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

February 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 January 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/nk

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 January 2024

February 19, 2024

A report to the Board of Commissioners of Public Utilities

newfoundland labrador hydro

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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 January 2024.[1]

2.0 System Hydrology

Reservoir inflows in January 2024 were 61% 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 (%)
31-Jan-2024	2,018	2,229	1,807	750	2,452	82

The aggregate reservoir storage level on January 31, 2024 was 2,018 GWh, which is 18% below the seasonal maximum operating level and 169% above the minimum storage limit.[3] Inflows across the Island System were below average in January 2024. Conditions throughout the month were cold and dry

[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] 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.

across the Island reservoirs. Inflows to the reservoirs of the Bay d'Espoir System were 31% of average during the month, while inflows to the Hinds Lake Reservoir were 64% of average and inflows to the Cat Arm Reservoir were 82% of average.

The Cat Arm Hydroelectric Generating Station ("Cat Arm Station") and the Upper Salmon Hydroelectric Generating Station ("Upper Salmon Station") experienced a small number of brief outages in January 2024. The first outage occurred on Unit 1 at the Cat Arm Station on December 31, 2023 and was the result of an issue with the unit's governor system. The unit was returned to service on January 1, 2024. On January 7, 2024, an outage occurred at the Upper Salmon Station due to the accumulation of frazil ice in the unit's intake. The unit was returned to service on January 9, 2024. A short outage to address the governor system issue on Unit 1 at the Cat Arm Station took place on January 17, 2024. The unit was returned to service the same day. Finally, the Upper Salmon Station was taken offline on January 19, 2024 as a precautionary measure due to risk of frazil ice risk. The unit was returned to service on January 20, 2024.

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

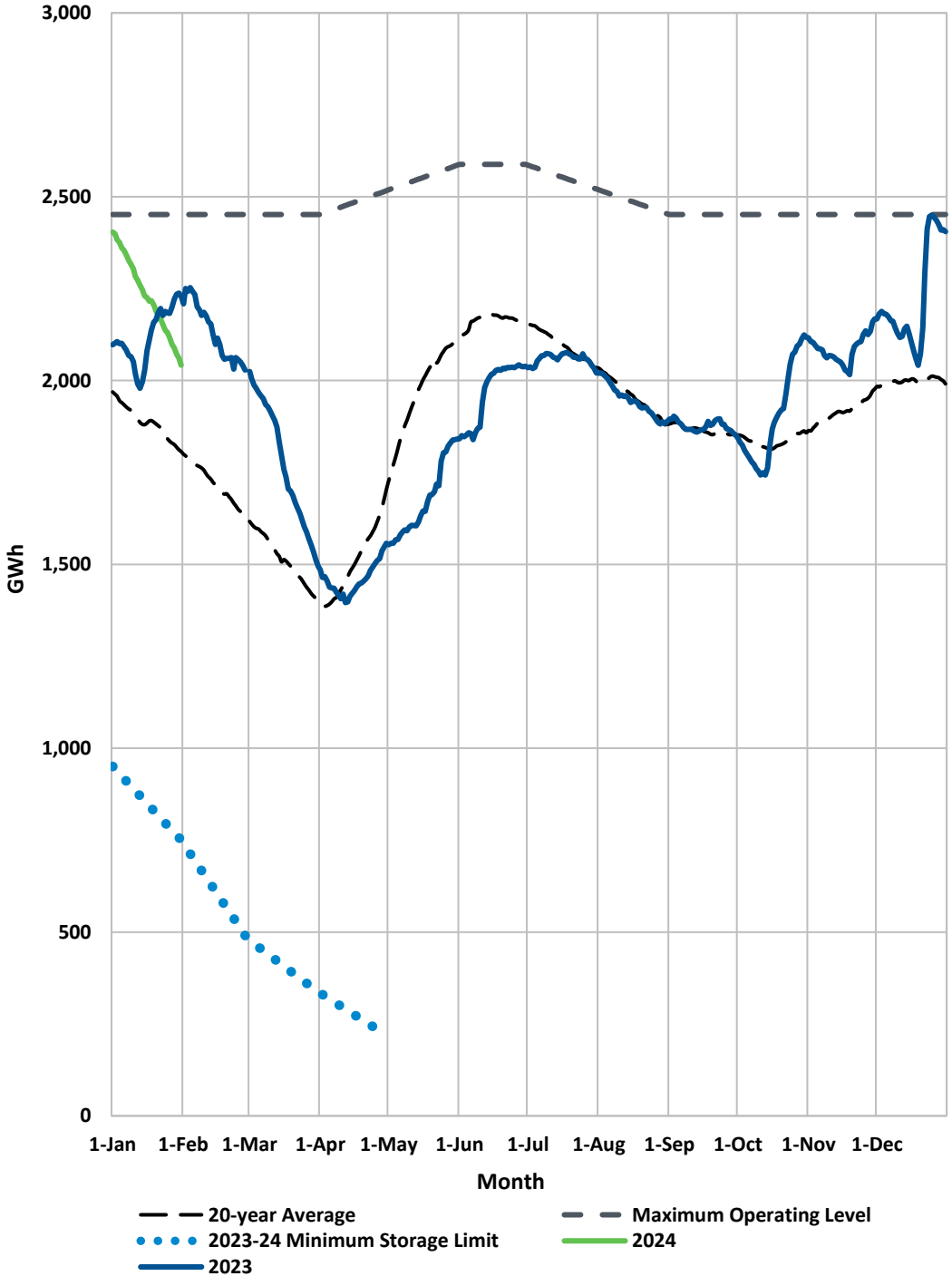

Figure 1: Total System Energy Storage[4]

[4] 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),[5] the Board approved Hydro's application for approval of a Pilot Agreement for the Optimization of Hydraulic Resources ("Pilot Agreement").[6] 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 January 2024.

2.2 Spill Activity

Bypass flows at the North Salmon Spillway due to high storage levels in the Meelpaeg Reservoir continued at the beginning of January 2024 and concluded on January 2, 2024. High storage levels were the result of a significant rain event which took place from December 19 to 22, 2023. The Granite Canal Bypass also resumed on January 1, 2024 as a result of elevated water levels from the December 2023 rain event, and generation reductions at the Granite Canal Hydroelectric Generating Station ("Granite Canal Station") due to frazil ice. The Granite Canal Bypass concluded on January 3, 2024. No additional releases of water were required throughout the remainder of January 2024 at any locations on the Island Interconnected System.

Appendix A provides information regarding spill-avoidance export transactions undertaken during the month.[7] Energy exports to mitigate spill were not required in January 2024. The Granite Canal Station and Upper Salmon Station were generating their maximum possible amounts during bypass.

[5] *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 49(2018), Board of Commissioners of Public Utilities, December 18, 2018.
[6] The Third Amended and Restated Pilot Agreement for the Optimization of Hydraulic Resources was approved as per *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 35(2022), Board of Commissioners of Public Utilities, December 16, 2022, and was extended as per *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 30(2023), Board of Commissioners of Public Utilities, December 12, 2023.
[7] 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.

Table 2: Spill Activity[8]

	Granite Canal Bypass		Upper Salmon Bypass	
	MCM[9]	**GWh**	**MCM**	**GWh**
31-Jan-2024	5.9	0.6	3.9	0.5
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 January 2024. There was no energy repaid from Corner Brook Pulp and Paper Limited ("CBPP") to Energy Marketing under the Temporary Energy Exchange Agreement in January 2024. A total of 0.1 GWh[10] of emergency energy[11] was supplied to Nova Scotia over the Maritime Link during January 2024.

4.0 Thermal Production

Two Holyrood Thermal Generating Station ("Holyrood TGS") units were online for system generation requirements during January 2024. Total energy production from the Holyrood TGS was 99.5 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.

[8] Numbers may not add due to rounding.
[9] Million cubic metres ("MCM").
[10] 124 MWh measured at Bottom Brook Converter Station.
[11] Under the Interconnection Operators Agreement between Hydro and Nova Scotia Power.

Table 3: Holyrood TGS and Gas Turbines Operating Hours

	Operating Hours	Synch Condense Hours	Available Hours
Holyrood TGS			
Unit 1	684.0	0	684.0
Unit 2	0	0	0
Unit 3	517.2	0	517.2
Gas Turbines			
Hardwoods	5.4	738.6	744.0
Stephenville	0	0	0
Holyrood	48.3	0	744.0

5.0 Unit Deratings

At the beginning of January 2024, Holyrood TGS Unit 1 was online and derated to 160 MW. On January 27, 2024, the unit was taken offline for a maintenance outage to replace generator brushes and to swap out the turbine dc lube oil pump motor. The unit was returned to service later that same day with a capability of 160 MW. Hydro intends to bring in a boiler controls expert in February 2024, pending contractor availability, to perform tuning on the unit in an attempt to understand and resolve the residual derate.

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

At the beginning of January 2024, Unit 3 at the Holyrood TGS was operating with a derating of 70 MW due to a boiler leak that was identified in December 2023. An outage began on January 9, 2024 to correct the leak and return the unit to full capability. The unit was returned to service on January 17, 2024 with full capability and remained online for the remainder of the month.

The Hardwoods and Holyrood Gas Turbines were both available for the full month of January 2024.

The Stephenville Gas Turbine remained unavailable during the full month of January 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; due to the results of the tests and inspections, additional repairs were required in

January 2024 with the rotor expected to be returned to site in late February 2024. The bearings and excitor were returned to site in mid-February 2024; however, the excitor sustained damage during shipping and requires additional repairs. The unit is expected to return to service in late April 2024.

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 January 31, 2024.

Appendix B

Production and Purchases

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

	January 2024	YTD January 2024
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	42.7	42.7
Unit 2	42.5	42.5
Unit 3	40.9	40.9
Unit 4	31.5	31.5
Unit 5	32.3	32.3
Unit 6	29.7	29.7
Unit 7	93.0	93.0
Subtotal Bay d'Espoir	312.7	312.7
Upper Salmon	45.5	45.5
Granite Canal	18.9	18.9
Hinds Lake	40.5	40.5
Cat Arm		
Unit 1	43.6	43.6
Unit 2	44.3	44.3
Subtotal Cat Arm	87.9	87.9
Paradise River	1.4	1.4
Star Lake	12.3	12.3
Rattle Brook	0.4	0.4
Nalcor Exploits	51.3	51.3
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	**570.8**	**570.8**
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	58.6	58.6
Unit 2	0.0	0.0
Unit 3	40.9	40.9
Subtotal Holyrood TGS Units	99.5	99.5
Holyrood Gas Turbine and Diesels	2.8	2.8
Hardwoods Gas Turbine	0.1	0.1
Stephenville Gas Turbine	0.0	0.0
Other Thermal	0.0	0.0
Total Thermal Generation (Hydro)	**102.4**	**102.4**
Purchases		
Requested Newfoundland Power and Vale	0.0	0.0
CBPP		
Capacity Assistance	0.5	0.5
Secondary	1.7	1.7
Co-Generation	10.6	10.6
Subtotal CBPP	12.9	12.9
Wind Purchases	19.6	19.6
Maritime Link Imports[2]	0.0	0.0
New World Dairy	0.1	0.1
Labrador Island Link Delivery to IIS[3,4]	148.0	148.0
Total Purchases	**180.6**	**180.6**
Total[5]	**853.7**	**853.7**

[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 308.2 GWh less Maritime Link Exports of 160.2 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.