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February 17, 2023

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

Attention: Cheryl Blundon
Director Corporate Services and Board Secretary

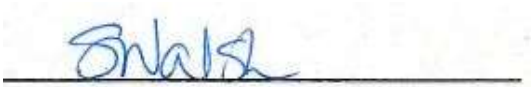
Re: Monthly Energy Supply Report for the Island Interconnected System for January 2023

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
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Monthly Energy Supply Report for the Island Interconnected System

January 2023

February 17, 2023

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, as contained in Hydro's Quarterly 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 2023.

2.0 System Hydrology

Reservoir inflows in January 2023 were approximately 111% above the month's historical average.[1] 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	2023 (GWh)	2022 (GWh)	20-Year Average (GWh)	Minimum Storage Limit (GWh)	Maximum Operating Level (GWh)	Maximum Operating Level (%)
31-Jan-2023	2,229	2,107	1,765	946	2,452	91

The aggregate reservoir storage level on January 31, 2023 was 2,229 GWh, which is 9% below the seasonal maximum operating level and 136% above the minimum storage limit.[2] Overall system inflows were above average due to periods of heavy rainfall combined with mild weather and snow melt across Hydro's major reservoirs throughout the month, particularly in the Bay d'Espoir System. The first

[1] Percent of average inflows in this paragraph are calculated in terms of energy (gigawatt hours).

[2] 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, maximum generation at the Holyrood Thermal Generating Station ("Holyrood TGS"), and non-firm imports. Hydro's long-term critical dry sequence is defined as January 1959 to March 1962 (39 months). Other dry periods are also examined during the derivation to ensure that no other shorter-term historic dry sequence could result in insufficient storage.

significant weather event took place starting on January 13, 2023 when approximately 100–130 mm of precipitation fell across the Bay d'Espoir System over a four day period. A second period of rain and mild weather then occurred on January 26 to 27, 2023 which brought an additional 40–60 mm of precipitation to the area. Inflows to the Bay d'Espoir System overall were 130% above the month's historical average.

Leading up to and during this period, generation was prioritized along the Bay d'Espoir System with all plants maximized. Energy exports to mitigate spill were not available in January 2023 as system load necessitated maximum generation at the Granite Canal Hydroelectric Generating Station and Upper Salmon Hydroelectric Generating Station. Generation at the Bay d'Espoir Hydroelectric Generating Facility was also maximized to the extent possible.[3]

Spill and bypass releases were required at multiple locations in the system to keep reservoirs below their respective maximum operating levels. Spill releases from the Burnt Dam Spillway and bypass releases at the North Salmon Dam Spillway began on January 16, 2023 and continued until the end of the month. Releases at the Granite Canal Bypass structure occurred from January 18 to 21, 2023 and resumed from January 27 to 30, 2023 after the second rainfall event. At the end of January 2023, Hydro assumed the negative ponding balance of -9.8 GWh as spill avoidance exports due to the ongoing spill releases and excess storage in the Long Pond reservoir, resetting the ponding balance to 0 GWh.[4]

A brief planned outage occurred at the Upper Salmon Hydroelectric Generating Station from January 17 to 20, 2023 to complete a scheduled rotor rim inspection, after which the plant was returned to normal service.

Figure 1 plots the 2022 and 2023 storage levels, minimum storage limits, maximum operating level storage, and the 20-year average aggregate storage for comparison.

[3] Regulating reserve criteria required the Bay d'Espoir Hydroelectric Generating Facility to operate below its maximum rated capacity such that some generation is held in reserve.
[4] Pursuant to the Pilot Agreement for the Optimization of Hydraulic Resources, exporting when system load is low allowed for sustained generation from Island hydraulic facilities and the utilization of water (energy) that would otherwise have been spilled, while not increasing the risk of spill elsewhere in the system.

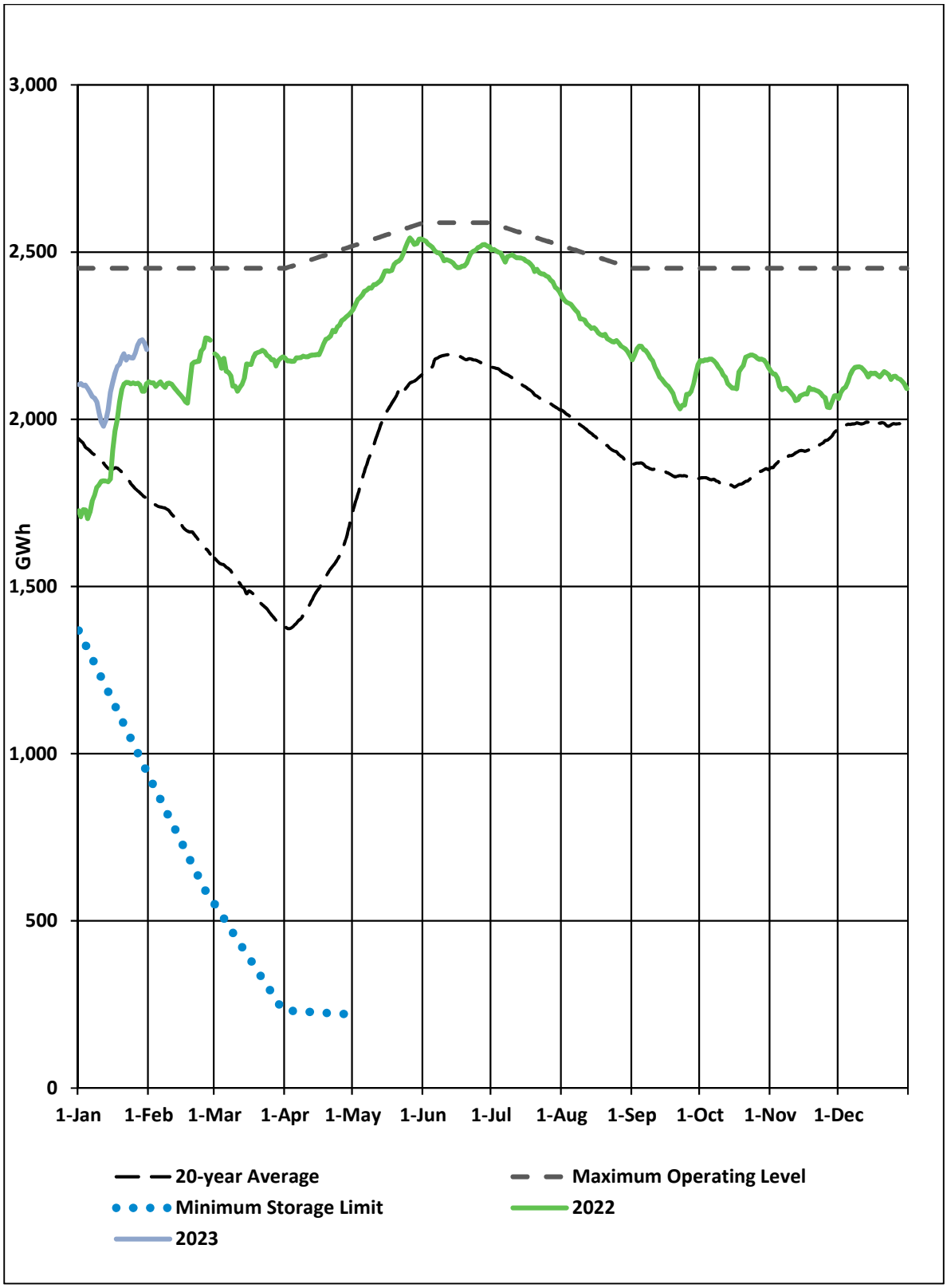

Figure 1: Total System Energy Storage

3.0 Production and Purchases

Appendix A provides a breakdown of power purchases, including imports, and production by plant during January 2023.

4.0 Thermal Production and Imports

All three units at the Holyrood TGS were required to generate in January 2023 for system requirements. Holyrood TGS Unit 1 was operated for the entire month, while Unit 2 was operated for 617.9 hours and Unit 3 was operated for 452.8 hours. Total energy production from the Holyrood TGS during January 2023 was 129.0 GWh.

Standby units were operated for a total of 81.4 hours during the month to support system requirements. Total standby production during the month was 4.0 GWh. Standby generation was not required to support reservoir storage. During January 2023, the Hardwoods and Stephenville gas turbines were also operated in sync condense mode for 717.1 and 113.0 hours, respectively.

Table 2 summarizes the Muskrat Falls energy deliveries, ponding activity, Corner Brook Pulp and Paper Limited ("CBPP") energy repaid to Energy Marketing, and emergency supply to Nova Scotia in January 2023.

Table 2: Muskrat Falls Deliveries and Export Activity

	Energy (GWh)
Muskrat Falls Energy Deliveries	
Muskrat Falls Power Purchase Agreement (Hydro)	39.8
Nova Scotia Block and Supplemental Energy[5]	99.9
Energy Marketing Bulk Surplus Exports[6]	1.7
Ponding Activity	
Ponding Exports	0.0
Ponding Balance	0.0[7]
Other Activity	
CBPP Energy repaid to Energy Marketing	0.0
Emergency supply to Nova Scotia[8]	0.2

[5] Nova Scotia Block and Supplemental Energy quantities are reflected at the point of commercial transaction. Due to power system operations, metered quantities may not match commercially transacted volumes.
[6] Energy Marketing has updated its reporting of Bulk Surplus Exports and CBPP energy repaid to Energy Marketing. The Bulk Surplus Exports figure now reports only Muskrat Falls energy exported to external markets. CBPP Energy repaid to Energy Marketing continues to be reported separately.
[7] Pursuant to the Agreement for the Optimization of Hydraulic Resources, Hydro assumed the negative ponding balance of -9.8 GWh from previous ponding exports as spill avoidance exports, resulting in a zero ponding balance at the end of January 2023.
[8] Under the Interconnection Operators Agreement between Hydro and Nova Scotia Power.

5.0 Unit Deratings

Unit 1 at the Holyrood TGS was operating with full capability for the month of January.

Unit 2 at the Holyrood TGS was taken offline for a planned maintenance outage from January 13 to 15, 2023 to complete an air heater wash and change generator brushes. Otherwise, the unit was online with full capability for the month of January 2023.

Unit 3 at the Holyrood TGS was taken offline for a planned maintenance outage on January 19, 2023 to complete an air heater wash and other minor maintenance. It was returned to service on January 31, 2023 with full capability.

The Hardwoods, Holyrood and Stephenville Gas Turbines were available at full capacity for the entire month of January 2023.

Appendix A

Production and Purchases

Table A-1: Generation and Purchases[1]

	January 2023 (GWh)	YTD[2] 2023 (GWh)
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	44.3	44.3
Unit 2	43.6	43.6
Unit 3	43.1	43.1
Unit 4	38.0	38.0
Unit 5	32.2	32.2
Unit 6	41.2	41.2
Unit 7	98.0	98.0
Subtotal Bay d'Espoir	340.4	340.4
Upper Salmon	52.8	52.8
Granite Canal	24.6	24.6
Hinds Lake	30.3	30.3
Cat Arm		
Unit 1	23.8	23.8
Unit 2	26.0	26.0
Subtotal Cat Arm	49.8	49.8
Paradise River	4.6	4.6
Star Lake	12.5	12.5
Rattle Brook	1.1	1.1
Nalcor Exploits	58.1	58.1
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	**574.1**	**574.1**
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	51.8	51.8
Unit 2	44.4	44.4
Unit 3	32.8	32.8
Subtotal Holyrood TGS Units	129.0	129.0
Holyrood Gas Turbine and Diesels	2.3	2.3
Hardwoods Gas Turbine	0.8	0.8
Stephenville Gas Turbine	0.7	0.7
Other Thermal	0.2	0.2
Total Thermal Generation (Hydro)	**133.0**	**133.0**
Purchases		
Requested Newfoundland Power and Vale	0.0	0.0
CBPP		
Capacity Assistance	0.0	0.0
Firm Energy Power Purchase Agreement	0.0	0.0
Secondary	2.0	2.0
Co-Generation	4.4	4.4
Subtotal CBPP	6.4	6.4
Wind Purchases	16.3	16.3
Maritime Link Imports[3]	0.2	0.2
New World Dairy	0.3	0.3
LIL Imports[4]	131.5	131.5
Maritime Link Exports[5, 6]	100.1	100.1
Net LIL Delivery to IIS[7]	31.4	31.4
Total Purchases	**154.6**	**154.6**
Total[8]	**861.7**	**861.7**

[1] Gross generation.
[2] Year-to-date ("YTD").
[3] Includes energy flows as a result of purchases and inadvertent energy.
[4] Includes purchases as a result of testing activity as well as deliveries that are then exported over the Maritime Link.
[5] Totals include the provision of emergency and inadvertent energy to Nova Scotia Power Inc., provision of the Nova Scotia Block, the Supplemental Block, and export activity conducted by Energy Marketing including the export of spilled energy on Newfoundland and Labrador Hydro's ("Hydro") behalf.
[6] Physical delivery of the Nova Scotia Block will only occur when the Labrador-Island Link ("LIL") is online and able to transfer power.
[7] Net energy delivered to the Island Interconnected System is less than the total energy delivery to Hydro under the Muskrat Falls Power Purchase Agreement ("Muskrat Falls PPA") because of transmission losses on the LIL. Additionally, the ratio of the energy deliveries to Nova Scotia and to Hydro is reflective of an operating restriction in place to ensure reliable service for customers while the LIL is in monopole mode. The loss of the pole while the LIL is operating in monopole mode would result in under frequency load shedding to Island customers if deliveries to Hydro were to exceed 30 to 40 MW, depending on system conditions. On this basis, operating restrictions are in place to restrict Hydro energy deliveries when the LIL is in service as a monopole to ensure reliable service for customers. As the LIL was primarily in operation in monopole mode in January 2023, Hydro received less power transfers than Nova Scotia. Nova Scotia is capable of accepting significantly higher power transfers during monopole operation of the LIL without subjecting customers to adverse risk. This is because the power system in Nova Scotia is synchronously tied to the North American Grid and the interruption of power flows from Newfoundland and Labrador would not result in customer impact. Hydro's entitlement under the Muskrat Falls PPA remains unchanged, with any shortfall in deliveries in current/near term periods to be addressed in the future.
[8] Actuals reflect rounded values to the nearest tenth of a GWh. Differences between total versus addition of individual components due to rounding.