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HAND DELIVERED

September 11, 2019

Board of Commissioners
of Public Utilities
P.O. Box 21040
120 Torbay Road
St. John's, NL A1A 5B2

Attention: G. Cheryl Blundon
Director of Corporate Services
and Board Secretary

Ladies and Gentlemen:

Re: Newfoundland and Labrador Hydro – 2020 Capital Budget Application

Please find enclosed the original and 10 copies of Newfoundland Power's Requests for Information NP-NLH-001 to NP-NLH-057 in relation to the above noted Application.

A copy of this letter, together with enclosures, has been forwarded directly to the parties listed below.

If you have any questions regarding the enclosed, please contact the undersigned at your convenience.

Yours very truly,

A handwritten signature in blue ink, appearing to read "Kelly Hopkins".

Kelly Hopkins
Corporate Counsel

Enclosures

c. Geoffrey Young, Q.C.
Newfoundland and Labrador Hydro

Dennis Browne, Q.C.
Browne Fitzgerald Morgan Avis

Paul Coxworthy
Stewart McKelvey

Newfoundland Power Inc.

55 Kenmount Road • P.O. Box 8910 • St. John's, NL A1B 3P6

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IN THE MATTER OF the *Electrical Power Control Act*, RSNL 1994, Chapter E-5.1 (the EPCA) and the *Public Utilities Act*, RSNL 1990, Chapter P-47 (the Act), and regulations thereunder;

AND IN THE MATTER OF an Application by Newfoundland and Labrador Hydro an Order approving: (i) its 2020 capital budget pursuant to s.41(1) of the Act; (ii) its 2020 capital purchases, and construction projects in excess of \$50,000 pursuant to s.41(3) (a) of the Act; (iii) its estimated contributions in aid of construction for 2020 pursuant to s.41(5) of the Act; and (iv) for an Order pursuant to s.78 of the Act fixing and determining its average rate base for 2015 and 2016.

**Requests for Information by
Newfoundland Power Inc.**

NP-NLH-001 to NP-NLH-057

September 11, 2019

Requests for Information

Reference: **2019 Capital Budget Application, response to Request for Information NP-NLH-006.**

“The addition of a 230/66 kV, 40/53.3/66.7 MVA power transformer and associated equipment to the Bottom Brook Terminal Station is not in Hydro’s “2019-2023 Capital Plan” at this time. Hydro is evaluating the requirement for any system additions as part of its supply adequacy analysis to be included in its submission of the Supply Adequacy report to the Board, scheduled for November 15, 2018.”

NP-NLH-001 Was the addition of a 230/66 kV, 40/53.3/66.7 MVA power transformer and associated equipment to the Bottom Brook Terminal Station specifically dealt with in the *Reliability and Resource Adequacy Study* filed on November 16, 2018? If so, please provide the reference. If not, why not?

Reference: **Volume I, 2020 Capital Projects Overview, page 2, lines 15 to 19.**

“The proposals addressing sustaining capital projects contained in the 2020 CBA and previous applications focus on appropriate maintenance or replacement of existing assets with consideration given to condition, performance, and asset age, as well as availability of more efficient technologies. In other proposals, newer, more efficient technologies (e.g., LED lighting) justify the replacement of equipment.”

NP-NLH-002 Does Hydro’s 2020 Capital Budget or the 2020-2024 Capital Plan include any projects associated with the replacement of existing street lighting with LED technology? If not, why not?

Reference: **Volume I, 2020 Capital Projects Overview, page 13, lines 17 to 22.**

“A project included in the 2020 Capital Plan is the Additions for Load – Increase Capacity for Labrador West project. Hydro is developing a supplemental application to the 2019 Capital Budget to address the base load forecast for Labrador West; however, the technical analysis is not yet complete. The 2020 CBA does not include approval of the funding for this project; however, it has been included for completeness. Additional details on this project will be included in the Supplemental Capital Budget Application when filed.”

NP-NLH-003 Is Hydro aware of any other supplemental capital expenditures it expects to file before it files its 2021 Capital Budget Application? If yes, please provide details.

NP-NLH-004

Please complete the following table listing all of Hydro’s supplemental capital projects approved over the period 2009 to 2018:

Table 1 Supplemental Capital Projects 2009-2018				
Year	Board Order	Project Description	Approved Budget	Actual Expenditure

Reference:**Volume I, 2020-2024 Capital Plan, page 4, lines 14 to 18.**

“Hydro filed reports on Bay d’Espoir Penstocks 1 to 3 on December 12, 2018, March 29, 2019, and July 31, 2019. The July 31, 2019 report recommends several alternatives for managing the future reliability of the Bay d’Espoir penstocks. Based on this recommendation, Hydro is developing updated plans for this refurbishment work, which will be proposed in Hydro’s 2021 CBA.”

NP-NLH-005

Will implementing any of the recommended alternatives for managing the future reliability of the Bay d’Espoir penstocks have a material impact on the 2020-2024 Capital Plan? If yes, please provide the anticipated cost by year for implementing any of the recommended alternatives.

Reference:**Volume I, 2020-2024 Capital Plan, page 6, lines 1 to 4.**

“The 50 MW Hardwoods and Stephenville Gas Turbines have required relatively minimal capital expenditure until recent years. There are no capital proposals in the 2020 CBA, or in the five-year plan for these facilities. These facilities will continue to be evaluated as part of the Reliability and Resource Adequacy Study.”

NP-NLH-006

In its 2019 Capital Budget Application, Hydro committed to provide an updated long-term Capital Plan for the Hardwoods and Stephenville gas turbines as part of the 2020 Capital Budget Application (2019 Capital Budget Application, 2019 Capital Projects Overview, page 10, lines 3 to 5). In Appendix D of its 2019-2023 Capital Plan, Hydro discusses the possibility of early retirement for the Stephenville and Hardwoods gas turbines in 2021. What is Hydro’s current estimate of the remaining service lives of the Stephenville and Hardwoods gas turbines?

NP-NLH-007

What is Hydro’s plan to provide backup for the loss of 230 kV transmission line TL209 following retirement of the Stephenville Gas Turbine?

- NP-NLH-008 The 2020-2024 Capital Plan for Terminal Stations has a 2-year project to construct a firewall between the transformer and gas turbine scheduled for 2022 and 2023, with expenditures totaling \$838,300 (see page A-7). If the Stephenville Gas Turbine is retired in the near future, will this project still be required?
- Reference:** **Volume I, 2020-2024 Capital Plan, page 9, lines 1 to 2.**
- “Gensets in various isolated diesel plants, with a planned project to replace units in Hopedale and St. Brendan’s starting in 2021.*
- NP-NLH-009 Has Hydro recently considered alternatives to connect Isolated Systems, such as those in Hopedale or St. Brendan’s, to the Labrador Interconnected or Island Interconnected systems? If yes, please provide details, including any lifecycle cost analysis, of the alternatives considered. If not, why not?
- Reference:** **Volume I, Capital Projects Over \$500,000, Thermal In-Service Failures, page C-13 to C-15.**
- NP-NLH-010 Please provide historical expenditures for the period 2015-2019 for this project. Describe any variance from the 5 year historical average cost and the 2020 budget estimate of \$2,000,000 for this project.
- Reference:** **Volume I, Capital Projects Over \$500,000, Hydraulic In-Service Failures, page C-25 to C-27.**
- NP-NLH-011 Please provide historical expenditures for the period 2015-2019 for this project. Describe any variance from the 5 year historical average cost and the 2020 budget estimate of \$1,250,000 for this project.
- Reference:** **Volume I, 2020 Capital Projects Over \$500,000, Purchase New Mobile Substation, page C-43, lines 16 and 17.**
- “This project consists of the procurement of a new 30 MVA, 138-69/25-12.5 kV mobile substation complete with a disconnect switch and on-load tap changer.”*
- NP-NLH-012 Please provide a list of all spare 138 or 69 kV to 25 or 12.5 kV transformers, 30 MVA or less, in Hydro’s fleet.
- Reference:** **Volume II, Purchase New Mobile Substation – Bishop’s Falls, Tab 9, Page 2, lines 36 to 38 and Table 1.**
- “With the exception of P1, four of the five mobile substations (P235, P3, P4 and P5) are suitable as emergency spares for all 21 terminal stations and the three power transformers.”*
- NP-NLH-013 As Portable Substation P235 is determined to be a suitable spare for all 21 terminal stations and the 3 power transformers, and P235 is rated for 15 MVA, why would a larger portable substation be required?

Reference: **Volume II, Purchase New Mobile Substation – Bishop’s Falls, Tab 9, Page 2, lines 42 to 45.**

“Hydro has experienced instances when all mobile substations have been in service and are unavailable for immediate use as an emergency spare. If a mobile substation is needed for emergency use during times of unavailability, an extended customer outage would occur and would last until a mobile substation could be freed and moved to the site of the emergency.”

NP-NLH-014 In recent years, has Hydro experienced a situation where a portable substation was required in an emergency and all mobile substations were in service and unavailable? If yes, please provide the details including date, location, and any delay experienced.

NP-NLH-015 Is it Hydro’s intention that the new mobile substation be only used as an emergency spare, and not otherwise used, to ensure its 100% availability in the event of an emergency?

Reference: **Volume I, 2020 Capital Projects Over \$500,000, Overhaul Diesel Units, page C-53, lines 15 to 17.**

“Hydro has determined, based upon the cost of replacement parts, that it may be cost comparable to replace the engine instead of overhauling an engine, if the engine is available with acceptable delivery.”

NP-NLH-016 Please describe, with examples, what Hydro would consider to be *cost comparable*?

NP-NLH-017 Has Hydro completed a financial analysis based on life cycle costs for the remaining life of these diesel generators to confirm *least cost*? If yes, please provide the analysis. If not, why not?

NP-NLH-018 If, as Hydro suggests, it is cost comparable to replace the engine instead of overhauling an engine, will Hydro seek Board approval before proceeding to purchase the engine replacement?

Reference: **Volume I, 2020 Capital Projects Over \$200,000 and less than \$500,000, Install Recloser Remote Control (2020-2021) – Hampden and Upper Salmon, page D-23, lines 16 to 18, and pages D-31 to D-32.**

“Appendix A provides a description of the factors and the methodology for how the reclosers were prioritized. The top ten reclosers from the 2018 analysis are proposed to be automated between 2019 and 2024.”

NP-NLH-019 Please provide a table showing the scoring for each of the 6 factors for the 10 highest priority reclosers identified in Appendix A, Table A-7.

Reference: **Volume I, 2020 Capital Projects Over \$200,000 and less than \$500,000, Install Recloser Remote Control (2020-2021) – Hampden and Upper Salmon, pages D-31 to D32, Table A-7.**

NP-NLH-020 Reclosers on the same distribution system and location have different priorities and appear to be proposed for completion in different years. Has Hydro considered whether completing all reclosers on the same distribution system or location in the same year would be least cost?

Reference: **Volume I, 2020 Capital Projects Over \$200,000 and less than \$500,000, Replace Radomes – Various, page D-38, lines 18 to 20.**

“Hydro has a network of microwave radios by which corporate communications and system data are transmitted. The microwave radio system provides the backbone for all corporate voice and data communications across Hydro’s system.”

NP-NLH-021 Does Hydro’s network of microwave radios carry traffic other than corporate communications and system data specifically for regulated Hydro operations? If yes, please identify those other users (including unregulated operations and third parties), estimate the percentage of traffic carried for those users, and explain how those users contribute to the capital and operating cost.

Reference: **Volume I, 2020 Capital Projects Over \$200,000 and less than \$500,000, Replace Radomes – Various, page D-42, Figure 5.**

NP-NLH-022 Please provide a legible electronic copy of Figure 5.

Reference: **Volume I, 2019 Capital Expenditures Overview, Section H.**

NP-NLH-023 Please provide a copy of Hydro’s annual Capital Expenditure and Carryover reports for each year from 2014 to 2018.

Reference: Volume I, 2015 and 2016 Average Rate Base, Section I.

NP-NLH-024 Please complete the table below showing Hydro’s rate base for the period 2008 to 2019, showing the increase/decrease for each year.

Table 1			
Average Rate Base by Year			
Year	Average Rate Base (\$000s)	Increase/Decrease (\$000s)	Increase/Decrease (%)
2008			
2009			
2010			
2011			
2012			
2013			
2014			
2015			
2016			
2017F			
2018F			
2019F			

Reference: Volume I, Capital Projects Over \$500,000, Hydraulic Generation Refurbishment and Modernization (2020-2021), page C-4.

NP-NLH-025 Is there a standard or other industry guideline to substantiate the 6 year cycle for turbine and generator overhauls? If yes, please provide a copy of the standard or guideline.

Reference: Volume II, Hydraulic Generation Refurbishment and Modernization (2020-2021), Tab 1, page 49, lines 20 and 21.

“This project will include replacement of the existing culverts with a bridge reused from the construction of TL 267, as shown in Figures 33 and 34.”

NP-NLH-026 Provide a copy of the analysis indicating replacement of the existing culverts with a bridge reused from the construction of TL 267 is least cost.

Reference: **Volume II, Install Partial Discharge Monitoring – Holyrood Gas Turbine, Tab 6, page 1, lines 18 to 20.**

“The Holyrood Gas Turbine Generator is not equipped with a Partial Discharge Monitoring System. Hydro has partial discharge monitoring on the other high speed gas turbine generators, as well as other generating units such as the units in Bay d’Espoir.”

NP-NLH-027 Why was the Holyrood Gas Turbine supplied without partial discharge monitoring? In the response explain how it is more cost effective to retrofit the generator now, rather than have it included when originally supplied.

Reference: **Volume II, Terminal Station Refurbishment and Modernization (2020-2021), Tab 7, page 6, Table 8.**

NP-NLH-028 Please provide a listing of assets in Churchill Falls and Muskrat Falls that are owned and maintained by regulated Hydro operations.

NP-NLH-029 Why are the bushings on Muskrat Falls T1 scheduled for replacement in 2020? In the response, please provide the date of original manufacture and the justification for replacing the bushings.

Reference: **Volume I, 2020 Capital Projects Over \$500,000, Distribution System Upgrades, page C-45, lines 14 to 15.**

“Through reliability performance analysis, feeders in the Bear Cove, St Anthony, and Fleur-de-Lys areas have been identified as requiring refurbishment and upgrading.”

NP-NLH-030 Please provide details of the age and condition of the infrastructure on the Bear Cove, St. Anthony, and Fleur-de-Lys distribution feeders.

Reference: **Volume II, Distribution System Upgrades (2020 – 2021) – Various, Tab 10, page 1, lines 7 to 10.**

“Hydro uses Customer Hours of Interruption (“CHI”), System Average Interruption Frequency Index (“SAIFI”), and System Average Interruption Duration Index (“SAIDI”) to identify poor reliability performing feeders, known as “Worst Performing Feeders”.

NP-NLH-031 Is Hydro aware of any other Canadian utilities that use CHI to identify its worst performing feeders? If yes, please provide a list of those utilities.

Reference: **Volume II, Distribution System Upgrades (2020 – 2021) – Various, Tab 10, page 3, Table 1.**

NP-NLH-032 Please confirm that SAIDI and SAIFI for the St. Anthony L3 feeder is significantly better than Hydro’s corporate average.

NP-NLH-033 What is the average number of customers on Hydro’s distribution feeders? In the response, please provide the number of customers on the St. Anthony L3 feeder and indicate whether it is greater or less than Hydro’s corporate average.

Reference: **Volume II, Distribution System Upgrades (2020 – 2021) – Various, Tab 10, Appendix B, page B-7, lines 10 to 14.**

“The first 2.3 km section of this feeder has substandard #2 Aluminum conductor. This section has many long span structures that are susceptible to conductor galloping and failure. Most of the structures of this section are located off road and required to be rerouted to roadside for better access (see Figure B- 8). Recent inspections have identified 11 deteriorated poles and two decayed or damaged cribs on this section.”

NP-NLH-034 How many poles are located off road, and what percentage of these poles are deteriorated?

Reference: **Volume I, 2020 Capital Projects Overview, page 11, lines 25 to 28.**

“2020 expenditures include year two of the Muskrat Falls to Happy Valley Interconnection and the Wood Pole Line Management (“WPLM”) Program. Subsequent CBAs in the five-year plan include only the WPLM Program.”

NP-NLH-035 Under which program does Hydro undertake maintenance and refurbishment activities on its steel transmission towers? Please provide actual capital expenditures by year for maintenance and refurbishment of steel transmission towers for the period 2014 to 2018, and forecast expenditures for the period 2019 to 2024.

Reference: **Volume I, 2020 Capital Projects Over \$500,000, Wood Pole Line Management Program – Various, page C-49, lines 11 to 12.**

“Any replacement and/or refurbishment will be based on the assessment of quantitative risk with respect to in-service pole strength.”

NP-NLH-036 Please describe how Hydro determines the in-service pole strength of transmission wood poles.

Reference: **Volume II, Wood Pole Line Management Program - Various, Tab 11, page i, lines 3 and 4.**

“Under the program, transmission line inspection data of each year is analyzed and appropriate recommendations made for necessary refurbishment and/or replacement of line components including poles, structures, hardware, and conductors in the subsequent year.”

NP-NLH-037 Please provide copies of Hydro’s inspection and maintenance guidelines for its transmission lines of all voltage, including evaluation tools, techniques and methods. Describe any differences in inspection and maintenance practices for 230 kV transmission lines versus transmission lines of lower voltage.

Reference **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 1, lines 2 and 3.**

“As wood poles age, their preservative retention levels decrease and the poles become increasingly subject to deterioration by different agents including fungi and insects.”

NP-NLH-038 Has Hydro identified a significant amount of deteriorated wood poles due to insects or fungi? If yes, what type of fungi and insects were found?

Reference: **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 1, lines 4 to 8.**

“The WPLM Program is an annual program that detects deteriorated poles and other line components early to avoid safety hazards and to identify poles that are at early stages of decay to ensure that corrective measures can be taken to extend the average life of these poles. This is a least-cost strategy in the long-term through the deferring of rebuilding lines and avoiding forced outages.”

NP-NLH-039 Provide the analysis substantiating WPLM as a *least-cost strategy*.

Reference: **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 2, Figure 1.**

NP-NLH-040 Please complete the table below detailing the number of poles tested at MUN annually over the period 2004 to 2019.

Table 1 Number of Poles Tested at MUN		
Year	Transmission Poles	Distribution Poles
2004		
2005		
2006		
2007		
2008		
2009		
2010		
2011		
2012		
2013		
2014		
2015		
2016		
2017		
2018		
2019		

Reference: **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 3, lines 1 and 2.**

“The anticipated useful life of a wood pole transmission line not subject to inspection or maintenance is approximately 40 years.”

NP-NLH-041 Please provide Hydro’s source for the 40 year anticipated useful life of a wood pole transmission line not subject to inspection or maintenance.

Reference: **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 4, line 3.**

“There are no alternatives for undertaking the activities outlined in this program.”

NP-NLH-042 Has Hydro completed a survey of wood pole management programs for transmission utilities across Canada? If yes, please provide the results of the survey. If not, why not?

Reference: **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 7, Table 4.**

NP-NLH-043 Were the 11 transmission lines identified in Table 4 the only transmission lines inspected in 2018?

Reference **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 9, Table 7.**

NP-NLH-044 Does conductor inspection and maintenance form part of Hydro's practices for Wood Pole Line Management? If yes, why isn't conductor included as a line component in Table 7? If not, why not?

NP-NLH-045 Has Hydro experienced any outages due to conductor damage since 2004?

Reference **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 9, Table 7.**

NP-NLH-046 Has Hydro, at any time, removed any crossarms identified as being deteriorated and had the components tested in a laboratory setting to critically evaluate preservative level and residual strength of the components? If yes, please provide the results of the testing. If not, what criteria does Hydro follow for preservative retention in crossarms?

Reference **Volume II, Wood Pole Line Management Program - Various, Tab 11, page 9, lines 2 to 4.**

"The project estimate is provided in Table 8 includes the complete inspection of the stated lines, including the visual inspection supported by inspecting each pole using non-destructive evaluation tools and treatment of the pole as required."

NP-NLH-047 Please indicate the type of treatment and related procedures for wood poles and related components. In the response, please indicate whether treatment is completed by contractors.

Reference **Volume II, Wood Pole Line Management Program - Various, Tab 11, Appendix A, page A-1.**

NP-NLH-048 Please provide the service life estimates for transmission and distribution poles used in each of Hydro's depreciation studies completed since 2004. Please identify and describe any change in service life estimates from study to study.

NP-NLH-049 Please provide all data and assumptions underlying the Current (Projection) shown in Figure A-1.

- Reference** **Volume II, Replace Transformer T7 - Holyrood Terminal Station, Tab 12, page i, lines 5 to 11.**
- “An internal inspection of this transformer in late 2018 indicated that this unit has reached the end of its operational life and it has been removed from service.*
- The absence of Holyrood T7 results in an increased probability of shedding customer loads supplied via the 138 kV transmission loop between the Western Avalon Terminal Station (“Western Avalon TS”) and the Holyrood TGS. A replacement transformer must be installed to maintain the reliable operation of the Northeast Avalon 230-138 kV transmission system.”*
- NP-NLH-050 Why did Hydro not file an application under the Allowance for Unforeseen in late 2018 to immediately commence the replacement of Holyrood T7 to address the increased probability of shedding customer loads as stated?
- Reference** **Volume II, Replace Transformer T7 - Holyrood Terminal Station, Tab 12, page 2, lines 22 to 24.**
- “Churchill Falls T31 was purchased and installed by the Muskrat Falls Project in 2013 to facilitate increased capacity and supply of construction power for the Muskrat Falls Project via L1301.”*
- NP-NLH-051 (a) What was the original purchase price from the manufacturer in 2013 for Churchill Falls T31?
- (b) What is the agreed to price for Hydro to purchase the Churchill Falls T31 transformer in 2020?
- Reference** **Volume II, Replace Transformer T7 - Holyrood Terminal Station, Tab 12, page 3, lines 13 and 14.**
- “The use of an available transformer is the least cost option and will expedite the replacement due to the elimination of the extended delivery time (approximately 36 weeks) for a new transformer.”*
- NP-NLH-052 What was the purchase cost, with costs for shipping identified separately, and delivery period for the last three 230/138 kV transformers purchased by Hydro?
- NP-NLH-053 Using the 36 week delivery suggested, what would have been the likely estimate for the in-service date for a new Holyrood T7 transformer if it were purchased in December 2018? Indicate in the response whether a new transformer, on a 36 week delivery, could have been in service prior to the 2019/2020 winter season.

Reference **Volume II, Replace Transformer T7 - Holyrood Terminal Station, Tab 12, page 4, lines 2 to 11.**

NP-NLH-054 Complete Table 1 providing a cost breakdown for each of the 6 items identified in the project scope.

Table 1	
Item	Estimate
Remove and Dispose of Holyrood T7	
Remove Churchill Falls T31	
Transportation of T31 to Holyrood	
Refurbish, Install and Commission T31	
Complete Protection and Metering Upgrades	
Complete Commissioning with Holyrood T6 and T8	
Total Project	\$2,678,100

Reference: **Volume I, 2020 Capital Projects Over \$500,000, Replace Elevator Motors and Control Equipment – Hydro Place, pages C-78 to C79.**

NP-NLH-055 Will any costs for this project be recovered from other, non-regulated business units based out of Hydro Place? If not, why not?

Reference **Volume II, Replace Elevator Motors and Control Equipment – Hydro Place, Tab 20, Attachment 1.**

NP-NLH-056 Is it Hydro’s intention to engage thyssenkrupp Elevator (Canada) Limited to complete this \$736,700 capital project?

NP-NLH-057 Has Hydro engaged an independent third party with expertise in elevator systems to confirm the recommendation by thyssenkrupp Elevator (Canada) Limited? If yes, please provide a copy of their recommendation. If not, why not?

RESPECTFULLY SUBMITTED at St. John’s, Newfoundland and Labrador, this 11th day of September, 2019.



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