

November 30, 2018

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

Attention: Ms. Cheryl Blundon
Director Corporate Services & Board Secretary

Dear Ms. Blundon:

Re: Newfoundland and Labrador Hydro – 2018 Capital Budget Application – Muskrat Falls to Happy Valley Interconnection Update

Introduction

Newfoundland and Labrador Hydro ("Hydro") filed the Muskrat Falls to Happy Valley Interconnection Project ("Project") as part of the 2018 Capital Budget Application ("CBA"). As per Order No. P.U. 43(2017), the Board deferred a decision on the Project pending submission of further information from Hydro. Additional information was filed between January 29, 2018 and March 16, 2018. On March 23, 2018, the Board issued P.U. 9(2018) ordering Hydro to file a proposed plan in relation to the provision of reliable service in Labrador East in 2018-2019 and a proposal for the process and timelines to enable further consideration of the Project. In response, Hydro has filed monthly status reports on the provision of reliable service in Labrador East since June 15, 2018. Additionally, a review of its Network Addition Policy was filed on October 1, 2018, with a commitment to filing a proposed policy for the Labrador Interconnected System on December 14, 2018. Hydro also filed the Labrador Interconnected System Transmission Expansion Study ("Expansion Study") on October 31, 2018.

On November 20, 2018, the Board directed Hydro to file an updated Project proposal on Friday, November 30, 2018.

Historical Information

Currently, Labrador East receives power via a 269 km 138 kV transmission line (L1301/L1302)¹ from the Churchill Falls Hydroelectric Generating Station ("Churchill Falls") to the Happy Valley Terminal Station ("Happy Valley"). Two new 315 kV transmission lines interconnect Churchill Falls and the new Muskrat Falls Terminal Station 2 ("Muskrat Falls TS2"). The Project was proposed as the least-cost option to improve service reliability to the Labrador East section of the Labrador Interconnected System, and to provide sufficient transmission capacity to serve the installed load base. The Project includes the construction of six kilometres of 138 kV transmission and associated terminal station modifications to extend L1302 from the Muskrat Falls Tap Station to the Muskrat Falls TS2. By interconnecting Happy Valley to Muskrat Falls TS2, Labrador East will receive Churchill Falls Power via the new 315 kV system

¹ L1301 extends from Churchill Falls to the Muskrat Falls Tap Station, which is near the Muskrat Falls Hydroelectric Project, and L1302 extends from the Muskrat Falls Tap Station to the Happy Valley Terminal Station.

and the single 138 kV transmission line, which will be reduced in length from 269 km to 36 km. This new interconnection will improve reliability and increase capacity for the Labrador East System. The proposed project estimate in the CBA was approximately \$20 million, with a proposed schedule indicating the transmission line in-service by December 2018 and the 50 MVA transformer in-service by December 2019.

Verification of Least-Cost Option

Hydro filed the Expansion Study on October 31, 2018, which identified the least-cost, reliable transmission system additions required for eastern and western Labrador. The analysis contemplated both the baseline forecast and incremental loads beyond the baseline forecast. Table 3 in the Expansion Study document, simplified and provided herein as Table 1 to include only Labrador East, provides the updated Baseline Coincident Peak Forecasts.

Hydro provided additional analysis in the Expansion Study. The Expansion Study confirmed that the proposed Project was necessary and remained the least-cost option to reliably meet the capacity requirements of the baseline forecast in Labrador East.

Table 1: Baseline Coincident Peak Forecast (Labrador Interconnected System) (MW)

Year	Labrador East
	Base Coincident Peak
2018	81.7
2019	83.3
2020	83.5
2021	83.8
2022	84.0
2023	84.3
2024	84.9
2025	85.4
2026	85.9
2027	86.4
2028	86.9
2029	87.5
2030	88.0
2031	88.5
2032	89.0
2033	89.6
2034	90.1
2035	90.6
2036	91.1
2037	91.7
2038	92.2
2039	92.7
2040	93.3
2041	93.8
2042	94.3
2043	94.8

The data shows that while transmission system capacity remains at 77 MW at the 25 kV bus in the Happy Valley Terminal Station, the current coincident peak load forecast is above the transmission system capacity. The capacity shortfall is managed in the short-term by a temporary 5.5 MW interruptible contract,² as well as potential contribution from existing customers through the Advance Notification Protocol. In addition to the options presented in the CBA, Hydro completed an analysis of options to manage the peak load by running the existing Happy Valley Gas Turbine and the addition of a transformer at Churchill Falls through the Expansion Study. The Cumulative Net Present Value (“CPV”) of this option was over \$30 million higher than the proposed Project.³

Updated Proposed Budget Estimate and Schedule

The proposed Project Budget Estimate as provided in the CBA is below as Table 2. The current proposed Project Budget Estimate and Project Schedule, revised to reflect a new proposed start date of February 15, 2019, are included as Tables 3 and 4, respectively. The plan has been readjusted for optimum execution to establish power flow in 2019 and complete the remaining system requirements in 2020. Therefore, the transmission line extension and Muskrat Falls TS2 work is scheduled for completion by December 2019, and the Happy Valley work will continue into 2020 and be complete by December 2020. This execution change is reflected in the Project Budget Estimate; however, while the direct costs remain as proposed in the CBA, the project estimate has increased from \$20.0 million to \$20.8 million due to inflationary increases since the baseline estimate was established in 2017.

Table 2: Project Budget Estimate (August 30, 2017)

Project Cost: (\$ x1,000)	2018	2019	Beyond	Total
Material Supply	1,370.2	0.0	0.0	1,370.2
Labour	2,419.0	275.0	0.0	2,694.0
Consultant	114.6	0.0	0.0	114.6
Contract Work	10,132.6	1,500.0	0.0	11,632.6
Other Direct Costs	266.6	0.0	0.0	266.6
Interest and Escalation	567.9	117.0	0.0	684.9
Contingency	2,860.6	355.0	0.0	3,215.6
TOTAL	17,731.5	2,247.0	0.0	19,978.5

Table 3: Project Budget Estimate (Revised)

Project Cost: (\$ x1,000)	2019	2020	Beyond	Total
Material Supply	1,360.2	10.0	0.0	1,370.2
Labour	1,675.6	1,018.4	0.0	2,694.0
Consultant	114.6	0.0	0.0	114.6
Contract Work	6,807.3	4,825.3	0.0	11,632.6
Other Direct Costs	207.0	59.6	0.0	266.6
Interest and Escalation	853.8	650.1	0.0	1,503.9
Contingency	2,032.9	1,182.7	0.0	3,215.6
TOTAL	13,051.4	7,746.1	0.0	20,797.5

² Application for Interruptible Load Service Agreement with Labrador Lynx Limited filed by Hydro on August 31, 2018 and approved on October 11, 2018 (P.U. 37(2018)).

³ The cost benefit analysis results are included in Table 7 of the Expansion Study.

Table 4: Project Schedule (Revised)

Activity	Start Date	End Date
Planning	February 2019	February 2019
Design	February 2019	August 2019
Procurement	February 2019	June 2020
Construction – 2019 – Transmission / Muskrat Falls TS2 expansion	June 2019	September 2019
Commissioning – 2019 – Transmission / Muskrat Falls TS2 expansion	September 2019	December 2019
Construction – 2020 – Happy Valley Terminal Station upgrades/expansion	June 2020	September 2020
Commissioning – 2020 – Happy Valley Terminal Station upgrades/expansion	September 2020	October 2020
Project Closeout	November 2020	December 2020

Hydro believes that the Project, as proposed, remains the least-cost reliable solution for Labrador East to serve the load requirements of the current customers on the Labrador Interconnected System. The management of the additional capacity provided by this Project will be addressed through the Network Addition Policy to be filed by Hydro on December 14, 2018.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO



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