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January 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 & Board Secretary

**Re: Monthly Energy Supply Report for the Island Interconnected System for November 2022 –
Revision 1**

Enclosed please find Revision 1 of Newfoundland and Labrador Hydro's ("Hydro") Monthly Energy Supply Report for the Island Interconnected System. The revised report reflects corrections to Section 2.0 System Hydrology (November 2022 reservoir inflows percentage below the monthly historical average and total 2022 inflows percentage of the year-to-date historical average). These changes are due to an error in the monthly historical averages used to calculate the previously provided values. This error has since been corrected.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO

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Encl.

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Revision History

Revision	Date	Location	Reason
1	17-Jan-2023	Sec. 2.0, p. 1, line 11	Error in the monthly historical averages used to calculate the November 2022 percent below the monthly historical average.
1	17-Jan-2023	Sec. 2.0, p. 1, line 12	Error in the monthly historical averages used to calculate the November 2022 percent below the monthly historical average, carrying through to the year-to-date historical average calculation.

Monthly Energy Supply Report for the Island Interconnected System

November 2022

Original Submission: December 19, 2022

Revision 1: January 17, 2023

A report to the Board of Commissioners of Public Utilities



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Appendix A: Production and Purchases

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 November 2022.

2.0 System Hydrology

Reservoir inflows in November 2022 were approximately 29% below the month’s historical average. Inflows in 2022 are 125% of the year-to-date 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	2022 (GWh)	2021 (GWh)	20-Year Average (GWh)	Minimum Storage Limit (GWh)	Maximum Operating Level (GWh)	Maximum Operating Level (%)
30-Nov-2022	2,061	1,626	1,947	1,409	2,452	84

The aggregate reservoir storage level on November 30, 2022 was 2,061 GWh, which is 16% below the seasonal maximum operating level and 46% above the minimum storage limit.² The current storage level

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.

1 is shown in Figure 1 in relation to the 20-year average storage level for the end of November 2022 of
2 1,947 GWh. At the end of November 2021, the aggregate storage level was 1,626 GWh.

3 Overall system inflows in November 2022 were below average due to the mostly dry conditions
4 experienced by Hydro's major reservoirs throughout much of the month. On November 12 to 13, 2022,
5 a significant precipitation event led to approximately 50 to 80 mm of rainfall across the Bay d'Espoir
6 System. The Hinds Lake Reservoir also received approximately 82 mm of rain on these dates, while
7 Cat Arm received about 28 mm of rain. This was followed by a period of freezing temperatures and snow
8 accumulation for all of Hydro's major reservoirs from approximately November 16 to 25, 2022. On
9 November 26, 2022, the second and final major precipitation event for the month led to another 40 mm
10 of rainfall in the upper portion of the Bay d'Espoir System (Victoria Reservoir to Granite Canal).
11 Approximately 14 mm of rain was recorded near the Meelpaeg and Long Pond Reservoirs, 14 mm for
12 Hinds Lake, and 9 mm for Cat Arm. This was followed by a period of mild temperatures that led to
13 significant snow melt and high inflows persisting for a number of days along the Bay d'Espoir System.
14 November inflows to the Bay d'Espoir System were 78% of average. Hinds Lake and Cat Arm inflows
15 were 59% and 86% of average, respectively.³ No energy exports to mitigate spill were required.

16 The annual planned outage for Bay d'Espoir Unit 4 that began in October was completed on
17 November 11, 2022. There were a number of brief planned outages throughout the month for winter
18 readiness checks: (i) Bay d'Espoir Unit 1 from November 13 to 19, 2022, (ii) Bay d'Espoir Unit 2 from
19 November 26 to 27, 2022, (iii) Bay d'Espoir Unit 3 on November 10, 2022, (iv) Bay d'Espoir Unit 5 from
20 November 11 to 12, 2022, (v) Bay d'Espoir Unit 6 from November 25 to 26, 2022, (vi) Upper Salmon from
21 November 28 to 30, 2022, (vii) Granite Canal from November 17 to 18, 2022, and (viii) Hinds Lake on
22 November 16, 2022.

23 Figure 1 plots the 2021 and 2022 storage levels, minimum storage limits, maximum operating level
24 storage, and the 20-year average aggregate storage for comparison.

³ Percent of average inflows in this paragraph are calculated by volume (cubic meters).

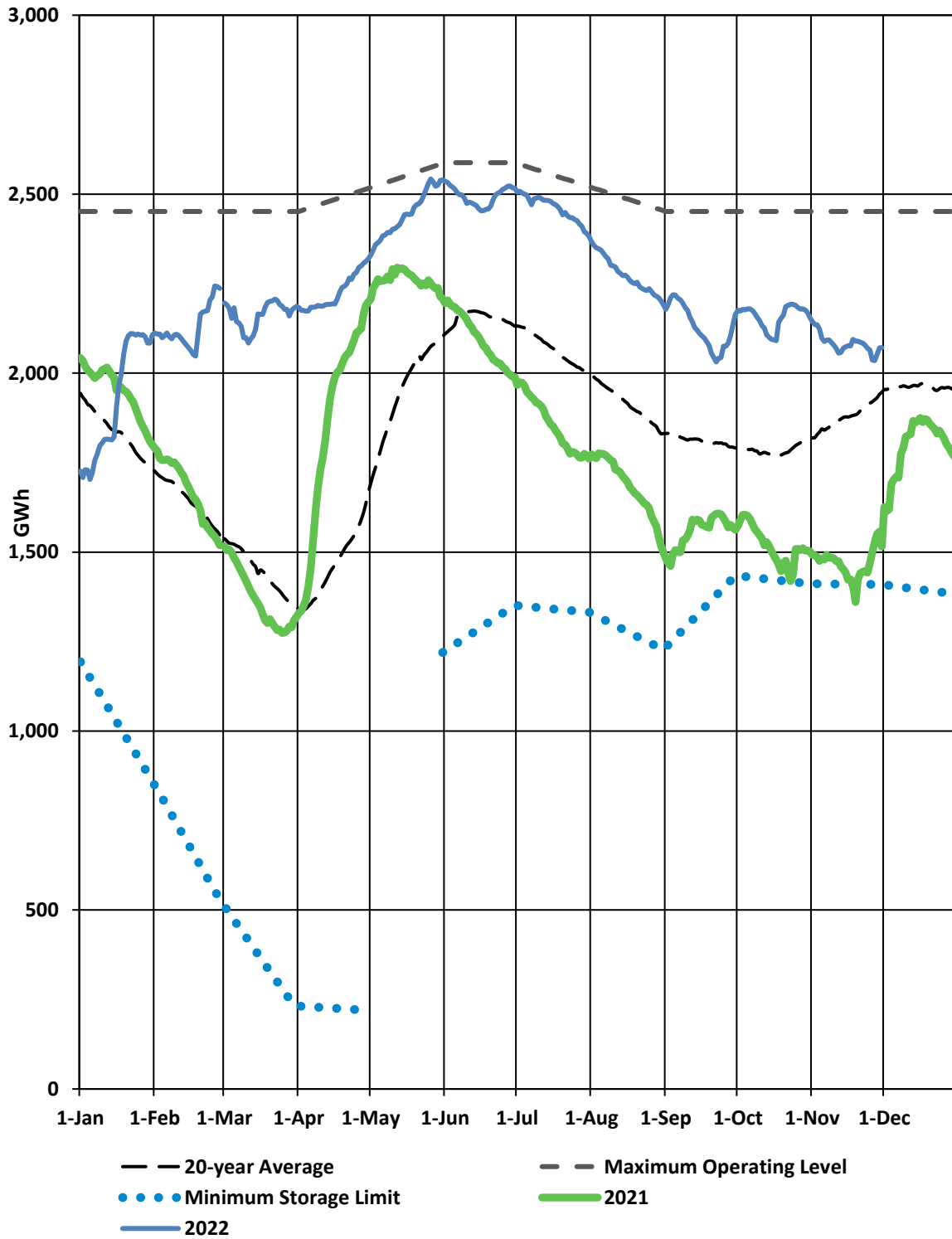


Figure 1: Total System Energy Storage

3.0 Production and Purchases

Appendix A provides a breakdown of power purchases, including imports, and production by plant during November 2022.

4.0 Thermal Production and Imports

All three units at the Holyrood TGS were required to generate in November 2022 for system requirements. Holyrood Unit 1 operated from November 8 to 21, 2022 and from November 24, 2022 onwards for a total of 489.4 hours throughout the month. Unit 2 was online the entire month for a total of 720 hours. Unit 3 operated in synchronous condenser mode until November 21, 2022 when it was converted to generation mode and operated for a total of 220.3 hours until the end of the month. Total energy production from the Holyrood TGS during November 2022 was 103.3 GWh.

Standby units were operated for a total of 5.6 hours during the month to support system requirements. Total standby production during the month was 0.2 GWh. Standby generation was not required to support reservoir storage. The Hardwoods Gas Turbine was operated in synchronous condenser mode for 707.8 hours. The Stephenville Gas Turbine was operated in synchronous condenser mode for 287.3 hours.

Power transfers on the Labrador-Island Link (“LIL”) in November 2022 resulted in a total metered energy value of 153.5 GWh at Soldiers Pond. The total energy delivered to Hydro under the Muskrat Falls Power Purchase Agreement was 23.8 GWh. Total metered energy over the Maritime Link to Nova Scotia for the month of November 2022 was 137.8 GWh.^{4,5} Energy Marketing exported 136.4 GWh⁶ associated with the delivery of the Nova Scotia Block and Supplemental Energy⁷, as well as 2.7 GWh of bulk surplus energy.⁸ There were no ponding exports in November 2022 and the negative balance has remained at 9.8 GWh since August 22, 2022. A total of approximately 0.4 GWh of emergency energy was supplied to Nova Scotia Power in November 2022, pursuant to the Interconnection Operators Agreement between

⁴ Totals include the provision of emergency and inadvertent energy to Nova Scotia Power, provision of the Nova Scotia Block, the Supplemental Block, and export activity conducted by Energy Marketing including the export of spilled energy on Hydro’s behalf.

⁵ Physical delivery of the Nova Scotia Block will only occur when the LIL is online and able to transfer power.

⁶ Due to power system operations, metered quantities may not match commercially transacted volumes.

⁷ Nova Scotia Block and Supplemental Energy quantities are reflected at the point of commercial transaction.

⁸ Bulk surplus energy includes Muskrat Falls energy and energy repaid to Energy Marketing by Corner Brook Pulp and Paper Limited (“CBPP”) that is sold to external markets.

1 Hydro and Nova Scotia Power. In addition, 1.0 GWh⁹ was repaid to Energy Marketing by CBPP pursuant
2 to the Temporary Energy Exchange Agreement. This energy was also exported over the Maritime Link.

3 **5.0 Unit Deratings**

4 On November 8, 2022, Holyrood TGS Unit 1 was returned to service with full load capability, after being
5 placed on standby because it was not needed to meet system demand. On November 15, 2022, there
6 was a failure of the east boiler feed pump motor, which derated the unit to 80 MW. On
7 November 21, 2022, the unit was removed from service due to a problem with a disconnect in the
8 switchyard. On November 24, 2022, Transmission and Rural Operations had repaired the disconnect and
9 the unit was returned to service, while still derated to 80 MW pending the return of the boiler feed
10 pump motor. The boiler feed pump motor was given to the local motor service provider with an
11 expected return to service date of December 12, 2022 that would restore the unit to full load capability.

12 Unit 2 at the Holyrood TGS was offline on a planned annual maintenance outage until October 29, 2022.
13 It was returned to service on October 30, 2022, with a scheduled de-rating to 150 MW pending the
14 completion of online safety valve testing. Safety valve testing was completed on November 8, 2022. The
15 unit is available for full load of 170 MW, as confirmed through T2 transformer testing completed to
16 170 MW on December 1, 2022.

17 Unit 3 at the Holyrood TGS was returned to service in generation mode on November 21, 2022, with a
18 scheduled derating to 120 MW pending completion of the online safety valve testing. On
19 November 22, 2022, due to an issue with the east boiler feed pump discharge valve, the unit was further
20 derated to 75 MW. The discharge valve derate was resolved on November 23, 2022, returning the unit
21 to 120 MW capability. Online safety valve testing was completed on November 29, 2022, which
22 removed the scheduled derating to 120 MW. However, a derating to 140 MW remained due to a burner
23 issue on the boiler. The unit was further derated to 100 MW on December 1, 2022 as work crews
24 continued to work on the issue. On December 2, 2022, the issue was resolved and the unit was available
25 for full load of 150 MW.

⁹ CBPP energy repaid during the month of October 2022 was incorrectly reported as 0.4 GWh in the October 2022 Monthly Energy Supply Report. The total was actually 0.04 GWh.

- 1 The Holyrood Gas Turbine was available at full capacity for the entire month of November 2022, with
- 2 the exception of a planned outage on November 19, 2022 to complete blackstart testing.

- 3 The Hardwoods and Stephenville Gas Turbines were available at full capacity for the entire month of
- 4 November 2022, with the exception of a planned outage on November 26, 2022 to complete blackstart
- 5 testing.

Appendix A

Production and Purchases



Table A-1: Generation and Purchases¹

	November 2022 (GWh)	YTD ² 2022 (GWh)
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	33.9	414.4
Unit 2	40.7	424.0
Unit 3	28.8	323.7
Unit 4	18.6	182.9
Unit 5	26.8	198.1
Unit 6	24.5	200.8
Unit 7	87.5	774.4
Subtotal Bay d'Espoir	260.8	2,518.2
Upper Salmon	51.2	478.4
Granite Canal	23.6	209.0
Hinds Lake	30.3	350.3
Cat Arm		
Unit 1	26.6	275.9
Unit 2	29.2	310.7
Subtotal Cat Arm	55.8	586.6
Paradise River	3.4	29.4
Star Lake	5.7	119.6
Rattle Brook	0.7	13.8
Nalcor Exploits	43.6	528.2
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	475.0	4,833.3
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	33.8	245.8
Unit 2	53.1	266.3
Unit 3	16.3	155.5
Subtotal Holyrood TGS Units	103.3	667.6
Holyrood Gas Turbine and Diesels	0.2	1.8
Hardwoods Gas Turbine	0.0	0.8
Stephenville Gas Turbine	0.0	0.5
Other Thermal	0.0	0.6
Total Thermal Generation (Hydro)	103.5	671.3
Purchases		
Requested Newfoundland Power and Vale CBPP	0.0	0.0
Capacity Assistance	0.0	0.0
Firm Energy Power Purchase Agreement	0.0	0.0
Secondary	3.5	37.7
Co-Generation	4.4	41.3
Subtotal CBPP	7.9	79.0
Wind Purchases	22.2	165.6
Maritime Link Imports ³	0.0	1.7
New World Dairy	0.3	3.0
LIL Imports ⁴	153.5	1,192.4
Total Purchases	183.8	1,441.8
Total⁵	762.3	6,946.4

¹ Gross generation.

² Year-to-date ("YTD").

³ Includes energy flows as a result of purchases and inadvertent energy.

⁴ Includes purchases as result of testing activity as well as deliveries that are then exported over the Maritime Link.

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