

January 11, 2024

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

Attention: Jo-Anne Galarneau  
Executive Director and Board Secretary

**Re: *Reliability and Resource Adequacy Study Review – Labrador-Island Link Update for the Quarter Ended December 31, 2023.***

On November 21, 2019, the Board of Commissioners of Public Utilities (“Board”) requested that Newfoundland and Labrador Hydro (“Hydro”) provide further information as a result of the findings in The Liberty Consulting Group’s (“Liberty”) Eighth Quarterly Monitoring Report on the Integration of Power Supply Facilities to the Island Interconnected System.<sup>1</sup> Hydro committed to providing Liberty and the Board with a monthly status update reflecting specific requests by the Board and other pertinent information with respect to the Muskrat Falls Project.<sup>2,3,4</sup> On July 25, 2023, the Board directed Hydro to reduce the frequency of reporting to quarterly from monthly.<sup>5</sup> Enclosed please find the update, as requested.

## **1.0 Labrador-Island Link**

### **1.1 Commissioning Activities**

#### **1.1.1 Bipole Commissioning**

As previously reported, the Labrador-Island Link (“LIL”) was officially commissioned on April 14, 2023, in accordance with the project financing and revenue agreements.

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<sup>1</sup> “Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System – Phase Two – The Liberty Consulting Group Eighth Quarterly Monitoring Report on the Integration of Power Supply Facilities to the Island Interconnected System – Further Information and Continued Quarterly Monitoring Reports in 2020,” Board of Commissioners of Public Utilities, November 21, 2019.

<sup>2</sup> *Ibid.*, p. 1.

<sup>3</sup> “Newfoundland and Labrador Hydro – Reliability and Resource Adequacy Study Review – Information Required for Monthly Reports,” Board of Commissioners of Public Utilities, January 19, 2021.

<sup>4</sup> Hydro’s report has been adjusted to reflect the Board’s requests, with the exception of information related to the LIL monthly energy transfers as well as Maritime Link availability, exports, and imports in the month. Both pieces of information are currently included in Hydro’s monthly energy supply report and are not available in a timeframe that corresponds with the timing of this report.

<sup>5</sup> “Newfoundland and Labrador Hydro – Reliability and Resource Adequacy Study Review – Frequency of Reporting by Newfoundland and Labrador Hydro and The Liberty Consulting Group,” Board of Commissioners of Public Utilities, July 25, 2023.

Since commissioning, the LIL has been in service and successfully providing power to the provincial grid. Hydro will continue to address the remaining punchlist items submitted with the commissioning certificate, including delivery of a final version of LIL software and execution of a 900 MW pole overload test.

The purpose of the final software version is to resolve the outstanding punchlist items and other items that were deferred to the final release. Hydro has continued to witness software testing and GE's progress on the resolution of the remaining 111 software punchlist items. The final software version underwent Factory Acceptance Testing in late 2023; only one software punchlist item remains outstanding, with a resolution targeted in early 2024. As communicated in the last LIL update,<sup>6</sup> the installation of the new software version is planned for the spring of 2024.

Hydro continues to plan for the execution of the 900 MW pole overload test. As previously reported, the following are prerequisite conditions for the test to occur:

- Satisfactory system conditions are present, including those in Newfoundland and Labrador and neighbouring jurisdictions;
- Successful coordination with all relevant system operators is attained; and
- Identification of risks and implementation of all necessary risk mitigation actions are in place.

Opportunities for testing may occur late in the first quarter or early in the second quarter of 2024 but would be dependent on system loading conditions and the availability of generation/reserves.

### **1.1.2 Soldiers Pond Synchronous Condensers**

Since the last LIL update, the Soldiers Pond Synchronous Condensers have been in operation at all times other than for scheduled maintenance and completion of punchlist work, with the following exceptions:

- On December 5, 2023, Synchronous Condenser 3 tripped due to a loss of power to its auxiliaries. There was no customer impact as a result of this trip. The unit returned to service on December 12, 2023. An investigation into the event is ongoing.
- On December 12, 2023, Synchronous Condenser 2 tripped. There was no customer impact as a result of this trip. The unit was returned to service on December 15, 2023. An investigation into the event is ongoing.

Hydro is also investigating the performance of the synchronous condenser brush gear that has resulted in four unplanned maintenance outages to the three units. These maintenance outages were planned in consultation with the Newfoundland and Labrador System Operator and have not affected power supply for customers. Hydro is working with the brush gear manufacturer to understand the root cause and ensure necessary corrective actions are identified and implemented.

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<sup>6</sup> "Reliability and Resource Adequacy Study Review – Labrador-Island Link Update for the Quarter Ended September 30, 2023," Newfoundland and Labrador Hydro, October 5, 2023.

## 1.2 Operations

Since the last update, the LIL has been operating at various power transfer levels. In total, 852.63 GWh were delivered over the LIL from October 1 to December 31, 2023, more than triple the deliveries for the same period in 2022. Hydro continues to ensure the availability of generation at the Holyrood Thermal Generation Station; however, energy and capacity delivered over the LIL are used to minimize thermal generation whenever possible. During the fourth quarter of 2023, Hydro utilized more energy from LIL deliveries to service Island Interconnected System customers than thermal generation.

As part of the *Reliability and Resource Adequacy Study Review* proceeding, Hydro established the assumption that the equivalent forced outage rate for the LIL over the long term would be in the range of 1% to 10%. Hydro is pleased to report that, despite expectations of increased unavailability in its early operation, the equivalent forced outage rate for the LIL from January 1 to December 31, 2023 was approximately 4%.<sup>7</sup> This is well within the assumed long-term range.

During the fourth quarter of 2023, the LIL experienced eight pole trips associated with control system components; these trips did not result in any customer impact. The average return-to-service time for the trips was less than ten hours.

Three pole trips were due to DCCT<sup>8</sup> issues. As previously reported, Hydro has experienced challenges with electromagnetic interference (noise) and cold temperature performance with these components. Hydro is working with GE to coordinate the replacement of problematic devices and the engineering of solutions to mitigate noise. Hydro has identified four devices for replacement, with expected completion during the first quarter of 2024.

Two pole trips occurred due to failed components—one to a failed power supply and one to a failed control card. The failed components were replaced with available spares and root cause investigations are ongoing.

The three remaining trips are attributed to the failure of control components at the LIL Transition Compound following the submarine cable switching in the Strait of Belle Isle (“SOBI”). These failures are under investigation and cable switching has been disabled until the investigations are complete. With cable switching disabled, pole overloads (individual pole operation above 450 MW) are limited to five minutes, as only one cable is in service per pole.<sup>9</sup> To provide reliable service, Hydro has limited the LIL bipole capacity to 450 MW for normal operation; however, operation up to 700 MW is available, should the system require operation at that level.

Hydro will provide an update on the ongoing investigations and DCCT mitigations in its next quarterly update.

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<sup>7</sup> This equivalent forced outage rate is calculated on a base Labrador Island Link capacity of 700 MW. On a base capacity of 900 MW, the equivalent forced outage rate is calculated to be approximately 6%. Following the completion of the 900 MW test, all calculations will be adjusted to reflect the change in assumptions.

<sup>8</sup> Direct current current transformers (“DCCT”).

<sup>9</sup> Under normal operation, when all three SOBI cables are available, poles may be overloaded to 675 MW continuously. With a cable out of service, there is an elevated risk of under-frequency load shedding if the LIL were loaded above 450 MW.

### 1.3 Outages

As noted in Section 1.2, there were no customer outages to report in the current quarter.

### 2.0 Muskrat Falls Generation

#### 2.1 Operations

Since the filing of the last LIL monthly update, the units at the Muskrat Falls Hydroelectric Generating Facility have been available for service at all times other than for scheduled maintenance outages with the exception of the following system events.

- On October 6, 2023, Unit 3 tripped due to protection relay operation. An initial assessment indicated no issues. The unit was returned to service on October 7, 2023. Hydro is working with the original equipment manufacturer to understand the cause of the trip and to ensure there is no risk to the equipment. An investigation into this event is ongoing.
- On October 24, 2023, during final energization tests on Unit 1 before its return to service after completing scheduled maintenance, an excitation system fault tripped the unit. The unit was returned to service on October 25, 2023. An investigation into this event is ongoing.

The total plant DAFOR performance through the end of the fourth quarter of 2023 was 2.49%, which was better than the Electricity Canada average of 5.82% for similar units across Canada.

### 3.0 Labrador-Island Link Schedule

As noted in Section 1.1.1, LIL commissioning has been achieved in accordance with both the project finance agreement and revenue agreements.

If you have any questions or comments, please contact the undersigned.

Yours truly,

#### NEWFOUNDLAND AND LABRADOR HYDRO



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Vice President, Chief Legal Officer & Corporate Secretary  
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