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September 18, 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
Executive Director and Board Secretary

Re: Monthly Energy Supply Report for the Island Interconnected System for August 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

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Encl.

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Monthly Energy Supply Report for the Island Interconnected System for August 2023

September 18, 2023

A report to the Board of Commissioners of Public Utilities



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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 August 2023.¹

2.0 System Hydrology

Reservoir inflows in August 2023 were 1% above 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	2023 (GWh)	2022 (GWh)	20-Year Average (GWh)	Minimum Storage Limit (GWh)	Maximum Operating Level (GWh)	Maximum Operating Level (%)
31-Aug-2023	1,895	2,178	1,866	1,197	2,452	77

The aggregate reservoir storage level on August 31, 2023 was 1,895 GWh, which is 23% below the seasonal maximum operating level and 58% above the minimum storage limit.³ Overall, inflows across

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 hours).

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 (“Muskrat Falls 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.

1 Hydro's system in August were more in line with the long-term historical average than previous inflows
2 in June and July, which were above historical average. Inflows to the Bay d'Espoir system were slightly
3 below average in August at approximately 89% of average, while inflows to Cat Arm and Hinds Lake
4 were slightly above average at 118% and 104% of average, respectively. Although there were no large
5 rainfall events across the Island reservoirs in August, all regions did receive multiple days of rain in the
6 10–30 mm range throughout the month. The Cat Arm Reservoir also recorded approximately 50 mm of
7 rain over a three-day period from August 14 to 16, 2023. Additionally, the Bay d'Espoir system received
8 approximately 30–35 mm of rain from a low pressure system associated with Hurricane Franklin on
9 August 30 to 31, 2023.

10 Cat Arm Unit 1 continued with its planned outage at the beginning of August, returning to service on
11 August 4, 2023. Cat Arm Unit 2 was also offline for a pair of brief planned outages in August. The first
12 outage occurred on August 17, 2023, with the unit returning to service on the same day. The second
13 occurred from August 22 to 28, 2023. There were also a pair of planned outages at the Bay d'Espoir
14 Hydroelectric Generating Facility in August. The first of these was a brief outage on Bay d'Espoir Unit 4,
15 which took place from August 2 to 3, 2023. A longer planned outage also took place on Bay d'Espoir
16 Unit 7 from August 6 to 24, 2023. Bay d'Espoir Unit 6 continued to be unavailable throughout the month
17 of August. The Upper Salmon Hydroelectric Generating Station ("Upper Salmon Station") also remained
18 offline throughout all of August 2023.

19 The Granite Canal Hydroelectric Generating Station also experienced a pair of brief unplanned outages
20 in August. The first of these occurred on August 12, 2023, with the unit returning to service later the
21 same day. A similar outage also occurred on August 14, 2023, with the unit returning to service on
22 August 15, 2023. Another brief planned outage occurred on August 16, 2023 while crews were on site
23 troubleshooting the previous unplanned outage. After the unit was returned to service on
24 August 16, 2023, the unit remained online for the remainder of the month.

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

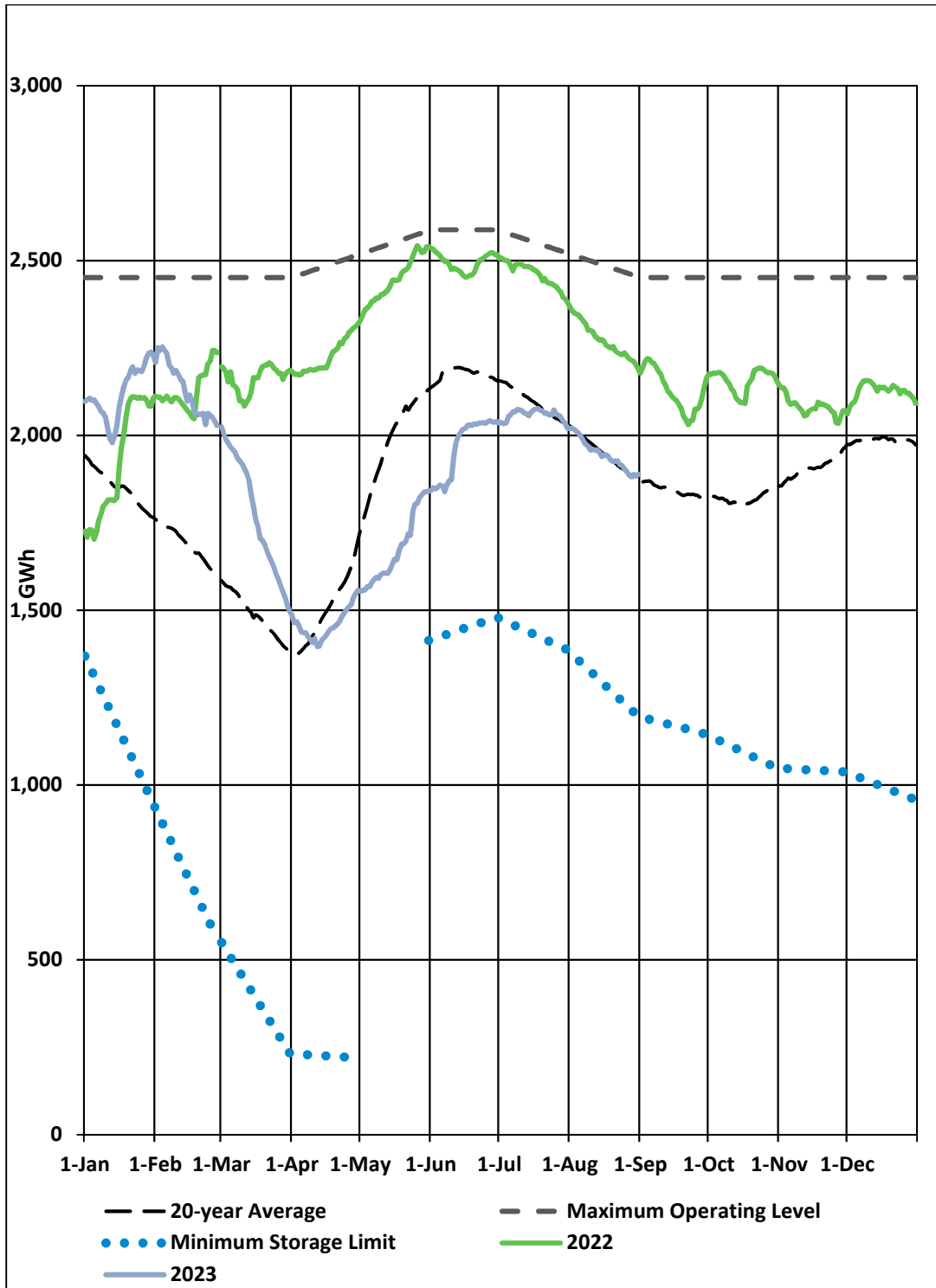


Figure 1: Total System Energy Storage⁴

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 a log of imported and exported energy transactions under the Pilot Agreement during the month. No ponding imports or exports occurred in August 2023.

2.2 Spill Activity

Bypass flows at North Salmon Spillway continued throughout August 2023 to support Long Pond Reservoir storage while the unit at the Upper Salmon Station is offline. Bypass at this location is expected to continue until the unit at the Upper Salmon Station is released for service, currently estimated for late November 2023. Spill was not required at any additional locations in August 2023.

A summary of the amount spilled or bypassed in both MCM⁷ and GWh for August 2023 as well as year-to-date (“YTD”) totals are provided in Table 2. Appendix A provides a log of spill avoidance export transactions during the month.⁸ Energy exports to mitigate spill were not required in August 2023.

Table 2: Spill Activity⁹

	Burnt Dam Spillway		Granite Canal Bypass		Upper Salmon Bypass		Cat Arm Spillway	
	MCM	GWh	MCM	GWh	MCM	GWh	MCM	GWh
31-Aug-2023	0	0	0	0	334.3	43.6	40.7	36.6
YTD Total	122.7	80.8	19.8	1.9	2539.0	331.1	40.7	36.6

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.
⁷ Million cubic metres (“MCM”).
⁸ Pursuant to the Pilot Agreement for the Optimization of Hydraulic Resources, 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.
⁹ Numbers may not add due to rounding.

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 August 2023. Corner Brook Pulp and Paper (“CBPP”) repaid 2.0 GWh of energy to Energy Marketing as per the Temporary Energy Exchange Agreement during the month of August 2023. This energy was also exported over the Maritime Link.

4.0 Thermal Production

No Holyrood Thermal Generating Station (“Holyrood TGS”) units were online for generation requirements during August 2023 and total energy production from the Holyrood TGS was 0 GWh during the month. Unit 3 was operated for a total of 345.6 hours in synch condense mode in August. 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. The Hardwoods and Holyrood Gas Turbines were operated in August for unit testing purposes.

Table 3: Holyrood TGS and Gas Turbines Operating Hours

	Operating Hours	Synch Condense Hours	Available Hours
Holyrood TGS			
Unit 1	0	0	0
Unit 2	0	0	0
Unit 3	0	345.6	345.6
Gas Turbines			
Hardwoods	1.5	725.0	730.9
Stephenville	0	0	0
Holyrood	2.0	0	744.0

1 **5.0 Unit Deratings**

2 Unit 1 and Unit 2 at the Holyrood TGS was offline for the planned annual maintenance outage for the
3 entire month of August 2023.¹⁰

4 Unit 3 at the Holyrood TGS was online in synchronous condenser mode until August 15, 2023. On
5 August 15, 2023, Unit 3 was taken offline from synchronous condenser mode for the planned total plant
6 outage for the remainder of August.

7 The Hardwoods Gas Turbine was available for the full month of August 2023 with the exception of a
8 planned outage of Bus 7 in the Hardwoods Terminal Station on August 1, 2023. The unit was also
9 unavailable due to an unplanned outage on August 3, 2023 to repair a leak on a jacking oil pressure
10 switch.

11 The Holyrood Gas Turbine was available at full capacity for the entire month of August 2023.

12 The Stephenville Gas Turbine remained unavailable during the full month of August 2023, due to
13 damage to the generator resulting from the failure of a generator cooling fan. The exact return to
14 service date is currently unknown, but is currently estimated to be in December 2023.

¹⁰ As reported in Hydro's response to CA-NLH-057 of the 2024 Capital Budget Application proceeding, Hydro has encountered cracking on the low pressure blades on Unit 2 turbine at the Holyrood TGS that will render the unit unavailable into the first quarter of 2024.

Appendix A

Ponding and Spill Transactions



Table A-1: Ponding Transactions¹

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 Pondered Energy (MWh)
Opening Balance						-
Total ²	-	-	-	-	-	

Table A-2: Avoided Spill Revenue¹

Date	Avoided Spill Exports (MWh)	Energy Losses to Export (MWh)	Transfer of Pond Balance to Spill Avoidance (MWh)	Cumulative Avoided Spill Energy (MWh)
Opening Balance				73,427
Total ²	-	-	-	

¹ Numbers may not add due to rounding.

² As of August 31, 2023.

Appendix B

Production and Purchases



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

	August 2023	YTD August 2023
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	41.0	329.6
Unit 2	42.0	327.3
Unit 3	24.8	205.1
Unit 4	17.4	171.0
Unit 5	13.2	155.0
Unit 6	0.0	163.4
Unit 7	5.0	515.2
Subtotal Bay d'Espoir	<u>143.4</u>	<u>1,866.5</u>
Upper Salmon	0.0	108.9
Granite Canal	19.3	163.0
Hinds Lake	34.4	274.4
Cat Arm		
Unit 1	33.7	239.1
Unit 2	29.3	273.4
Subtotal Cat Arm	<u>63.0</u>	<u>512.5</u>
Paradise River	1.3	19.2
Star Lake	12.9	98.0
Rattle Brook	1.5	10.9
Nalcor Exploits	53.1	432.1
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	<u>328.8</u>	<u>3,485.4</u>
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	0.0	150.9
Unit 2	0.0	200.8
Unit 3	0.0	126.2
Subtotal Holyrood TGS Units	<u>0.0</u>	<u>477.9</u>
Holyrood Gas Turbine and Diesels	0.1	14.8
Hardwoods Gas Turbine ²	0.0	1.6
Stephenville Gas Turbine	0.0	1.5
Other Thermal	0.0	0.3
Total Thermal Generation (Hydro)	<u>0.1</u>	<u>496.1</u>
Purchases		
Requested Newfoundland Power and Vale CBPP	0.0	0.1
Capacity Assistance	0.0	0.0
Firm Energy Power Purchase Agreement	0.0	0.0
Secondary	4.3	20.2
Co-Generation	3.1	28.3
Subtotal CBPP	<u>7.3</u>	<u>48.5</u>
Wind Purchases	8.3	116.9
Maritime Link Imports ³	0.0	0.2
New World Dairy	0.2	1.6
LIL Imports ⁴	235.0	1,784.9
Maritime Link Exports ^{5,6}	202.7	1,247.2
Net LIL Delivery to IIS ⁷	32.3	537.7
Total Purchases	<u>250.8</u>	<u>1,952.1</u>
Total⁸	<u>579.7</u>	<u>5,933.7</u>

¹ Gross generation.

² Hardwoods Gas Turbine generation was approximately 0.01 GWh for the month of August.

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. under the Interconnection Operators Agreement, provision of the Nova Scotia Block, the Supplemental Block, and export activity conducted by Energy Marketing including the export of CBPP repaid energy and spilled energy on Hydro's behalf.

⁶ Physical delivery of the Nova Scotia Block will only occur when the LIL is online and able to transfer power. CBPP energy repaid to Energy Marketing may be used to supply the Nova Scotia Block while the LIL is offline.

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 because of transmission losses on the LIL.

⁸ Actuals reflect rounded values to the nearest tenth of a GWh. Differences between total versus addition of individual components due to rounding.