Newfoundland and Labrador Hydro
Hydro Place. 500 Columbus Drive
P.O. Box 12400. St. John's. NL
Canada A1B 4K7
t. 709.737.1400 I f. 709.737.1800
nlhydro.com

March 19, 2024

The 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: Monthly Energy Supply Report for the Island Interconnected System for February 2024

Enclosed please find Newfoundland and Labrador Hydro's Monthly Energy Supply Report for the Island Interconnected System as directed by the Board of Commissioners of Public Utilities.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO

Shirley A. Walsh
Senior Legal Counsel, Regulatory
SAW/kd

Encl.

ecc:

Board of Commissioners of Public Utilities
Jacqui H. Glynn
Board General

Consumer Advocate
Dennis M. Browne, KC, Browne Fitzgerald Morgan & Avis
Stephen F. Fitzgerald, Browne Fitzgerald Morgan & Avis
Sarah G. Fitzgerald, Browne Fitzgerald Morgan & Avis
Bernice Bailey, Browne Fitzgerald Morgan & Avis

Linde Canada Inc.
Sheryl E. Nisenbaum
Peter Strong

Newfoundland Power Inc.
Dominic J. Foley
Lindsay S.A. Hollett
Regulatory Email

Teck Resources Limited
Shawn Kinsella

Island Industrial Customer Group
Paul L. Coxworthy, Stewart McKelvey
Denis J. Fleming, Cox & Palmer
Dean A. Porter, Poole Althouse

Monthly Energy Supply Report for the Island Interconnected System for February 2024

March 19, 2024

A report to the Board of Commissioners of Public Utilities

newfoundland labrador hydro

Contents

List of Appendices

1.0 Introduction

On February 8, 2016, the Board of Commissioners of Public Utilities ("Board") requested Newfoundland and Labrador Hydro ("Hydro") file a biweekly report containing, but not limited to, the following:

1) System Hydrology Report;

2) The thermal plant operated in support of hydrology;

3) Production by plant/unit; and

4) Details of any current or anticipated long-term derating.

In July 2016, the Board indicated that a monthly report would thereafter be sufficient. This report provides data for February 2024.[1]

2.0 System Hydrology

Reservoir inflows in February 2024 were 10% below the month's historical average.[2] Table 1 summarizes the aggregate storage position of Hydro's reservoirs at the end of the reporting period.

Table 1: System Hydrology Storage Levels

Date	2024 (GWh)	2023 (GWh)	20-Year Average (GWh)	Minimum Storage Limit (GWh)	Maximum Operating Level (GWh)	Maximum Operating Level (%)
29-Feb-2024	1,763	2,000[3]	1,629[4]	482	2,452	72

The aggregate reservoir storage level on February 29, 2024 was 1,763 GWh, which is 28% below the seasonal maximum operating level and 266% above the minimum storage limit.[5] Inflows to the

[1] Effective April 2023, Hydro added Section 2.1 (Ponding), Section 2.2 (Spill Activity), and Appendix A (Ponding and Spill Transactions) within this report. "Newfoundland and Labrador Hydro – Streamlining of Quarterly Regulatory Report to Parties – Board's Decision on Reporting," Board of Commissioners of Public Utilities, May 11, 2023.
[2] Calculated in terms of energy (gigawatt hour ["GWh"]).
[3] Value for February 28, 2023.
[4] 20-year average storage value for February 28 reported.
[5] Minimum storage limits are developed annually to provide guidance in the reliable operation of Hydro's major reservoirs—Victoria, Meelpaeg, Long Pond, Cat Arm, and Hinds Lake. The minimum storage limit is designed to indicate the minimum level of aggregate storage required such that if there was a repeat of Hydro's critical dry sequence, or other less severe sequence, Hydro's load can still be met through the use of the available hydraulic storage supplemented with maximized deliveries of power from the Muskrat Falls Hydroelectric Generating Facility over the Labrador-Island Link ("LIL"). Hydro's long-term critical dry sequence is defined as January 1959 to March 1962 (39 months). Other dry periods are also considered during this analysis to ensure that no other shorter-term historic dry sequence could result in insufficient storage.

reservoirs of the Bay d'Espoir System were 83% of average during February 2024, while inflows to the Hinds Lake Reservoir were 119% of average and inflows to the Cat Arm Reservoir were 130% of average. Weather conditions across the Island reservoirs were cold and mostly dry at the beginning of February, followed by a period of milder weather and increased inflows due to rain and snow melt near the end of the month.

There was one brief unit outage that occurred in February 2024. Bay d'Espoir Unit 4 was taken offline on a planned outage on February 1, 2024 to investigate an issue with a 75 rpm[6] speed switch. The unit was then returned to service later the same day.

A snow survey of the Bay d'Espoir System reservoirs, as well as the Hinds Lake Reservoir and Cat Arm Reservoir, was completed from February 19 to February 22, 2024. The snow pack was found to be below average across the Island reservoirs, with snow-water equivalents in the Bay d'Espoir System between 39% and 66% of average. The least amount of snow-water equivalent was found at the Long Pond Reservoir, while the highest amount of snow-water equivalent was found in the Victoria Lake Watershed. Snow-water equivalent in the Hinds Lake Reservoir was found to be 46% of the historical average, while Cat Arm Reservoir was found to be 38% of the historical average.

Figure 1 plots the 2023 and 2024 storage levels, minimum storage limits, maximum operating level storage, and 20-year average aggregate storage for comparison.

[6] Revolutions per minute ("rpm").

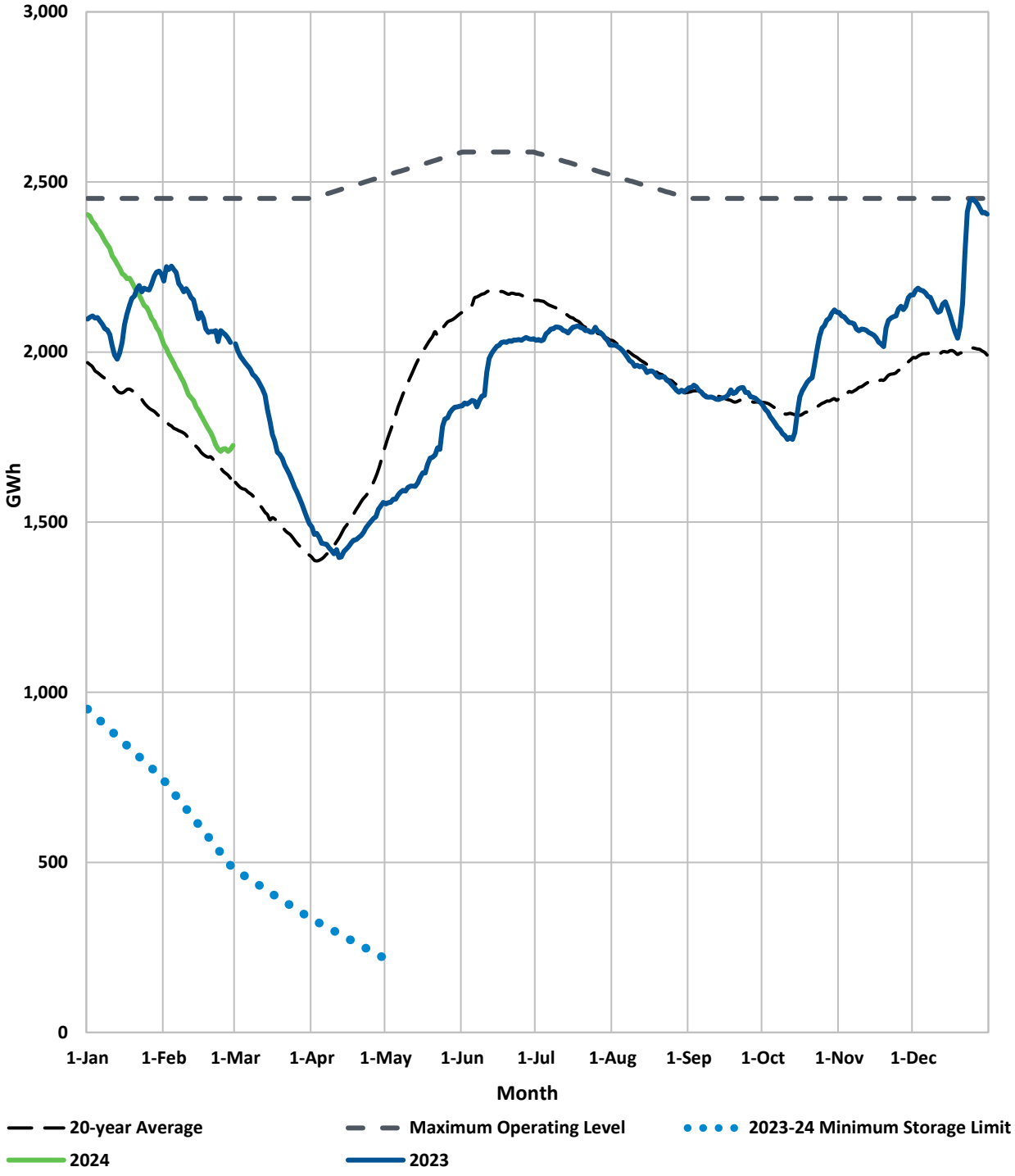

Figure 1: Total System Energy Storage[7]

[7] Data points in Figure 1 represent storage at the beginning of each day. Table 1 reports the end-of-day storage values, which results in a small difference between the storage data presented in Table 1 and Figure 1.

2.1 Ponding

In Order No. P.U. 49(2018), the Board approved Hydro's application for approval of a Pilot Agreement for the Optimization of Hydraulic Resources ("Pilot Agreement").[8] The intent of the Pilot Agreement is to optimize Hydro's hydraulic resources through the strategic use of its storage capabilities, taking advantage of the variability of energy pricing in external markets over time.

Appendix A provides information regarding imported and exported energy transactions under the Pilot Agreement during the month; however, no ponding imports or exports occurred in February 2024.

2.2 Spill Activity

There were no releases of water required at any locations on the Island Interconnected System in February 2024. Appendix A provides information regarding spill-avoidance export transactions undertaken during the month.[9] Energy exports to mitigate spills were not required in February 2024.

Table 2: Spill Activity[10]

	Granite Canal Bypass		Upper Salmon Bypass	
	MCM[11]	**GWh**	**MCM**	**GWh**
29-Feb-2024	-	-	-	-
YTD Total	**5.9**	**0.6**	**3.9**	**0.5**

3.0 Production and Purchases

Appendix B provides a breakdown of power purchases, including the import and export activity over the LIL and Maritime Link, and production by plant during February 2024. There was no energy repaid from Corner Brook Pulp and Paper Limited ("CBPP") to Energy Marketing under the Temporary Energy Exchange Agreement in February 2024.

On February 1, 2024, Hydro entered into a six-month power purchase agreement with CBPP as per the directive of the Government of Newfoundland and Labrador on January 22, 2024, in the Order in

[8] The Third Amended and Restated Pilot Agreement for the Optimization of Hydraulic Resources was approved as per Board Order No. P.U. 35(2022), and was extended as per Board Order No. P.U. 30(2023).
[9] Pursuant to the Pilot Agreement, exporting when system load is low allows for sustained generation from Island hydraulic facilities and the utilization of water (energy) that would have otherwise been spilled, while not increasing the risk of spill elsewhere in the system.
[10] Numbers may not add due to rounding.
[11] Million cubic metres ("MCM").

Council No. OC2024-013. The power purchase agreement with CBPP provides Hydro with 80 GWh from February 1, 2024 through July 31, 2024 inclusive.

4.0 Thermal Production

Two Holyrood Thermal Generating Station ("Holyrood TGS") units were online for system generation requirements in February 2024. Total energy production from the Holyrood TGS was 101.0 GWh during the month. The operating hours for the Holyrood TGS and the Hardwoods, Stephenville, and Holyrood Gas Turbines are summarized in Table 3. Standby generation was not required to support reservoir storage.

Table 3: Holyrood TGS and Gas Turbines Operating Hours

	Operating Hours	Synch Condense Hours	Available Hours
Holyrood TGS			
Unit 1	654.4	0	654.4
Unit 2	0	0	0
Unit 3	696.0	0	696.0
Gas Turbines			
Hardwoods	5.6	685.6	691.2
Stephenville	0	0	0
Holyrood	13.8	0	696.0

5.0 Unit Deratings

At the beginning of February 2024, Holyrood TGS Unit 1 was online and derated to 160 MW. From February 7, 2024 through February 9, 2024, a boiler controls expert was on site to determine the cause for the derating. It was determined that the high pressure feedwater heaters and variable frequency drive ("VFD") performance on the forced draft fans contributed to this derating. These items cannot be addressed with the unit online and will be addressed during the planned annual outage in 2024. Boiler tuning will be completed again once these issues are corrected and the unit is returned to service for the 2024 winter operating season. As a result, Unit 1 will remain derated to 160 MW for the remainder of the operating season. On February 9, 2024, the unit tripped due to a fault with the turbine controls. The fault was corrected, and the unit returned to service on February 10, 2024. On February 11, 2024, a hydraulic leak developed in the turbine control system and the unit had to be taken offline to resolve it. The unit was returned to service on February 12, 2024. On February 22, 2024, the east forced draft fan

tripped due to a VFD failure causing an additional derate to 50 MW, which is the maximum output for that unit when operating with one fan. It was determined that there were issues with the VFDs on both fans. When the east fan was returned to service, the west fan was taken out of service to correct that VFD. Both fans were restored later that same day, returning the load capability to 160 MW. The unit continued to operate with 160 MW capability for the remainder of February 2024.

Unit 2 at the Holyrood TGS was offline for the entire month of February 2024 on a forced extension to the planned annual maintenance outage. This is a result of cracking discovered on the low pressure turbine blades.

Unit 3 at the Holyrood TGS and the Hardwoods Gas Turbine were online and operating with full capability for the entire month of February 2024.

The Holyrood Gas Turbine was available for the full month of February 2024 with the exception of a short, forced outage on February 9, 2024 due to a faulty independent overspeed module. This was corrected, and the unit was returned to service later the same day.

The Stephenville Gas Turbine remained unavailable during the full month of February 2024 due to damage to the generator resulting from the failure of a generator cooling fan. The rotor underwent inspection and testing at the original equipment manufacturer's facility in the United States throughout December 2023. The rotor was returned to site in late February 2024 and was reinstalled in the unit on March 5, 2024. The exciter was also returned to site in mid-February 2024; however, it sustained damage during shipping and requires additional repairs. It is expected that the exciter will be returned to site in early April 2024; the unit is estimated to return to service later that month.

Appendix A

Ponding and Spill Transactions

Table A-1: Ponding Transactions[1]

Date	Ponding Imports (MWh)	Ponding Exports (MWh)	Ponding Imports Purchased by Hydro (MWh)	Transfer of Pond Balance to Spill Avoidance (MWh)	Energy Losses to Export (MWh)	Cumulative Ponded Energy (MWh)
Opening Balance						-
Total[2]	-	-	-	-	-	

Table A-2: Avoided Spill Energy[1]

Date	Avoided Spill Exports (MWh)	Energy Losses to Export (MWh)	Transfer of Pond Balance to Spill Avoidance (MWh)	Year-to-date Avoided Spill Energy (MWh)
Opening Balance				
Total[2]	-	-	-	

[1] Numbers may not add due to rounding.
[2] As of February 29, 2024.

Appendix B

Production and Purchases

Table B-1: Generation and Purchases (GWh)[1]

	February 2024	YTD February 2024
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	39.3	82.0
Unit 2	39.1	81.6
Unit 3	35.8	76.7
Unit 4	26.1	57.6
Unit 5	26.9	59.2
Unit 6	22.9	52.6
Unit 7	78.0	171.0
Subtotal Bay d'Espoir	268.0	580.7
Upper Salmon	54.7	100.2
Granite Canal	22.1	41.0
Hinds Lake	43.1	83.6
Cat Arm		
Unit 1	44.6	88.2
Unit 2	44.6	88.9
Subtotal Cat Arm	89.2	177.0
Paradise River	1.4	2.8
Star Lake	11.4	23.6
Rattle Brook	0.4	0.8
Nalcor Exploits	49.4	100.7
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	**539.7**	**1,110.5**
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	48.7	107.3
Unit 2	0.0	0.0
Unit 3	52.3	93.2
Subtotal Holyrood TGS Units	101.0	200.5
Holyrood Gas Turbine and Diesels	0.9	3.7
Hardwoods Gas Turbine	0.1	0.1
Stephenville Gas Turbine	0.0	0.0
Other Thermal	0.0	0.0
Total Thermal Generation (Hydro)	**102.0**	**204.3**
Purchases		
Requested Newfoundland Power and Vale	0.0	0.0
CBPP		
Capacity Assistance	0.0	0.5
Power Purchase Agreement	15.3	15.3
Secondary	0.0	1.7
Co-Generation	0.0	10.6
Subtotal CBPP	15.3	28.2
Wind Purchases	17.3	36.9
Maritime Link Imports[2]	0.0	0.0
New World Dairy	0.0	0.1
Labrador Island Link Delivery to IIS[3,4]	90.2	238.2
Total Purchases	**122.9**	**303.4**
Total[5]	**764.6**	**1,618.3**

[1] Gross generation.

[2] Includes energy flows as a result of purchases and inadvertent energy.

[3] LIL deliveries to the Island Interconnected System are calculated by total LIL imports of 272.9 GWh less Maritime Link Exports of 182.6 GWh.

[4] Net energy delivered to the Island Interconnected System is less than the total energy delivery to Hydro under the Muskrat Falls Power Purchase Agreement because of transmission losses on the LIL.

[5] Actuals reflect rounded values to the nearest tenth of a GWh. Differences between total versus addition of individual components due to rounding.