,546)	851,321	332,819	327,513	391,737	433,308	(215,848)
Deferred Revenue	(205,682)	-	-	-	-	-	(205,682)
Payments in lieu of taxes	(55,413)	(32,305)	-	-	-	-	(87,718)
Long Term Prepaid	-	(529,033)	158,710	158,710	158,710	52,903	-
Intercompany	(58,088)	-	-	-	-	-	(58,088)
Increase (decrease) in customer deposits	(56,011)	-	-	-	-	-	(56,011)
Cash provided by operating activities	2,045,440	5,419,016	6,359,673	6,332,800	6,289,397	6,214,231	32,660,558
INVESTING ACTIVITIES							
Purchase of property, plant and equipment	(6,388,186)	(6,692,043)	(5,902,311)	(5,645,613)	(5,811,702)	(6,192,626)	(36,632,481)
Proceeds on sale of property, plant and equipment	-	-	-	-	-	-	-
Decrease (increase) in regulatory assets/liabilities	(609,756)	(231,379)	(550,309)	(508,578)	(493,200)	(491,841)	(2,885,063)
Intercompany Loan Receivable	(277,743)	-	-	-	-	-	(277,743)
Cash used in investment activities	(7,275,685)	(6,923,422)	(6,452,620)	(6,154,191)	(6,304,902)	(6,684,467)	(39,795,287)
FINANCING ACTIVITIES							
Contributions received in aid of construction	560,311	551,144	530,000	530,000	530,000	530,000	3,231,455
Dividends / Dividends in kind	(359,466)	(544,881)	(701,258)	(686,418)	(658,789)	(653,220)	(3,604,032)
Repayment Smart Meter Loan	(350,000)	(116,667)	-	-	-	-	(466,667)
Repayment Capital Loan 2014	(406,723)	(419,492)	(432,661)	(446,243)	(382,552)	-	(2,087,671)
Repayment Capital Loan 2015	(593,657)	(608,366)	(623,440)	(638,886)	(654,716)	(557,971)	(3,677,036)
Repayment Capital Loan 2016	(482,503)	(493,753)	(505,712)	(517,776)	(530,129)	(542,776)	(3,072,649)
Repayment CNB Loan replacement	(822,082)	(842,871)	(864,186)	(886,040)	(908,447)	(931,420)	(5,255,046)
Repayment Capital Loan 2017	(465,950)	(479,548)	(493,542)	(507,946)	(522,769)	(538,025)	(3,007,780)
Repayment Capital Loan 2018	(395,442)	(409,711)	(424,494)	(439,811)	(455,681)	(472,124)	(2,597,263)
Repayment Capital Loan 2019	(496,185)	(509,274)	(520,263)	(532,728)	(545,492)	(558,561)	(3,162,502)
Repayment Capital Loan 2020	6,000,000	(538,116)	(551,008)	(564,210)	(577,728)	(591,570)	3,177,367
Repayment Capital Loan 2021	-	6,200,000	(554,751)	(568,326)	(582,233)	(596,480)	3,898,209
Repayment Capital Loan 2022 - 2025	-	-	5,900,000	5,084,377	4,779,712	4,642,634	20,406,724
Cash provided by financing activities	2,188,302	1,788,468	758,685	(174,008)	(508,824)	(269,513)	3,783,110
Net increase in cash	(3,041,942)	284,062	665,739	4,601	(524,329)	(739,749)	(3,351,619)
Cash , beginning of period	11,244,115	8,202,173	8,486,233	9,151,972	9,156,574	8,632,244	11,244,115
Cash , end of year	\$ 8,202,173	\$ 8,486,234	\$ 9,151,972	\$ 9,156,574	\$ 8,632,244	\$ 7,892,495	\$ 7,892,496

Attachment D – CCC-17 – Critical Factors for Determining Wood Pole Health Report

(FILED IN CONFIDENCE)

Attachment E – CCC-20 – North Bay Hydro Distribution Limited Asset Condition Assessment



ASSET CONDITION ASSESSMENT REPORT

Prepared by:



December, 2013

EXECUTIVE SUMMARY

This report prepared by METSCO Energy Solutions Inc. (METSCO), documents results of the health and condition assessment exercise completed in December 2013. The report covers the fixed assets employed on the power distribution system owned and operated by North Bay Hydro Distribution Limited (North Bay Hydro). The report provides a comprehensive picture of the existing health and condition of the distribution system assets as of 2013 and provides quantitative estimates of the assets found in poor and very poor condition, requiring rehabilitation or replacement in the near term. The condition assessment of revenue meters is not included in this report, because a vast majority of the assets in this class are virtually brand new, replaced in the recent past under the province's smart metering initiative. Auxiliary assets, such as motor vehicles, tools and equipment and IT systems etc. are not covered in this report.

The methodology utilized in this study is an integral part of a risk based asset management strategy that is based on the Asset Management Standard PAS-55, a specification developed by British Standards Institute (BSI) and commonly employed by progressive electric utilities. A risk based asset management strategy determines the timing and scope of investments into asset renewal, based on the risk of an asset's failure determined by the condition of the asset and consequences of its failure in service.

The first step towards implementation of a risk based asset management approach is to develop a yard stick to measure and benchmark the health and condition of assets and to determine the risk of in-service failure of assets. A comprehensive methodology for development of health indices for various assets has been developed and documented in Section 3 of the report, to quantitatively measure the health of all fixed assets employed on North Bay Hydro's distribution network, including the assets employed in substations, overhead lines and underground distribution system.

By applying this methodology, condition assessment of the assets has been completed and is documented in Section 4, providing the health indices and quantitative estimates of assets in different health index categories. In determining the health indices of assets, all available information relevant to the assets' health, described in Section 3 of this report, has been utilized. Where information on a health parameter was not available, health index has been calculated using a modified algorithm, utilizing only those parameters on which information was available.

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1 Introduction

This report summarizes the results of an Asset Condition Assessment study carried out by METSCO on behalf of North Bay Hydro, with the objective of establishing the health and condition of fixed assets currently in service on North Bay Hydro's distribution system.

The assets covered by the report include fixed assets employed on:

- a) Distribution substations
- b) Overhead distribution lines;
- c) Underground distribution lines;
- d) Distribution transformers; and
- e) Switches and Cut-outs installed in pole-mounted and pad-mounted configurations.

The report is organized into four (4) sections including this introductory section:

- Section 2 describes the general principles of the risk based asset management strategy to achieve optimal operation of the distribution grid
- Section 3 describes the methodology for ranking and benchmarking the health of assets, through health index development
- Section 4 documents the results of asset condition assessment exercise

2 Strategic Management of Distribution Fixed Assets

Decisions involving investment into fixed assets play a major role in determining the optimal performance of distribution system fixed assets. A majority of the investments in fixed assets are triggered by either declining performance in the areas of supply system reliability, power quality or safety; or increasing operating and maintenance costs associated with aging assets; or anticipated growth in demand requiring capacity upgrades. In either case, investments that are either oversized or made too far in advance of the actual system need may result in non-optimal operation. On the other hand, investment not made on time when warranted by the system needs raise the risk of performance targets not being achieved and would also result in non-optimal operation. Optimal operation of the distribution system is achieved when “right sized” investments into renewal and replacement (capital investments) and into asset repair, rehabilitation and preventative maintenance are planned and implemented based on a “just-in-time” approach. In summary, the overarching objective of the Asset Management Strategy is to find the right balance between capital investments in new infrastructure and operating and maintenance costs so that the combined total cost over the life of the asset is minimized.

A risk based Asset Management Strategy, therefore, determines the risk of asset failure based on the condition of the asset, which is commonly measured with the help of a yard stick of “Asset Health Indices”, and computes the valuation of the risk based on consequences of asset failure and identifies the optimal risk mitigation alternative through an evaluation of all available options. Asset management covers the full life cycle of a fixed asset, from preparation of the asset specification and installation standards - to the scope and frequency of preventative maintenance during the asset’s service life – and finally to the determination of the assets end-of-life and retirement from service. At each stage of an asset’s life cycle, decisions are made to achieve the right balance between achieving maximum life expectancy, highest operating performance, lowest initial investment (capital costs) and lowest operating costs. The best-in-class asset management strategies employ integrated processes that allow optimal levels of financial and operating performance to be achieved, using transparent and objective criteria that can easily be audited and inspected by regulators.

PAS-55, a specification for asset management, was developed by the British Standards Institute (BSI) and offers one of the best-in-class strategies for risk management associated with fixed assets of electricity distribution systems. To be compliant with the PAS-55 asset management standard, the asset management approach must contain the essential elements documented in Exhibit 2-1.

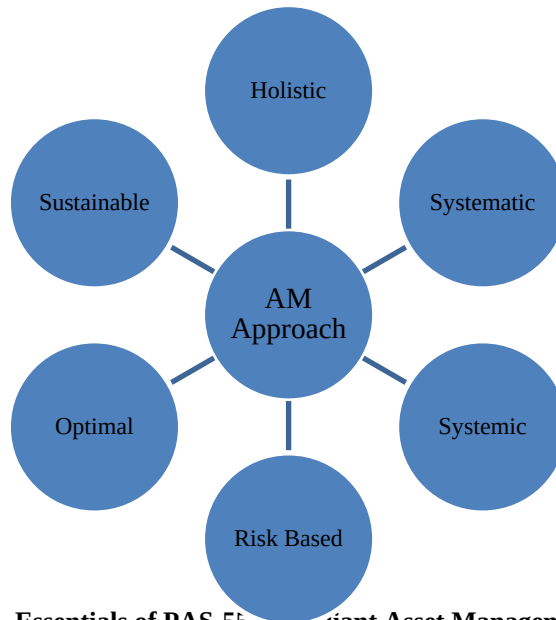


Exhibit 2-1: Essentials of PAS-55 Compliant Asset Management Strategy

The overarching objective is to develop capital and preventative maintenance investment plans, which could be implemented over a period of ten to twenty-five years to achieve optimal system performance by placing appropriate weights on corporate objectives and performance requirements, as shown in Exhibit 2-2.

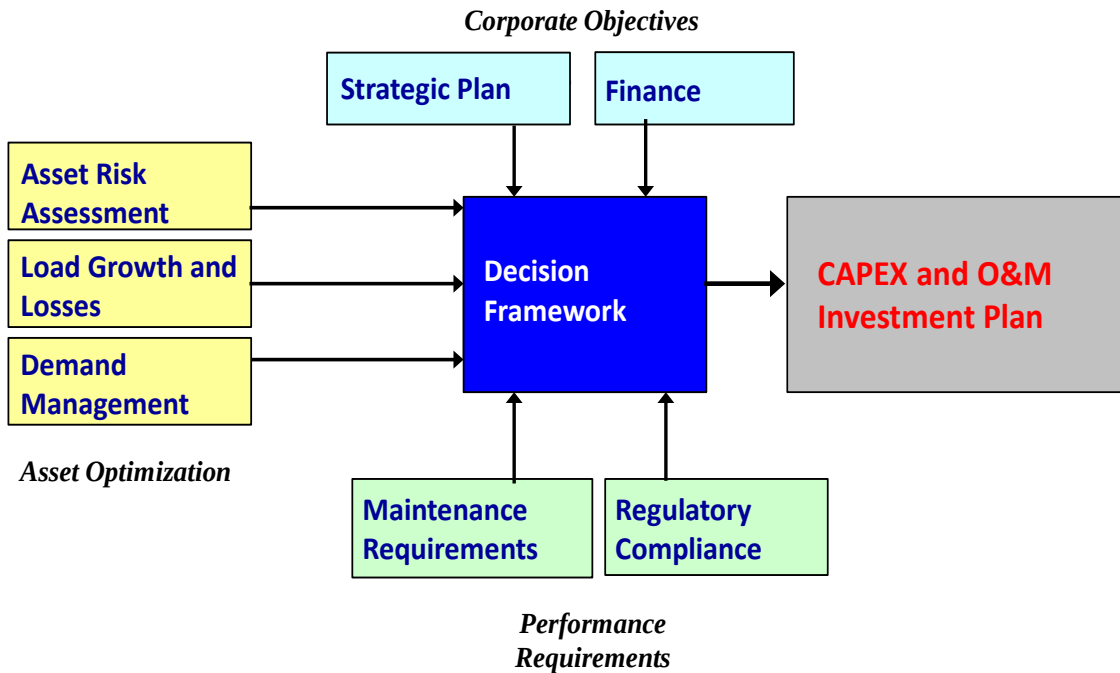


Exhibit 2-2: Multi-Prong Decision Framework

For regulated transmission and distribution (T&D) businesses, the key considerations in development of a Strategic Asset Management Plan include:

- a) Regulatory Compliance
- b) Public and Employee Safety
- c) Protecting Brand Name and Image
- d) Operating Efficiency
- e) Reliability and Supply System Security
- f) Customer Service Quality
- g) Getting Full Life out of Assets
- h) Return on Investment
- i) Risk Based Maintenance Strategy
- j) Minimizing Asset Life Cycle Costs
- k) Minimizing Risk of Premature Failures
- l) Minimizing Environmental Risks

Exhibit 2-3 shows the basic decision support model employed under a risk based strategy. The timing and size of investments are selected to minimize the “Total Cost” of risk and risk mitigation initiatives.

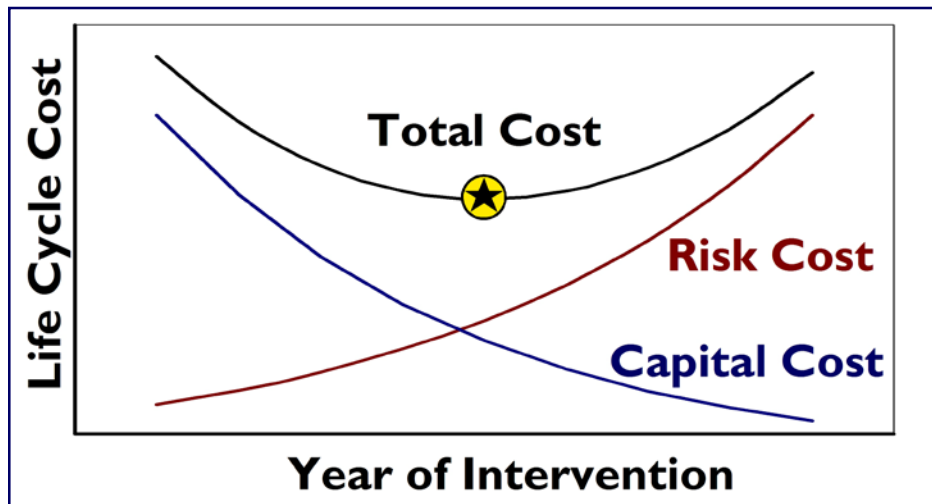


Exhibit 2-3: Risk Based Decision Support System

Exhibit 2-4 summarizes a practical matrix to sift through a large number of assets, typically employed on T&D systems to objectively identify assets that present the highest risk of in-service failures so that the investments could be targeted into assets that present the highest risk. Numeric health indices, typically normalized to a scale of 100, are commonly used to express the health and condition of assets, as shown in Exhibit 2-5 and this allows separation of the assets in good condition that require minimal risk mitigation from those in poor condition, requiring a higher level of investments. This exercise allows development of an investment plan as shown in Exhibit 2-6 that could be implemented over a 5-10 year period.

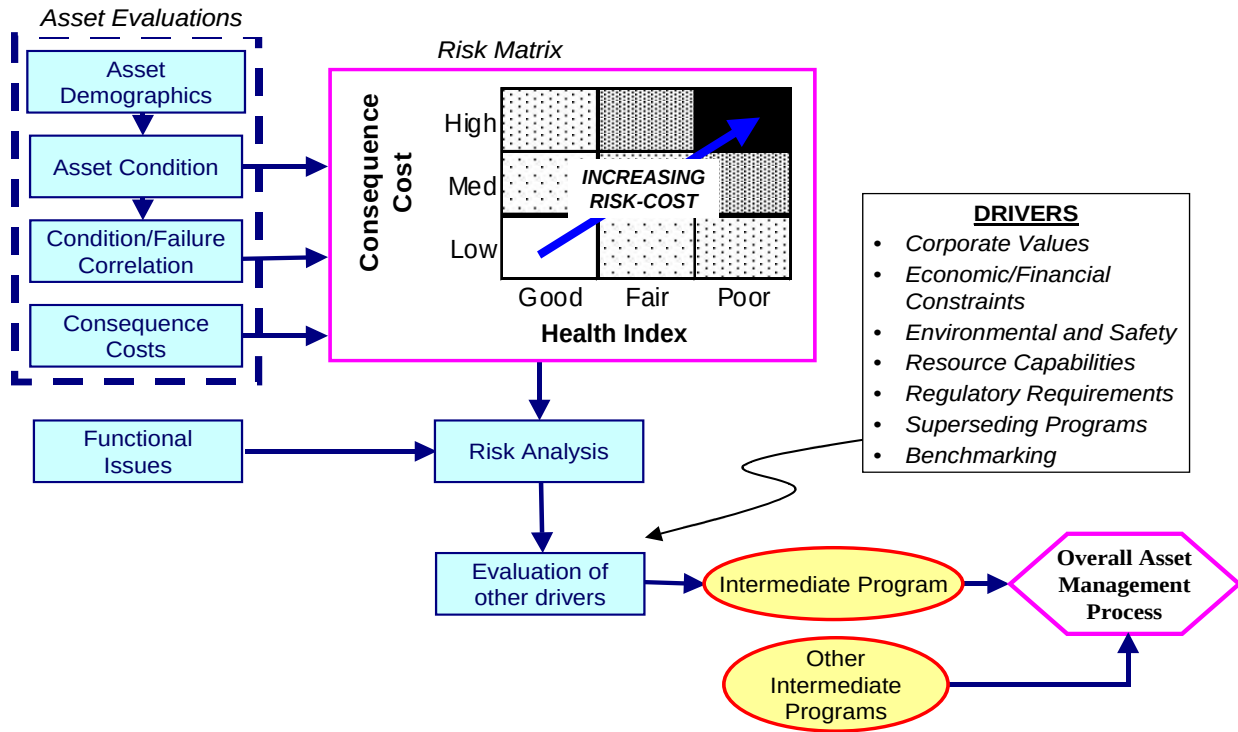


Exhibit 2-4: Model to Identify Assets with Highest Risks

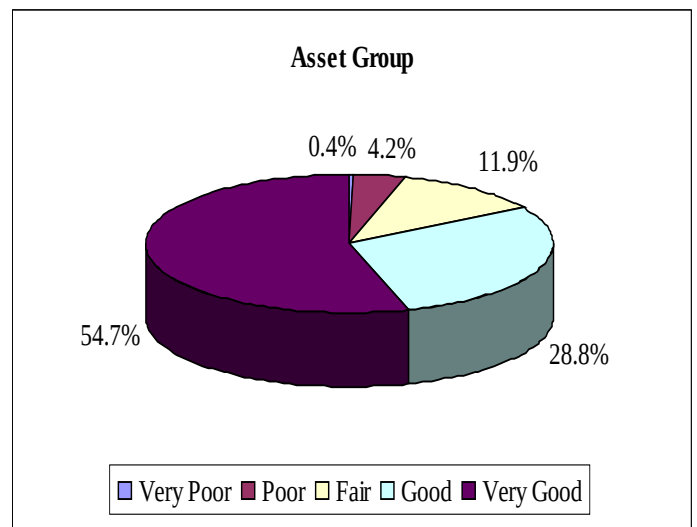
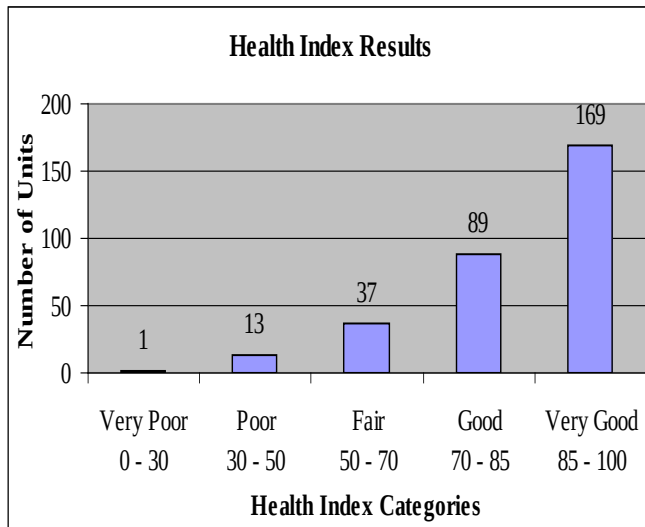


Exhibit 2-5: Graphs to Identify Assets with Highest Risks

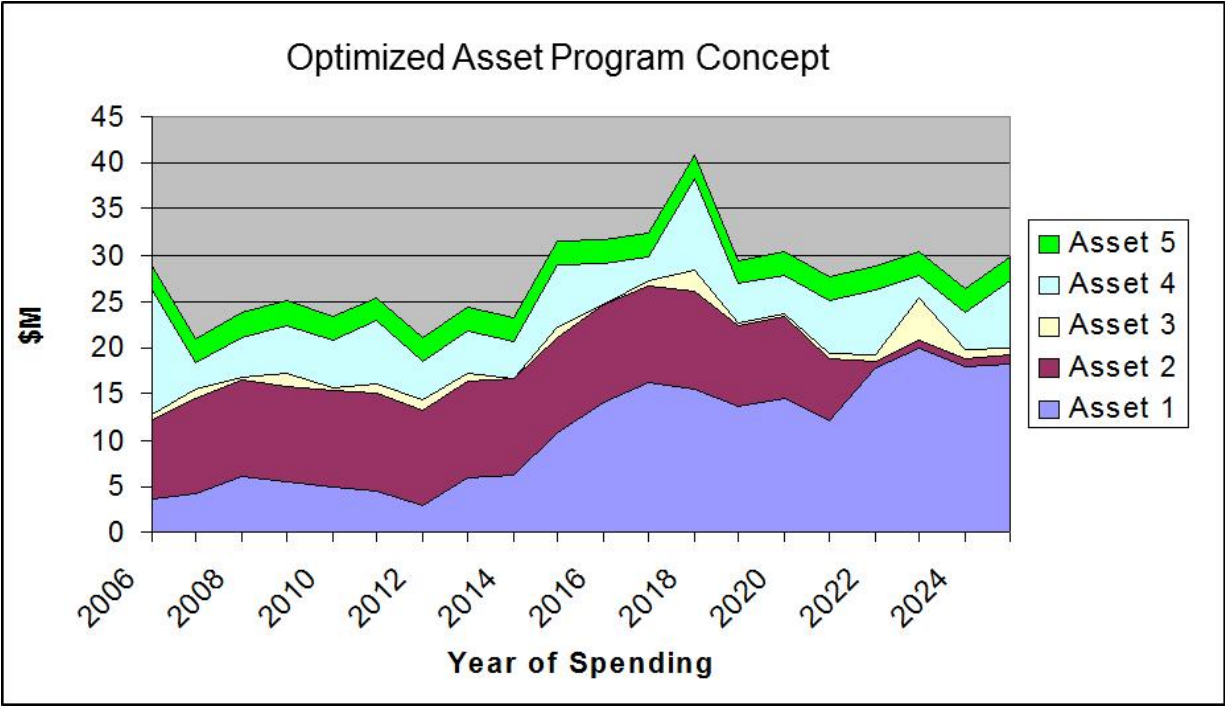


Exhibit 2-6: Investment Plan

3 ASSET CONDITION ASSESSMENT METHODOLOGY

This section describes in detail an asset condition assessment methodology for different categories of fixed assets employed on North Bay Hydro's distribution system. Adoption of this methodology would require periodic asset inspections and recording of their condition to identify the assets most at risk, requiring focused investments into risk mitigation.

Asset Condition Assessment methodologies are described below for the following distribution system asset categories:

- a) Overhead Lines
- b) Underground Lines
- c) Substations
- d) Distribution Transformers (pole mounted, pad mounted, pole trans and vault mounted)
- e) Distribution Switches and Fused Cut-outs
- f) Low Voltage system

The components and tests shown in the tables are weighted based on their importance in determining the assets end-of-life.

For purposes of scoring the condition assessment, the letter condition ratings are assigned the following numbers shown as "factors":

- A = 5
- B = 4
- C = 3
- D = 2
- E = 1

These condition rating numbers (i.e., A = 5, B = 4, etc.) are multiplied by the assigned weights to compute weighted scores for each component and test. The weighted scores are totaled for each asset.

Totaled scores are used in calculating final Health Indices for each asset. For each component, the Health Index calculation involves dividing its total condition score by its maximum condition score, then multiplying by 100. This allows for determining condition category for each asset in groups of Very Poor, Poor, Fair, Good and Very Good depending upon the resulting score.

3.1 Substations

The major assets employed in substations include:

- Station Transformers
- Circuit Breakers or Reclosers
- Controls and Protective Relays
- Control Battery and Chargers

- Ground Grid
- Perimeter Fences
- Buildings

3.1.1 Condition Assessment of Station Transformers

The key role of station transformers is to step down transmission or sub-transmission voltage to distribution voltage. In case of North Bay Hydro, station transformers step down from 44 kV sub-transmission voltages to 12.47 kV or 4.16 kV.

The key components of pad-mounted power transformers employed at municipal stations are:

- primary and secondary coils, made of copper or aluminium conductors
- magnetic core made of iron laminations
- insulation system, commonly consisting of cellulose paper and mineral oil
- transformer tank, either sealed or breather type, and
- primary and secondary bushings.
- auxiliary devices

The most critical component in transformer aging consideration is the insulation system, consisting of mineral oil and cellulose paper. Transformer oil consists of hydrocarbon compounds that degrade with time due to oxidation, resulting in formation of moisture, organic acids and sludge. The oil oxidation rate is a function of operating temperature. Increased acidity and moisture content in insulating oil causes accelerated degradation of insulation paper. Formation of sludge adversely impacts the cooling efficiency of transformer, resulting in higher operating temperatures and further increasing the rate of oxidation of both the oil and the paper. Condition assessment of transformer oil, therefore, provides extremely useful information in assessing the health and condition of a transformer.

The paper insulation consists of long cellulose chains, that break as the paper ages (oxidizes). Tensile strength and ductility of insulation paper are important properties that are determined by the average length of the cellulose chains. As the paper oxidizes, its mechanical strength is gradually reduced, making it weak and brittle. This can lead to insulation failure if the transformer is subjected to mechanical shocks that are common in normal operating conditions. Insulation degradation and failure can also result from electrical activity inside insulation, such as partial discharge activity, which is initiated if the level of moisture in oil builds up or if other minor defects develop within the insulation. Partial discharge and other electrical and thermal faults in the transformer can be detected and monitored by measurement of hydrocarbon gases in the oil through Dissolved Gas Analysis (DGA).

Oil analysis provides information on three critical factors:

- condition of the oil from moisture, acidity and breakdown strength measurements,
- condition of the paper insulation from Furan, carbon dioxide, carbon monoxide and moisture measurements, and,
- presence of any incipient electrical or thermal faults within the transformer from the DGA results.

Some other tests that can be applied to oil samples such as interfacial tension, power factor etc.

3.1.2 Ranking Condition of Station Transformers through Multiple Criteria

Computing the Health Index for a transformer requires developing end-of-life criteria for its various components. Each criterion represents a factor critical in determining the component's condition relative to potential failure. The condition assessment process includes scoring based on multiple parameter criteria as described below:

(a) Age Related Scoring

Since the service age provides a reasonably good measure of the remaining life of transformers, it is employed as an assessment parameter, with the following scores:

Condition Rating	Station Transformer Age
A	0 to 10 years
B	10 to 20 years
C	20 to 30 years
D	30 to 50 years
E	50 years or older

Exhibit 3-1: Station Transformers – Age Related Health Score

(b) Condition Assessment Based on Loading Level

The rate of insulation degradation is directly related to the operating temperature and operating temperature is directly related to loading levels. Peak loading level of the transformers expressed in % of nameplate rating can therefore be employed as an indicator of transformer health:

Condition Rating	Component Condition
A	Peak load less than 50% of its rating
B	Peak load of 50% to 75% of its rating
C	Peak load of 75% to 100% of its rating
D	Circuit loading of 100% to 125% of its rating
E	Circuit loading of greater than 125% of its rating

Exhibit 3-2: Station Transformers – Load Related Health Score

(c) Visual Inspections

Visual inspections can provide a good indication of the physical condition of transformers, which can be ranked as indicated below:

Condition Rating	Visual Inspections
A	No rust on tank/radiator, no damage to bushings, no sign of oil leaks, forced air cooling fully functional
B	Only one of the following defects: Minor rust, or minor cracks in bushings or minor oil leak
C	Two or more of the above indicated defects present but do not impact safe operation
D	Tank/radiator badly rusted or major damage to bushing or major oil leak
E	Two or more of the above indicated defects or the cooling fans do not work

Exhibit 3-3: Station Transformers – Health Score Based on Visual Inspections**(d) Condition Rating Based on Testing of the Insulating Oil**

Various insulation tests, including dissolved gas in oil analysis (DGA), dielectric strength or water content measurement test can be interpreted by an expert to rank the overall condition of transformer insulation system:

Condition Rating	Test Results
A	Test results indicate excellent insulation condition, no indication of moisture, arcing, overheating or degradation of paper
B	Tests indicate normal aging, no concerns about insulation health
C	Tests indicate slightly above average but stable moisture content or presence of arcing overheating related gases
D	Some of the tests indicates significant concerns about insulation condition
E	Two or more of the tests indicate rapidly deteriorating insulation condition

Exhibit 3-4: Station Transformers – Health Score Based on Oil Tests**3.1.3 Condition Assessment Criteria for Circuit Breakers or Reclosers**

Medium voltage circuit breakers provide local or remote control for closing and opening of power supply circuits and in conjunction with protective relays provide an important safety function to automatically detect and isolate faulty circuits in order to provide safe, stable and reliable operation with desired selectivity. A pole mounted recloser virtually provides the same functions as a circuit breaker. While its design is significantly different, the recloser employs the same operating principle as a circuit breaker.

When a circuit breaker interrupts current, an electrical arc is produced in the ionized insulation medium. In order for the circuit breaker action to succeed, the large amount of energy contained in the arc must be successfully extinguished by the breaker's interrupting medium. Depending on the type of arc interrupting medium employed, circuit breakers (or reclosers) are classified as oil

circuit breakers, magnetic air circuit breakers, SF-6 circuit breakers or vacuum circuit breakers. In order to deliver the desired functions, circuit breakers and reclosers are required to possess the following properties and characteristics:

- Highly conductive contact material, capable of withstanding repeated arcs;
- High quality of contact make with extremely low resistance;
- High quality contact mating, capable of retaining high conductivity over time;
- Adequate contacts parting distance in open position for the rated voltage;
- Adequate line to ground insulation for the rated voltage;
- Stable insulating medium, capable of withstanding repeated arcs;
- Fast speed during opening and closing of contacts;
- Appropriate arc blowing techniques to extinguish arcs;
- Adequate energy imparting mechanisms for making or breaking of short circuit currents.

The operating mechanism of circuit breakers and reclosers consists of numerous moving parts that are subject to wear and tear during breaker operation. Because circuit breakers are required to frequently “make” and “break” heavy currents, the contacts are subjected to arcing that accompanies such operations. Each time a circuit breaker opens or closes, the contact surfaces undergo some degradation and degraded contacts produces higher degree of arcing in subsequent operations. Heat produced during contact arcing also decomposes the metal surface from the contacts as well as the insulation medium and the by-products so decomposed are deposited in surrounding insulation materials. The mechanical energy required to generate high contact velocities also results in wear and tear of the mechanical parts in operating mechanism.

A number of factors influence the overall rate of wear and severity of degradation of circuit breakers, including type of the insulating medium, design of the contacts, operating environment, and the duty cycle of the circuit breaker. Load current switching or fault current interruption seldom lead to sudden failure of circuit breakers, but repeated operations result in overall wear and tear which lead to eventual end of life.

Circuit breakers mounted outdoors may experience adverse environmental conditions that may further contribute to the rate and severity of degradation. The following factors represent environmental degradation of outdoor mounted circuit breakers:

- Corrosion of enclosures and metal parts;
- Potential ingress of moisture into operating parts and insulating system;
- Bushing/insulator deterioration under the influence of moisture, fog, ice; and
- Deterioration of mechanical parts;

OCBs typically have longer current interruption duration compared with other types of designs. Contacts and the insulation medium are therefore subjected to severe arcing, resulting in deterioration of the contact surface as well as insulation. Thus, both contacts and oil degrade more rapidly in case of OCBs than they do in either SF6 or vacuum designs, especially when the OCB undergoes frequent switching operations. Generally, 4 to 8 interruptions under fault or heavy load will cause contact erosion and oil carbonisation, requiring contact maintenance and possibly oil filtration. OCBs have therefore higher operating costs compared to other designs.

Different types of circuit breakers employed on North Bay Hydro's distribution system are described below:

(a) Oil Circuit Breakers (OCB) or Oil Filled Reclosers

In minimum oil circuit breakers, insulating oil provides the role of arc quenching only, but in bulk oil circuit breakers, the insulating oil provides both the arc quenching and the insulation functions. OCBs generally perform well at low ambient temperatures. They also provide long and reliable service life when the number of loading switching or fault interruption operations is infrequent. However, frequent switching fault interruption applications must be accompanied by frequent preventative maintenance. OCBs do not perform well in switching capacitive loads, during switching operations of which high peak recovery voltages are produced. Generally, after 4 to 8 fully rated interruptions, OCB's require preventative maintenance, during which excessive contact erosion, carbonisation of oil, and maintenance of operating mechanism may need to be attended to. The manufacture of new OCBs has been discontinued for at least 25 years now. The original equipment manufacturers (OEMs) provided service support and spares for these OCBs until the late 1990s. Many utilities in North America continue to successfully employ older vintages of OCBs on their systems.

(b) Air Magnetic Circuit Breakers (Air Magnetic Breakers)

Air magnetic breakers employ the magnetic effect of the current in their design, by forcing the electric arc produced during opening on the contacts into an arc chute. The arc chute causes elongation of the arc path and allows cooling, splitting and eventual extinction of the arc. In some designs, an auxiliary puffer is employed to blast air into the arc, which allows successful interruption of low-level currents with weaker magnetic fields. Air magnetic breakers represent the second oldest technology in circuit breaker design, next to OCBs. They are also no longer in manufacture and have been superseded by SF₆ and vacuum technologies since the late 1970s.

(c) Vacuum Circuit Breakers or Reclosers

In a vacuum circuit breaker, vacuum interrupters are employed to make or break load or fault current. Upon separation of the contacts, the current initiates a metal vapour arc discharge and flows through the plasma until the next current zero. The arc is extinguished at current zero and the conductive metal vapour condenses on the metal surfaces during a very short time interval measured in micro seconds. Therefore, the dielectric strength in the breaker builds up very rapidly. The effectiveness of vacuum interrupter depends largely on the material and form of the contacts. In modern designs, oxygen free copper chromium alloy is commonly employed as it is believed to be the best material for the application. This material combines good arc extinguishing characteristic with a reduced tendency to contact welding.

(d) SF₆ Circuit Breakers

A SF₆ circuit breaker is designed to direct a constant gas flow to the arc that extracts heat from the arc and so allows achieving its extinction at current zero. The gas flow de-ionises the contact gap and establishes the required dielectric strength to prevent an arc re-strike. The direction of the gas flow either parallel or across to the axis of the arc has an influence on the efficiency of the arc interruption process. Research has shown that an axial flow creates a turbulence causing

an intensive and continuous interaction between the gas and plasma as current approaches zero. Recent developments concentrated on employing the arc energy itself to create directly the differential pressure needed, without using an external piston. Parallel to the self-pressurising design, the rotating arc SF₆ interrupter was also developed. In this design, a coil sets the arc in rotation while the quenching medium remains stationary. The relative movement between the arc and the gas is no longer axial but radial; it is a cross-flow mechanism.

3.1.4 Ranking Condition of Circuit Breakers and Reclosers through Multiple Criteria

Computing the Health Index for circuit breakers requires collection of data on a number of condition indicators:

(a) Age Related Scoring

Service age provides a reasonably good measure of the remaining life of circuit breakers and reclosers. Since the outdoor mounted reclosers, exposed to the weather elements experience a faster rate of aging, two separate sets of criteria are provided for outdoor and indoor mounted circuit breakers / reclosers:

Condition Rating	Age
A	0 to 7 years
B	8 to 15 years
C	16 to 24 years (or
D	25 to 32 years
E	33 years or older

Exhibit 3-5: Outdoor Circuit Breakers or Reclosers – Age Related Health Score

Condition Rating	Age
A	0 to 10 years
B	11 to 20 years
C	21 to 30 years (or
D	31 to 40 years
E	41 years or older

Exhibit 3-6: Indoor Circuit Breakers – Age Related Health Score

(b) Visual Inspections

Visual inspections can provide a good indication of the physical condition of circuit breakers or reclosers, which can be ranked as indicated below:

Condition Rating	Visual Inspection Indicators
A	No rust on tank/enclosure, no damage to bushings, no leaks, controls and wiring in excellent condition
B	Only one of the following defects: Minor rust, or minor cracks in bushings or minor oil leak
C	Two or more of the above indicated defects present but do not impact safe operation
D	Tank/enclosure badly rusted or major damage to bushing or major oil leak
E	Two or more of the above indicated defects or the cooling fans do not work

Exhibit 3-7: Circuit Breakers – Visual Inspections Based Health Score**(c) Condition Rating Based on Evaluation of the tests**

Various interruption chamber tests can be interpreted by an expert to rank the overall condition of breaker insulation system:

Condition Rating	Test Results
A	Test results indicate excellent condition of contacts, operating mechanism, insulation condition and controls
B	Normal aging, each of the four indicators within specified limits
C	One of the above four indicators is slightly beyond the specified limits
D	Two or more of the above four indicators beyond the specified limits
E	Two or more of the indicators beyond specifications and cannot be brought to comply with the specifications

Exhibit 3-8: Circuit Breakers and Recloser – Testing Based Health Score**3.1.5 Condition Assessment Criteria for Protection Relays and Remote Terminal Units**

The function of protection relays on distribution systems is to detect and annunciate abnormal operating conditions and initiate circuit breaker or recloser trip to isolate faulty circuits from healthy circuits. Protection relays obtain their input from instrument transformers, process the information and automatically take corrective action with adequate speed and selectivity.

Electro-mechanical designs of protection relays have been in use in the industry for several decades, but the industry best practice has been to replace these relays with solid state and microprocessor relays. Electro-mechanical relays have many moving parts and require calibration at regularly scheduled intervals to assure accurate operation. Modern micro-processor relays have no moving parts and can provide much more accurate operation without requiring frequent calibration.

The electro-mechanical relays with many moving parts lose their operating accuracy due to the moving parts developing friction or the springs becoming weak with passage of time and need to

be readjusted from time to time. Voltage and current surges can also harm electrical components of relays. The micro-processor and the solid state relays do not require frequent calibrations, but they are vulnerable to voltage and current surges.

3.1.6 Ranking of Protection Relays Condition through Multiple Criteria

(a) Age Related Scoring

Service age provides a reasonably good measure of the remaining life of protection relays. Since the relays are either installed indoors or in weatherproof cabinets, they are protected from the weather elements.

Condition Rating	Age
A	0 to 10 years
B	11 to 20 years
C	21 to 30 years
D	31 to 40 years
E	41 years or older

Exhibit 3-9: Protection Relays – Age Based Health Score

(b) Condition Rating Based on Evaluation of the tests

Calibration tests can be interpreted by an expert to rank the overall condition of protection relays:

Condition Rating	Test Results
A	Excellent operating condition, calibration well within specified limits
B	Normal aging, calibration within the specified limits
C	Frequent calibration required, but it is possible to meet specified limits
E	Not possible to calibrate the relays to bring settings to specified limits

Exhibit 3-10: Protection Relays – Testing Based Health Score

3.1.7 Control Battery and Chargers

The purpose of substation control batteries is to provide power for critical control functions such as trip coils of circuit breakers. Two types of batteries are commonly used: lead acid batteries and nickel cadmium batteries. Batteries are carefully sized to store adequate energy for system operation during an AC power failure.

The key parts of a control battery include two electrodes immersed in an electrolyte inside a container. The battery terminals are brought out for cable connections. While the earlier vintages of control batteries required frequent maintenance and monitoring of electrolyte, modern batteries employ sealed design and are virtually maintenance free for the service life.

Battery chargers employ solid state rectifiers and are equipped with normal slow charge or fast charge functions.

Both the electrodes and electrolyte in control batteries undergo aging with repeated charge and discharge cycles, which result in gradual reduction of battery storage capacity. The end of life is reached when the battery is no longer able to retain adequate charge for required functions.

Battery chargers can experience component failures, but these can be easily replaced and as a result the charger often outlasts the battery.

3.1.8 Ranking Condition Control Batteries through Multiple Criteria

(a) Age Related Scoring

Since different types of batteries can have significantly different life expectancy, age related scoring needs to be measured in terms of manufacturer recommended life expectancy:

Condition Rating	Actual Battery Age
A	Less than 25% of manufacturer recommended age
B	Less than 50% of manufacturer recommended age
C	Less than 75% of manufacturer recommended age
D	Less than manufacturer recommended age
E	More than manufacturer recommended age

Exhibit 3-11: Control Batteries and Chargers – Age Related Health Score

(b) Condition Rating Based on Evaluation of the tests

Condition Rating	Test Results
A	Battery capable of storing full rated energy
C	Battery stores marginally less than full rated energy, but still adequate for required functions
E	Battery stores significantly less than the full rated energy, inadequate for required functions

Exhibit 3-12: Control Batteries and Chargers – Test Based Health Score

3.1.9 Substation Ground Grids

The purpose of a substation ground grid is to provide a low resistance ground electrode for system neutral, for equipment case grounding and to maintain safe potential gradients within the station yards during abnormal operating conditions, i.e. line-to-ground faults.

The station ground electrode consist of multiple ground rods driven into the ground and located strategically and connected with underground copper conductors to make a mesh of sufficiently low resistance. All feeder neutrals are connected to the electrode. Cases of each piece of power

equipment are also bonded to the ground electrode. All fences and gates are bonded to the perimeter ground grid.

Where the ground potential rise (GPR) exceeds safe limits, surface stone of high resistivity is used in the substation yard to maintain step potential within safe limits.

Buried ground rods, conductors and connectors are subject to corrosion, which reduces the effectiveness of the ground electrode with passage of time. Above ground components of the electrode and copper conductors are subject to vandalism and damage. The surface stone can degrade in quality due to growth of weeds.

3.1.10 Ranking Condition of Ground Grids through Multiple Criteria

The health and condition of a ground grid can be verified through ground grid resistance measurements and integrity tests.

(a) Age Related Scoring

Condition Rating	Age
A	Ground Electrode less than 10 years old
B	Ground Electrode Between 10 and 20 years Old
C	Ground Electrode Between 20 and 30 years Old
D	Ground Electrode Between 30 and 40 years Old
E	Ground Electrode More than 40 years Old

Exhibit 3-13: Ground Grid – Age Related Score

(b) Condition Rating Based on Evaluation of the tests

Condition Rating	Test Results
A	Ground electrode resistance and GPR within safe limits, all electrode components pass integrity test
C	Ground electrode resistance and GPR within safe limits but a few electrode components do not pass integrity test
E	Ground electrode resistance or GPR not within safe limits or many electrode components do not pass integrity test

Exhibit 3-14: Ground Grid – Testing Related Health Score

(c) Rating Based on Condition of Surface Stone

Condition Rating	Test/Inspection Results
A	Resistivity of Surface Stone >3000 Ohm-m, no sign of vegetation growth
C	Resistivity of Surface Stone marginally less than <3000 Ohm-m, but no sign of vegetation growth
E	Resistivity of Surface Stone significantly less than <3000 Ohm-m, and signs of vegetation growth

Exhibit 3-15: Ground Grid – Testing Related Health Score

3.1.11 Substation Fences

The purpose of substation fences is to provide security for substation assets by not allowing entry into the yard to unauthorized people or wild life.

To achieve this objective the fence has to be of a minimum height of 1.8 m to comply with the Ontario Electrical Safety Code and topped with three rungs of barbed wire covering a height of 0.3 m. The fence must be secured with posts of adequate strength and should limit the crawl space between the fence and ground to 0.1 m or less. Where a substation fence connects into another steel fence, an insulated section should be added to prevent transfer of harmful potential to remote locations.

The fence should be grounded and bonded throughout. The gates should be lockable and locked and warning signs should be provided.

The common degradation mode for station fences are rusting and corrosion, damage to fence posts and gates, soil erosion increasing the crawl space under the fence and vandalism to damage and deface warning signs.

3.1.12 Ranking Condition of Fences through Multiple Criteria

(a) Condition Rating Based on Evaluation of the tests

Condition Rating	Inspections
A	No deficiencies in the fence
C	Only minor deficiencies
E	Major deficiencies requiring immediate attention

Exhibit 3-16: Fences Health Score based on Visual Inspections

3.1.13 Substation Buildings

Substation buildings provide protection to critical substation assets, i.e. circuit breakers and protection relays against weather elements. While the switchgear is commonly located on the main floor, the basements serve as an oversized manhole to provide exit for feeder cables.

The common degradation mode for substation buildings is deterioration of roofs, sidings, doors and windows. A small leak in the roof can cause a lot of harm to electrical equipment and defeat the very purpose of the substation building.

3.1.14 Ranking Condition of Substation Buildings through Multiple Criteria:

The health and condition of a substation building can be measured through visual inspections:

Condition Rating	Inspections
A	No deficiencies in the building
C	Only minor deficiencies
E	Major deficiencies requiring immediate attention

Exhibit 3-17: Substation Buildings Health Score

3.1.15 Health Index Formulation for Substation Equipment

Since each piece of substation equipment can be independently replaced or rehabilitated, rather than developing an overall health index for substations, methodology for developing health indices for key substation assets is provided below:

For purposes of formulating the Health Index for major substation assets, it is proposed to assign the following weights to various health index criteria described in the previous sections:

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age of transformer	A - E	5	6	30
2	Peak loading	A - E	5	4	20
3	Visual inspection	A - E	5	2	10
4	Testing	A - E	5	8	40
	Total				100

Exhibit 3-18: Station Transformers – Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age	A - E	5	8	40
2	Visual inspection	A - E	5	4	20
3	Testing	A - E	5	8	40
	Total				100

Exhibit 3-19: Circuit Breakers – Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age	A - E	5	10	50
2	Testing	A - E	5	10	50
	Total				100

Exhibit 3-20: Protection Relays and RTUs – Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age	A - E	5	10	50
2	Testing	A - E	5	10	50
	Total				100

Exhibit 3-21: Substation Control Batteries and Chargers – Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age	A - E	5	8	40
2	Testing	A - E	5	8	40
3	Visual Inspection	A - E	5	4	20
	Total				100

Exhibit 3-22: Substation Ground Grid – Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Visual Inspection	A - E	5	20	100
	Total				100

Exhibit 3-23: Substation Fences – Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Visual Inspection	A - E	5	20	100
	Total				100

Exhibit 3-24: Substation Buildings – Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Transformers	A - E	5	10	50
2	Circuit Breakers/Reclosers	A - E	5	5	25
3	Protection Relays/Controls	A - E	5	5	20
4	Ground Grids	A - E	5	1	5
5	Fences / Control buildings	A - E	5	1	5
	Total				100

Exhibit 3-25: Overall Health Index For Outdoor Substations

3.2 *Overhead Lines*

Condition assessment methodologies for the following components employed on overhead lines are discussed below:

- Poles
- Insulators
- Hardware
- Conductors and splices

3.2.1 **Condition Assessment Criteria for Poles**

As wood is a natural material, its degradation processes are different from other assets on distribution systems. The most critical degradation process for wood poles involves biological and environmental mechanisms such as fungal decay, wildlife damage and effects of weather. Fungi attack both external surfaces and the internal heartwood of wood poles. The process of fungal decay requires the presence of fungus spores in the presence of water and oxygen. For this reason, the area of the pole most susceptible to fungal decay is at and around the ground line, although pole rot is also known to begin at the top of the pole. To prevent the decay of wood poles, utilities treat them with preservatives before installation. Wood preservatives have two basic functions:

- keep out moisture that supports fungi by sealing the surfaces, and
- kill off the fungal spores.

Most power companies install only fully treated wood poles these days, however this was not always the case and the lines constructed 40 years ago or earlier may not have been constructed with fully treated poles but only butt treated poles may have been used. Typically, fully treated poles are expected to provide a longer service life in relation to butt treated poles.

The following factors represent some of the more critical factors affecting wood pole strength as poles age:

- Original type and class of wood pole;
- Original defects in wood (e.g. knots, cracks or rot);
- Rate of decay in service life which depends on type of treatment and environmental conditions;
- Pole damage by woodpeckers, insects, and other wildlife; and
- Wood burns.

Several types of damage can also deform bolt holes in poles. Generally, such deformities do not present immediate problems. However, in some cases deformed holes can result in both failure of the structure and failure of other components attached to the pole. Bolts also can become loose, elongated, bent, cracked, sheared/broken and lost.

Visual inspection can detect the following types of wood pole damage readily:

- Fibre damage that may occur when wind hits a wood pole with force beyond the pole's bearing capacity;
- Partial damage that may result when objects hit wood poles and reduce effective pole circumference. If the damage affects only part of a pole's cross-section the utility may keep the pole in service with a reduced factor of safety.
- Wood splits from various causes that may accelerate the end of a pole's life, depending upon the extent of the split damage;
- Mis-orientation from excessive transverse forces that may result in pole tilting as well as "stretching" (i.e., loosening) and breaking of guys and guying systems;
- Burning from conductor faults and insulator flashovers that may damage wood poles, wooden support cross-braces and timber, reducing the ability of these structures to withstand mechanical stress changes or causing their complete loss through fire; and
- Wood cracks that may hold moisture and cause decay or weaken the structures through freeze/thaw forces during winter.

Utilities have sought objective and accurate means to assess pole condition and remaining life, as a result of which, a wide range of wood pole assessment and diagnostic tools and techniques has developed. These include techniques designed to apply traditional probing and hammer tests in more controlled, repeatable and objective ways. Indirect and non-destructive techniques such as ultrasonics, X-rays, and electrical resistance have received widespread testing.

3.2.2 Condition Assessment Criteria for Insulators

The types of insulators and configurations typically used in distribution systems include dead-end, suspension, post and pin types. The insulating portion may consist of porcelain or polymer. The metallic parts usually are made from zinc coated ductile or malleable iron. Both electrical and mechanical stresses may affect insulators. Degradation and eventual failure generally result from the loss of either dielectric or mechanical strength. Mechanical loading on suspension and line post insulators consists of a combination of tensile, torsional, cantilever, vibration and compression forces resulting from factors such as conductor vibration and galloping, accumulation of high density snow or ice, and sudden ice shedding. Line post, strut and pin type insulators are unique since they may experience a combination of cantilever, transverse and tensile forces simultaneously. Impact or contact induced damage also may occur.

Contamination of insulator surface with road salt, freezing rain, and snow accumulation may induce flashovers resulting in dielectric failure of insulators. Electrical flashovers can cause both external and internal damage to porcelain and composite insulators. Visual inspection can detect the following external insulator damage readily:

- Broken porcelain from the shell caused by a flashover (lightning) or impact damage (vandalism);
- Flashover burn markings on the porcelain shell resulting from burns/arcing damage/galvanizing;

Latent damages, typically internal to the porcelain shell, metal fitting and hardware include:

- Internal cracks under the metal cap or inside the porcelain head from lightning flashovers or line galloping, which in essence cause electrical shorts in the insulator that can distort the insulator string's voltage profile;
- Radial cracks (come from cement growth) through the porcelain shell;

Composite insulators consist of a glass fibre reinforced rod covered in either EPDM or silicone rubber weather sheds with appropriate end fittings. While the composite insulators offer a great range of mechanical strengths and much lower weight than other types of insulators, the EPDM or silicone rubber material also is soft and easily cut, ripped or punctured by sharp objects. The integrity of the sheath and weather sheds is critical. Failure commonly occurs when moisture enters into the glass fibre rod area.

Noticeable damage to insulator includes cuts, splits, holes, erosion, tracking, or burning of the rubber shed and sheath material, plus separation or degradation of the rubber sheath material where it meets the metal end fittings. Any signs of power arc, lightning damage, or corrosion on the metal end fittings also indicate deterioration of the component.

3.2.3 Condition Assessment Criteria for Metal Cross Arms or Hardware

Degradation or reduction in strength of insulator hardware may occur due to the following:

- Loss of galvanization and corrosion of steel members;
- Loss in strength due to fatigue;
- Loosening of hardware due to conductor vibrations; or
- Hardware failure during major storm events.

Close-up visual inspections generally can determine the extent of degradation. Laboratory testing can further corroborate results of visual investigations.

3.2.4 Ranking Condition of Poles and Accessories through Multiple Criteria

The condition assessment process includes scoring based on multiple parameter criteria as described below:

(a) Age Related Score

Since the service age provides a reasonably good measure of the remaining strength of wood poles, cross arms, hardware and insulators, it is employed as an assessment parameter, with the following scores:

Condition Rating	Age
A	0 to 10 years
B	10 to 30 years
C	30 to 40 years
D	40 to 50 years
E	50 years or older

Exhibit 3-26: Overhead Lines – Age Related Health Score**(b) Preservative Treatment Based Scoring for Wood Poles**

Since the rate of pole degradation is affected by the effectiveness of the preservative treatment, wood pole treatment is employed in Health Index formulation of line sections, as indicated in the table below:

Condition Rating	Type of Pole Treatment
A	Fully Treated
C	Butt Treated
E	No Treatment

Exhibit 3-27: Overhead Lines – Pole Treatment Based Health Score**(c) Condition Rating Based on Visual Examinations of Pole Line Components**

Different components of the pole line, including wood poles, cross-arms, hardware, insulators and pole grounding are visually inspected by qualified staff during line patrols. By taking into account the results of these inspections, the health and condition of each component is scored in accordance with the following table:

Condition Rating	Component Condition
A	Component is in “as new” condition
B	Component has normal wear expected with age
C	Component has many minor problems or a major problem that requires close attention and monitoring
D	Component has many problems and the potential for its failure would rapidly escalate unless preventative maintenance is performed
E	Component has damaged/degraded beyond repair and will require replacement

Exhibit 3-28: Overhead Lines - Visual Inspections Based Health Score**3.2.5 Condition Assessment Criteria for Conductors**

Conductors allow flow of current through them facilitating the movement of power from substations to customers’ premises. Overhead line conductors are typically supported on wood pole structures to which they are attached by insulators suitable for the voltage at which the lines

operate. The conductors on a line are sized by taking into account the amount of current to be carried. The maximum current carrying capacity of conductors is determined by their thermal rating. However distribution line conductors are commonly sized to provide the right balance between energy loss in conductors (copper loss) and the capital cost of conductors. As a result the distribution lines often operate under loads significantly below the thermal rating of the conductors.

Overhead line conductors must have adequate tensile strength, enabling them to be stretched between poles. Distribution lines typically have span length of 40 m to 60 m. Three different types of conductors are commonly used on distribution lines:

- Aluminium Conductors Steel Reinforced (ACSR),
- Aluminium Stranded Conductors (ASC),
- Aluminium Alloy Conductors (AAC).

Steel reinforced aluminium conductors have galvanized steel core strands that supply most of their tensile strength. The steel core has both tensile and ductile properties, allowing the core to withstand both longitudinal forces and bending movements without failure. AAC conductors cost less in relation to ACSR conductors, but their tensile strength is significantly lower than those of the ACSR conductors. Both the price and tensile strength of AAC conductors lie in between those of ASC and ACSR conductors.

Because of the relatively short span lengths employed on distribution lines in relation to transmission lines, the tensile strength of conductors on distribution lines is not as critical as it is on transmission lines. Most distribution utilities these days, therefore, employ all aluminium conductors on distribution lines. Aluminium alloy conductors are sometimes used on distribution lines with longer span lengths.

As current passes through the conductors, the resistance causes its temperature to rise, the temperature change is proportional to the square of the load current passing through the conductor. The rise in temperature causes the conductor to lengthen and sag between points of support, reducing the height of the conductor above ground. Although it seldom happens on distribution lines, line operation at loads beyond conductors' thermal rating of approximately 90° C may lead to annealing of conductors, resulting in permanent loss of its tensile strength.

To provide their intended functions on distribution lines, conductors must retain both their conductive properties and mechanical (i.e., tensile) strength. Aluminium conductors have three primary modes of degradation, corrosion, fatigue and creep. The rate of each degradation mode depends on several factors, including the size and construction of the conductor as well as environmental and operating conditions.

Generally, corrosion represents the most critical life-limiting factor for ACSR conductors. Environmental conditions affect degradation rates from corrosion. Both aluminium and zinc-coated steel core conductors are susceptible to corrosion from chlorine-based pollutants, even in low concentrations, but the rate of corrosion of steel core is significantly greater than that of

aluminium. While fatigue degradation is a serious concern for transmission lines that are strung with significantly higher tension, it is commonly not a serious issue for distribution lines.

Overloaded lines operating beyond their thermal capacity can suffer from a loss of tensile strength due to annealing at elevated operating temperatures. Each elevated temperature event adds cumulative damage to the conductors. After loss of 10% of a conductor's rated tensile strength, significant sag occurs, requiring either re-sagging or replacement of the conductor. ACSR conductors can withstand greater annealing degradation compared to ASC.

Phase to phase power arcs can result from conductor galloping during severe storm events. This can cause localized burning and melting of a conductor's aluminium strands, reducing strength at those sites and potentially leading to conductor failures.

Other forms of conductor damage include:

- Broken strands (i.e., outer and inner)
- Strand abrasion
- Elongation (i.e., change in sags and tensions)
- Burn damage (i.e., power arc/clashing)
- Bird-caging.

Although laboratory tests are available to determine the degree of corrosion and assess the tensile strength and remaining useful life of conductors, distribution line conductors rarely require testing. Conductors on distribution lines often outlive the poles and are not usually on the critical path to determine end of life for a line section.

The only exception to the above rule might be where small copper conductors susceptible to frequent breakdowns are in use or where line conductors are too small for line loads resulting in sub optimal system operation due to high line loss.

3.2.6 Condition Assessment Criteria for Splices

Conductor splices generally have a larger cross-sectional area than the conductor itself. When properly installed, splices should outlast the conductor. However, when improperly installed, splices can reduce a conductor's life. Improperly crimped splices represent the weakest link in conductors under tension.

In extreme cases, splice failures lead to excessive conductor annealing that may cause the conductor's strands to be pulled from the compression splice. Any strand damage that occurs during splice installation may lead to localized weakening of the conductor and premature splice failure. Failure to use non-oxidizing grease in splices also may lead to the development of hot spots and splice failure.

3.2.7 Ranking Condition of Conductors and Splices through Multiple Criteria

Computing the Health Index for overhead line conductors and splices requires developing end-of-life criteria for conductors. The condition assessment process includes scoring based on the following parameters:

(a) Age Related Scoring

Since the service age provides a reasonably good measure of the remaining strength of conductors and all the defects are not easily detected through visual inspections, an age based criteria is proposed as indicated below:

Condition Rating	Age
A	0 to 15 years
B	16 to 30 years
C	31 to 40 years
D	51 to 60 years
E	Older than 60 years

Exhibit 3-29: Conductors and Splices – Age Related Health Score

(b) Small Conductor Risk

Since small sized conductors pose a serious safety risk, the value of this risk is scored separately with help of the table below:

Condition Rating	Age
A	Absence of small sized conductors
E	Presence of small sized conductors (#4 to #6 copper)

Exhibit 3-30: Overhead Lines - Small Conductor Related Health Score

(c) Valuation of System losses

In addition to the above criteria, percentage losses on the feeder will be calculated and when significantly greater than the average distribution system losses on North Bay Hydro's system, will be included in valuation as indicated below:

Condition Rating	Line Loss
A	Less than or Equal to Average system loss
B	5% higher from the average system loss
C	10% higher from the average system loss
D	20% higher from the average system loss
E	30% higher from the average system loss

Exhibit 3-31: Overhead Lines – System Losses Related Score

3.2.8 Health Index Formulation for Overhead Lines

Health indexing quantifies equipment conditions relative to long-term degradation factors that cumulatively lead to an asset's end-of-life. Health indexing differs from maintenance testing, which emphasizes finding defects and deficiencies that need correction or remediation to keep the asset operating during some time period.

For purposes of formulating the Health Index for overhead line sections, it is proposed to assign the following weights to various Health Index criteria described in Section 3.2.1 through 3.2.7.

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age of pole line	A - E	5	3	15
2	Pole treatment	A - E	5	1	5
3	Visual inspection of poles	A - E	5	1	5
4	Pole testing	A - E	5	4	20
5	Visual inspection of insulators	A - E	5	1	5
6	Visual inspection of hardware	A - E	5	1	5
7	Age of conductors	A - E	5	1	5
8	Small conductor risk	A - E	5	5	25
9	Energy loss in conductors	A - E	5	3	15
	Total				100

Exhibit 3-32: Overhead Lines – Health Index Calculation

3.3 Underground Distribution System

The major assets employed on underground distribution systems can be grouped into the following categories:

- Cables, splices and terminations
- Manholes and vaults

3.3.1 Condition Assessment Criteria for Cables, Splices and Terminations

Safety, reliability, aesthetics and operating costs govern the design and construction standards for underground distribution lines. Underground cables can be constructed in a number of configurations, including direct buried cables, cables installed in direct buried conduits and cables installed in a concrete encased duct manhole system. Medium voltage underground cables have the following key components:

- Cables
- Cable Splices
- Cable Terminations

Medium voltage cables may employ either copper or aluminium conductors. They may be constructed in either single phase or three phase configurations. Two major types of cables are in common use in Canada: paper insulated lead covered (PILC) and cross linked polyethylene (XLPE).

Polymer insulations for cables were introduced as an economic alternative to PILC cables in 1970's. The insulation system in these cables consists of a semi-conducting sheath over the conductor, the insulation, another semi-conducting layer over the insulation, a metallic shield tape or concentric neutral and a jacket. For the early generation of these cables, manufactured in the 1970's, two unexpected factors entered into the failure mechanism: presence of impurities in the insulation system and ingress of moisture that made these cables susceptible to premature failures due to water treeing. Corrosion of concentric neutral conductors is another potential mode of failure. Water treeing is the most significant degradation process for polymeric cables. The original design of cables with polymeric sheaths allowed water to penetrate and come into contact with the insulation. In the presence of electric fields water migration can result in treeing and ultimately breakdown. The rate of growth of water trees is dependent on the quality of the polymeric insulation and the manufacturing process. Any contamination voids or discontinuities will accelerate degradation. This has been the reason for poor reliability and relatively short lifetimes of early polymeric cables.

As manufacturing processes have improved the performance and ultimate life of this type of cable has also improved. In addition to manufacturing improvements, development of tree retardant TRXLPE cables and designs to incorporate metal foil barriers and water migration control have further reduced the rate of deterioration due to treeing.

Distribution underground cables are one of the more challenging assets on electricity systems from a condition assessment and asset management viewpoint. Although a number of test techniques, such as partial discharge (PD) testing have become available over the recent years, it is still very difficult and expensive to obtain accurate condition information for buried cables. The standard approach to managing cable systems has been monitoring of cable failure rates and the impacts of in-service failures on reliability and operating costs and when the costs associated with in-service failures, including the cost of repeated emergency repairs and customer outage costs become higher than the annualized cost of cable replacement, the cables are replaced.

3.3.2 Condition Assessment Criteria for Cable Splices and Terminations

Cable splices and terminations are subject to the same type of insulation degradation and aging as the cables themselves. Improperly made splices may be susceptible to moisture ingress and as a result may experience higher failure rates compared to cables.

3.3.3 Ranking Condition of Cables and Splices through Multiple Criteria

Computing the Health Index for an underground cable section requires developing end-of-life criteria for its various components. The condition assessment process includes scoring based on multiple parameter criteria as described below:

(a) Age Related Scoring

Since the service age provides a reasonably good measure of the remaining useful life of cables, splices and terminations, it can be employed as an assessment parameter, with the following scores:

Condition Rating	Age
A	0 to 10 years
B	10 to 20 years
C	20 to 30 years
D	30 to 40 years
E	40 to 50 years or older

Exhibit 3-33: Underground Cables - Age Related Score

(b) Cable Design and Construction

Since PILC cable designs are known to provide significantly longer service life compared to XLPE cables and earlier vintages of XLPE cables that did not employ tree retardant designs are subject to premature failures, design of cable is employed in Health Index formulation, as indicated in the table below:

Condition Rating	Type of Treatment
A	PILC Cables
B	Tree Retardant XLPE
E	Earlier vintages of XLPE

Exhibit 3-34: Underground Cables – Design Related Health Score

(c) Circuit Loading

The rate of insulation degradation is directly related to the operating temperature. Assuming similar types of backfills result in uniform rates of heat dissipation for all circuits, current loading of circuits measured as percentage of circuit's rated current carrying capacity, can be employed as an indicator of cable health as indicated below:

Condition Rating	Component Condition
A	Circuit loaded less than 25% of its rating
B	Circuit loading of 25% to 50% of its rating
C	Circuit loading of 50% to 75% of its rating
D	Circuit loading of 75% to 100% of its rating
E	Circuit loading of greater than 100% of its rating

Exhibit 3-35: Underground Cables – Loading Related Score

(d) Historic Rates of Circuit Failures

Historic failure rates on a cable circuit are an excellent indicator of the cable health and condition and its useful remaining life and therefore employed in cable Health Index formulation as indicated below:

Condition Rating	Component Condition
A	Less than 0.5 Failures per 10 km in the last 5 years
B	0.5 to 1.0 Failures per 10 km in the last 5 years
C	1.0 to 1.5 Failures per 10 km in the last 5 years
D	1.5 to 2.5 Failures per 10 km in the last 5 years
E	2.5 or more Failures per 10 km in the last 5 years

Exhibit 3-36: Underground Cables – Failure Related Score

(e) Condition of Cable Splices or Stress Cones

Physical condition of cable splices or stress cones can be employed in assessing overall condition of the cable circuit:

Condition Rating	Component Condition
A	Splice or Stress Cone appears in good condition, no indication of moisture ingress
C	Normal wear, no apparent damage, no evidence of moisture ingress
E	Poor condition, potential moisture ingress or IR indicates hot spot

Exhibit 3-37: Underground Cables - Splice or Stress Cone Related Health Score

3.3.4 Condition Assessment Criteria for Manholes and Vaults

Manholes provide the junction point on underground ducts to facilitate cable pulling and provide access for inspection of cable splices. Vaults provide below grade space of installation of electrical equipment such as submersible transformers or switches. In the case of both manholes and vaults, steel reinforced concrete is used for walls, roofs and floors. In locations subject to flooding floor drains and sump pumps are provided. Vaults where heat generating equipment such as distribution transformers are installed are also equipped with ventilation grates. Man access is provided through the top. When vaults and manholes are located in road ways, parking lots or other areas open to vehicular traffic, the structures must be designed by a structural engineer. Since manholes and vaults are confined spaces, they must be adequately sized to rescue trapped workers during a fire or explosion inside the vault or manhole.

The common degradation mode for manholes and vaults is the deterioration of concrete structures due to concrete spalling and corrosion of rebar, sinking of the roof top surfaces allowing rain water to collect and flood the manhole and vaults. Functional obsolescence, where the size of the manhole or vault no longer meets the space requirements can also lead to end of life of a structure.

3.3.5 Ranking Condition of Manholes and Vaults through Multiple Criteria

The health and condition of manhole and vaults can be measured through visual inspections, looking for:

- Structural damage to concrete walls or roof
- Frequent flooding incidents of the vaults or manholes
- Non-functioning drains or sump pumps
- Inadequate space

(a) Structural Condition

Condition Rating	Inspections
A	No deficiencies in the vault or manhole
C	Only minor deficiencies
E	Major deficiencies requiring immediate repairs/replacement

Exhibit 3-38: Manhole and Vaults – Structural Health Score

(b) Flooding Incidents, Drains, Sump Pumps

Condition Rating	Inspections
A	No incidents of Flooding at this location
C	Occasional Flooding, working sump pumps and drains
E	Frequent Flooding, No sump pumps or drains

Exhibit 3-39: Manhole and Vaults - Flooding Related Health Score**(c) Vault Size and Access:**

Condition Rating	Inspections
A	Adequate ergonomic size and safe access to vault
C	Vault size slightly smaller than ideal, but adequate for safe working and reasonable access to vault
E	Vault size or access inadequate for safe working or worker rescue during an accident immediate repairs/replacement

Exhibit 3-40: Manholes and Vaults – Size Related Health Score**3.3.6 Health Index Formulation for Underground Cables, Manholes and Vaults**

Health indexing quantifies equipment conditions relative to long-term degradation factors that cumulatively lead to an asset's end-of-life. Health indexing differs from maintenance testing, which emphasizes finding defects and deficiencies that need correction or remediation to keep the asset operating during some time period.

For purposes of formulating the Health Index for underground cables and manholes/vaults, it is proposed to assign the following weights to various health index criteria:

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age of Cable Circuit	A – E	5	3	15
2	Type/Design of Cable	A – E	5	3	15
3	Loading of Cable Circuit	A – E	5	5	25
4	Historic Failure rates	A – E	5	8	40
5	Visual inspection of splices or stress cones	A – E	5	1	5
	Total				100

Exhibit 3-41: Cables, Splices and Terminators Health Index

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Structural Integrity	A – E	5	8	40
2	Flooding and Its mitigation	A – E	5	4	20
3	Size and Access	A – E	5	8	40
	Total				100

Exhibit 3-42: Manholes and Vaults Health Index

3.4 Distribution Transformers

Four (4) main types of distribution transformers are commonly employed on distribution system:

- Pole mounted transformer
- Pad mounted transformer
- Vault transformer
- Transclosure

Aside from the different design and construction standards employed in their manufacture and installation, each type of transformer serves the same functions and the same asset management strategy can be employed for these assets as described below:

Distribution transformers step down to the medium voltage distribution power to final utilization voltage of either 120/240V, 120/208V, 240/416 V or 347/600 V. Both single phase and three phase transformers are in use. In pole top applications, three single phase transformers are commonly employed to create a three phase bank, however for pad mounted applications, three phase transformers are used for three phase applications.

The key components of a distribution transformer are:

- primary and secondary coils, made of copper or aluminium conductors
- magnetic core made of iron laminations
- insulation system, commonly consisting of paper and mineral oil
- sealed transformer tank
- primary and secondary bushings or bushing wells to accommodate elbows
- auxiliary devices

The most critical component in transformer aging consideration is the insulation system, consisting of mineral oil and paper. Transformer oil consists of hydrocarbon compounds that degrade with time due to oxidation, resulting in formation of moisture, organic acids and sludge. The oil oxidation rate is a function of operating temperature. Increased acidity and moisture content in insulating oil causes accelerated degradation of insulation paper. Formation of sludge adversely impacts the cooling efficiency of transformer, resulting in higher operating temperatures and further increasing the rate of oxidation of both the oil and the paper. Distribution transformers commonly fail when the age weakened insulation system is subjected to a voltage surge during lightning.

Most utilities run the distribution transformers to failure, i.e. replace them only after they fail. With the exception of rust proofing and painting of the tanks, replacing a damaged bushing or repairing a leaky gasket, very little invasive preventative maintenance or testing is carried out on distribution transformers.

3.4.1 Ranking the Condition of Distribution Transformers through Multiple Criteria

Computing the Health Index for a distribution transformer requires developing end-of-life criteria for its various components. Each criterion represents a factor critical in determining the component's condition relative to potential failure. The condition assessment process includes scoring based on multiple parameter criteria as described below:

(a) Age Related Scoring

Since the service age provides a reasonably good measure of the remaining life of transformers, it is employed as an assessment parameter, with the following scores:

Condition Rating	Distribution Transformer Age
A	0 to 10 years
B	10 to 20 years
C	20 to 30 years
D	30 to 40 years
E	40 years or older

Exhibit 3-43: Distribution Transformers – Age Based Health Scoring

(b) Condition Assessment Based on Loading Level

The rate of insulation degradation is directly related to the operating temperature and operating temperature is directly related to loading levels. Peak loading level of the transformer expressed in percentage of the nameplate rating can therefore be employed as an indicator of transformer health:

Condition Rating	Component Condition
A	Peak load less than 50% of its rating
B	Peak load of 50% to 75% of its rating
C	Peak load of 75% to 100% of its rating
D	Peak load of 100% to 125% of its rating
E	Peak load of greater than 125% of its rating

Exhibit 3-44: Distribution Transformers – Load Based Health Scoring

(c) Visual Inspections

Visual inspections can provide a good indication of the physical condition of transformers, which can be ranked as indicated below:

Condition Rating	Visual Inspections
A	No rust on tank/enclosure, no damage to bushings, no sign of oil leaks, padlocks in good condition on pad mounted transformers
B	Only one of the following defects: Minor rust, or minor cracks in bushings or minor oil leak
C	Two or more of the above indicated defects present but do not impact safe operation
D	Tank/radiator badly rusted or major damage to bushing or major oil leak
E	Two or more of the above indicated defects

Exhibit 3-45: Distribution Transformers – Inspections Based Health Scoring

3.4.2 Health Index Formulation for Distribution Transformers

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age of transformer	A – E	5	6	30
2	Peak loading	A – E	5	6	30
3	Visual inspection	A – E	5	8	40
	Total				100

Exhibit 3-46: Distribution Transformers Health Index

3.5 *Disconnect Switches and Cut-outs*

This asset class includes pad and vault mounted medium voltage switchgear as well as pole mounted ganged disconnect switches and single phase solid blade or cutouts. Disconnect switches provide means of load disconnect and isolation for equipment, such as underground laterals or distribution transformers.

The key components of a distribution switch are:

- Switch blades
- Operating handle and mechanism
- Insulator bushings
- Grounding and bonding conductors

Pad mounted disconnects have the following additional components:

- Pad or vault mounted metal enclosure
- Inter-phase glass polyester barriers
- Padlocks

The most critical components in the disconnect switch are the switch blades and operating mechanism. Misaligned or poorly surfaced contacts can result in excessive arcing during switch opening or closing, resulting in further deterioration of the blades. Corrosion may cause rusting of the links and pins in the operating mechanism reducing the blade movement speed. Broken grounds or damaged insulators are some other defects that may appear with age.

Pad or vault mounted disconnect switch enclosures are vulnerable to corrosion due to road salt spray. Non-functioning padlocks or broken inter-phase barriers are other serious defects that may develop with aging.

3.5.1 Ranking Condition of Disconnect Switches through Multiple Criteria

(a) Age Related Scoring

Since the service age provides a reasonably good measure of the remaining life of disconnect switches, it is employed as an assessment parameter, with the following scores:

Condition Rating	Disconnect Switch Age
A	0 to 10 years
B	10 to 20 years
C	20 to 30 years
D	30 to 40 years
E	40 years or older

Exhibit 3-47: Disconnect Switches and Cutouts – Age Based Health Scoring

(b) Visual Inspections

Visual inspections can provide a good indication of the physical condition of disconnect switches. Infrared (IR) scan can provide indication of hot spots resulting from misaligned blades.

Condition Rating	Visual Inspections
A	No rust on tank/enclosure, no damage to bushings, padlocks in good condition on pad mounted switchgear, operating mechanism and blades in excellent condition
B	Only minor wear, no defects
C	No more than one of the above indicated defects present but does not impact safe operation
D	Two or more of above indicated defects, but they can be repaired
E	Two or more of the above indicated defects, but they cannot be repaired

Exhibit 3-48: Disconnect Switches and Cutouts – Inspections Based Scoring

3.5.2 Health Index Formulation for Disconnect Switches

	Criteria	Rankings	Highest Score	Weight Assigned	Maximum Weighted Score
1	Age of disconnect	A - E	5	10	50
2	Visual inspections and IR Scan	A - E	5	10	50
	Total				100

Exhibit 3-49: Distribution Switches and Cutouts – Health Index

4 ASSET DEMOGRAPHICS AND CONDITION ASSESSMENT

The methodology described in detail in section 3 provides means of accurate and comprehensive condition assessment of all major assets employed on North Bay Hydro's distribution system. This section of the report, documents the health indices for fixed assets employed on North Bay Hydro's distribution system, based on all available information from testing, inspections, service age and other demographic information retrieved from the GIS system.

4.1 *Distribution Substations*

There are a total of 16 distribution substations employed on North Bay Hydro's distribution system. Exhibit 4-1 shows the geographic location of each of the distribution stations within the city of North Bay. Two of the substations, MS1 and MS7, step down power from 44 kV to 4.16. One substation, MS-18 has dual winding transformers, capable of supplying both 4.16 kV and 12.47 kV, but is presently supplying at 4.16 kV. The remaining substations step down from 44 kV to 12.47 kV.

4.1.1 Substation Transformers

Exhibit 4-2 presents the age profile of power transformers employed at North Bay Hydro's substations. Two of the transformers, installed in substations MS7 and MS 1, have a service age of greater than 40 years. Exhibit 4-3 provides detailed demographic information on power transformers, including manufacturer name, rating, service location and year of installation for each of the power transformers.

Based on the condition assessment criteria detailed in Section 3, Health Index score has been calculated for each of the substation transformers and the results are summarized in Exhibit 4-4. As shown, three power transformers – MS-7-T1, MS-9-T1 and MS-13-T1 transformers have determined to be in "poor" condition, while the remaining transformers are ranked to be in "fair", "good" or "very good" condition. The transformers determined to be in poor condition present high risk of failure in service and are recommended to be replaced during the next five years. By taking into account the high probability of failure of the assets found in poor and very poor condition and the consequence of the assets' failure in service, Section 5 documents additional analysis supporting replacement of the assets found in poor and very condition.

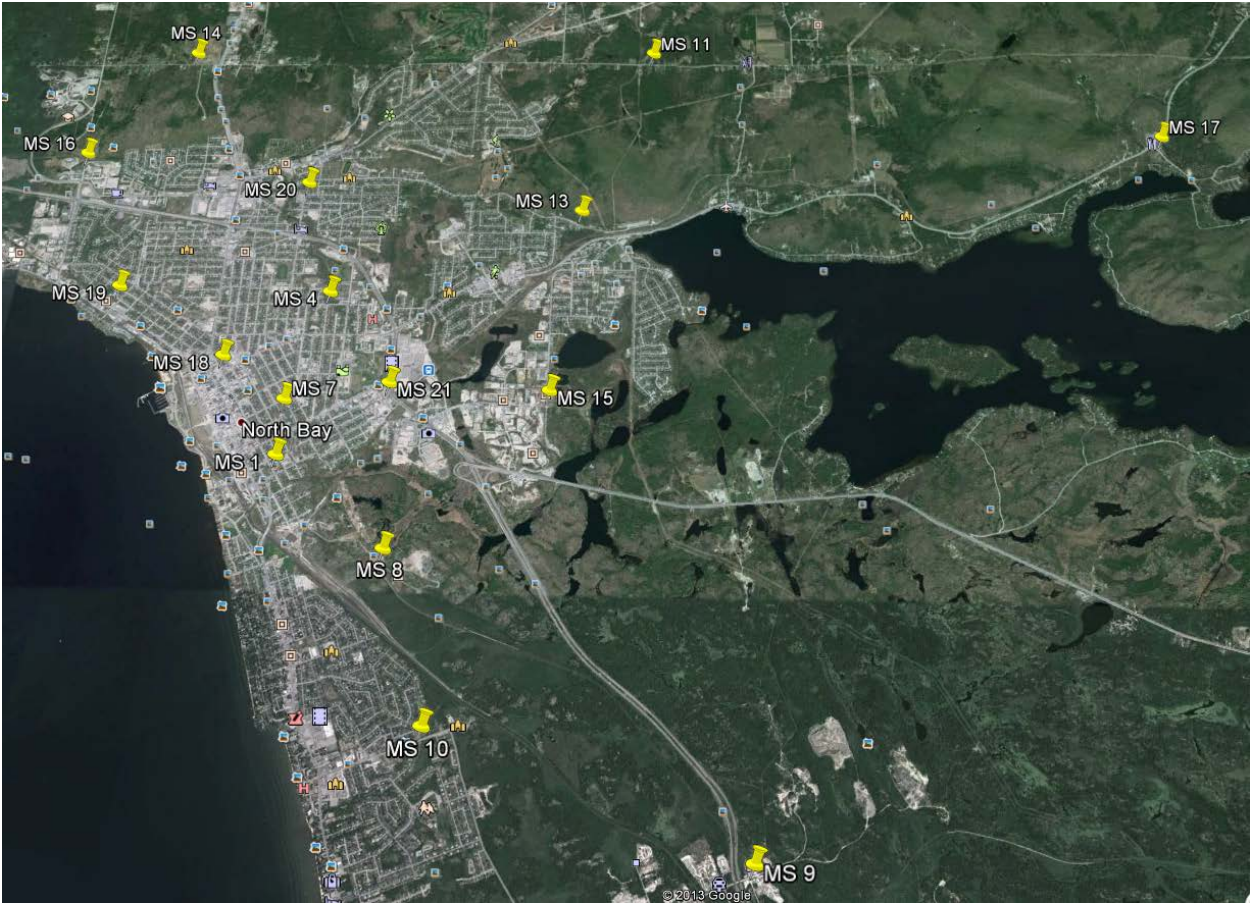


Exhibit 4-1: Distribution Substations and their Locations

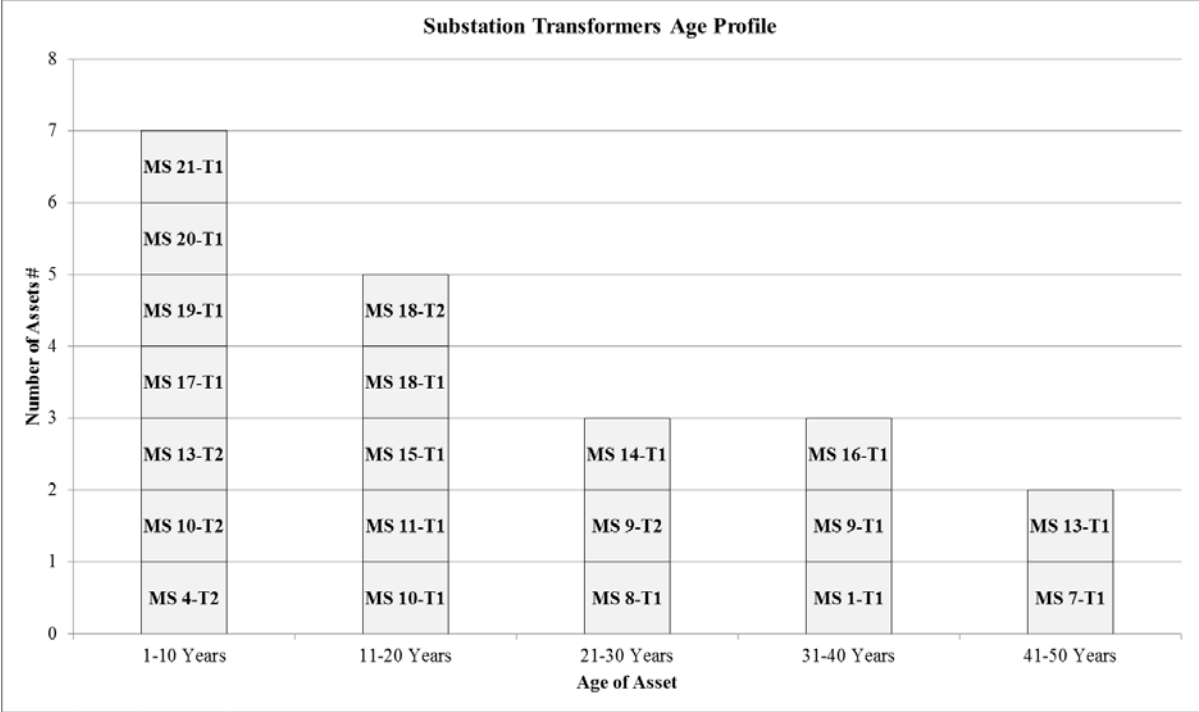


Exhibit 4-2: Substation Transformers Age Profile

North Bay Hydro Asset Condition Assessment Report

Designation	Substation ID	Location	Rating	Manufacturer	Serial #	In Service Date
MS 1-T1	MS 1	561 Worthington St. East	5 MVA	MOLONEY ELECTRIC	274690	1974
MS 4-T2	MS 4	1367 High St.	7.5 MVA	Northern	051993	2008
MS 7-T1	MS 7	290 Third Ave. East	5 MVA	GE	286624	1967
MS 8-T1	MS 8	Old Callander Road	7.5 MVA	Northern	92863	1992
MS 9-T1	MS 9	30 Division Street	7.5 MVA	Westing House	A3S6394	1977
MS 9-T2	MS 9	30 Division Street	7.5 MVA	Northern	92890	1992
MS 10-T1	MS 10	290 Marshall Ave East	7.5 MVA	Northern	94-1090	1994
MS 10-T2	MS 10	291 Marshall Ave East	7.5 MVA	Northern	062035	2006
MS 11-T1	MS 11	571 Tower Road	7.5 MVA	Northern	961251	2002
MS 13-T1	MS 13	1336 Ski Club Road	6 MVA	Feranti Packard	12801	1966
MS 13-T2	MS 13	1336 Ski Club Road	7.5 MVA	VTC	477500A1 64-B806A	2012
MS 14-T1	MS 14	137 Cedar Heights Rd	7.5 MVA	Northern	90733	1991
MS 15-T1	MS 15	897 Wallace Road	7.5 MVA	Northern	951134	1995
MS 16-T1	MS 16	880 Gormmanville Road	7.5 MVA	MOLONEY ELECTRIC	244320	1975
MS 17-T1	MS 17	20 Penninsula Road	7.5 MVA	ABB	BS401570 01	2011
MS 18-T1	MS 18	316 Worthington St.west	7.5 MVA	Northern	971309	1997
MS 18-T2	MS 18	316 Worthington St.west	7.5 MVA	Northern	971310	1997
MS 19-T1	MS 19	1299 Mcintyre St West	7.5 MVA	Northern	072153	2008
MS 20-T1	MS 20	1635 Mckeown Ave	7.5 MVA	ABB	BS401310 01	2011
MS 21-T1	MS 21	398 McGaughey Ave	7.5 MVA	VTC	477500A1 70-B888A	2013

Exhibit 4-3: Substation Transformers Detailed Demographic Information

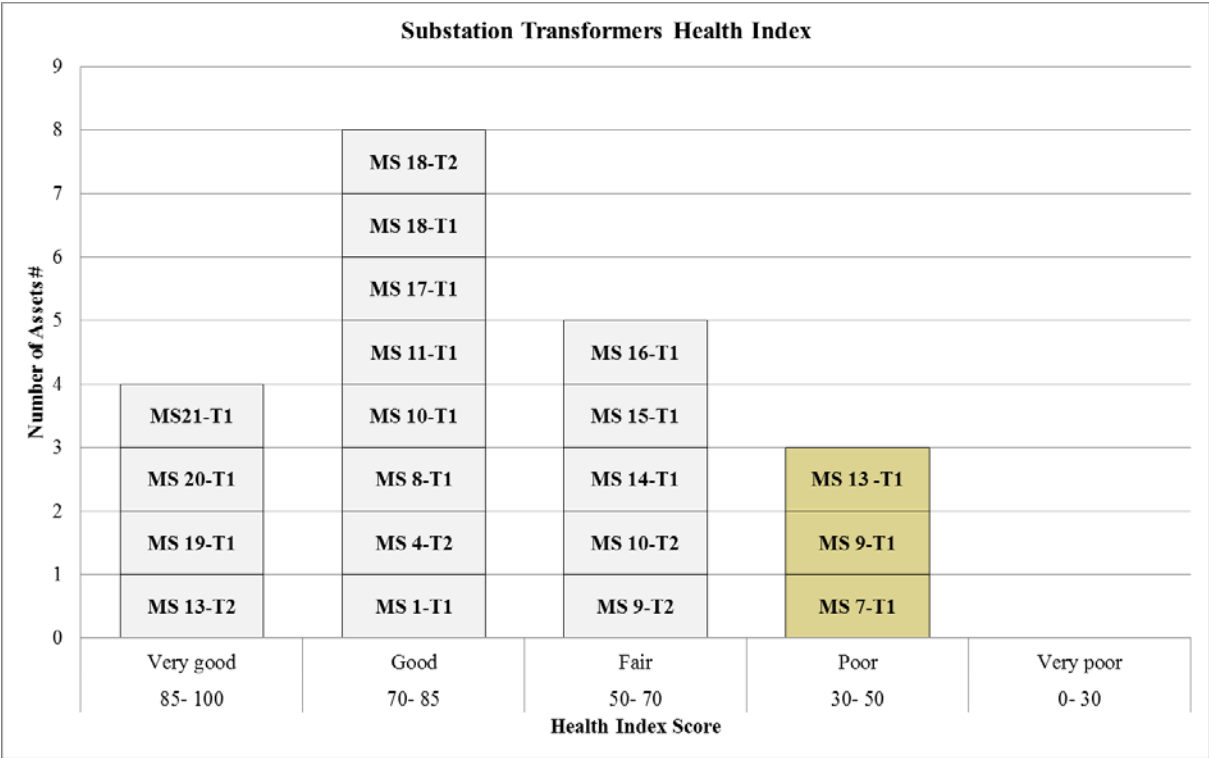


Exhibit 4-4: Substation Transformers Health Index Score

4.1.2 Substation Circuit Breakers and Reclosers

By taking into account the service age, the results of visual inspections and maintenance test reports (where available), Health Index score has been calculated for all circuit breakers and reclosers and the results are summarized in Exhibit 4-5. As indicated the reclosers at MS-9 have been determined to be in “poor” health and recommended to be replaced during the next five years. By taking into account the high probability of failure of the assets found in poor and very poor condition and the consequence of the assets’ failure in service, Section 5 documents additional analysis supporting replacement of the assets found in poor and very condition.

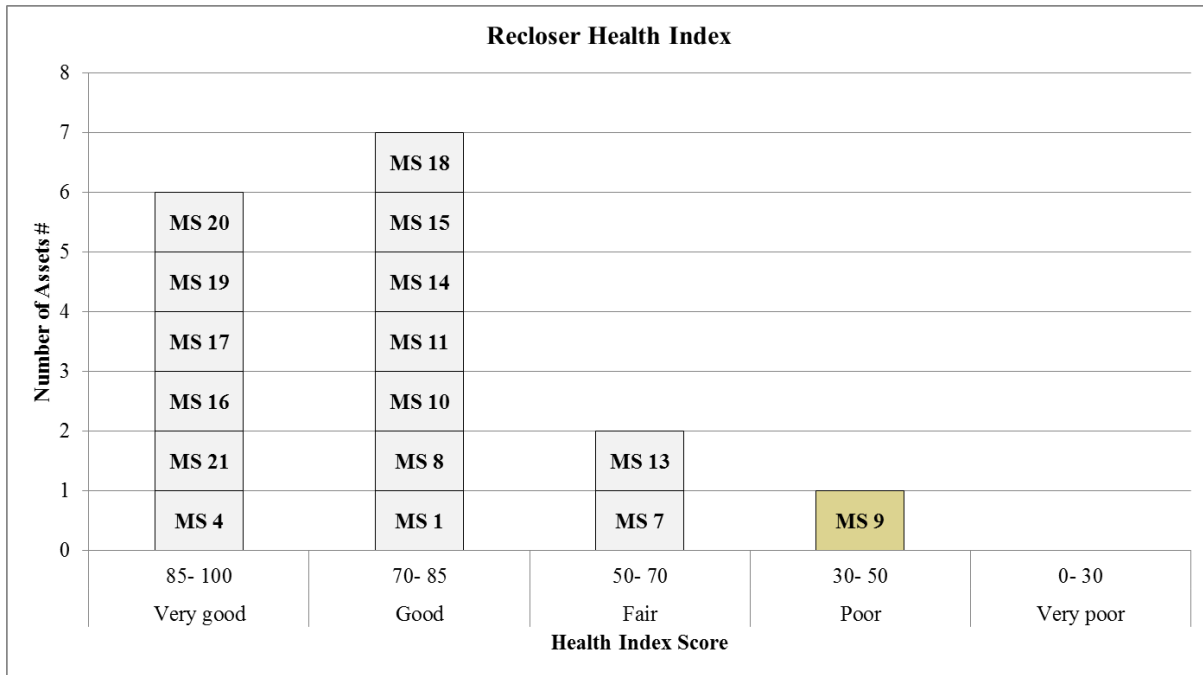


Exhibit 4-5: Substation Circuit Breakers and Reclosers Health Index Score

4.1.3 Substation Protection & Control Relays

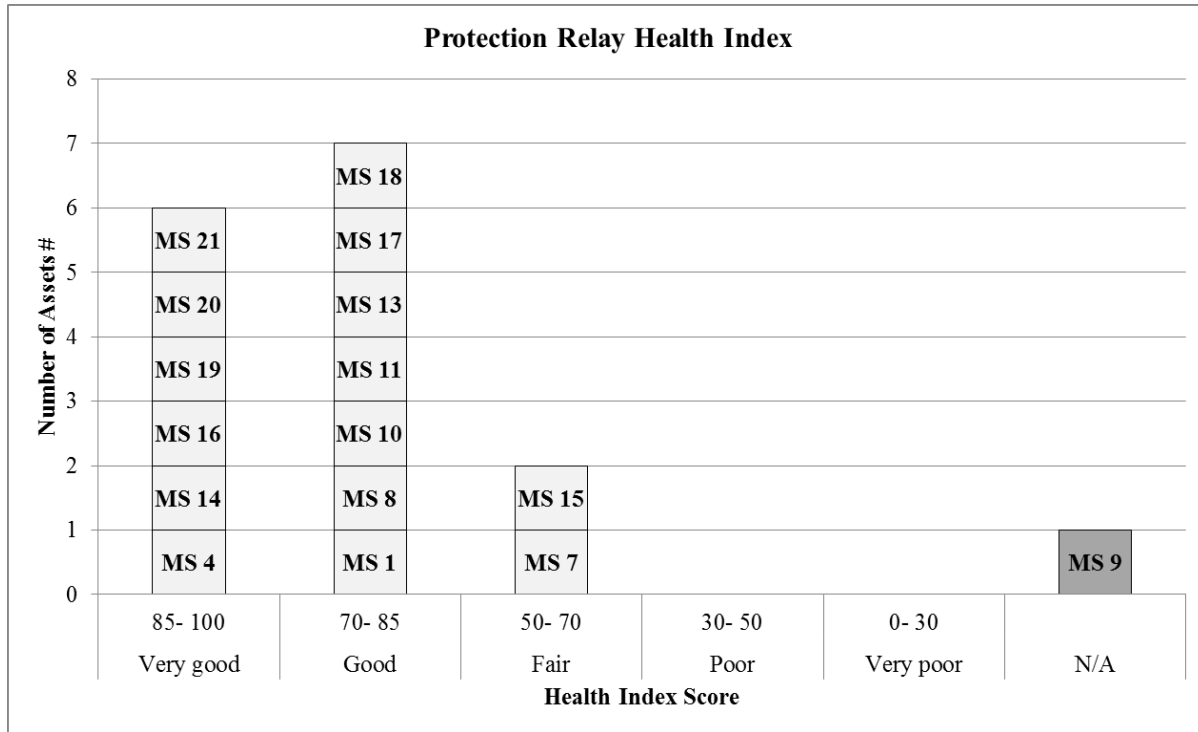


Exhibit 4-6: Substation Protection and Control Relays

As shown in Exhibit 4-6, with the exception of municipal stations MS-9 and MS-16, where no modern protection and controls (P&C) exist, the P&C equipment at the remaining stations has been determined to be in “fair”, “good” or “very good” condition.

4.1.4 Substation Ground Grids

Based on the service age of ground grids and results of visual inspections, the Health Index score for ground grids is calculated and is summarized in Exhibit 4-7. As indicated, the ground grids at MS1, MS4, MS7, MS9, MS10, MS11, MS13, MS15 and MS16 are determined to be in poor condition, mostly due to the poor condition of the surface stone and the rest are in good and very good condition. It is recommended the surface stone found in poor condition be replaced during the next five years.

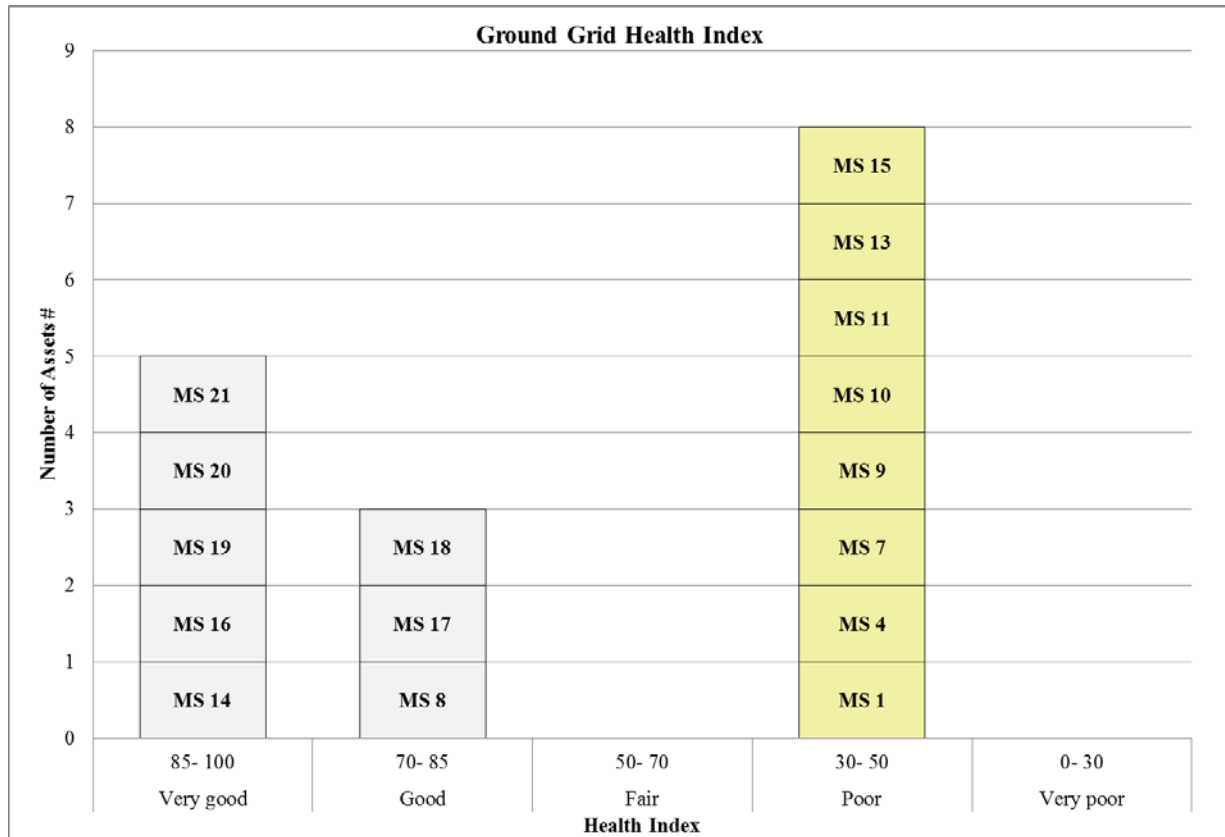


Exhibit 4-7: Substation Ground Grids Health Index Score

4.1.5 Substation Fences and Control Buildings

Based on the condition assessment criteria defined in Section 3, the Health Index score as summarized in Exhibit 4-8, is calculated for substation perimeter fences and control buildings. The perimeter fences and buildings at MS-15 and MS-16 are found in fair condition and the rest are in the good and very good condition.

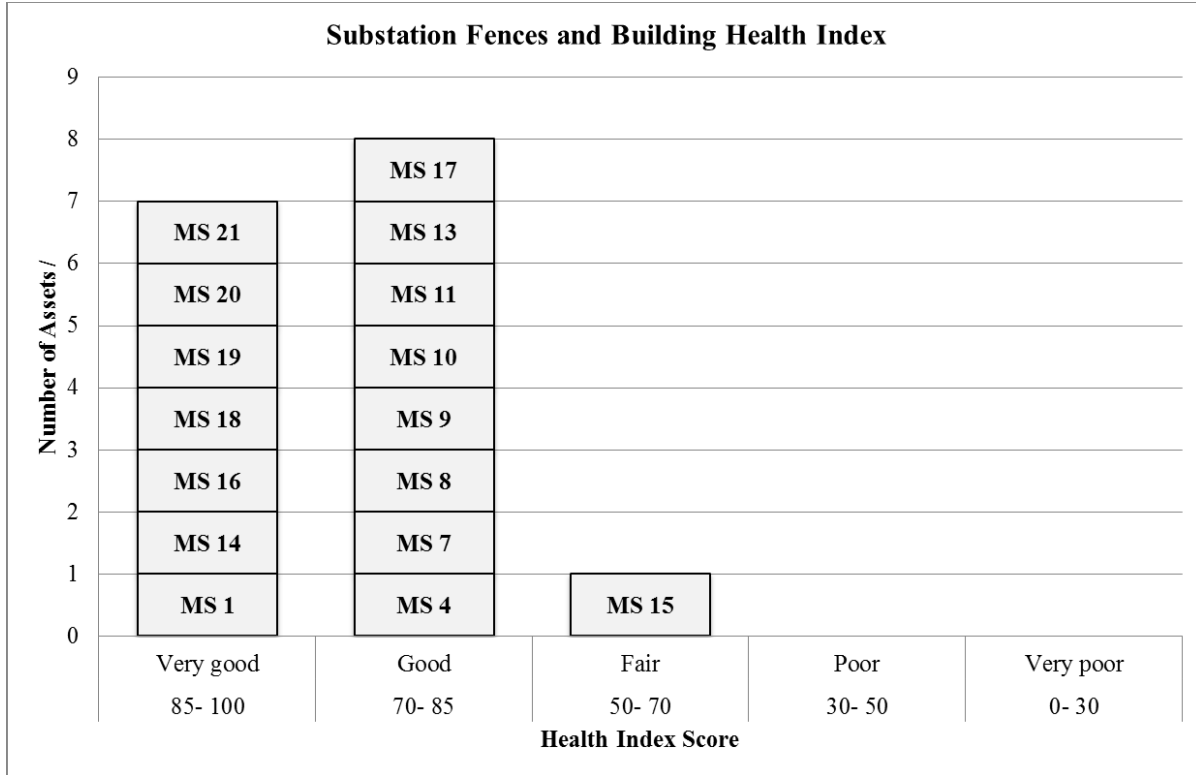


Exhibit 4-8: Substation Fences Health Index Score

4.1.6 Overall Health Index Scores for Substations

Based on the condition assessment criteria defined in Section 3, the overall Health Index scores for the substations currently in service at NBHDL are summarized in Exhibit 4-8.

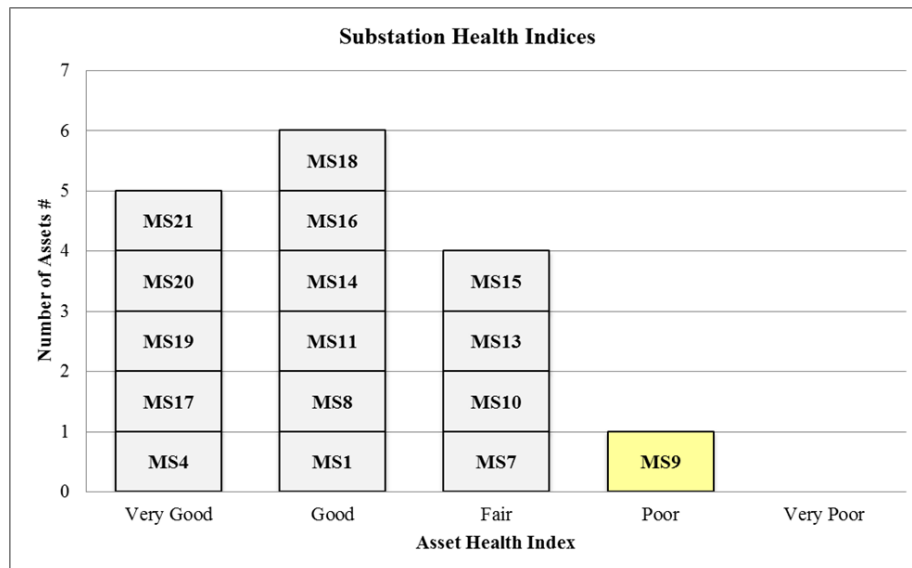


Exhibit 4-9: Overall Substation Health Index Score

4.2 Overhead Lines

4.2.1 Distribution Line Support Poles

Based on the demographic information retrieved from the GIS system, there are approximately 7180 wood poles and 71 other types of poles (including steel, concrete and fiberglass) employed on North Bay Hydro's medium voltage (MV) electricity distribution system. The total number of poles in services, per NB Hydro records is approximately 10,050, which means approximately 2870 poles are employed on LV lines and stub pole applications. For condition assessment of the assets we have employed the GIS data for poles employed on MV lines.

Exhibit 4-10 displays the age profile of wood poles employed on North Bay Hydro's distribution system. Approximately 1550 poles (shown in red) have been in service for more than 50 years and approximately 850 poles (shown in yellow) have been in service for more than 40 years. For approximately 550 poles the service age is unknown, but a vast majority of the poles in this category are expected to of older vintage with service life of more than 40 years. This means more than 40% of the poles currently in service have a service age of 40 years more, as of 2013 and a majority of these will required replacement during the next 10 years.

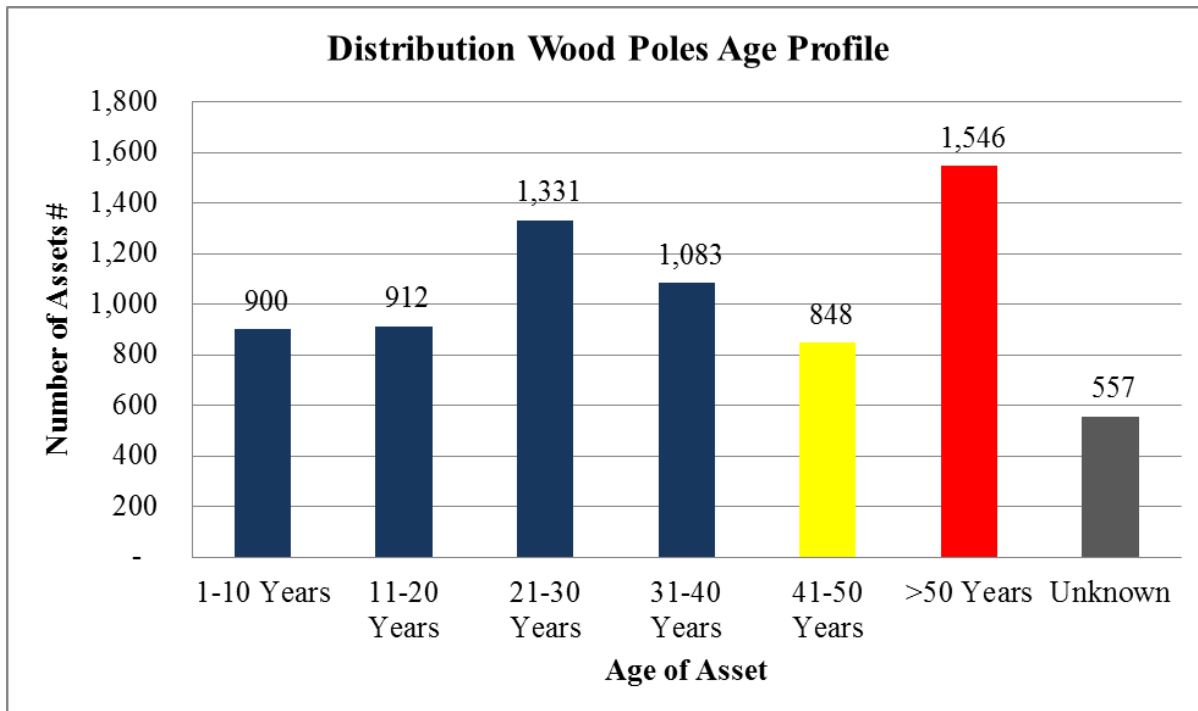


Exhibit 4-10: Age Demographics of Wood Poles

Exhibit 4-11 displays the feeder by feeder age profile of wood poles. As shown, feeders emanating from some of the substations, i.e. MS11, MS17 and MS8, etc., contain a much higher ratio of these older vintage poles.

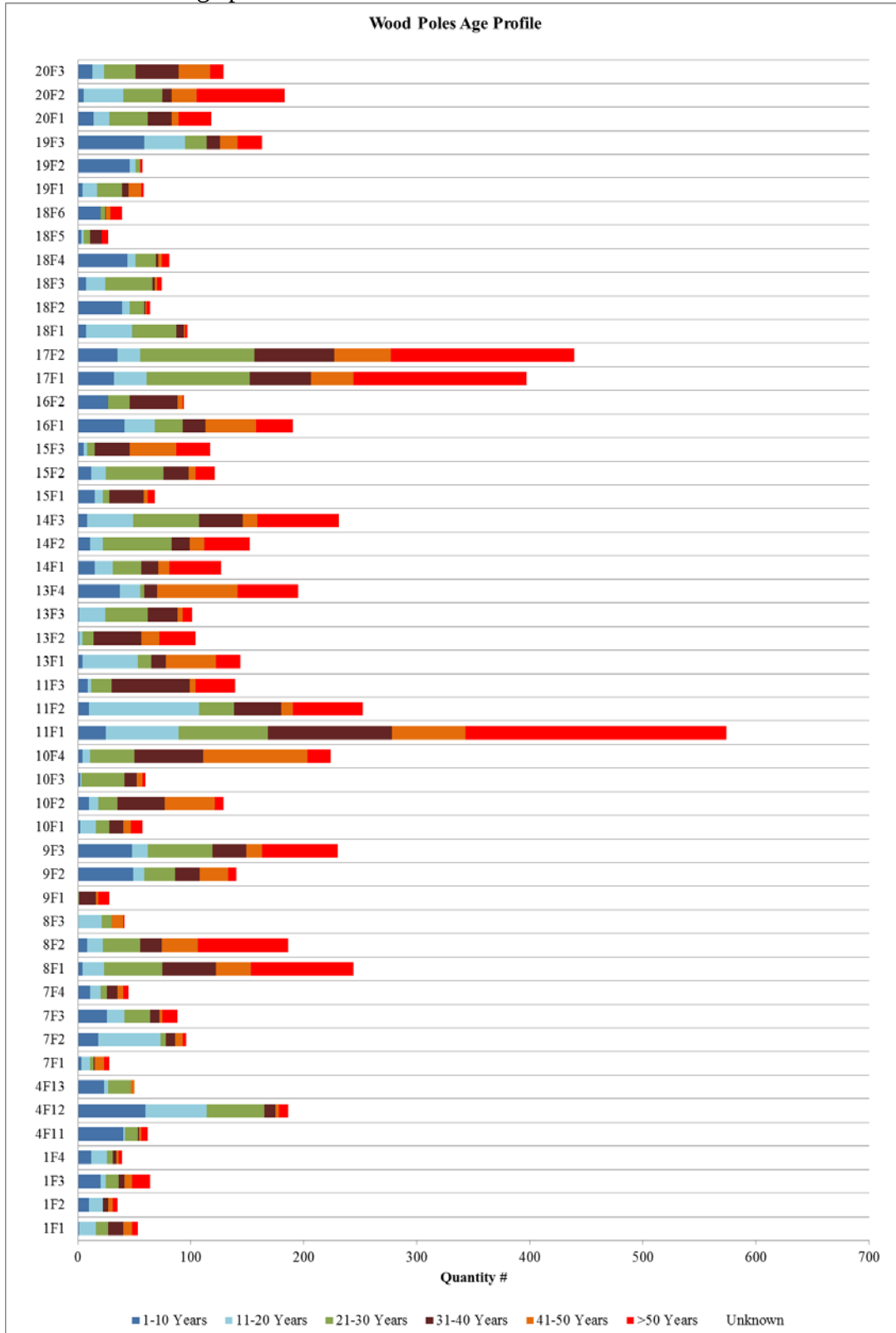


Exhibit 4-11: Age Demographics of Wood Poles

Exhibit 4-11 displays the number of poles in service age categories of “41-50 year”, “>50 years” and “unknown age” employed on 4 kV lines.

	41-50 years	>50 years	Unknown
MS1	21	28	13
MS7	23	26	49
MS18	11	32	21
MS19	26	26	24
MS4	8	14	9
TOTAL	89	126	116

Exhibit 4-12: Number of Poles Older than 40 years Employed on 4 kV Feeders

Poles on distribution lines are employed in different configurations; some support only low voltage circuits, while others may support multiple circuits of different voltages, requiring taller poles. Exhibit 4-13 indicates the approximate percentage of different pole heights employed on North Bay Hydro’s distribution system. As indicated, pole heights vary from 20 feet to 80 feet, however, 35ft, 40ft and 45ft poles are used most commonly. Poles 25 feet or less are typically stub poles.

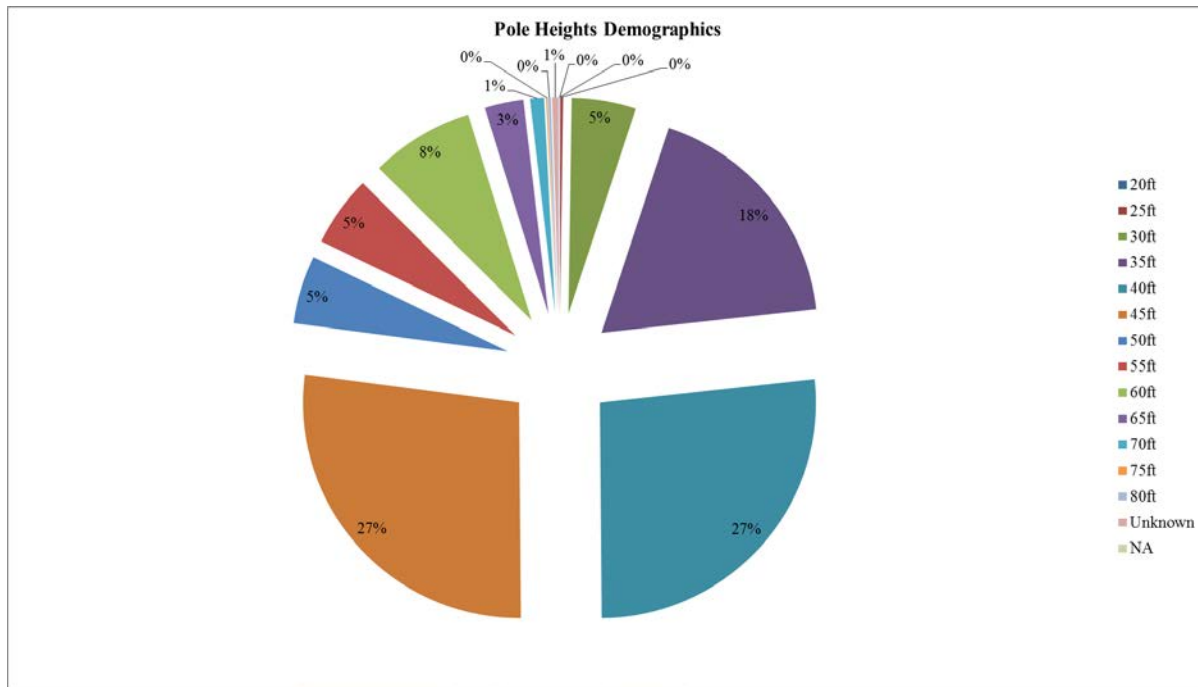


Exhibit 4-13: Distribution Poles Height Demographics

Exhibit 4-14 displays the age profile of the poles with respect to their heights and as indicated a majority of the poles that have reached more than 50 years of service age fall within the of 30', 35' and 40' height ranges.

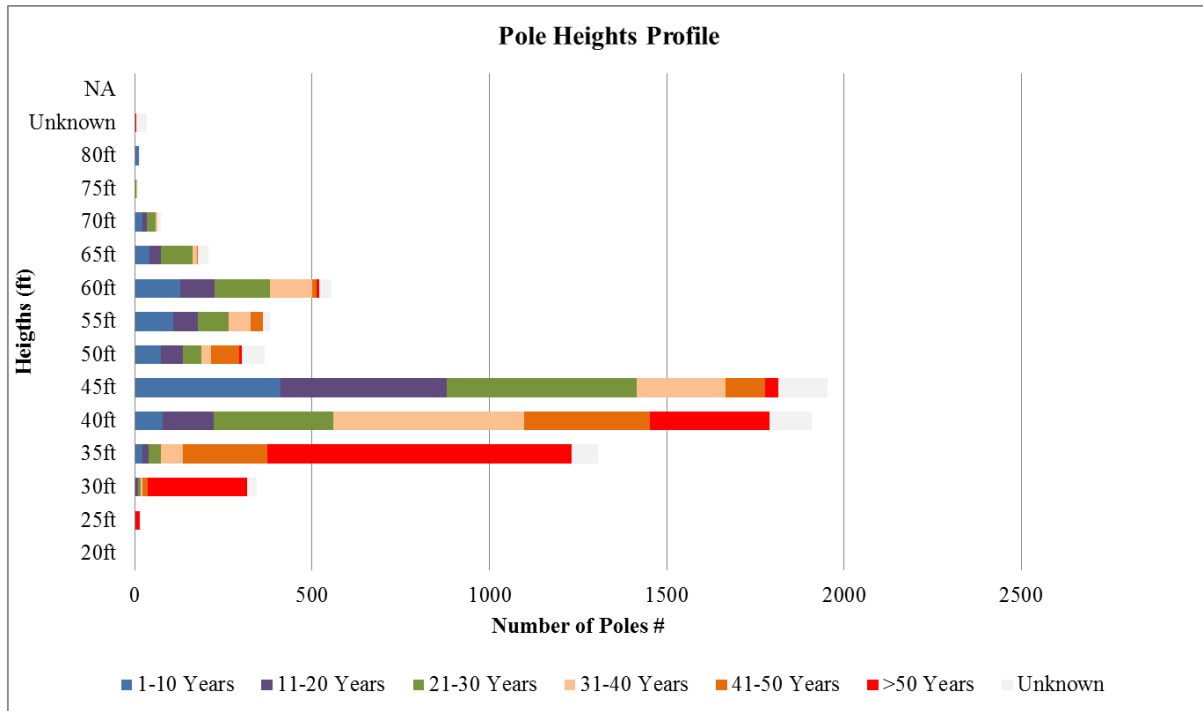


Exhibit 4-14: Age Profile of the Poles for different Heights

North Bay Hydro's has conducted non-destructive testing of wood poles. The test criteria have been that poles be at least 10 years of age. Approximately 2750 poles were tested and inspected by an independent contractor in 2010 and 2011; Exhibit 4-15 indicates the condition of poles inspected in 2011. In this case, the Health Index score is calculated based on the remaining strength of the pole, where "very poor" equates to less than 3 years of remaining useful life, "poor" equates to less than 5 years of anticipated remaining useful life and "fair" equates to anticipated remaining useful life of "5 to 20" years. As shown, out of the test pole sample tested in 2010 and 2011, approximately 142 poles are found to be in very poor condition and 158 in poor condition, In other words based on testing of the poles approximately 11% of poles in service were found to have a remaining life expectancy of five years or less.

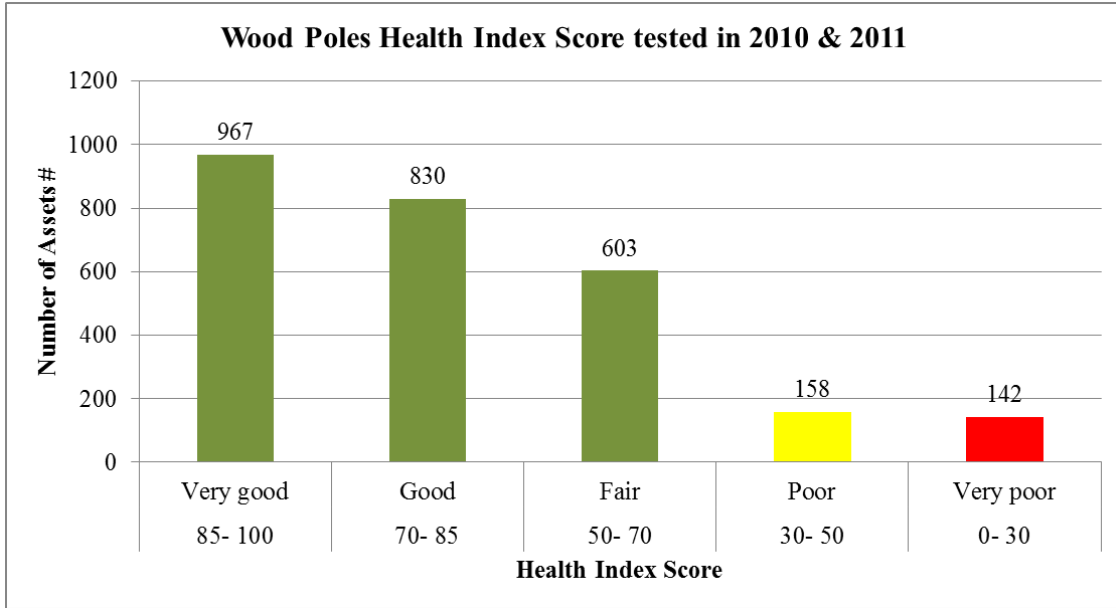


Exhibit 4-15: Wood Poles Health Index Score based on pole tests on a sample of 2754 Poles

Since the tests above were performed on a random sample of poles the results can be extrapolated to the full population of poles. The results of this analysis are presented in Exhibit 4-16.

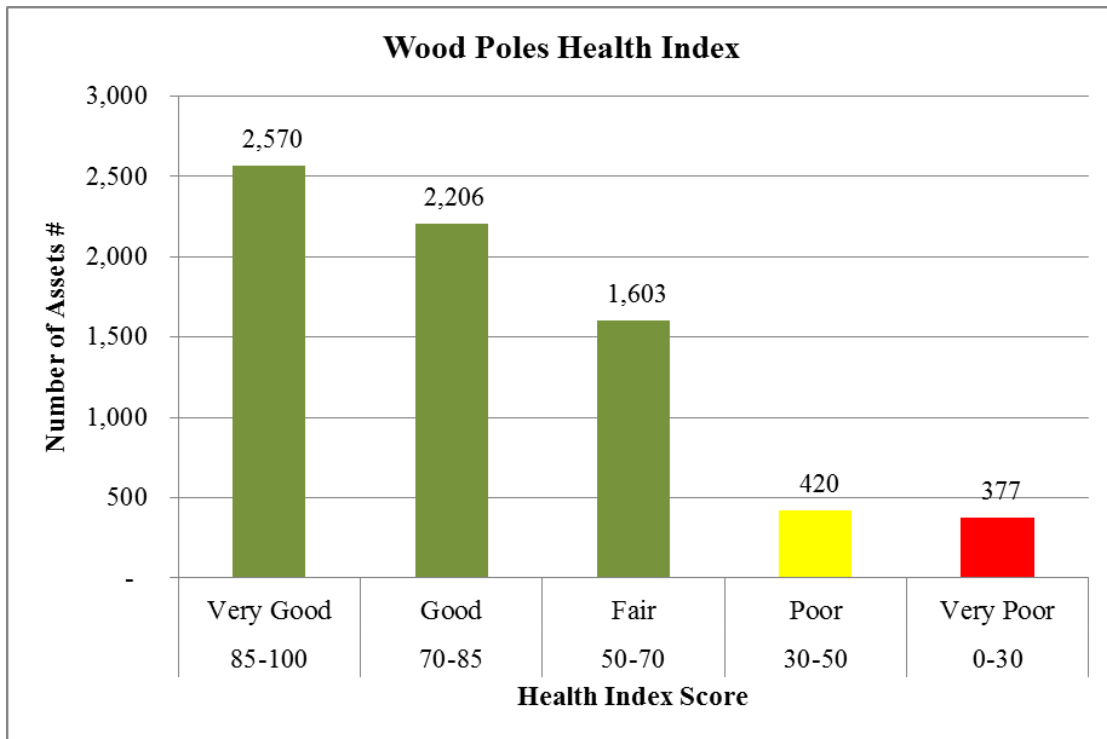


Exhibit 4-16: Wood Poles Health Index Score for Entire Pole Population

In this snap shot of the condition of poles in 2010 and 2011, poles with a health index of “30 or less” are determined to be in “very poor” condition and the poles with a health index in the range of “30 to 50” are determined to be in “poor” condition. The poles in poor and very poor condition present a high risk of failure in service under adverse weather conditions. It is noteworthy that with passage of time, about 50% of the poles found in “fair” condition during 2010 and 2011 testing, would also reach “poor” condition by the end of 2018, and the number of “poor” and “very poor” poles is expected to rise each year, unless a proactive pole replacement program is implemented.

We recommend approximately 1598 wood poles for replacement during the next five years: 377 shown in “very poor” condition, 420 shown in “poor” condition and 801 shown in “fair” condition in Exhibit 4-16. Since voltage upgrade of lines offers other economic benefits in addition to reducing the risk of asset failures, poles in “very poor” and “poor” condition employed on the 4 kV lines are recommended to be given priority in conjunction with the implementation of line voltage upgrades. Section 5 documents additional analysis supporting replacement of the assets found in poor and very condition.

4.2.2 44 kV Line Support Poles

While a majority of the 44 kV lines are overbuilt on top of 12.47 kV feeders, there are also some dedicated 44 kV lines. The age profile for poles employed on 44 kV lines is presented in Exhibit 4-17.

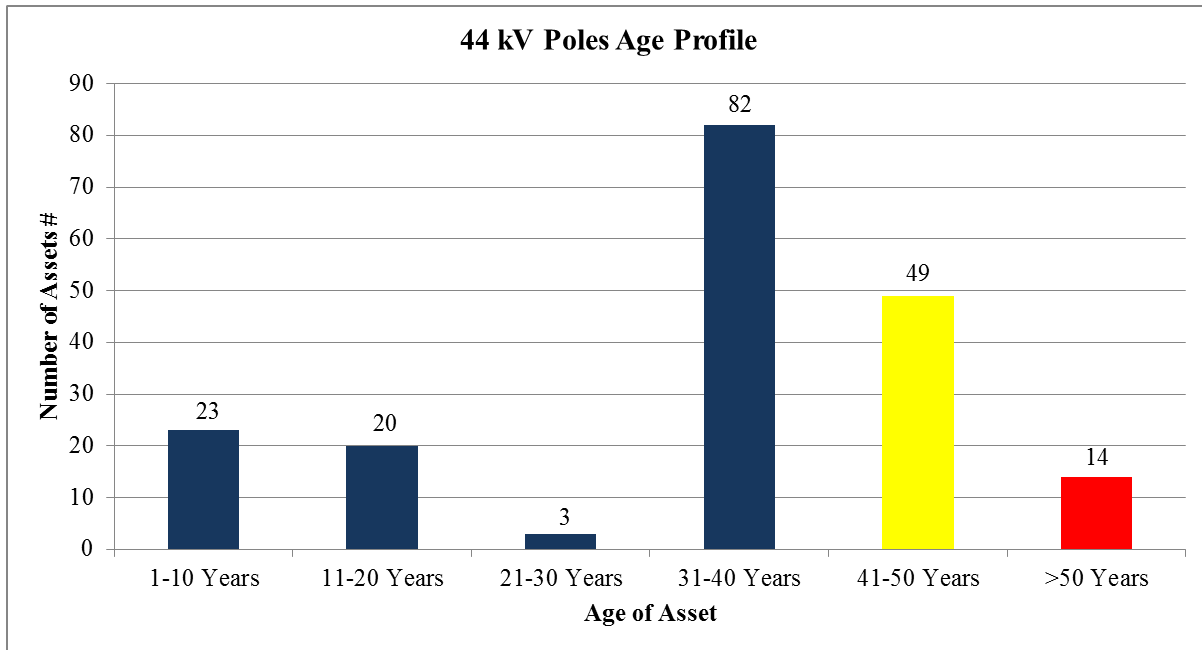


Exhibit 4-17: Age Profile of Wood Poles on 44 kV Lines

4.2.3 Overhead Primary Conductors

The overhead distribution network at North Bay Hydro employs approximately 400 kilometers of overhead distribution lines and approximately 90 km of 44 kV lines. For 44 kV lines, age profiles are not available. Age profiles for 12.47 kV and 4.16 kV lines are presented below.

The overall age profile of overhead primary conductors is presented in Exhibit 4-18. Approximately 35% of the conductors in service have reached a service age of greater than 40 years.

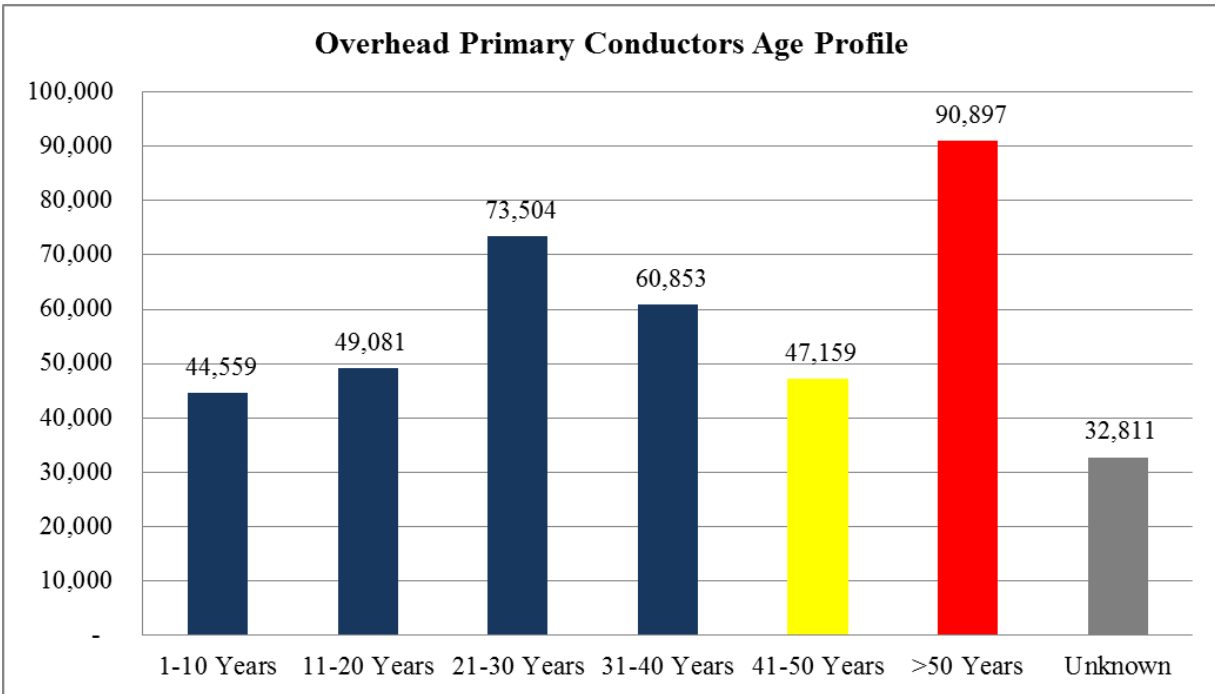


Exhibit 4-18: Overhead Primary Conductors Overall Age Profile

Exhibit 4-19 indicates the line lengths of different service age conductors, employed on 3-phase and 1-phase overhead lines. Exhibits 4-20 through 4-23 provide further breakdown of the overhead line sections into 4.16 kV and 12.47 kV; 3-phase and 1-phase lines. As indicated previously, age profiles of 44 kV sub-transmission lines are not available.

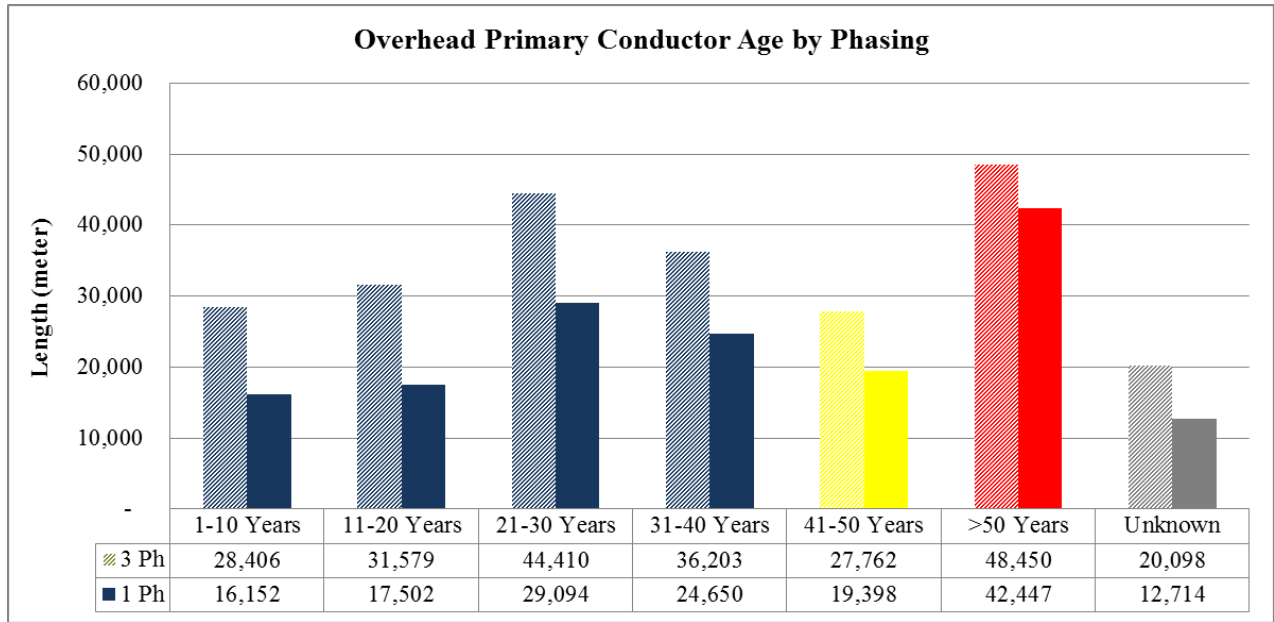


Exhibit 4-19: Overhead Primary Conductors Age Profile (1-Phase and 3-Phase)

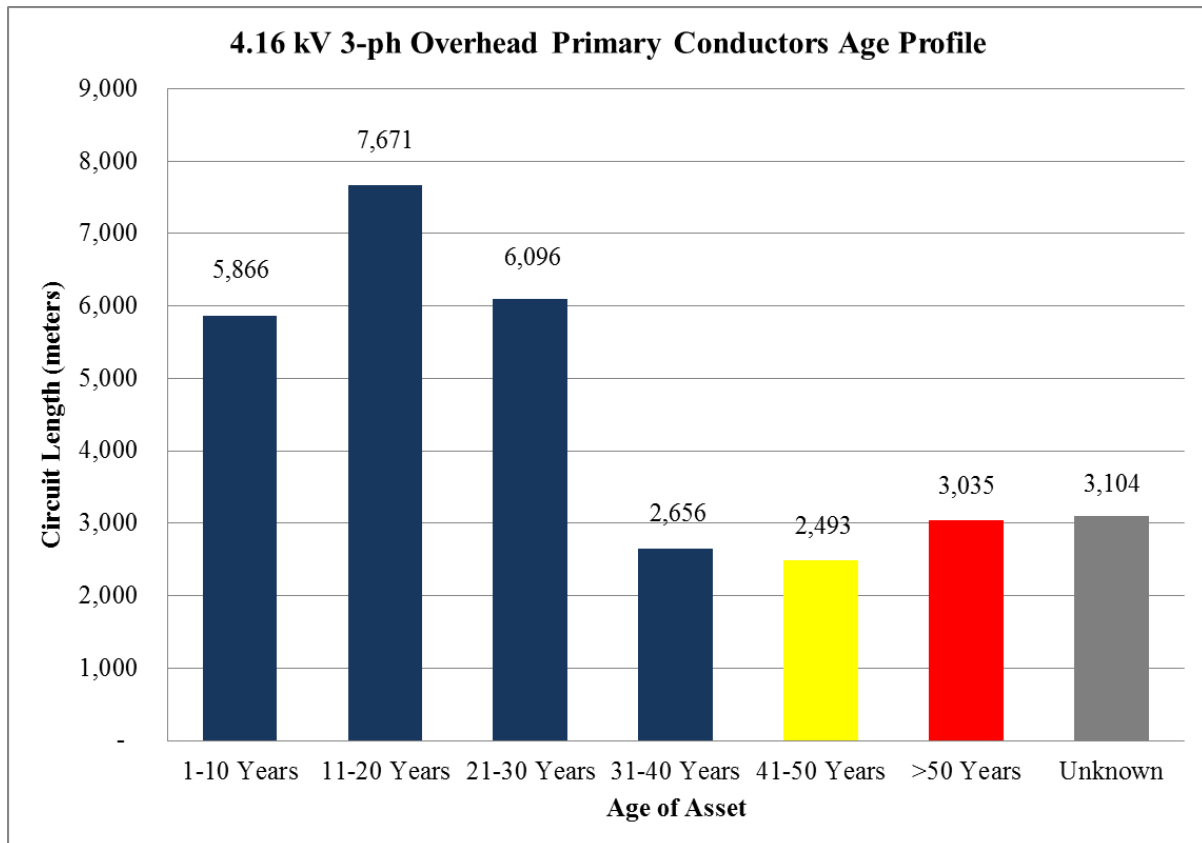


Exhibit 4-20: Overhead Primary Conductors Age Profile (4.16 kV; 3-Phase)

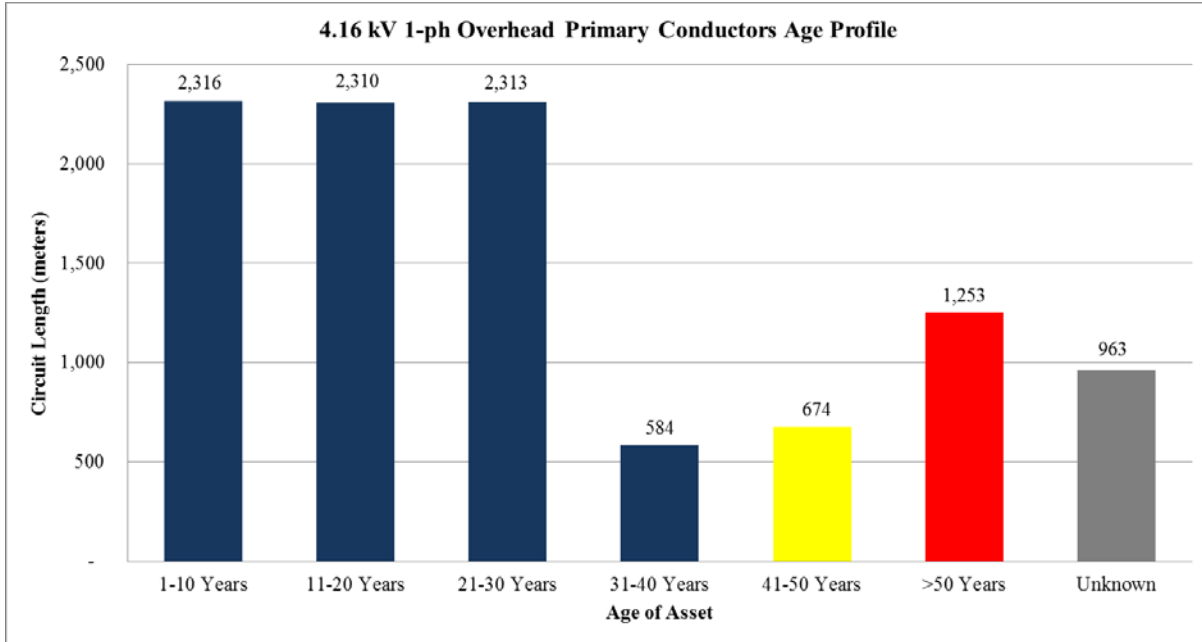


Exhibit 4-21: Overhead Primary Conductors Age Profile (4.16 kV; 1-Phase)

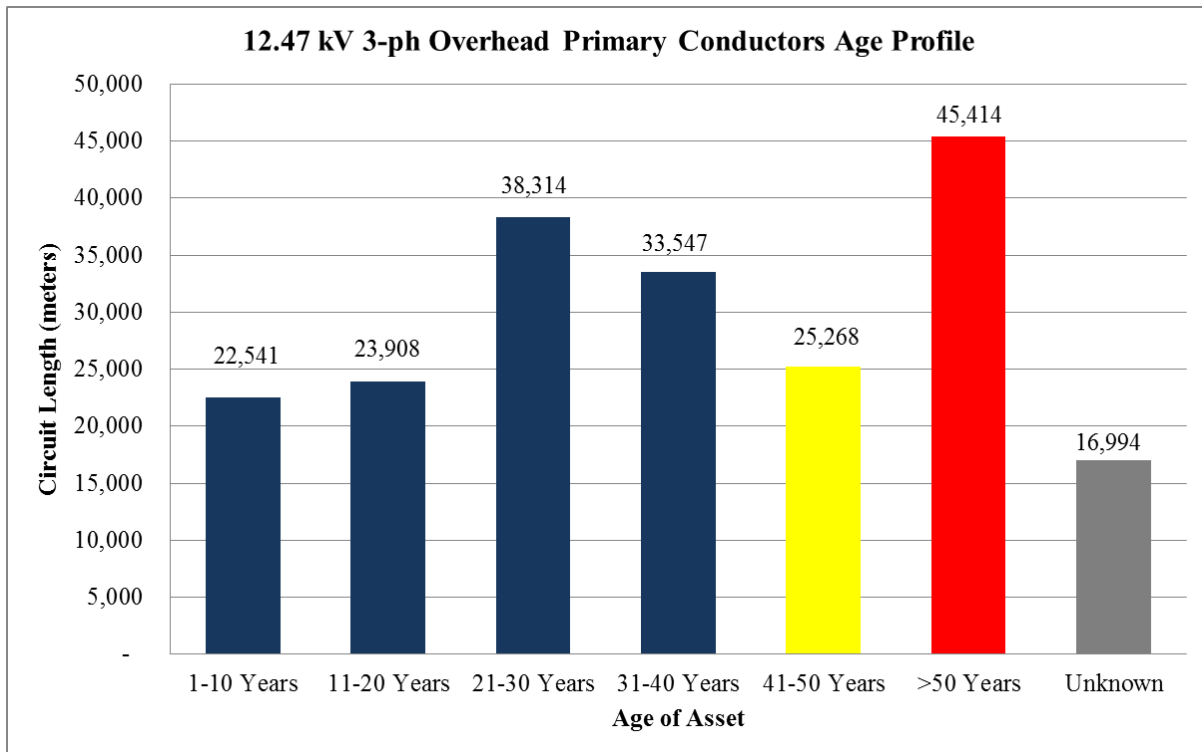


Exhibit 4-22: Overhead Primary Conductors Age Profile (12.47 kV; 3-Phase)

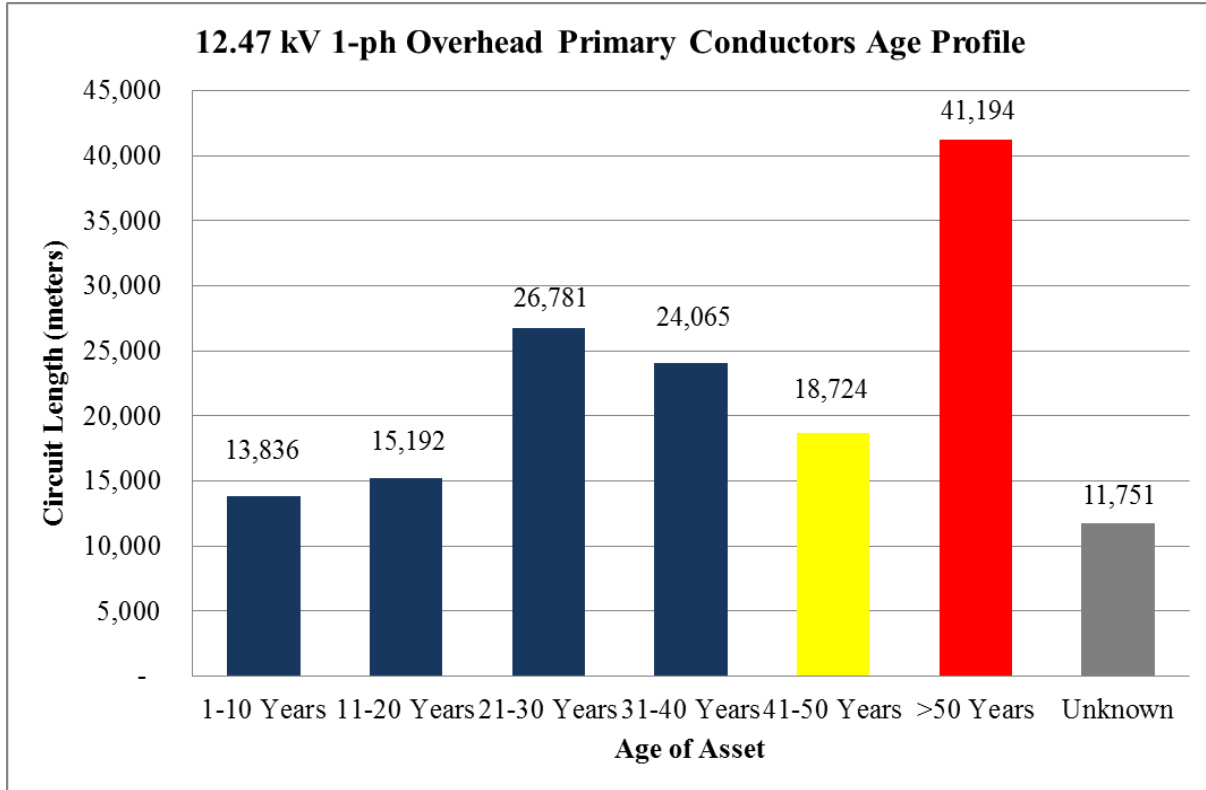


Exhibit 4-23: Overhead Primary Conductors Age Profile (12.47 kV; 1-Phase)

Exhibits 4-24 through 4-27 indicate the health indices for different categories of overhead line conductors. The conductors determined to be in “poor” and “very poor” condition are recommended to be replaced during the next five years.

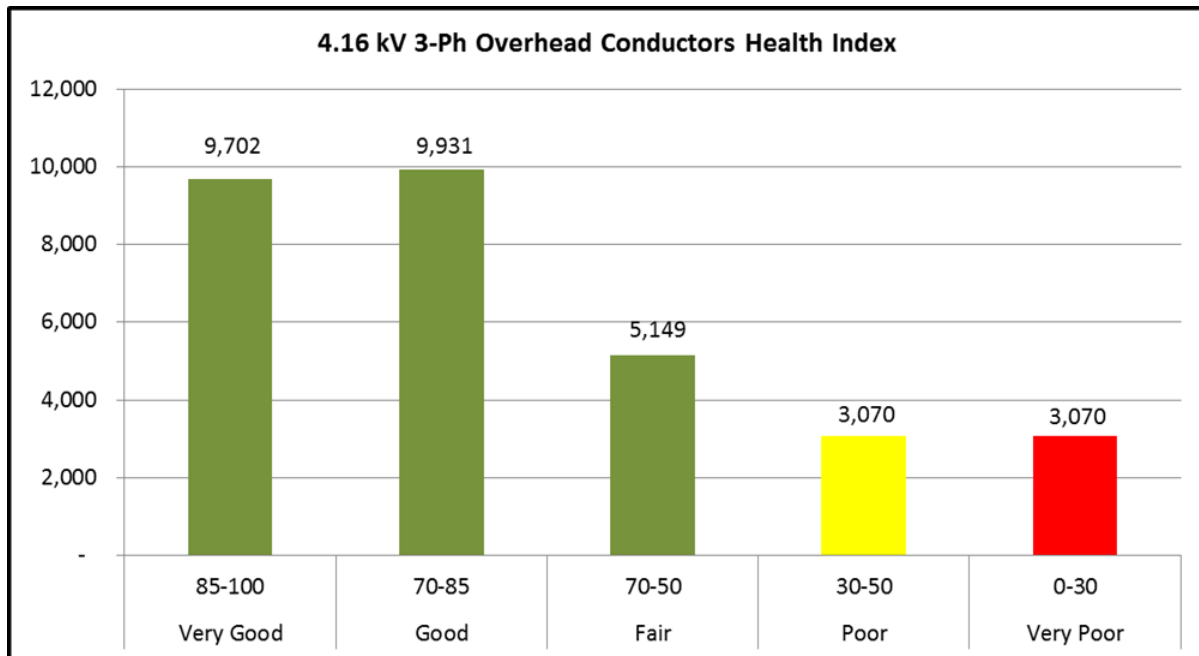


Exhibit 4-24: 4.16 kV 3-ph Overhead Primary Conductors Health Index Score

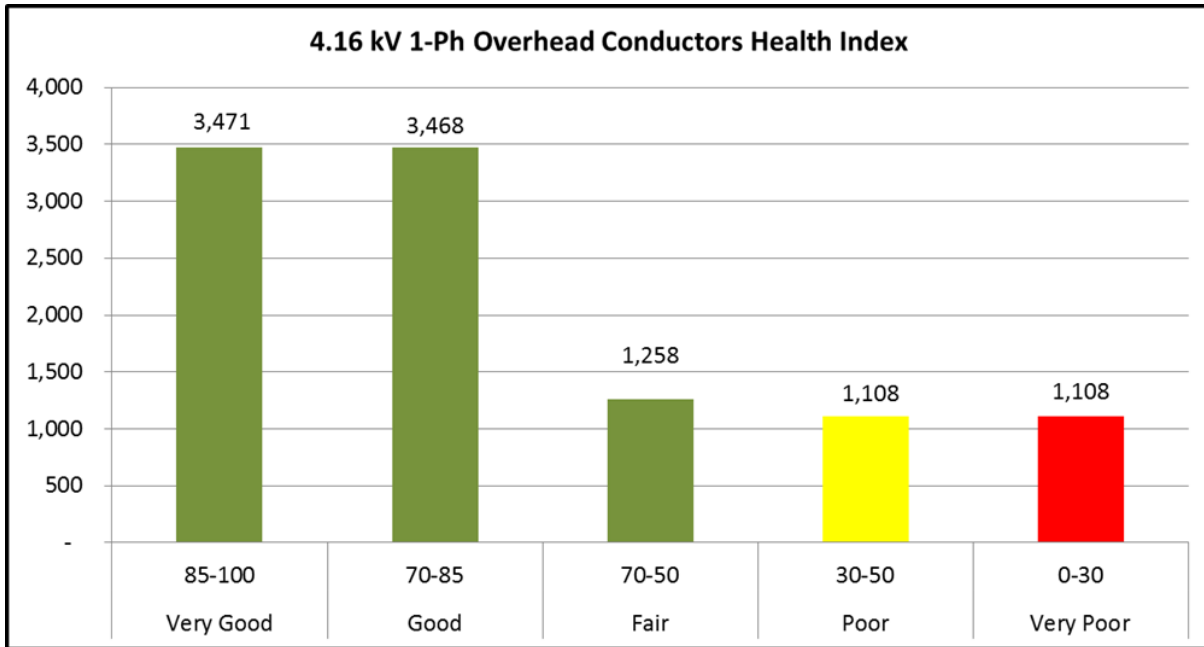


Exhibit 4-25: 4.16 kV 1-ph Overhead Primary Conductors Health Index Score

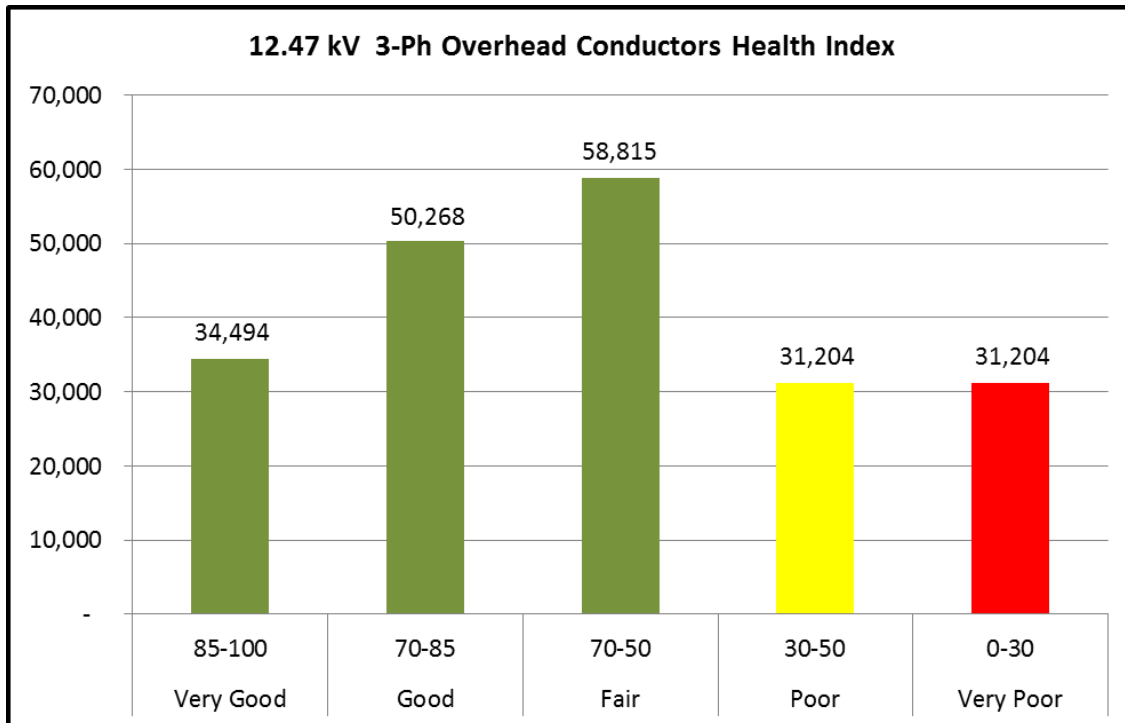


Exhibit 4-26: 12.47 kV 3-ph Overhead Primary Conductors Health Index Score

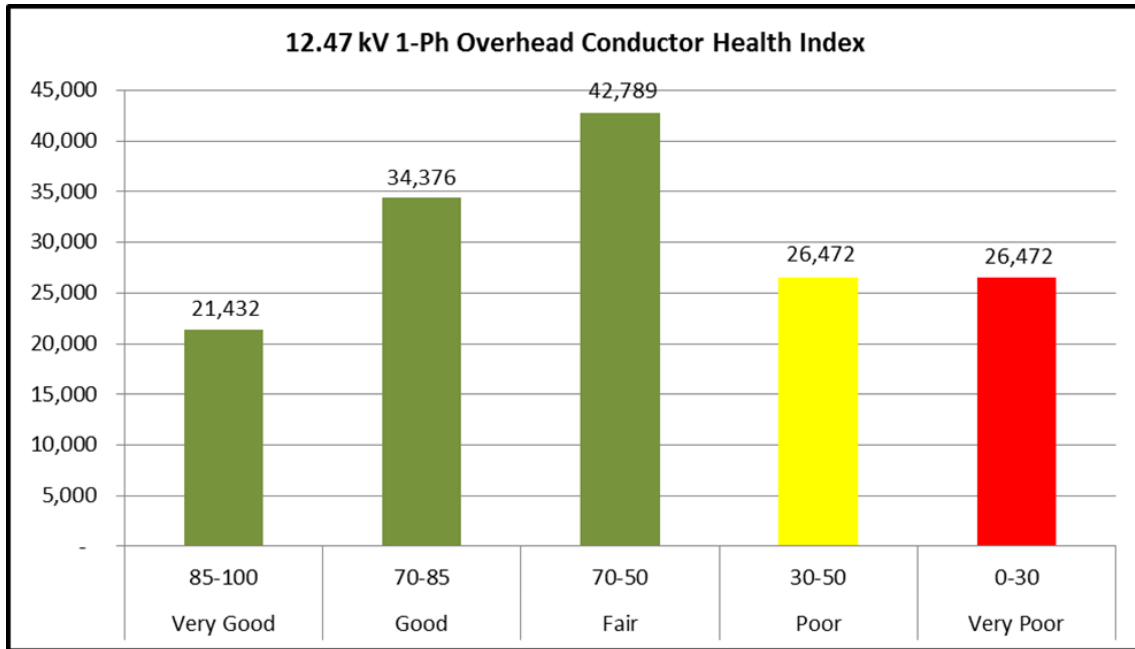


Exhibit 4-27: 12.47 kV 1-ph Overhead Primary Conductors Health Index Score

4.3 *Underground Distribution System*

4.3.1 Underground Primary Conductors

The underground distribution network at North Bay Hydro employs approximately 110 kilometers of primary underground cable circuits. The overall age profile of primary underground cables is presented in Exhibit 4-28. As indicated, a vast majority of the underground cables fall within the service age category of 20 to 30 years. Slightly more than 10% of the cables have reached the service age of greater than 40 years and these present a higher risk of failure in service.

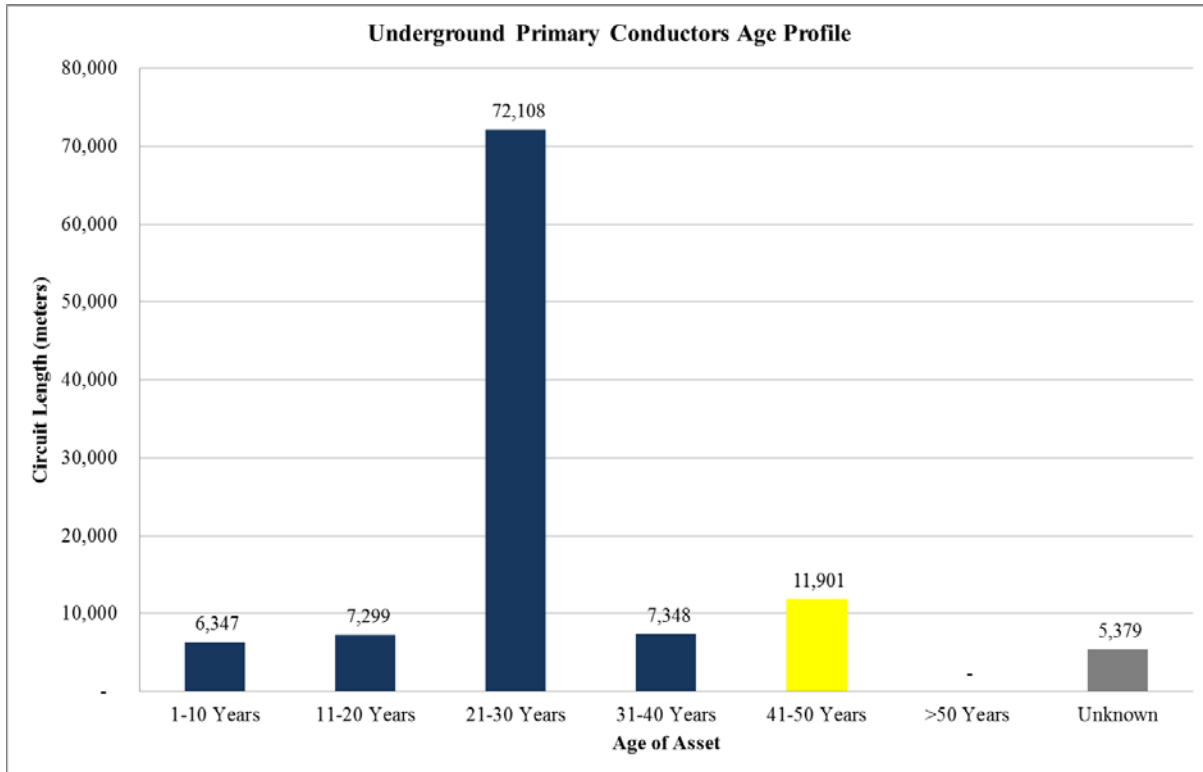


Exhibit 4-28: Underground Primary Conductors Overall Age Profile

Age profiles for 1-phase and 3 phase cables employed on different feeders operating at 4.16 kV and 12.47 kV are provided in Exhibit 4-29 through Exhibit 4-32. As indicated, most of the older vintage cables are employed in the service territories of MS-1, MS-7, MS-11 and MS-18 substations.

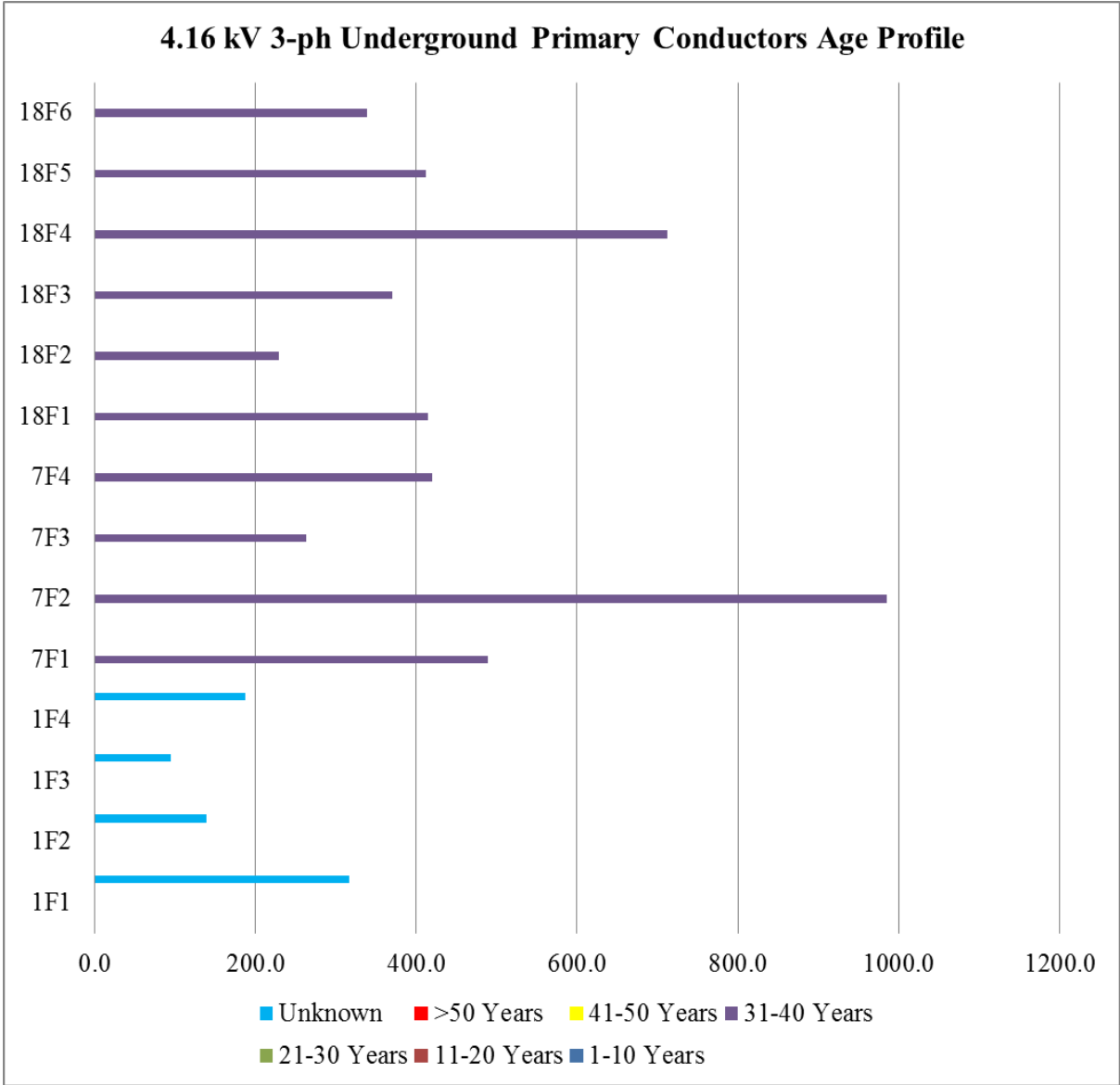


Exhibit 4-29: 4.16 kV Underground 3ph Conductor Age Profile

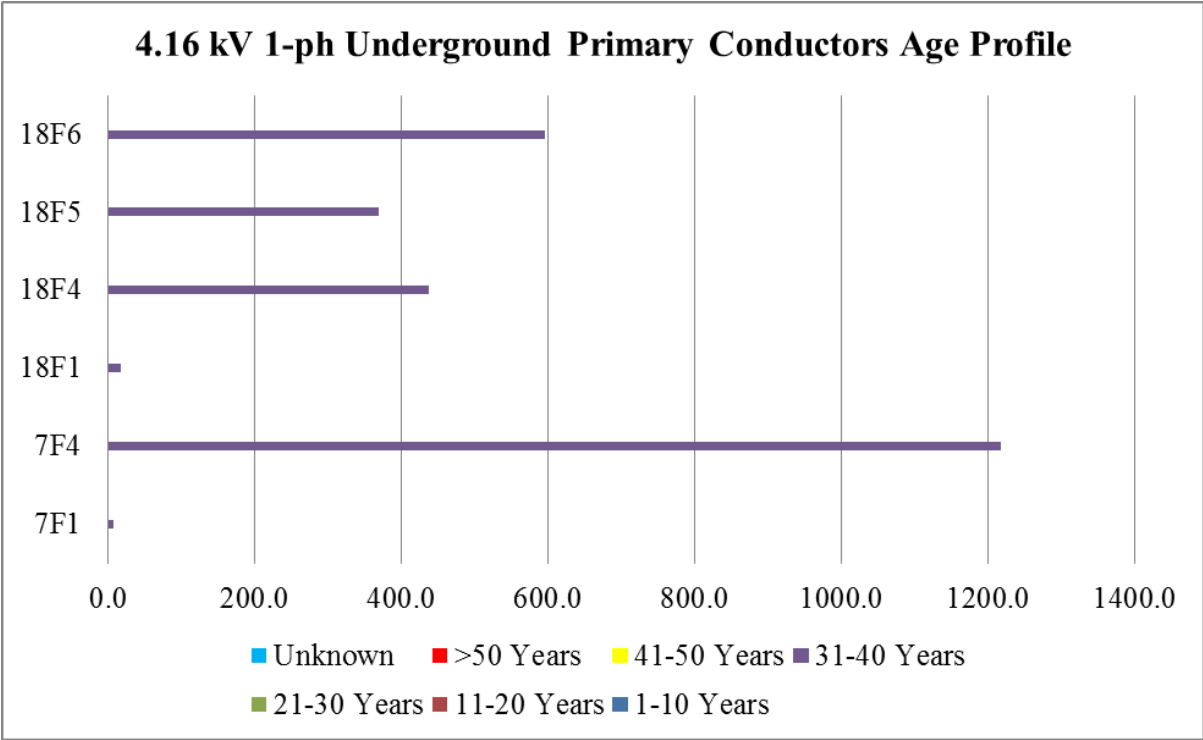


Exhibit 4-30: 4.16 kV Underground Primary 1ph Conductors Age Profile on different Circuits

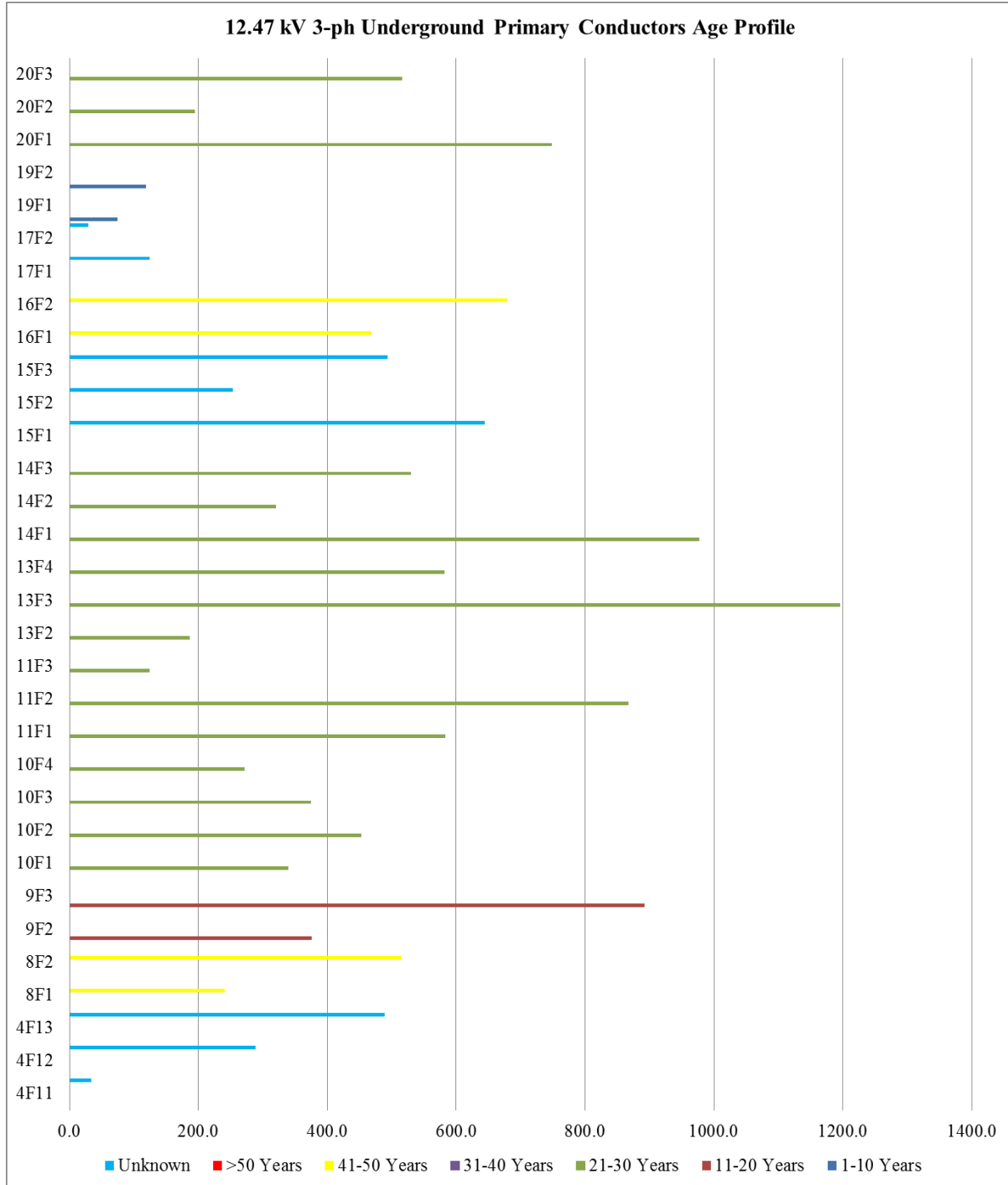


Exhibit 4-31: 12.47 kV Underground Primary 3ph Conductors Age Profile on different Circuits

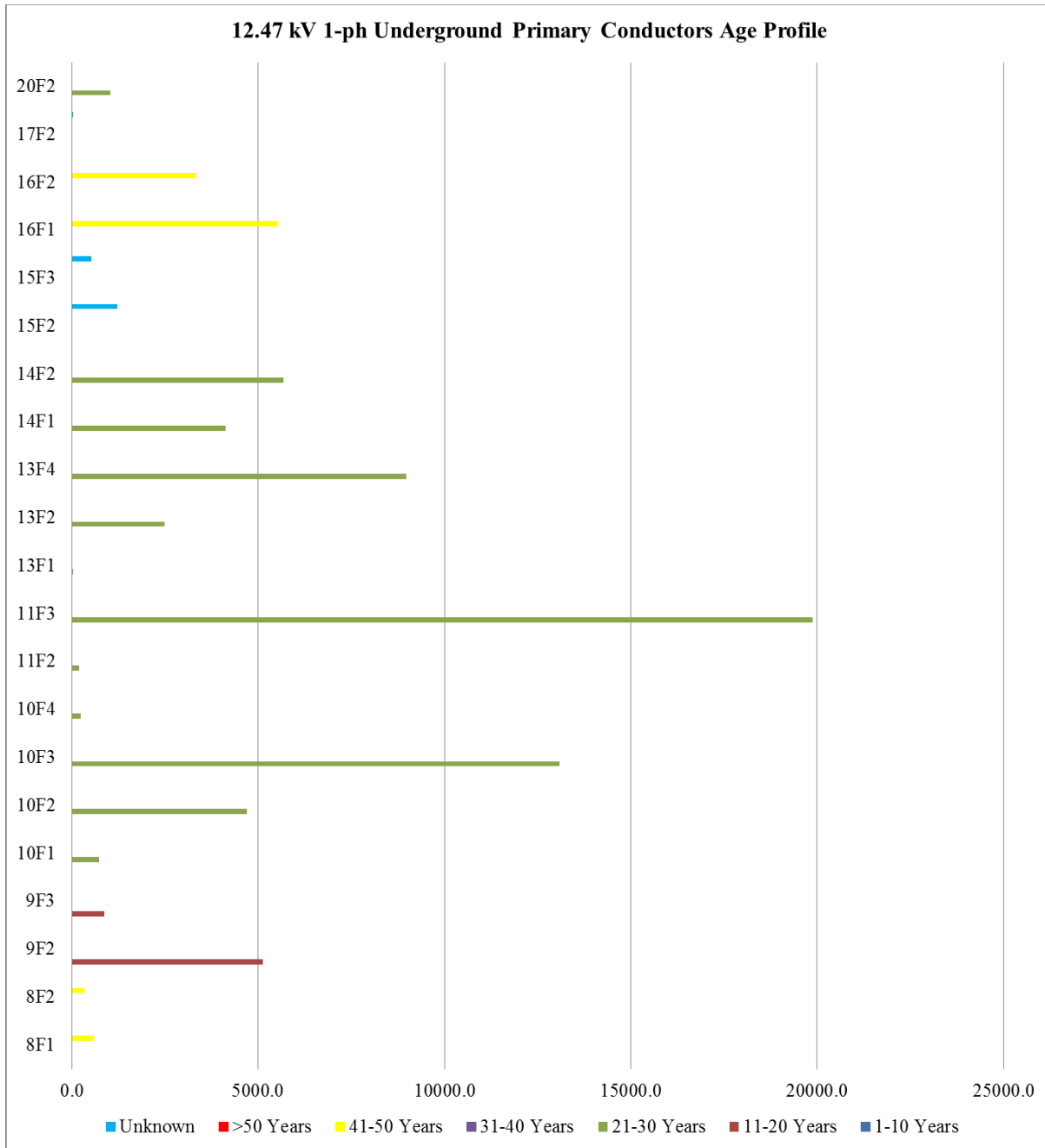


Exhibit 4-32: 12.47 kV Underground Primary 1ph Conductors Age Profile on different Circuits

Health indices for different voltage distribution cables, derived from available health indicators, are presented in Exhibits 4-33 through 4-36. Cables determined to be in poor and very condition present a high risk of failure in service and are recommended to be replaced during the next five years. Section 5 documents additional analysis supporting replacement of the assets found in poor and very condition, based on the consequences of assets failure in service.

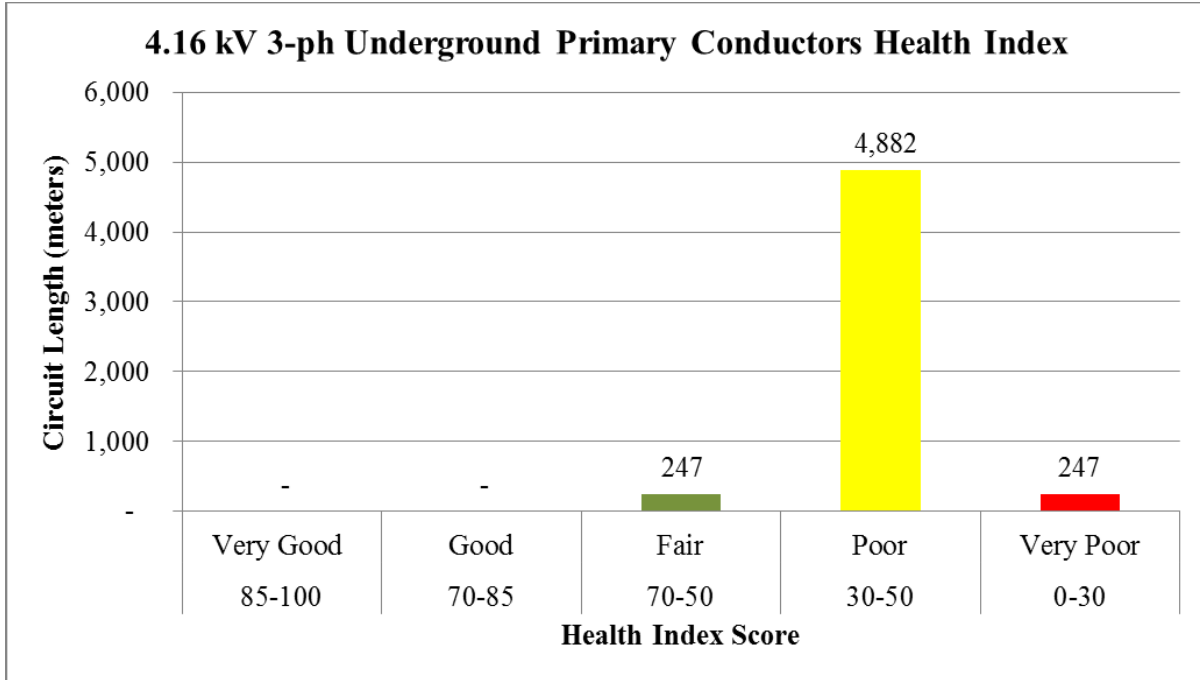


Exhibit 4-33: 4.16 kV, 3-Ph Underground Primary Cables Health Index Score

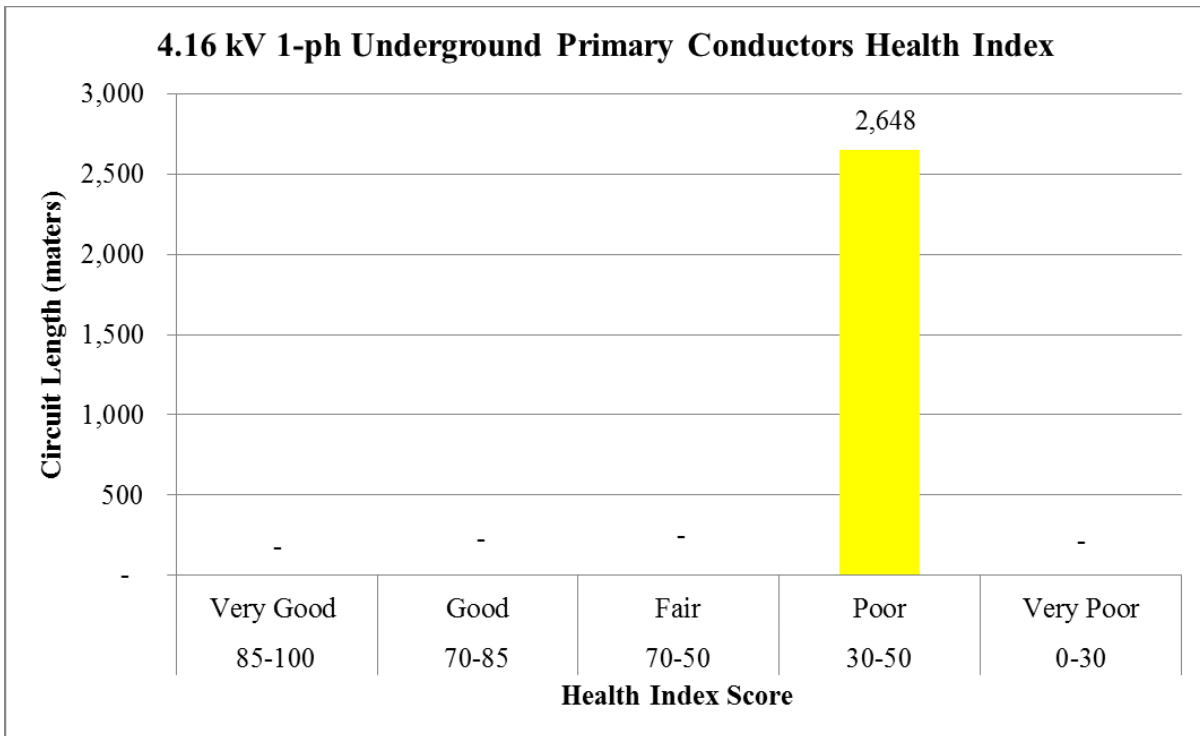


Exhibit 4-34: 4.16 kV, 1-Ph Underground Primary Cables Health Index Score

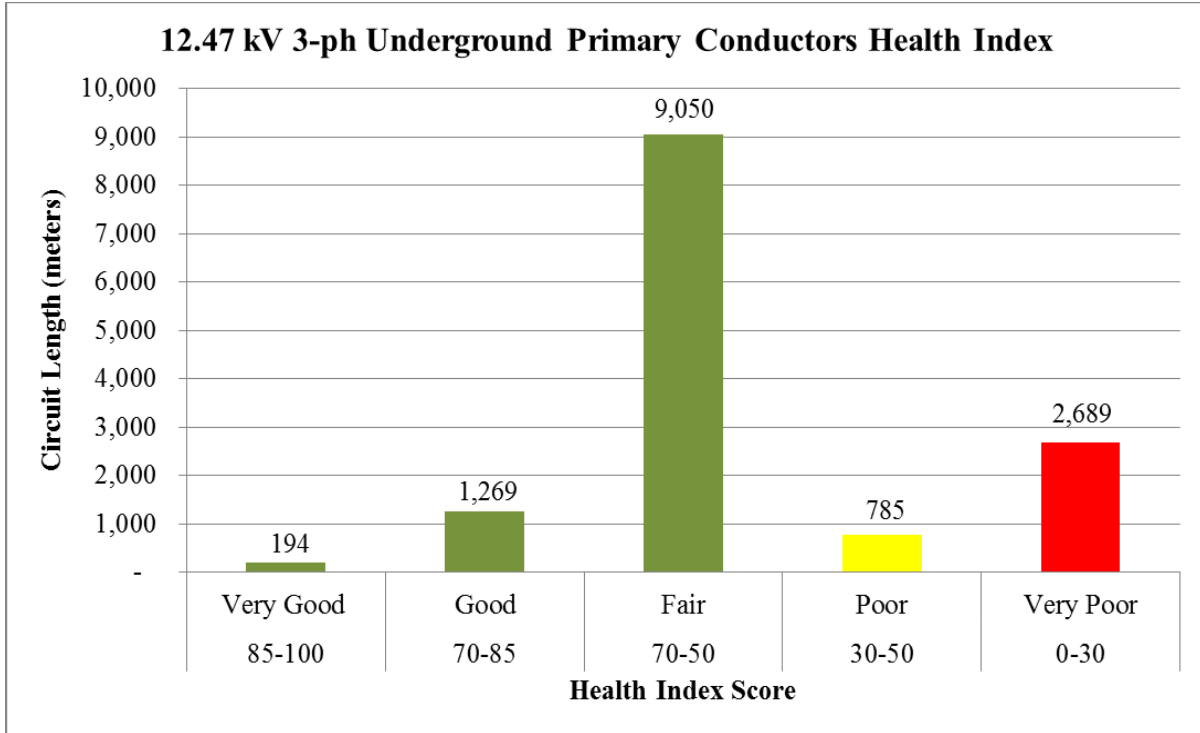


Exhibit 4-35: 12.47 kV, 3-Ph Underground Primary Cables Health Index Score

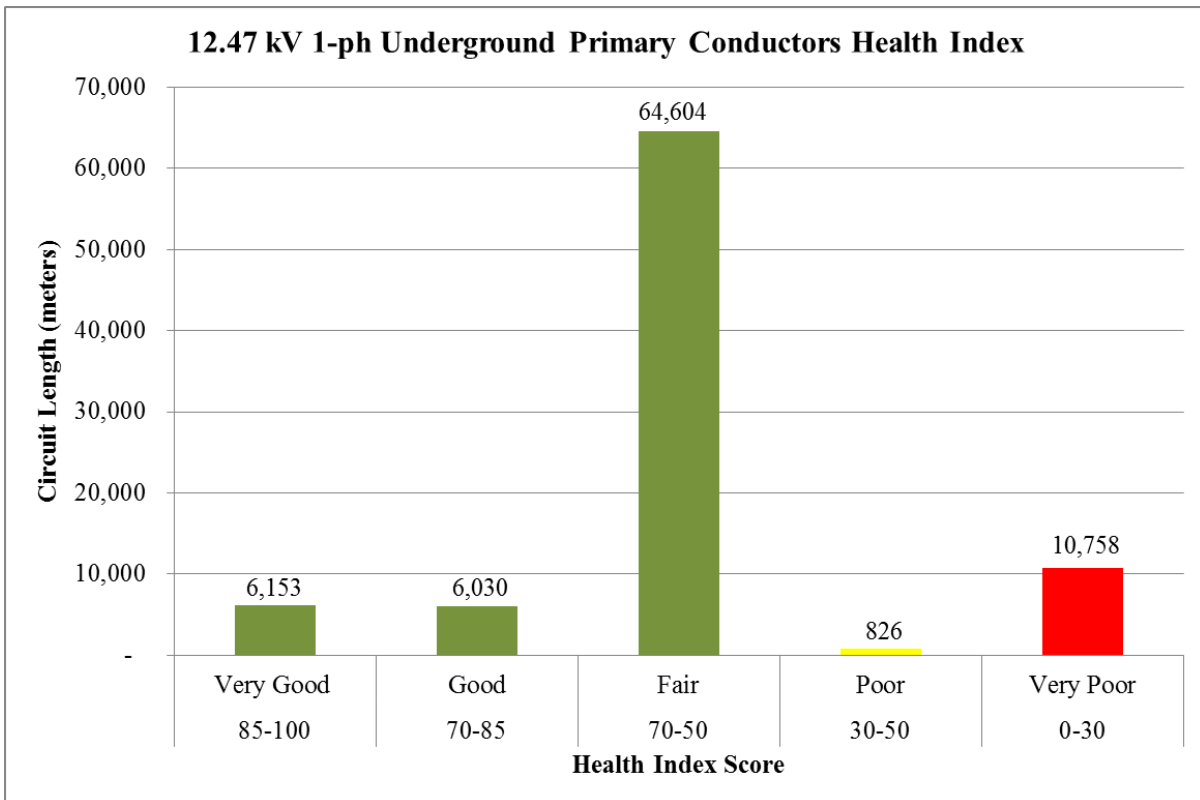


Exhibit 4-36: 12.47 kV, 1-Ph Underground Primary Cables Health Index Score

4.3.2 Underground Low Voltage Cables

Typical useful life of low voltage cables is of the order of 55 to 60 years, which is significantly greater than the typical useful life of medium voltage cables. Demographic information on this asset is not readily available to assess the overall health and condition of LV cables.

However in the following specific locations, where direct buried LV circuits serve multi-family dwellings, the LV cable circuits are experiencing repeated failures, resulting in poor power supply reliability and increase in operating costs due to emergency repairs. The LV cable circuits, determined to be at the end of their useful service life and requiring immediate replacement are listed below:

Manitou Complex:

- Approximately 760m of direct buried secondary bus/services
- 71 tapped services
- Installed in the early 1970's

Wickstead Complex:

- Approximately 860m of direct buried U/G secondary bus/services
- 103 tapped services
- Installed in the early 1970's

Sylvan Crescent:

- Approximately 800m of direct buried U/G secondary bus/services
- 119 tapped services
- Installed in the mid 1960's

Melina Close:

- Approximately 734m of direct buried U/G secondary bus/services
- 73 tapped services
- Installed in the mid 1960's

Madelena:

- 844m of direct buried U/G secondary bus/services
- 117 tapped services
- Installed in the mid 1960's

4.4 *Distribution Switches and Cutouts*

North Bay Hydro's distribution system is well equipped for disconnecting and isolating, load-breaking, and fault interrupting to provide means of isolation during power interruptions and operational functions and adequately protect the circuits during system faults. A majority of the line switches are pole type.

Exhibit 4-37 and Exhibit 4-38 display the age profiles of different types of 1-phase and 3-phase line mounted switches. As shown a vast majority of the switches are in form of fused or solid blade cutouts, but a smaller number of load break switches and mid span opener switches are also employed. Approximately 25% to 30% of the switches are approaching the end of their service life.

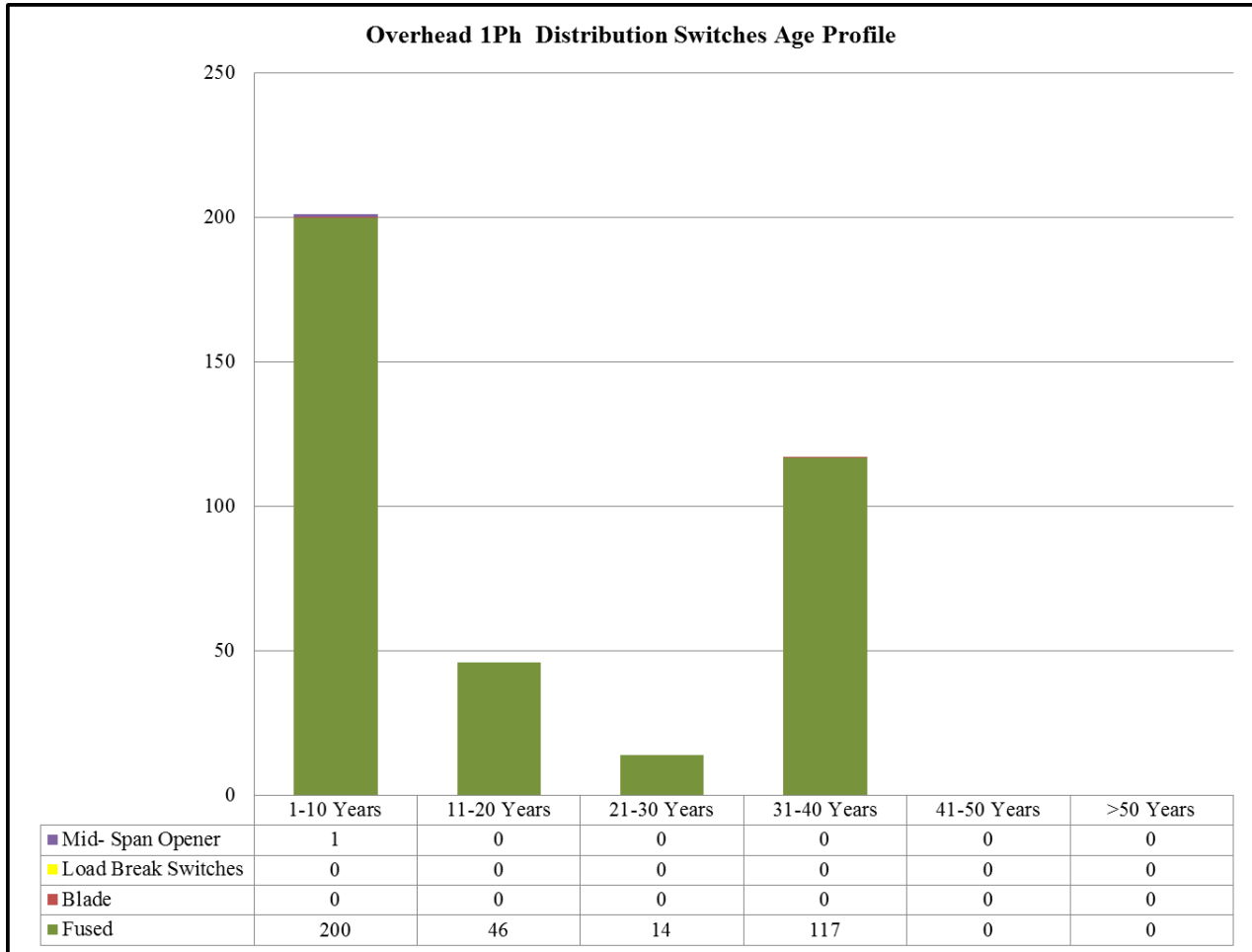


Exhibit 4-37: Age Profile of 3-Phase Pole-Mounted Switches

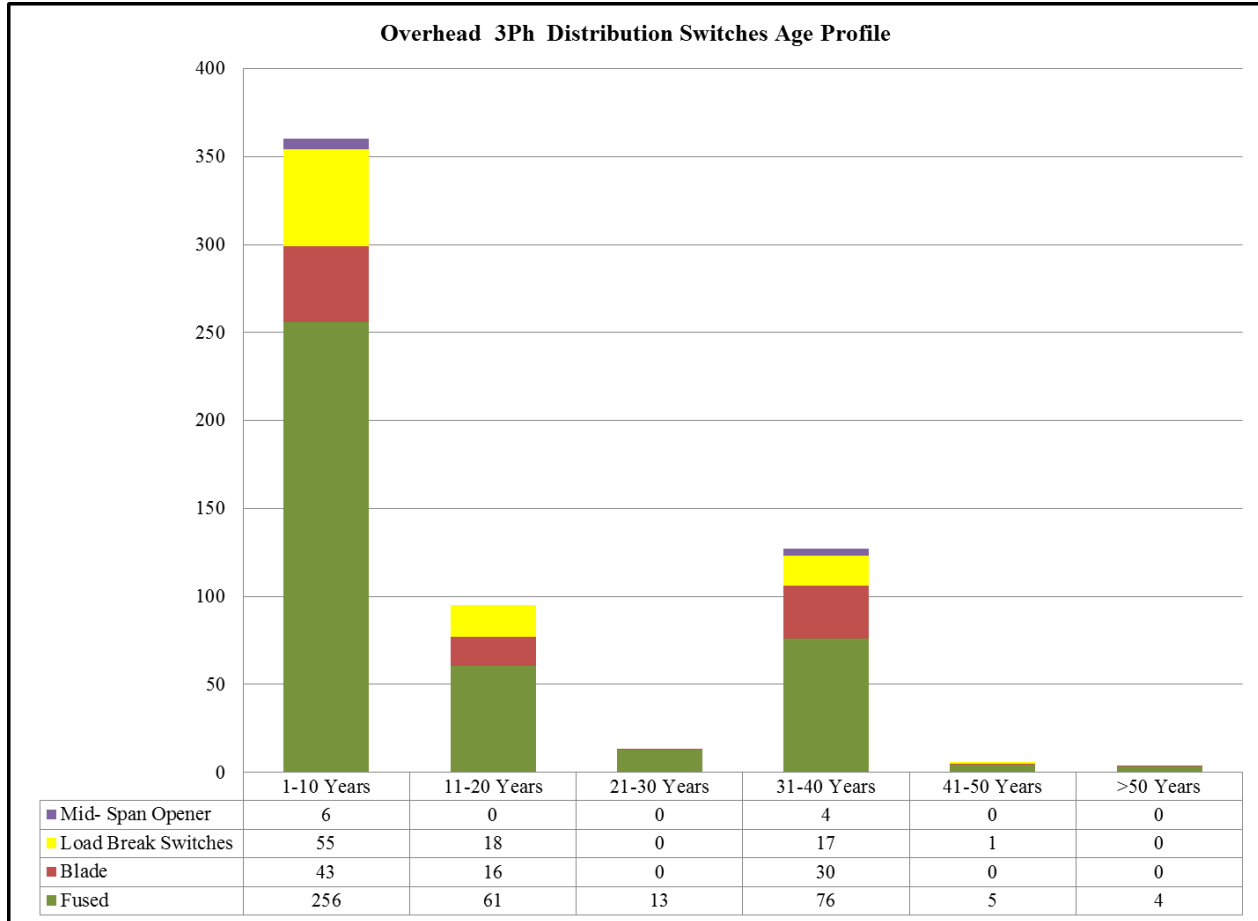


Exhibit 4-38 Age Profile of 3-Phase Pole-Mounted Switches

Based on the condition assessment criteria described in Section 3, the Health Index score is calculated for the 3-phase and 1-phase distribution switches and the 44 kV line switches and the results are presented in Exhibit 4-39 and 4-40. Exhibit 4.41 indicates assumed age profile for the 44 kV line switches and the health indices for 44 kV disconnect switches are indicated in Exhibit 4.42. Cutouts and disconnects determined to be in poor and very poor condition are recommended to be replaced during the next five years.

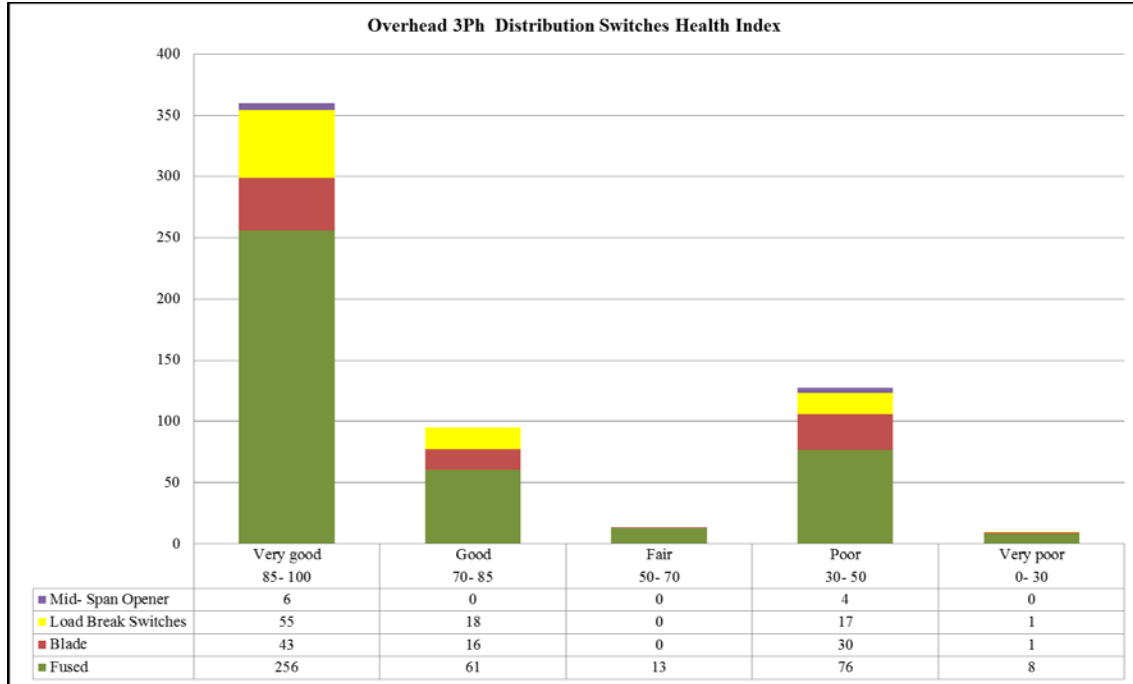


Exhibit 4-39 3-Ph Pole Mounted Switches Health Index Score

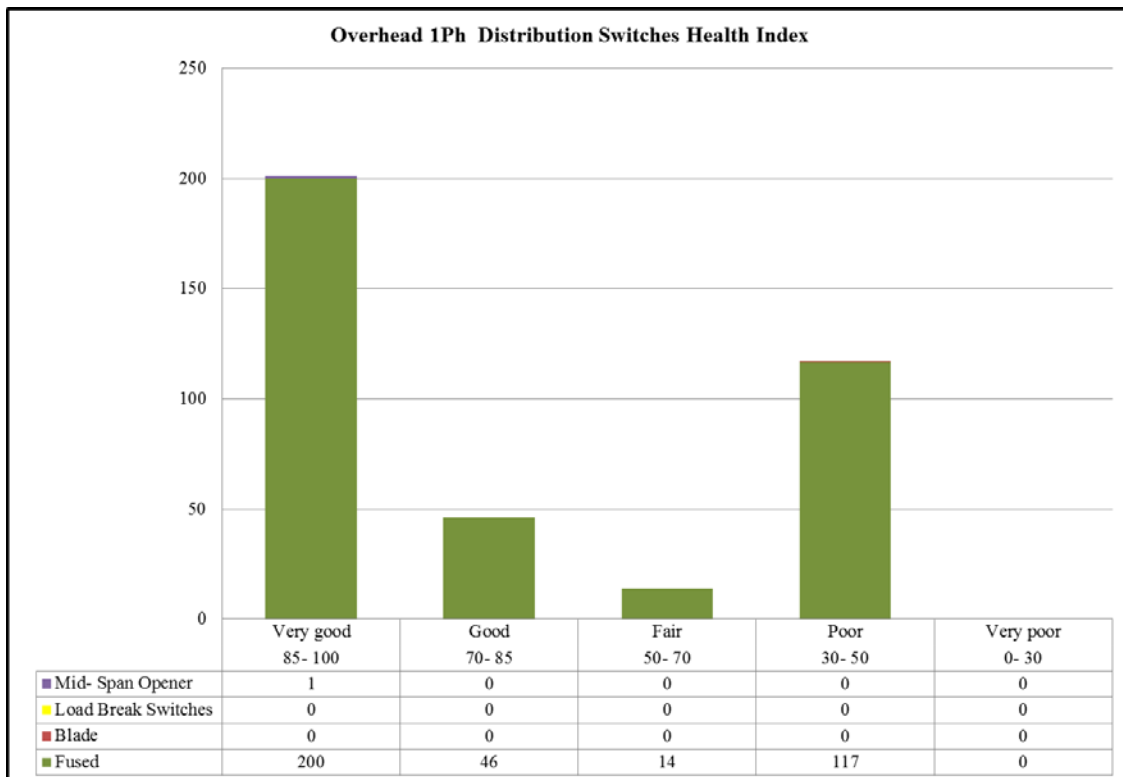


Exhibit 4-40 1-Ph Pole Mounted Switches Health Index Score

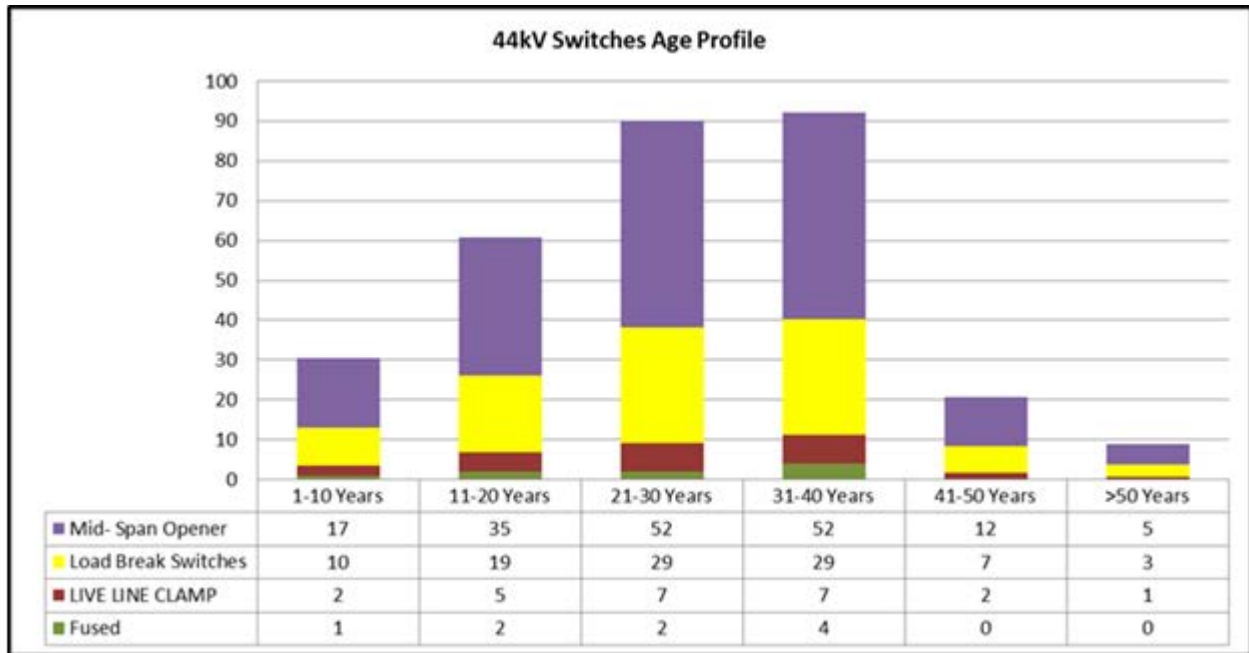


Exhibit 4-41 44kV Switches Age Profile

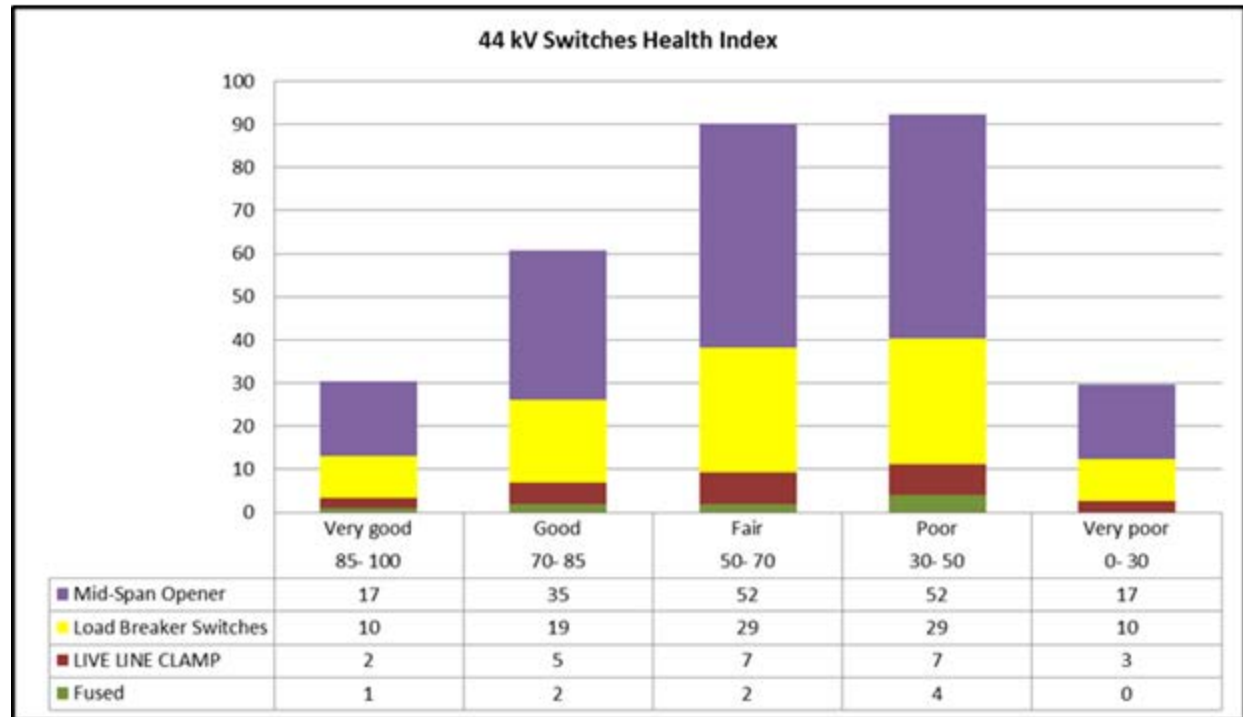


Exhibit 4-42 44kV Switches Health Index Score

4.5 Distribution Transformers

The asset demographics of distribution transformers are presented in Exhibit 4-43. Overall age profile for distribution transformers is displayed in graphical format in Exhibit 4-44. As indicated, only a small fraction of distribution transformers have service age of more than 30 years.

Description	No. of Phase	Installed quantity	Asset Age (in years)						
			1-10	11-20	21-30	31-40	41-50	>50	Unknown
Pad mount									
37.5kVA	3ph	1	0	1	0	0	0	0	0
50kVA	3ph	4	2	0	2	0	0	0	0
75kVA	3ph	4	0	2	2	0	0	0	0
100kVA	3ph	7	2	2	3	0	0	0	0
150kVA	3ph	3	0	2	1	0	0	0	0
167kVA	3ph	13	1	11	0	0	0	1	0
225kVA	3ph	1	0	1	0	0	0	0	0
250kVA	3ph	2	2	0	0	0	0	0	0
300kVA	3ph	3	3	0	0	0	0	0	0
500kVA	3ph	5	3	1	1	0	0	0	0
750kVA	3ph	11	2	5	4	0	0	0	0
1000kVA	3ph	1	1	0	0	0	0	0	0
1500kVA	3ph	2	0	0	2	0	0	0	0
Unknown	3ph	18	10	2	3	0	1	0	2
10kVA	1ph	1	0	1	0	0	0	0	0
25kVA	1ph	1	0	0	0	1	0	0	0
37.5kVA	1ph	1	0	1	0	0	0	0	0
50kVA	1ph	68	29	27	9	1	0	0	2
75kVA	1ph	23	1	9	12	0	0	0	1
100kVA	1ph	330	30	120	172	3	0	0	5
167kVA	1ph	23	2	11	10	0	0	0	0
Unknown	1ph	9	4	2	0	0	0	0	3
Total		531	92	198	221	5	1	1	13

Description	No. of Phase	Installed quantity	Asset Age (in years)						
			1-10	11-20	21-30	31-40	41-50	>50	Unknown
Pole mount									
3kVA	1ph	9	1	5	0	1	0	0	2
5kVA	1ph	37	6	27	0	0	0	1	3
10kVA	1ph	139	33	74	4	1	3	3	21
15kVA	1ph	59	8	44	2	0	0	1	4
25kVA	1ph	714	43	402	182	42	2	2	41
30kVA	1ph	2	0	1	0	0	0	0	1
37.5kVA	1ph	153	13	117	3	1	7	2	10

50kVA	1ph	893	109	566	118	34	15	1	50
75kVA	1ph	333	39	203	61	5	6	1	18
100kVA	1ph	153	46	79	16	2	5	0	5
150kVA	1ph	2	0	1	0	0	0	0	1
167kVA	1ph	5	0	0	2	0	0	0	3
225kVA	1ph	4	0	0	3	0	1	0	0
250kVA	1ph	3	0	3	0	0	0	0	0
Unknown	1ph	5	4	0	0	0	0	0	1
Total		2511	302	1522	391	86	39	11	160

Description	No. of Phase	Installed quantity	Asset Age (in years)						
			1-10	11-20	21-30	31-40	41-50	>50	Unknown
Vault									
50kVA	3ph	1	0	1	0	0	0	0	0
75kVA	3ph	5	4	1	0	0	0	0	0
150kVA	3ph	1	1	0	0	0	0	0	0
167kVA	3ph	1	0	0	1	0	0	0	0
750kVA	3ph	2	0	0	2	0	0	0	0
25kVA	1ph	2	0	1	0	0	0	0	1
37.5kVA	1ph	1	0	1	0	0	0	0	0
50kVA	1ph	12	1	10	1	0	0	0	0
75kVA	1ph	18	3	12	3	0	0	0	0
100kVA	1ph	12	1	10	0	0	1	0	0
150kVA	1ph	5	1	2	1	0	0	0	1
167kVA	1ph	8	0	4	4	0	0	0	0
300kVA	1ph	1	0	0	1	0	0	0	0
750kVA	1ph	10	0	6	2	1	0	0	1
Total		79	11	48	15	1	1	0	3

Description	No. of Phase	Installed quantity	Asset Age (in years)						
			1-10	11-20	21-30	31-40	41-50	>50	Unknown
Transclosure									
25kVA	1ph	4	0	4	0	0	0	0	0
50kVA	1ph	6	0	5	0	1	0	0	0
75kVA	1ph	4	0	2	2	0	0	0	0
100kVA	1ph	5	0	3	1	0	1	0	0
167kVA	1ph	4	0	4	0	0	0	0	0
750kVA	1ph	2	0	2	0	0	0	0	0
Total		25	0	20	3	1	1	0	0

Exhibit 4-43: Distribution Transformers Demographic Information

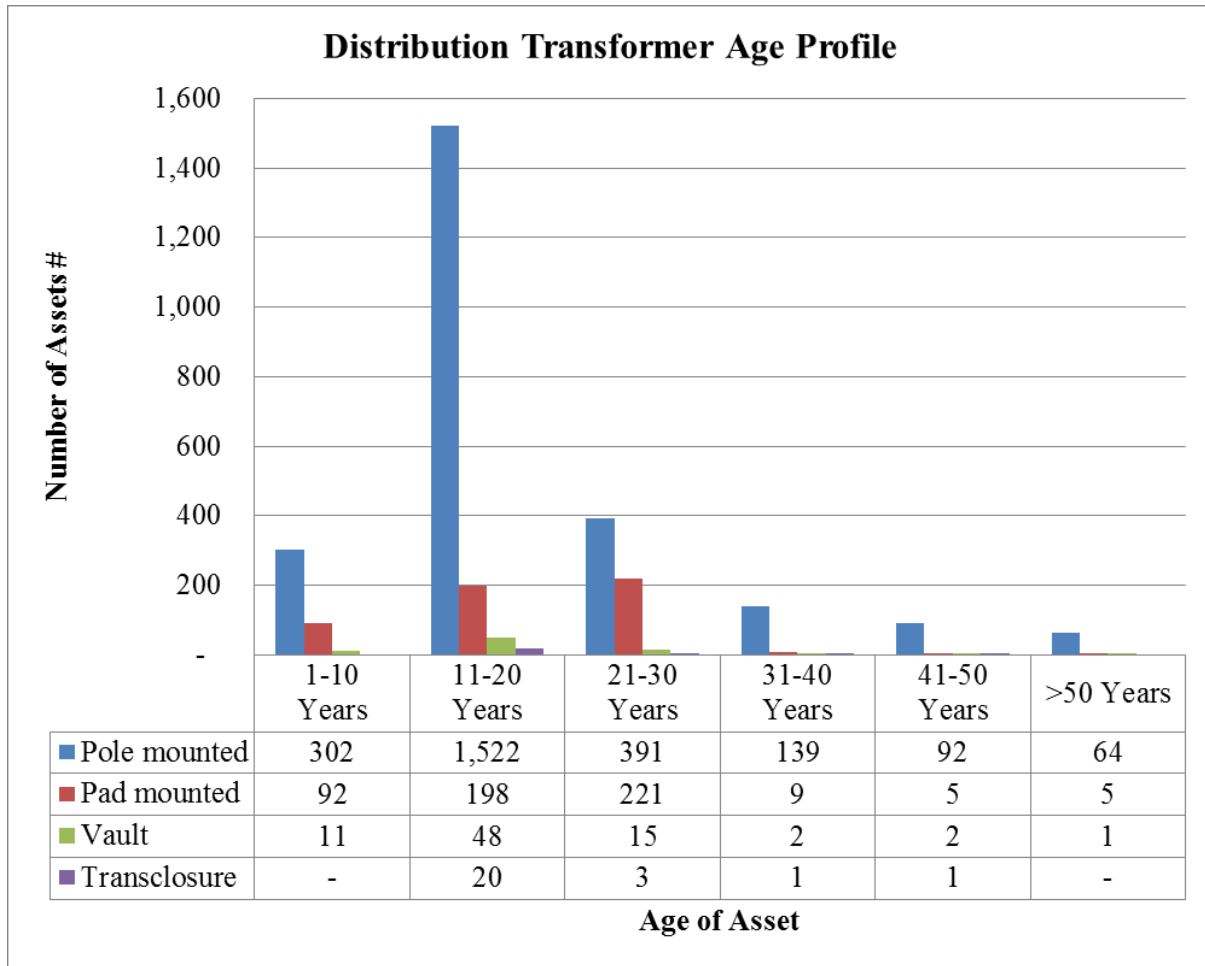


Exhibit 4-44: Distribution Transformers Age Profiles

The health indices for distribution transformers are presented in Exhibit 4-45. The distribution transformers are recommended to be run to failure, i.e. replace a transformer only after failure. The budgets for renewal of this asset can be based on anticipated failure and replacement of the transformers found in poor and very poor condition.

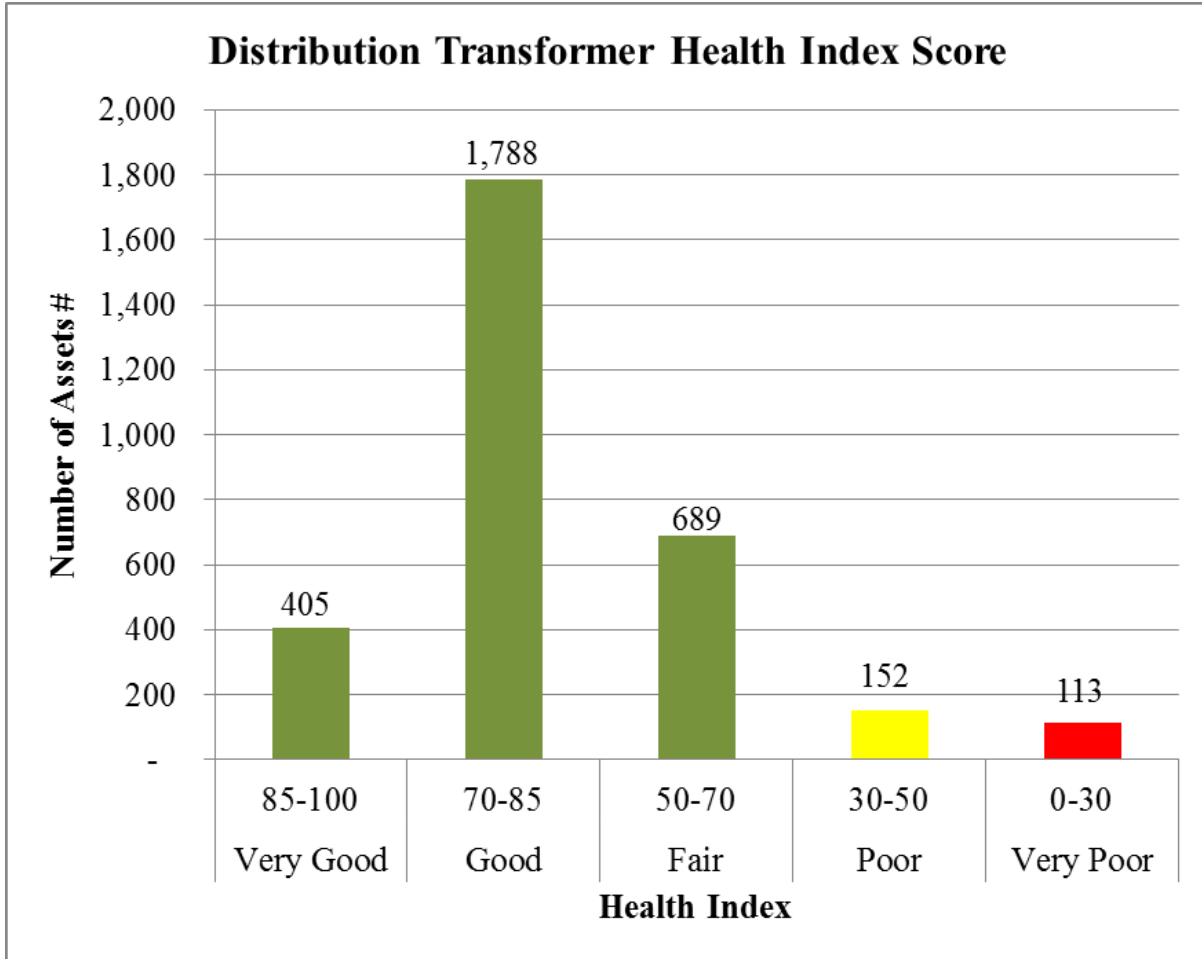


Exhibit 4-45: Distribution Transformers Health Index Score

5 METHODOLOGY AND RESULTS OF THE RISK-BASED ECONOMIC-LIFE ANALYSIS OF KEY ASSET

The methodology applied to determine the scope and timing of investments into asset renewal is the same as the Feeder Investment Model, used by many North American utilities, including Toronto Hydro. The objective is to identify assets that have reached the end of their economic life, and are due for replacement or refurbishment. The basic concept is that when deciding whether to replace an aging asset, a utility faces two competing objectives. On one hand, you would like to wait as long as possible to replace in order to minimize capital spending. On the other hand, as you wait longer you will face higher risk due to possible failures as the asset ages and becomes more likely to fail. The strategy that optimizes this trade-off is to minimize life-cycle cost.

The full range of relevant technical and economic considerations is integrated into this approach. Asset age and condition (i.e., health index) are used to estimate failure probability; criticality (i.e., customer effects) is used to define consequence of failure; and direct costs such as maintenance and capital replacement cost are integrated as well. All costs are defined from the perspective of the customer, which supports rate-making and budgeting with the regulator. In particular, the risk of failures captures the estimated customers' cost due to lost service.

Exhibit 5-1 shows graphically how the optimization is performed; this example is for a station transformer. The horizontal blue-dashed line is the leveled life-cycle cost of a new asset. The orange upward-sloping curve is the risk plus maintenance cost of the existing asset as it ages; this is known as the marginal cost. Risk is defined as probability of failure (which increases as an asset ages) times consequence cost of failure. As long as the marginal cost of the existing asset is lower than the leveled cost of the new one, it is cheaper to leave the existing asset in operation. When the curves cross, the marginal cost of the existing asset is higher than the cost of a new one, and the asset is at the end of its economic life. In the example below, the transformer would be replaced at about age 44.

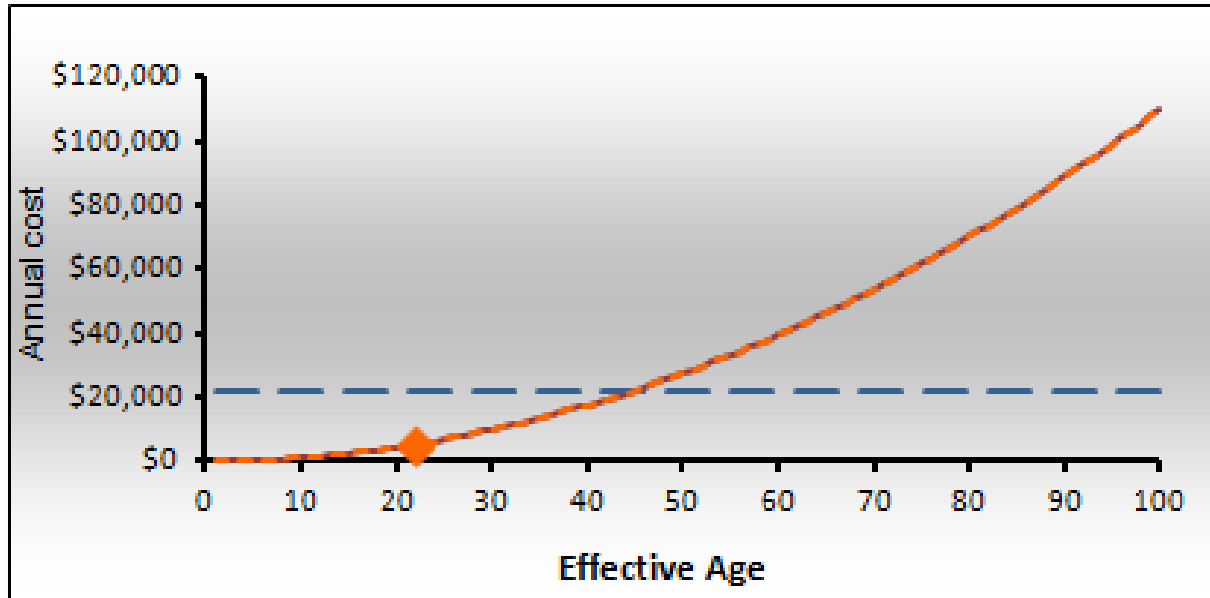


Exhibit 5-1: Station Transformer Optimization

This approach is asset specific. It is not possible to determine that, say; station reclosers have a 30-year life. Rather, we must say that this recloser has a 30-year life, but that one over there, which has different consequences of failure and different test results, has a different life. This analysis looks at each asset individually, and builds recommended spending plans from the bottom up.

The results of this analysis are discussed below, broken down by asset class. Detailed results can be found in the accompanying Excel workbook (*NBH Results Summary.xlsm*).

5.1 Key Assumptions

5.1.1 Health index

The results of North Bay Hydro's health indexing assessment have been integrated into the analysis. Assets in poor condition based on their health index are given a failure probability multiplier. For example, a 20-year-old power transformer would normally have about a 1 percent chance of failure before reaching age 21. If the transformer is known to be in poor condition, the expected failure probability is multiplied by as much as a factor of ten in order to capture the much faster than expected degradation.

The correlation between health index and failure probability is based on a combination of available historical data and expert opinion from work with other utilities.

5.1.2 Failure probability curves

The model includes curves defining failure probability as a function of age for each asset class. These curves are based on historical failure data and expert opinion from work with other utilities.

5.1.3 Customer outage cost

A significant element of the consequence of failure is customer interruptions. The economic life model quantifies customer outage cost, based on assumptions indicated below:

	Assumed value	NBH approach
Event	\$30/connected kVA	Assume 5kVA connected capacity per customer
Duration	\$15/hr/connected kVA	

Due to differences in available data, the approach to quantifying customer outage costs in modified somewhat. Specifically, NBH does not have connected capacity data but does have customer counts. For our analysis, we have assumed an average connected capacity per customer of 5 kVA.

The values used and the approach should be reviewed periodically as better surveys or other data sources become available.

5.1.4 Discount rate

This analysis uses a real discount rate of 5.5 percent for calculating net present values and annualized costs.

5.2 *Overview of results*

Detailed asset-by-asset results are delivered in the accompanying Excel workbook. The following is a summary of the results and interpretation.

5.2.1 Station transformers

Exhibit 5-2 shows the long-range replacement plan for station transformers. There are five transformers at or near end of life; their identifiers can be seen in the results summary workbook. MS 7-T1 and MS 13-T1 are the oldest two; MS 9 T-1 is in poor condition. These three are at end of life and due for immediate replacement. We recommend executing these replacements as quickly as possible, in order of decreasing benefit/cost ratio.

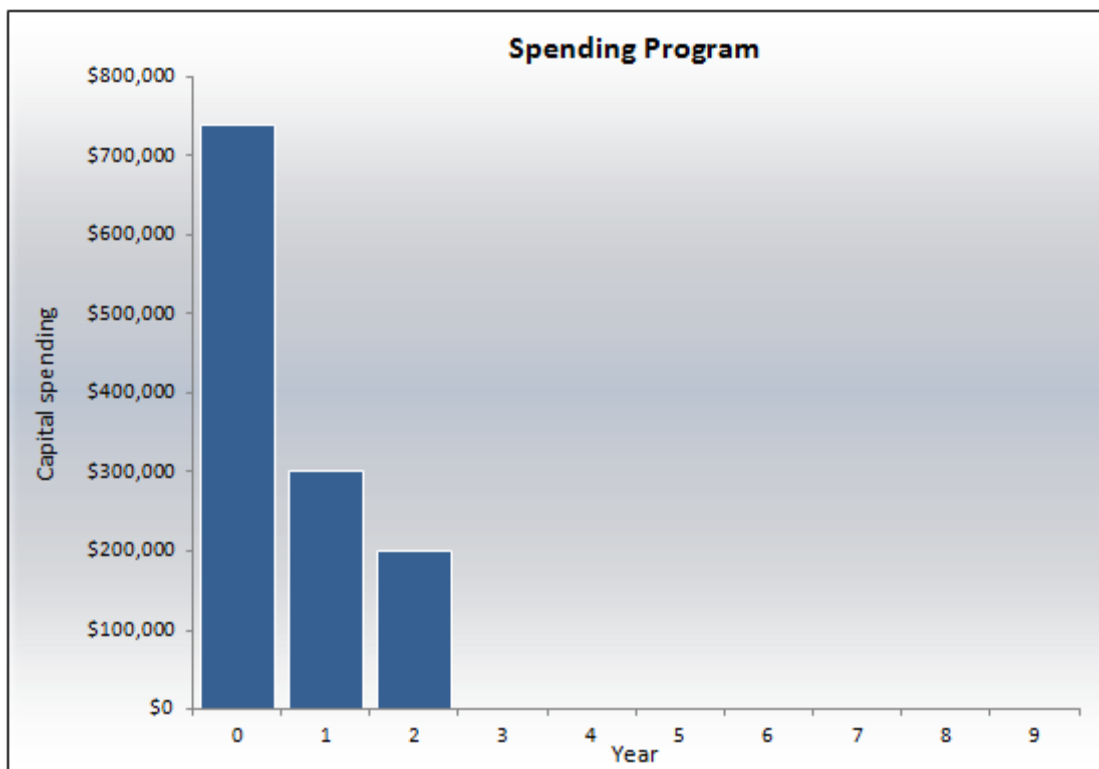


Exhibit 5-2: Station Transformers Spending Program

Exhibit 5-3 shows the transformer population risk matrix. Each asset is plotted relative to its current failure probability and expected consequence cost of failure. Assets at end of life are red, those not at end of life are blue.

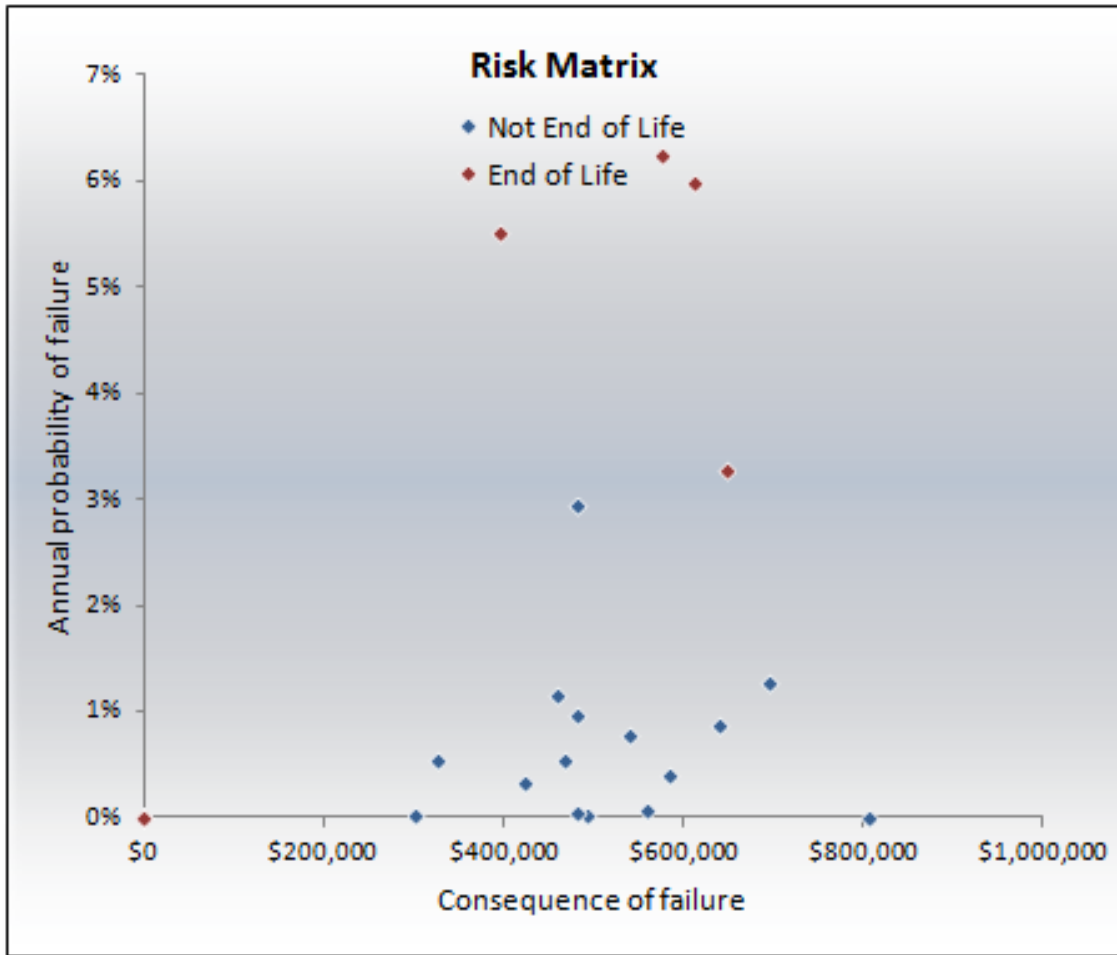


Exhibit 5-3: Station Transformer Risk Matrix

Some key assumptions are described below.

- Failure scenario: The station transformer failure scenario assumes that all customers served by the station (or the bus for multiple-transformer stations) will be out of service for four hours. There is a one-half percent probability of significant associated cost, assumed to be \$20 million. This scenario is consistent with industry standard assumptions.
- Replacement cost is estimated at \$40,000 per MVA, based on industry data.
- Refurbishment options are not evaluated for station transformers.

5.2.2 Underground cable

The long-range replacement program for underground cables is shown in Exhibit 5-4. We recommend leveling this spending over the entire duration – approximately \$300,000 per year.

The analysis considered replacement for cables installed prior to 1992.

In general, the data available for analysis of cables was incomplete. NBH should consider a survey or sample to improve the precision of the analysis.

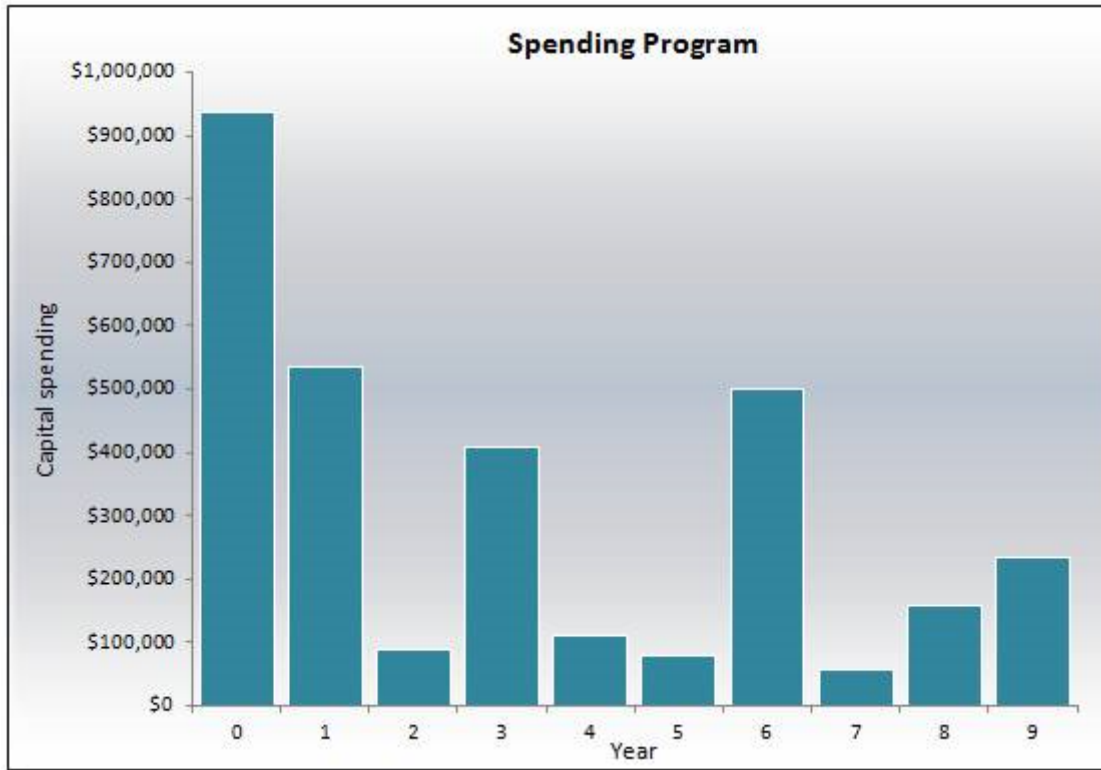


Exhibit 5-4: Underground Cable Spending Program

Exhibit 5-5 shows the underground cable population risk matrix. Each asset is plotted relative to its current failure probability and expected consequence cost of failure. Assets at end of life are red, those not at end of life are blue.

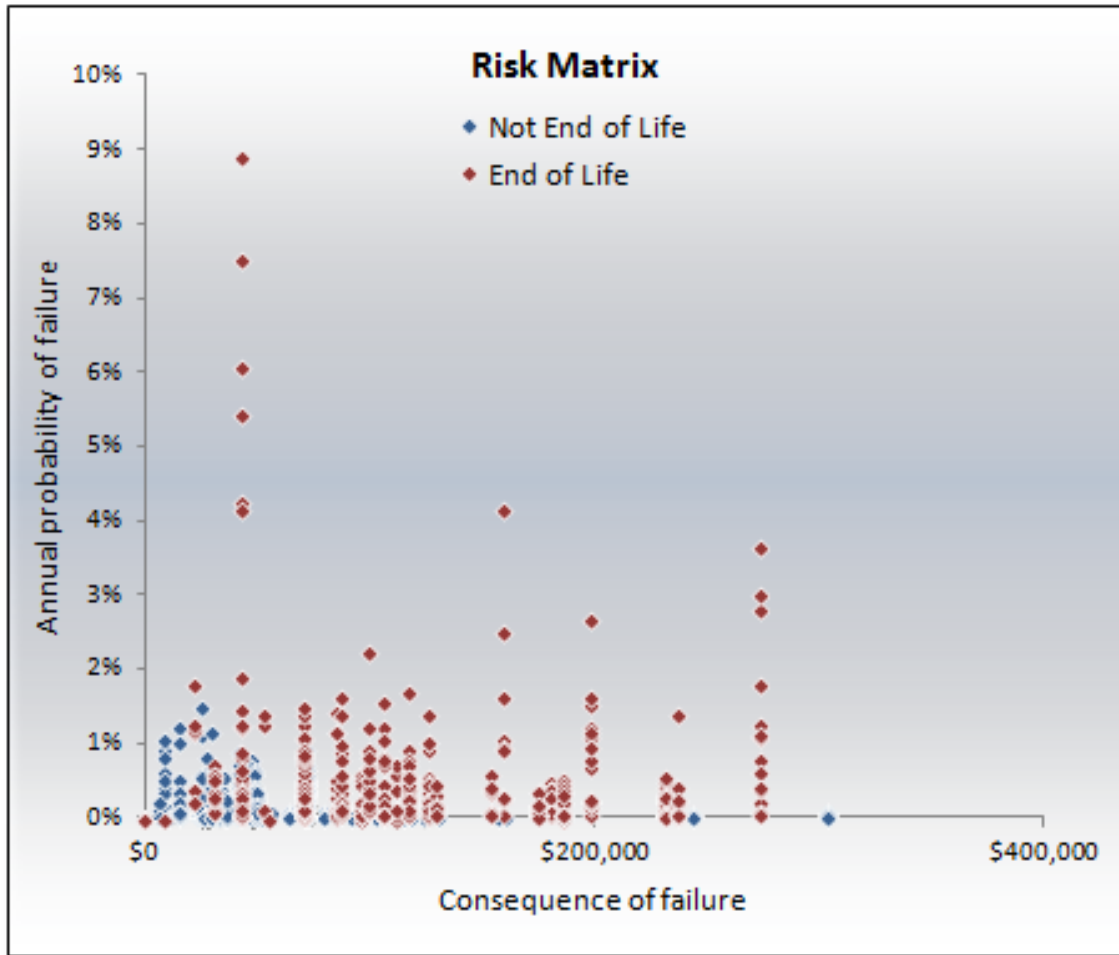


Exhibit 5-5: Underground Cable Risk Matrix

Some key assumptions are described below.

- Failure scenario: The analysis assumes that faults in three-phase cables will cause the entire feeder to be out for a two-hour switching duration. Faults in single-phase cables are assumed to be under a protective zone (i.e., fuse). Data on the zones was not available, so we have assumed an average of four zones per feeder. The same two-hour switching duration applies to single-phase faults.
- Replacement cost is estimated at \$120 per meter for trenching plus \$30 per phase-meter for cable. Cable will be replaced with very reliable modern XLPE cable in conduit.
- Injection cost is \$40 per phase-meter and is assumed to reduce the effective age by 20 years. These are all typical values used in the industry.

5.2.3 Station reclosers

The station recloser spending program is shown in Exhibit 5-6. The replacement program comprises one to two reclosers per year, which should be executed based on benefit/cost ratio.

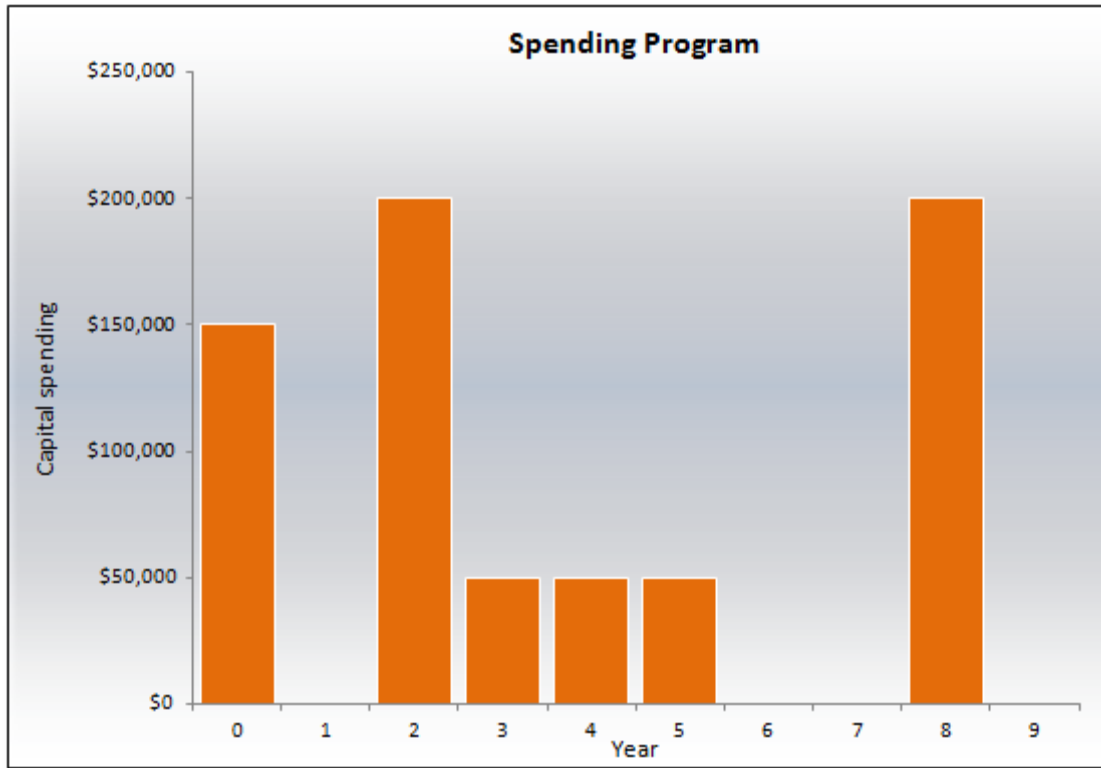


Exhibit 5-6: Reclosers Spending Program

Exhibit 5-7 shows the recloser population risk matrix. Each asset is plotted relative to its current failure probability and expected consequence cost of failure. Assets at end of life are red, those not at end of life are blue.

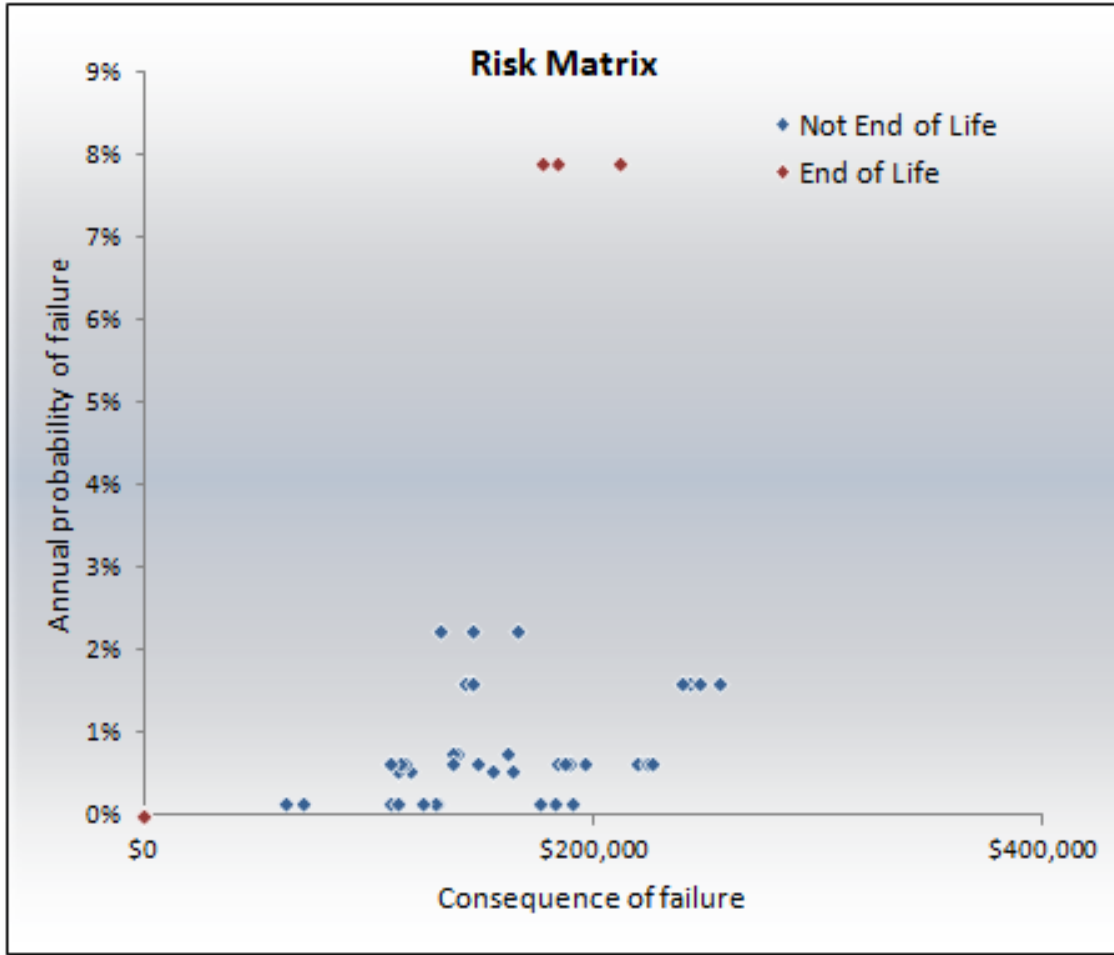


Exhibit 5-7: Reclosers Risk Matrix

Key assumptions include the following.

- Failure scenario: There are four failure scenarios modeled for reclosers, based on the industry standard approach.

Scenario	Description	Relative probability
Maintenance finds failure	Minor repair, \$5000 direct cost.	50%
Failure to open	Recloser fails to open, taking out the entire bus for four hours.	20%
Failure to reclose	Recloser fails to reclose, extending an existing outage by four hours	25%
Catastrophic	Failure to open with associated damage.	5%

- Replacement cost is estimated at \$50,000 per recloser, based on industry data.
- Refurbishment options are not evaluated for station transformers.

5.2.4 Wood poles

The model for wood poles focuses on estimating when poles will reach end of life based on testing and inspection criteria. Our experience has been that an economic model for pole replacement consistently recommends a run-to-failure strategy. The projected pole replacement program is shown in Exhibit 5-8. The program increases steadily as the population ages.

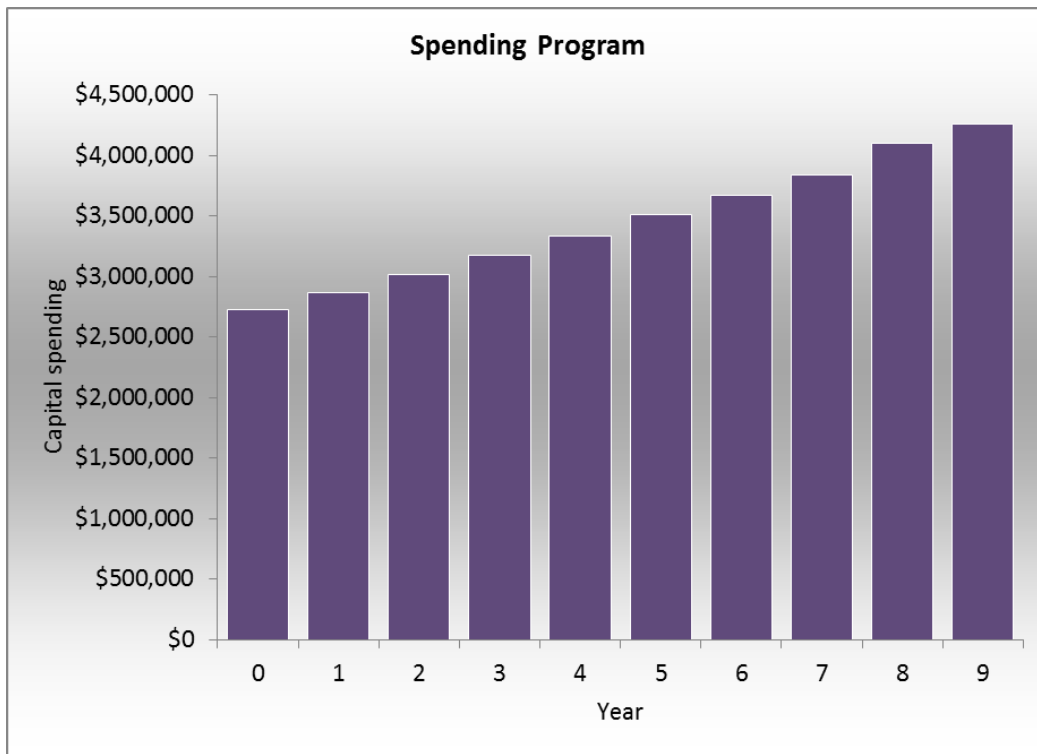


Exhibit 5-8: Wood Poles Spending Projection

The pole health results depended heavily on age, so they were not used as part of the long-range projection. Failure rate is determined using a hazard rate curve developed using data from other area utilities, which have similar weather and regulatory requirements for pole replacement.

Replacement cost per pole is estimated at \$13,000, based on input from North Bay Hydro.

5.2.5 Feeder results

The risk contribution of all the assets comprising each feeder has been summed up to give a measure of the feeders' relative risk. A summary is shown in Exhibit 5-9. This summary includes the risk contributions from all the assets evaluated in this study as well as from pole- and pad-mount transformers.

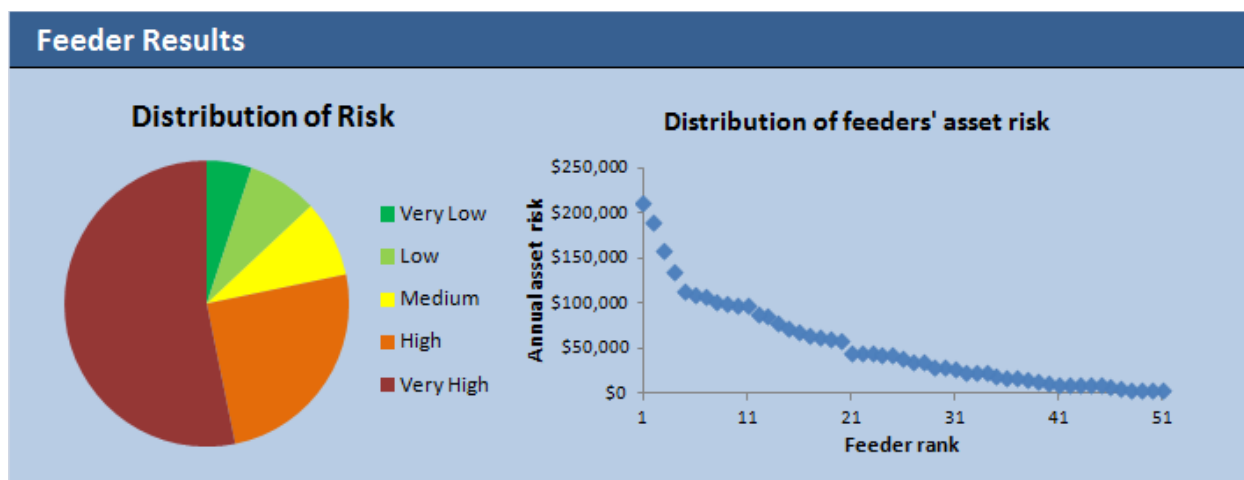


Exhibit 5-9: Quintiles Distribution of Risk

The main takeaway from this assessment is that there is a great deal of stratification of risk among feeders. Nearly half the total asset risk comes from the top 10 feeders, as shown by the red section of the pie chart.

Attachment F – SEC-2(2) - Phase 3 Customer Engagement Survey Results

North Bay Hydro Distribution Limited

Customer Engagement (Phase 3)

2021 Survey Results

Customer Engagement Summary

North Bay Hydro Distribution Limited has engaged customers in an effort to determine their needs, priorities, and preferences through several mediums such as social media, surveys, customer feedback, and other front-facing activities. This information is communicated upward through Senior Management regularly to help shape business practices and service offerings.

The following overview is from customers who completed a third, and final, online survey, which completes our comprehensive customer engagement strategy for this Cost of Service (“COS”) application. Customers followed advertising to the link by way of our social media accounts (Twitter, Facebook) and the North Bay Hydro website.

The purpose of this third phase of engagement was to relate the key proposals included in this COS application and the value of those proposals to customers. The survey provided an additional level of information that was influenced by Phases 1 and 2 of NBHDL's engagement. Basic qualifying questions that have been previously used to determine more information about the demographic were avoided in this particular survey, and emphasis was devoted to NBHDL's customer base.

The online survey was hosted by a temporary service. Similar to Phases 1 and 2, the opportunity to win a television was offered, chosen randomly to encourage participation. To this end, there were approximately 500 people who responded to phase one, and only slightly fewer responses to phase two. Participation was again smaller than our previous two surveys, with a total of 213 community members responding to the final portion of NBHDL's outreach.

The survey included a total of 10 questions and was accessible from January 31 to February 15, 2021.

Survey Question

The following information provides NBHDL's interpretation and analysis of the 10 questions of the Phase 3 Survey. Questions 1 to 3 are omitted as they pertained only to basic demographic qualifying questions.

Question 4

Customer feedback received in preparation for the rate application indicated that NBHDL should develop a mobile application (app), enhance the existing customer portal increasing functionality and accessibility (the customer portal allows customers to make changes to their accounts, monitor usage, etc.), and modernize the website, making it more interactive and efficient. Help us in understanding which of these new implementations should be first to be developed. Please rank from highest priority (1) to lowest (3)

In an effort to further delve into the requests that customers have provided in our two previous surveys, NBHDL wanted the community to provide their opinions, where possible, on the prioritization of our project lists, and better educate on how each may affect our costs and day to day business. Incorporating a mobile app will allow us to further, and immediately engage our customers in programs and messaging that may benefit the community. The mobile application will allow for direct and instant communication. Likely to be most beneficial in the following two areas; Power interruptions, Energy use monitoring.

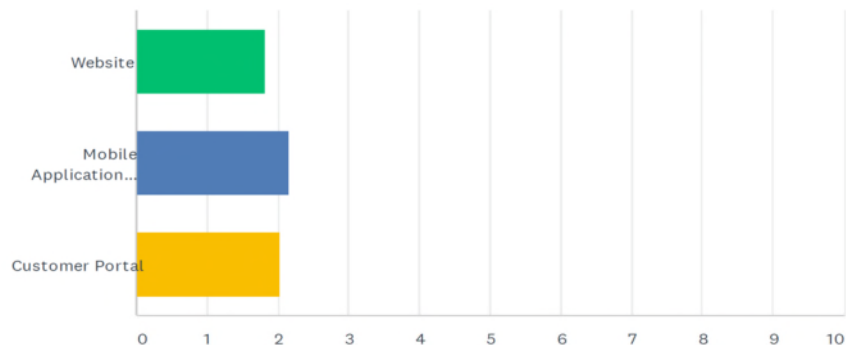
Based on the results, customers are truly looking for the ability to instantly control and access account details (app) to ensure they can easily access up-to-date energy consumption (portal) and easily attain information (website).

46% of customers mentioned the mobile app as being the #1 priority, with an additional 23% choosing it as the second priority.

30% of customers said the Customer Portal was their first priority, and 40% mentioned it as the second priority.

23% of those polled chose the website as the first priority, with 36% making it their second priority.

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	1	2	3	TOTAL	SCORE
Website	23.00% 49	36.15% 77	40.85% 87	213	1.82
Mobile Application (app)	46.48% 99	23.00% 49	30.52% 65	213	2.16
Customer Portal	30.52% 65	40.85% 87	28.64% 61	213	2.02

NBHDL needs to adapt to these current needs and emphasize the feedback, all while ensuring that each medium is up to date, fluid in design, with the user experience at top of mind. Modernizing these engagement tools is a necessity in ensuring NBHDL is accessible for different demographics within the community. As mentioned in previous documents, the NBHDL website is fairly dated, and cumbersome. Simplicity translates into website effectiveness, and NBHDL must create a simpler experience for the customer.

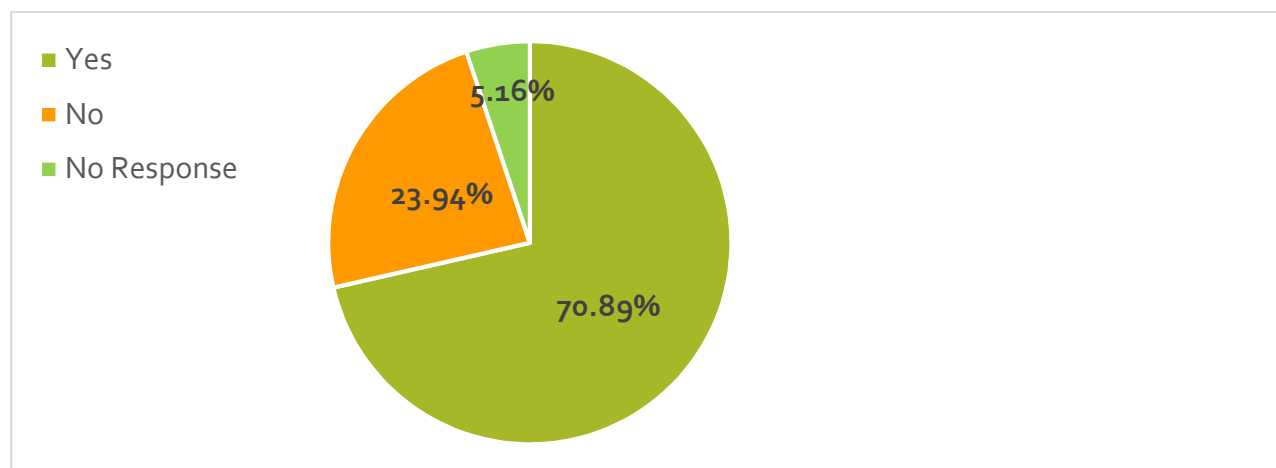
Based on the preferences provided, NBHDL will begin its due diligence process on each platform, and ensure the correct partner is found to begin the process of development of a new application, portal, and website that will each communicate fluidly with each other. Based on the feedback NBHDL understands the first priority is for the mobile app, but NBHDL may choose to update the website first to ensure the proper base exists for the other two applications.

Question 5

Electricity usage tracking and alerts provide real-time information and tips on reducing your usage to help you manage your electric bill and reduce costs where possible. NBHDL is seeking opportunities that may provide education and communication regarding your usage. Software additions of this nature have a bill impact of approximately 15 cents/bill. In reference to the development of a new mobile application and enhanced customer portal, would you be interested in NBHDL looking to implement usage tracking and alerts that would provide updates on your current electric usage and estimated bill amount via email, phone, or text message?

In our third phase of the engagement survey, NBHDL provided the community with an additional online software option for future consideration, that provides “push notifications” surrounding certain criteria such as bill amounts and energy consumption. Through the various phases of this customer engagement process, NBHDL is learning that our customers continue to push for the easiest methods of monitoring their own power consumption; this understanding enables NBHDL to seek new and improved methods to provide that information in a timely fashion. Additional elements of this nature will also increase the relationship and communication with our customers, providing a multitude of benefits.

Enhanced software and timely notifications will allow customers to be more educated and hands-on in monitoring their energy consumption. Thereby providing the tools to reduce cost. More telling is the significant percentage of “yes” to implementing the usage and tracking alerts, with a clear understanding of the estimated bill impact. 70% of respondents stated they would be willing to pay 15 cents/bill to have access to usage tracking and alerts, with estimated bill amounts via email, phone, or text message; this is a very strong result. In addition, 23% answered NO, and 5% preferred not to answer.



As a result of these findings, NBHDL will research modern platforms and companies that will be effective in producing a product that would fulfill these customer expectations in the future, while emphasizing the importance of proactive communication in a timely fashion.

Question 6

NBHDL made a change to its billing schedule in 2010. Prior to this adjustment, some customers were billed for the energy consumption on different days of the month. For example, this could mean your bill was based on power used from the 12th of January to the 12th of February. In an effort to provide simplicity and the ability for customers to better monitor their consumption, the change to calendar month billing was adopted. This change ensures customers are billed for consumption from the beginning of each month, to the end of the month. Ideally, this process also makes it easier to manage household budgets and aligns with other organizations that bill monthly (such as most gas and telephone companies). This initiative was designed, in part, for the convenience of our customers. However, this does create additional lag time in NBHDL's billing schedule that could have an approximate cost to the customer of 23 cents/bill. Based on the context provided, would you be willing to pay approximately 23 cents per bill, for calendar month billing?

Previous assumptions that customers preferred a calendar month invoice, which aligned with other service provider invoices such as cable, and internet, formed part of the decision making process that caused NBHDL to implement calendar month billing back in 2010.

More recent engagement has shown it is important to our community that additional costs to the customer base be considered for value against the product. These changes may also be attributed to an ever-changing demographic, behavior, or an unknown shift.

The response for "I don't care what day my billing starts" had an equal response rate to "I prefer my billing to begin on the 1st of the month, but not at an additional cost" and both answers accounted for 44% of the responses. Second to those answers, only 10% of respondents acknowledged they would be willing to continue to pay the estimated 23 cents per bill to continue the service.

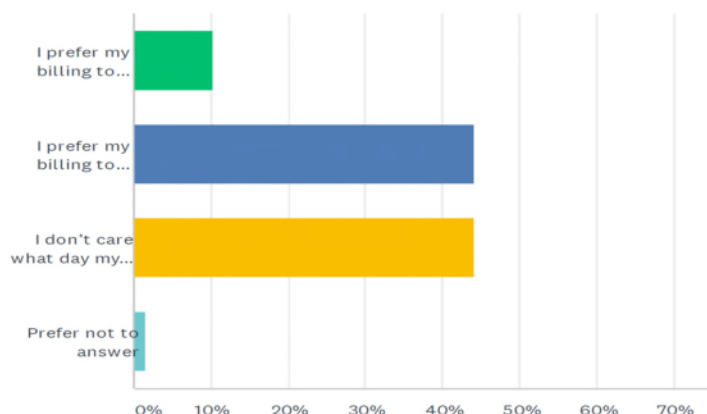
ANSWER CHOICES	RESPONSES	
I prefer my billing to begin on the 1st of the month, and I am willing to pay 23 cents per bill for it	10.33%	22
I prefer my billing to begin on the 1st of the month but not at an additional cost	44.13%	94
I don't care what day my billing starts	44.13%	94
Prefer not to answer	1.41%	3
TOTAL		213

It is clear customers continue to emphasize that only certain additions provide enough value to be worth the added investment. The preference to receive their invoice at, or near, the beginning of the month does not necessarily fall into the category of a value add. NBHDL is continuing to make adjustments that better serve the changing preferences. NBHDL will begin investigating what changes can be made to the billing schedule that prioritizes cost savings ahead of the timing of invoice issuance.

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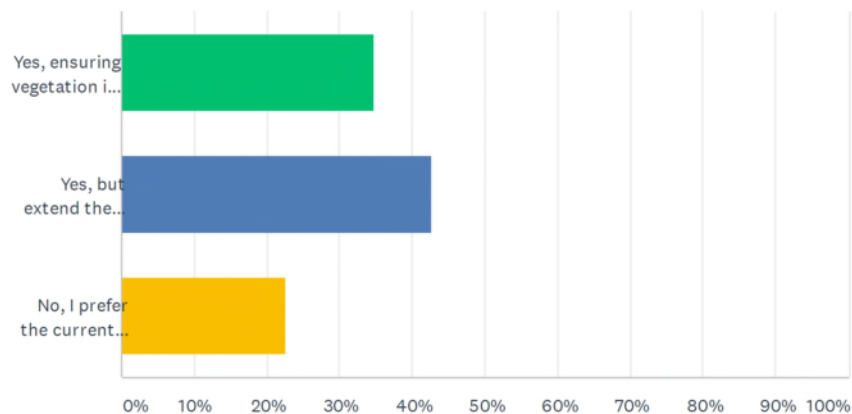
Question 7

NBHDL is proposing to increase the annual vegetation management spend from \$493,000 that is currently in rates to \$773,000, ensuring all trimming in the area is completed every 5 years to improve reliability statistics and safety at an approximate cost of 53 cents per bill. Do you agree with this proposal?



Customers are showing support for a significant increase in our tree trimming budget by way of both a 5 year, or an extended cycle of 6 years to slightly reduce the bill impact costs. NBHDL is confident that messaging provided through NBHDL's "Right Tree Right Place" program has been effective in educating the benefits of vegetation management. Customers appear to understand the importance of vegetation management as it directly relates to reliability and overall community safety. Albeit customers are still understandably conscious of cost versus value, which is clearly shown in the 42% that chose "Yes, but extend the cycle out to six years to limit the increase to \$644,000 per year". 34% of customers responded by choosing "Yes, ensuring vegetation is managed in a way that stays ahead of growth and improves reliability and safety should be a main priority of NBH". A very positive reaction that may show success in our marketing and education program "Right Tree Right Place" highlighting and educating the benefits of vegetation Management.

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ANSWER CHOICES	RESPONSES	
Yes, ensuring vegetation is managed in a way that stays ahead of growth and improves reliability and safety should be a main priority of NBH.	34.74%	74
Yes, but extend the cycle out to six years to limit the increase to \$644,000 per year.	42.72%	91
No, I prefer the current spending amount and accept the lower reliability and increased safety hazards created by a very long cycle length.	22.54%	48
TOTAL		213

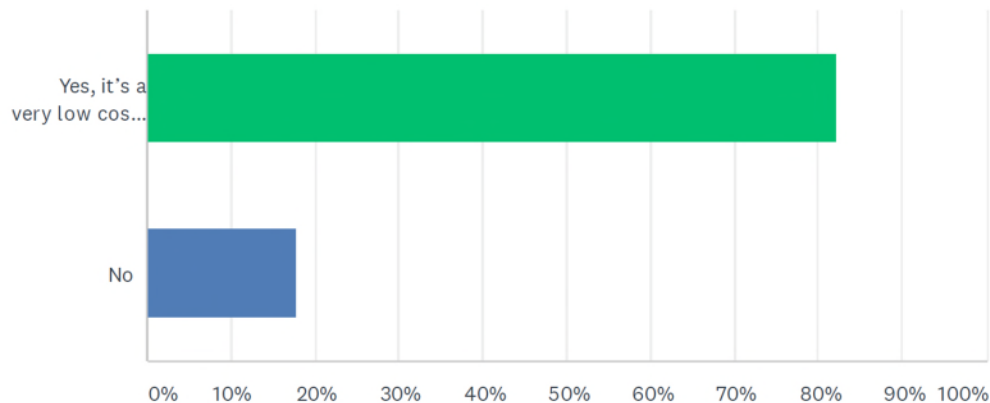
Based on the feedback received NBHDL will further explore the impacts and risks of extending the cycle to six years.

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Question 8

(Part 2 of previous question) Should NBHDL to continue to plant at least 100 trees in the community each year, at the cost of \$25,000/year

Second to the above-mentioned vegetation management discussion, NBHDL also asked its customers if they should continue to plant at least 100 trees in the community each year, at a cost of \$25,000/year. Customers were very clear in understanding that trees and other plants do beautify the community and contribute to a healthy living environment.



Based on positive feedback on this question, maintaining the local tree canopy will continue to be paramount in NBHDL's annual work program. 82% of customers agreed with the importance of the "Right Tree Right Place" program.

ANSWER CHOICES	RESPONSES	
Yes, it's a very low cost and provides significant benefit	82.16%	175
No	17.84%	38
TOTAL		213

NBHDL has been diligent in educating the public on many facets of this program, which may be a factor in the positive feedback visible. It also illustrates the importance of trees and the environment to the customer.

Question 9

NBHDL's regulatory environment allows a utility to realign the rate structure every 5 years. NBHDL deferred this major application an additional year and is now in year 6. In the years between these applications, rates are increased at an amount that is below inflation. NBHDL's rate application includes proposals for increases in Operations, Maintenance and Administrative ("OM&A") costs as well as stable investments in infrastructure renewal to ensure the continued distribution of safe and reliable electricity. The rate application includes \$6.14M in infrastructure spending that enables NBHDL to replace and refurbish poles, transformers, and wires, trucks, equipment, tools, and software systems, connect new customers and accommodate municipal and regional plans to name a few things. NBHDL's asset management plan enables us to ensure a safe, reliable supply of electricity with a paced 5-year plan that addresses sustainability and affordability. The application also includes \$8.6M in OM&A costs. These costs enable NBHDL to ensure we have the right people and skills to deliver on outage response and timely restoration, locate services, perform vegetation management services, ensure responsive customer service and consistent, accurate billing, and continue to engage with the customer to incorporate customer needs and preferences. These costs also enable NBHDL to deliver on provincial policies and adapt to the future needs of all our stakeholders. NBHDL's next 5 years will focus on ways to improve all aspects of the business while fostering an environment of safety, accountability, and efficiency. Now that you're more familiar with the costs associated with our OM&A and capital needs, do you feel you have a better understanding of the need for a rate increase to cover those costs?

NBHDL made effort to educate customers taking the survey prior to asking for a response on details before asking a cost-associated question. Because price is such a critical component to NBHDL's customer base, as shown by the feedback, some projects that were initially expected to be completed within the next 5 years in the DSP were not pursued because of a cost-benefit analysis. Customers are beginning to show an understanding of some of the factors included in the OM&A structure as evidenced by the 45% agreement regarding the understanding of these costs as well as the \$6.14M in infrastructure spending mentioned. 23% noted they would need additional information before determining if they have an understanding of the rate increase associated with that budget. This result is not unexpected; it is difficult to expand on the extensive detail involved in that particular plan in a short survey question. As such, the engagement exercise still shows a strong benefit in providing additional education to the customer base on how NBHDL's electrical system works.

ANSWER CHOICES	RESPONSES	
Yes	45.07%	96
No	14.08%	30
I need more information	23.47%	50
No opinion	17.37%	37
TOTAL		213

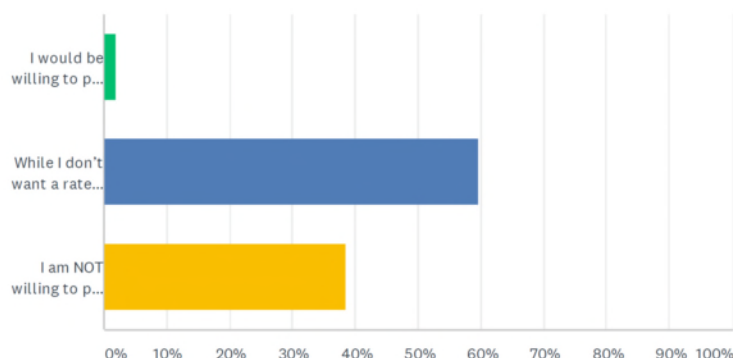
NBHDL will work to emphasize project prioritization via detailed analysis in hopes we can ensure customers' best interests are being met. Combined with very active social media accounts, notably Facebook and Twitter, transparent communications surrounding specific projects and their benefit to the community will be made available whenever possible to enhance the brand/community relationship. It will also be used to highlight NBHDL's approach to maximizing value delivered through assets, and explain how the distribution system will provide safe and reliable power to the community.

CUSTOMER ENGAGEMENT 2021 REPORT

Question 10

The proposed OM&A costs and infrastructure investments will result in a rate increase for NBHDL customers; the application proposes a total bill increase of \$2.32 / month for an average residential customer, a 1.97% change. Which statement best represents your point of view?

When asked if the proposed OM&A costs and infrastructure investments mentioned in the previous question, at an increase of \$2.32 per bill, nearly 60% of customers were clear that although they did not want an increase, they would be willing to pay this increase to maintain reliability and the services they expect, in a cost-effective manner.



Based on initial customer input, the understanding of increased business costs and ultimately the bill impacts that are a direct result of them, are clear and understood by the customer base. However, they have come to expect certain levels of investment into our infrastructure must occur to ensure we maintain or improve system reliability, with respect to fewer and shorter outages as well as maintain a high safety standard. Secondly, services they have come to expect should be provided by NBHDL and its platforms. This pertains to information and updates on our website and social media accounts, as well as the many duties and services provided by the Customer Service department.

ANSWER CHOICES	RESPONSES	
I would be willing to pay any rate increase (e.g. 15%) that allowed NBHDL to invest as much as possible to improve the reliability and overall performance of the system.	1.88%	4
While I don't want a rate increase, I would be willing to pay the proposed \$2.32/bill increase on my bill to maintain reliability through well-planned infrastructure renewal and continue the delivery of services that I have come to expect.	59.62%	127
I am NOT willing to pay any additional charges on the NBHDL portion of my bill knowing that the level of reliability and service could decline.	38.50%	82
TOTAL		213

Attachment G –SEC-5(2) – Dividend Policies

SCHEDULE A-1

DIVIDEND POLICY — NORTH BAY HYDRO DISTRIBUTION LIMITED

The dividend policy of Distco is predicated on the mandate of the Distco Board which includes optimizing value to the Holdco Shareholder. Such value is generally realized by Holdco through dividends or the appreciation of enterprise value.

1.1 Regular Dividends — Distco

The Distco Board will approve, declare and pay regular dividends from Distco to the Holdco Shareholder on an annual basis of 30% of Net and Comprehensive Income (as defined in the International Financial Reporting Standard in effect from time to time); provided, however that the calculation of Net and Comprehensive Income will exclude all gains, losses or changes in value on all derivative contracts to which Distco is a party. Payment of the dividend would be made in two installments annually.

1.2 Special Dividend

Should excess funds be available for additional dividends after a regular dividend has been declared and paid by Distco, then the Distco Board may supplement the regular dividend payment by way of a special dividend in an amount and at the time or times when the Distco Board deems appropriate subject to complying with the Conditions Precedent set out below.

1.3 Conditions Precedent to the Payment of Dividends

Dividends will only be paid to the extent that such payment would not otherwise cause:

- (i) non-compliance with applicable Law;
- (ii) non-compliance with any regulatory covenant or obligation;
- (iii) a breach of contract or the immediate or anticipated failure to otherwise meet the terms of financing arrangements;
- (iv) an impairment in the operations and maintenance of the assets of Distco;
- (v) an impairment in financial prudence including capital investment in electricity distribution infrastructure to sustain reliability;
- (vi) a deterioration in the credit rating of Distco;
- (vii) an impairment in the maintenance and growth of the Business, consistent with the Business Plan.

1.4 Payment of Dividends

Dividends, when approved and declared by the Distco Board, will be paid in two installments by way of certified cheque, bank draft or electronic funds transfer to the Holdco Shareholder as follows:

- (i) The first dividend installment will be paid in December of each year.
- (ii) The second dividend installment will be paid within 30 days following the receipt and approval of Distco's Financial Statements.

1.5 General Guidelines

The Distco Board will, when deciding whether to declare and pay dividends, consider the following guidelines:

- (i) The best interests of Distco will always be paramount when deciding whether or not there are sufficient funds available to declare and pay dividends;
- (ii) Distco must have sufficient funds on hand to enable a methodical re-investment in its infrastructure and plant in an amount to be determined by the Distco Board by way of completing and maintaining a realistic five year capital expenditure plan/budget and which capital expenditure plan /budget will be reviewed and adjusted at least annually;
- (iii) Any requirements and considerations that arise from any rate order issued by the Ontario Energy Board then in effect and any associated application, including a cost of service application;
- (iv) Such other factors and concerns that may arise at any time or times or require special consideration by the Distco Board as determined by the Distco Board.

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