NEWFOUNDLAND AND LABRADOR
BOARD OF COMMISSIONERS OF PUBLIC UTILITIES
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Dear Madam/Sirs:

Re: Newfoundland and Labrador Hydro - Reliability and Resource Adequacy Study Review Planned Reports, Studies and Analyses

In correspondence dated May 25, 2023 Newfoundland and Labrador Hydro ("Hydro"), in response to a May 5, 2023 direction from the Board, filed a list of reports, studies and analyses underway or planned with respect to issues in the Reliability and Resource Adequacy Study ("RRAS") Review.

Newfoundland Power Inc. ("Newfoundland Power"), the Island Industrial Customer Group ("IIC Group") and the Labrador Interconnected Group provided comments on the reports, studies and analyses listed by Hydro and proposed additional issues they believed should be addressed

as part of the RRAS Review. The Consumer Advocate did not provide any comments. On July 14, 2023 Hydro provided its reply. The parties' comments include:

- Newfoundland Power identified four issues for Hydro to address as part of the next update to the RRAS: (i) applications for additional capacity, including consideration of how Hydro's recommendation to proceed with Bay d'Espoir Unit 8 influences the need to replace the Holyrood Generating Plant ("Holyrood") and the Hardwoods Gas Turbine ("Hardwoods") capacity; (ii) whether the Labrador Island Link ("LIL") should be treated as an energy only line in consideration of the need to balance costs and reliability; (iii) whether Hydro's probabilistic criteria is appropriate given the uniqueness of the Island Interconnected System ("IIS"); and (iv) what near-term opportunities exist to support the IIS in order to respond to a potential supply shortfall.
- The IIC Group supported Newfoundland Power's comments on the need to assess the appropriateness of Hydro's probabilistic analysis for reliability. The IIC Group submitted that a primary focus for Hydro should be ensuring no further slippage in Hydro's filings schedule and addressing the concerns on the Muskrat Falls generation and transmission assets raised by The Liberty Consulting Group in its monitoring reports. The IIC Group also addressed load forecasting, electrification impacts, additional industrial capacity assistance, LIL reliability, conservation and demand management options and rate impacts.
- The Labrador Interconnected Group recommended that Hydro provide information regarding the potential for short-term supply to Quebec and potential supply additions for Labrador.
- Hydro generally agreed to undertake the work or analysis requested by the parties, but was not clear in certain cases that it intends to carry out the full scope of the work or analysis requested.

While Hydro outlined a fairly comprehensive list of additional work and analyses to be completed to support this process, it is not clear based on Hydro's July 14, 2023 reply that it plans to address all of the issues and concerns of the Board and those raised by the parties. The Board sets out below its comments and directions to Hydro on reports, studies and analyses to be completed and actions to be taken.

1. Requirement for Additional Capacity

In the RRAS-2022 Update, dated October 3, 2022 ("2022 RRAS Update"), Hydro, for the first time took the position that it has established the need for back up generation in support of the LIL and to address future load growth. Hydro stated that the operation of Holyrood and Hardwoods should be extended until 2030, or until such time as sufficient alternative generation is commissioned, adequate performance of the LIL is proven and generation reserves are met. Hydro indicated that it would develop an application for new supply, with the primary consideration being Unit 8 (154MW) at the Bay d'Espoir generating plant.

According to Newfoundland Power the 2022 RRAS Update is not clear on the replacement of Holyrood and Hardwoods capacity, including (i) what costs and reliability benefits an earlier replacement would have for customers; (ii) what least cost options might be available to replace some or all Holyrood and Hardwoods capacity; (iii) the timeline for new capacity additions and (iv) consideration of how the recommendation to proceed with Bay d'Espoir Unit 8 influences the need to replace Holyrood and Hardwoods capacity.

Hydro's position to extend operation of Holyrood and Hardwoods and to proceed with new generation is a significant change from earlier RRAS versions, first filed in 2018 and updated in 2019. Until 2022, it was Hydro's position that Holyrood and Hardwoods should be retired following integration of the Muskrat Falls Project with the IIS.[1] The Board believes that it is critical that Hydro fully address the issues associated with this significant change in position. The need for additional capacity must be adequately addressed in Hydro's reports, studies and analyses to allow for a full and comprehensive review of future supply requirements for the IIS.

The Board directs Hydro to fully address the need for additional capacity in the next update to the RRAS, including: (i) the amount of capacity required; (ii) the options for new capacity additions; (iii) the timeline for new capacity additions; and (iv) the costs and reliability benefits of an earlier replacement of Holyrood and Hardwoods.

2. Schedule

Hydro indicated that it would proceed with the preparation of an application for approval of Bay d'Espoir Unit 8 as its preferred option for a new generation addition with the Front-end engineering design ("FEED") study for this project scheduled for the fourth quarter of 2024. The completion of a feasibility study for a combustion turbine is planned for August 2023 with the FEED study scheduled for completion in the fourth quarter of 2024. Studies on other potential supply options, such as potential incremental capacity from existing hydro units and development of other Island hydroelectric facilities, are scheduled to be filed throughout 2024.

The Board believes that the information from the planned studies is essential and required to fully and comprehensively assess the best option for new generation. Hydro's proposed filing schedule does not permit the filing of an application for approval for new generation until the fourth quarter of 2024, at the earliest and considering the timing of the outstanding reports possibly not until 2025. The 2022 RRAS Update indicated a need for new additional generation to be in place by as early as 2030. At the same time the construction schedule Hydro identified for Bay d'Espoir Unit 8 is up to eight years.[2] The Board notes that based on the information provided in Hydro's 2024 Capital Budget Application the construction schedule for new generation could be up to ten years.[3] Clearly the filing of an application in late 2024 or early 2025 would not allow for a review of the application and completion of the project, estimated to require 8-10 years, before the planned retirement date of Holyrood in 2030.

The Board directs Hydro to ensure adequate resources are dedicated so that there is no further slippage in the schedule and also to seek and implement opportunities to advance the schedule for the completion of the identified studies, the filing of an application and the implementation of new generation.

[1] 2022 RRAS Update, Volume III, page 52 lines 5-7.
[2] 2022 RRAS Update, Executive summary, page 4, lines 4-6.
[3] 2024 Capital Budget Application, Schedule 3, page 15, lines 9-11.

3. Near-Term Sources of Supply

The issue of near-term capacity arises in the event of an extended outage of the LIL before the date that new capacity will be in service which, based on Hydro's schedule, would appear to extend beyond 2030. Newfoundland Power stated it considers the reliability consequences resulting from an extended outage of the LIL combined with high forced outage rates associated with Holyrood to be an emergency situation for its customers that would likely require an extended period of rotating outages. Newfoundland Power recommended that information on the measures that can be taken in the near-term to mitigate customer outages in the event of an extended outage of the LIL should be included in Hydro's next RRAS update. According to Hydro the near-term sources of capacity it is evaluating and would report on in its next update include investing in Holyrood and Hardwoods, capacity assistance programs, a focus on demand management and the potential to extend the Stephenville gas turbine. Hydro did not include a combustion turbine as a near-term option to mitigate customer outages in the event of an extended LIL outage.

The Board agrees it is critical that Hydro explore all options for near-term or short-term capacity options in the event of an emergency or a forecast shortfall while a longer-term solution is still being studied and implemented. The procurement of near-or short-term options to be available in the event of a LIL extended outage or a forecast capacity shortfall may assist in the reduction of some of the significant capital and operating costs projected for Holyrood and Hardwoods to 2030.[4] In particular the Board considers earlier replacement of Holyrood and Hardwoods, either partially or fully, with a combustion turbine or other supply option to be an issue that needs to fully addressed. An analysis should be completed on an expedited basis to determine the feasibility and costs of a combustion turbine to be available in the case of an extended outage of the LIL and as a potential source of supply before other generation is added. While Hydro estimated that it would take four years for a combustion turbine to be installed, the Board notes that Hydro last installed a 100 MW gas turbine in 2015 for Holyrood in a process that was less than 12 months from the filing of Hydro's application to the in service of the gas turbine. In the Board's view it is essential that Hydro's schedule for completion of the feasibility study for a combustion turbine not be delayed or extended, that the FEED study be expedited to as early as possible in 2024 and that the analysis be completed as soon as possible.

The Board directs Hydro to consider and report in the next update to the RRAS on supply options available on a short-term basis, including consideration of the expedited placement of a combustion turbine as a near-term and a potential long-term option, given the potential to reduce the impact of LIL outages and the potential to reduce the costs associated with maintaining and replacing Holyrood and Hardwoods. This analysis should include (1) consideration of options to expedite procurement as occurred with the last combustion turbine in the 2014-2015 period and (2) an evaluation of the environmental implications of a

[4] Operating Holyrood as a baseload source of capacity is estimated to cost $150 million annually for a total cost of $1Billion dollars between 2024 and 2030. (2022 RRAS Update, Vol. III, page 26, Tables 8 and 9).

combustion turbine, including a comparison to the environmental consequences of operating Holyrood that would be replaced by a combustion turbine.

4. LIL Reliability

There are continuing concerns on the reliability of the LIL. The IIC Group submitted that Hydro should continue to review options to mitigate the duration of LIL outages, including investment in critical spare equipment and remote line repair capabilities. According to Newfoundland Power an assessment that compares the customer reliability outcomes (i.e., customer outages and consequences) to the incremental cost of mitigating those outages would be informative in considering whether the LIL should be treated for planning purposes as an energy only line. Hydro agreed to provide an update in the next update to the RRAS on its ability to respond to failures of the LIL and on the six-week LIL shortfall analysis included in previous RRAS reports to account for the possibility of an extended outage of the LIL. Hydro also said it would make recommendations if the analysis shows justification for backup and it would include an analysis that compares the customer reliability impacts of the LIL against the incremental cost of mitigating the LIL reliability impact.

The Board considers the issue of an extended LIL outage to be a critical issue. The Board believes that Hydro should consider the options and actions available to mitigate the duration of LIL outages, as well as the near-term sources of supply available in the event of a LIL outage. The options analyzed should address those outlined in the Haldar reports[5] including reinforcing certain sections of the LIL.

The Board directs Hydro to (i) file a report in the next RRAS Update on the options available to mitigate the duration of LIL outages, including the LIL reinforcements and enhancements that are feasible, their costs and what the resulting risk of outages and their consequences remain after the reinforcement or enhancement and (ii) file a report in the first half of 2024 on the actions and activities it has undertaken or plans to undertake in response to the recommendations in the Haldar reports.

5. Probabilistic Analysis

Newfoundland Power submitted that a detailed review should be completed on why probabilistic criteria is appropriate for the IIS, given the unique vulnerabilities inherent in the size of the LIL, the lack of transmission interconnections, and potentially significant customer consequences that could result from a LIL outage. The IIC Group agree that such an analysis is required. Hydro in its reply stated that probabilistic analysis is an industry standard used by planners as an indication of supply adequacy and did not agree to provide the review suggested.

[5] Assessment of Labrador Island Transmission Link (LIL) Reliability in Consideration of Climatological Loads, dated March 10, 2021 (revised April 11, 2021) and Assessment of Labrador Island Transmission Link (LIL) Reliability in Consideration of Climatological Loads -Phase II, dated December, 2021 by Haldar & Associates Inc.

Given the magnitude of the LIL capacity, the existing concerns on LIL reliability, the customer consequences of a LIL extended outage and the lack of transmission interconnections, the Board believes that a review of the appropriateness of using probabilistic analysis is necessary**.**

The Board directs Hydro to undertake a review of the appropriateness of probabilistic analysis and to provide an update in the next RRAS update.

6. Load Forecast

The IIC Group submitted that an updated load forecast that includes details on sensitivities that affect the forecast and the implications of a range of electrification scenarios should be provided by Hydro. Hydro indicated that the next update to the RRAS will include the 2023 load forecast and will have a base ("reference") case and a high case with the high case reflecting a more aggressive electrification scenario.

The Board believes that inclusion of only a base case and a high case for the implications of electrification is inadequate. It is essential that the updated load forecast include a robust range of electrification scenarios to allow consideration of the implications on the load forecast of achievement of various levels of forecast electrification by 2030.

The Board directs Hydro to include a range of electrification scenarios in the sensitivities to be completed on the load forecast in the next update to the RRAS.

7. Rate Impacts

The ICC Group submitted that Hydro should provide an analysis of the rate impacts by customer class of potential additional generation options for the IIS, including the proposed Bay d'Espoir Unit 8. Hydro replied that it will assess the impact of new generation additions, including Bay d'Espoir Unit 8, on domestic rates based on what is known of the government's rate mitigation plan, which is not yet finalized.

The Board believes that the full implications for customer rates of new supply additions, without any rate mitigation, should also be identified to allow for full transparency on the impact of the integration of Muskrat Falls on the rate impacts for customers**.**

The Board directs Hydro to include analysis of the rate impacts with and without rate mitigation in the next update to the RRAS.

8. Transmission System Constraints

The May 25, 2023 correspondence from Hydro lists the Avalon Supply ("Transmission") Study update with a filing date of October, 2023.

The Board directs Hydro to report in the next RRAS update on whether any other parts of its transmission system have existing or potential constraints that could affect supply from new

generation sources and whether any studies have been completed for other than Avalon supply.

9. Short-term Energy Sales to Quebec

The Labrador Interconnected Group recommended that Hydro perform studies or analyses regarding the potential for short-term supply to Quebec in order to, among other things, avoid future spills. Hydro did not agree and stated that, as it does not foresee near-term opportunities for short-term sales to Quebec due to transmission capacity constraints, a specific study of short-term energy sales is not necessary. The Board agrees that, while such an analysis is not required at this time, it may be helpful for Hydro to provide additional information in relation to this issue in its next RRAS update.

The Board directs Hydro to include information in the next update to the RRAS on the potential for short-term sales to Quebec.

Conclusion

The issues and concerns in this RRAS Review involve significant matters affecting the future adequacy, reliability and costs of the electrical system in the province. With a need for new capacity identified for as early as 2030, a construction schedule of up to ten years for any new generation source, and ongoing issues on the reliability implications of the Muskrat Falls assets, the Board has concerns on Hydro's proposed schedule to address these issues. It is imperative that Hydro act expeditiously to complete the reports, studies and analyses required to support a full, transparent and thorough process, including the directions of the Board in this letter, to allow a full consideration of the reliability and adequacy of the IIS and the associated costs.

If you have any questions, please do not hesitate to contact the Board's Legal counsel, Ms. Jacqui Glynn, by email jglynn@pub.nl.ca or telephone (709) 726-3781.

Sincerely,

Sara Kean
Assistant Board Secretary

SK/cs

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