

January 29, 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 (Hydro) – 2018 Capital Budget Application –
Revised Information pursuant to Board Order P.U. 43(2017)**

Please find enclosed one (1) original and ten (10) copies of revised information pursuant to Board Order P.U. 43(2017) (the "Order") regarding Hydro's 2018 Capital Budget Application.

In response to the Order, Hydro is submitting additional information to aid the Board in making an informed decision regarding two projects on which a decision by the Board was deferred in the Order. Those two projects are 1) the Muskrat Falls to Happy Valley Interconnection Project and the 2) Hydraulic Generation Refurbishment and Modernization Project.

1. *Muskrat Falls to Happy Valley Interconnection Project*

In order to provide the necessary clarification for the Muskrat Falls to Happy Valley Interconnection Project, Hydro is submitting revisions to the documents that were contained in Volume II, Tab 13. The following is a summary of the revisions provided in the attached documentation. These revisions clarify that there are three data centres already active in Happy Valley, and that the forecasted Department of National Defence load in 2020 only increases the load forecast, which has already exceeded the existing system transfer capacity. As the customer load forecast already exceeds the system capacity, Hydro took action in 2017 to temporarily increase transmission capacity to Labrador East by utilizing the conductors on one of the newly constructed 315 kV lines between Churchill Falls and Muskrat Falls. Since the 315 kV lines were not yet in service, Hydro tapped the 138 kV line that connects Churchill Falls and Happy Valley and one of the 315 kV lines together, utilizing the conductors on that line, energizing it at 138 kV. The subsequent increase in transmission conductor resolved the capacity issue for the winter of 2017-2018; however, this solution is only available until the spring of 2018 when the 315 kV line is returned to the Muskrat Falls Project for commissioning of the Labrador-Island Transmission Link, and Labrador East is yet

again supplied on the 138 kV line. Consequently, a permanent 138 kV transmission solution is still required for reliable supply of the load in Labrador East to meet growing customer demand.

Execution of the proposed 138 kV line extension and connection at Muskrat Falls 315/138 kV station in 2018 meets the capacity requirement necessary to serve the load for the winter of 2018-2019. The addition of the 50 MVA transformer in 2019, with engineering starting in 2018, meets the necessary reliability requirement for the winter of 2019-2020 and beyond. From a short term perspective, the proposed solution (Phase I) is all that is required in order to reliably serve the Labrador East customer load up to 104 MW, forecasted out to 2041. In the event that customer load increases prior to this time and Phase II is required, Phase II will then be a natural progression, utilizing all infrastructure constructed as part of Phase I. Phase II would be the logical and least cost solution for Labrador East loads greater than 104 MW; therefore, there is no risk to executing the project in phases driven by load growth. This reduces the risk to customers of premature overdevelopment and the associated capital.

With respect to the operational and maintenance plan for the Happy Valley gas turbine, as part of the recommended option, the unit will have a much lower utilization as it will not be required to operate as a synchronous condenser for load transfer. Upon completion of Phase I, the unit will be required for operation in generate mode for line outages (maintenance) of L1302 (Muskrat Falls to Happy Valley) and to provide back up for loss of the largest 138/25 kV transformer during peak load conditions. Once the Labrador-Island HVdc Link is in service, the role of the Happy Valley gas turbine must be considered in the broader, system wide context of an interconnected system, and can only be fully addressed as part of a larger generation planning exercise, which is beyond the scope of this analysis and the current customer load driven issue. The gas turbine will be maintained for reliability in the future, with any future potential for decommissioning to be discussed with the Board and addressed, if appropriate, in an abandonment of plant application.

As for the Wood Pole Line Maintenance Program on L1301 and station O&M costs (specifically Churchill falls 230/138 kV equipment and Muskrat Falls construction power station), these costs have been shown to be immaterial¹ to the selection of the proposed alternative and if removed, will not affect the final recommendation. Hydro has updated the analysis,² and has appropriately included the cost of running the gas turbine for crossarm replacement on L1302. The report also provides details regarding the information used in the calculation. The selected alternative remains the least cost option that provides reliable service.

¹ 2018 Capital Budget Application RFI Response NP-NLH-025

² Muskrat Falls to Happy Valley Interconnection, Appendix A, Section 8

2. Hydraulic Generation Refurbishment and Modernization Project

With respect to the Hydraulic Generation Refurbishment and Modernization Project, Hydro does recognize that additional information would have been helpful in assisting the Board and intervenors to make a decision. Hydro is committed to providing additional detail in this project in the future 2019 Capital Budget Application. Hydro has provided additional information in RFI response PUB-NLH-018, including identification of the need for the two largest projects: 1) the Turbine Major Refurbishment and 2) the Refurbish and Replace Control Gate Infrastructure project.

- The Turbine Major Refurbishment includes details regarding the fact that it is due for refurbishment based on the Original Equipment Manufacturer recommended interval of 25 years and, based on the condition of Unit 3 and Unit 4 that had 25-year overhauls in 2017 and 2016, respectively.
- The Refurbish and Replace Control Gate Infrastructure project included two assessment reports, as noted in the RFI response.

The remaining proposed projects include condition assessments, details regarding how equipment is obsolete or failing, or are regularly scheduled capital interventions.

To provide additional clarity, Hydro is submitting a revision to Hydro's response to RFI PUB-NLH-018 (Revision 1), which now includes additional cost breakdown and schedule data, as well as additional clarification around the classification of two mandatory projects that are justified based on conformance with government regulations (Install Protective Guards in Turbine Pits and Diesel Fuel Storage Refurbishment and Replacement). One other project, although not mandatory by definition, follows the Dam Safety Guidelines (Upgrade Public Safety Around Dams and Waterways), and is industry best practice.

For the Refurbish Surge Tanks project, information was provided regarding the condition of the tanks; however, for additional clarity, Hydro is submitting the Bay d'Espoir Surge Tank #1 Condition Assessment (PUB-NLH-018 - Attachment 4). This project also includes a cost benefit analysis; however, the recommended option is the same as the refurbishment projects previously approved for Bay d'Espoir Surge Tanks 2 and 3. For the remaining projects, the only options are to 1) do nothing, for which Hydro believes there are associated risks to system reliability, or 2) to execute as proposed.

We trust the forgoing and the enclosed provides the Board with the additional information sought pursuant to Board Order P.U. 43(2017). Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO



Michael S. Ladha
Legal Counsel & Assistance Corporate Secretary
MSL/skc

Encl.

cc: Gerard Hayes – Newfoundland Power
Dean Porter – Poole Althouse
ecc: Denis Fleming – Cox & Palmer

Paul Coxworthy – Stewart McKelvey Stirling Scales
Dennis Browne, Q.C. – Browne Fitzgerald Morgan & Avis