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November 17, 2022

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 October 2022

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

October 2022

November 17, 2022

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 October 2022.

2.0 System Hydrology

Reservoir inflows in October 2022 were approximately 20% below the month’s historical average. Inflows in 2022 are 132% 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 (%)
31-Oct-2022	2,145	1,492	1,813	1,412	2,452	87

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

1 The aggregate reservoir storage level on October 31, 2022 was 2,145 GWh, which is 13% below the
2 seasonal maximum operating level and 52%² above the minimum storage limit.³ The current storage
3 level is shown in Figure 1 in relation to the 20-year average storage level for the end of October 2022 of
4 1,813 GWh. At the end of October 2021, the aggregate storage level was 1,492 GWh.

5 Overall system inflows in October 2022 were below average due to the mostly dry conditions
6 experienced by Hydro's major reservoirs throughout much of the month. Only one significant period of
7 precipitation occurred in October on the 16th and 17th, where approximately 30 to 60 mm of rain fell
8 across the Bay d'Espoir System. The Hinds Lake Reservoir also received approximately 27 mm of rain on
9 these dates, while Cat Arm received about 11 mm of rain. Lighter rainfall amounts of 5 to 20 mm
10 occurred in the Bay d'Espoir and Hinds Lake watersheds on October 20 and 27, 2022. October inflows to
11 the Bay d'Espoir System were 93% of average. Hinds Lake and Cat Arm inflows were 59% and 38% of
12 average, respectively.⁴ No energy exports to mitigate spill were required.

13 The annual planned outages for Cat Arm Units 1 and 2 that began in September were completed on
14 October 4 and 3, 2022, respectively. Bay d'Espoir Unit 3 underwent its annual outage between October 5
15 and 28, 2022. Bay d'Espoir Unit 4 began its annual outage on October 10, 2022. A brief planned outage of
16 the Upper Salmon plant occurred between October 4 and 8, 2022.

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

² Percent above the minimum storage limit was incorrectly calculated in the May to August 2022 Monthly Energy Supply Reports. The value was calculated as a percentage of the minimum storage limit using the formula $(\text{Current Storage} \div \text{Minimum Storage Limit}) \times 100$. The value in this report is calculated as a percentage *above* the minimum storage limit to align with Monthly Energy Supply Reports prior to May 2022 using the formula $((\text{Current Storage} \div \text{Minimum Storage Limit}) - 1.0) \times 100$.

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, 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.

⁴ Percent of average inflows in this paragraph are calculated by volume (cubic meters).

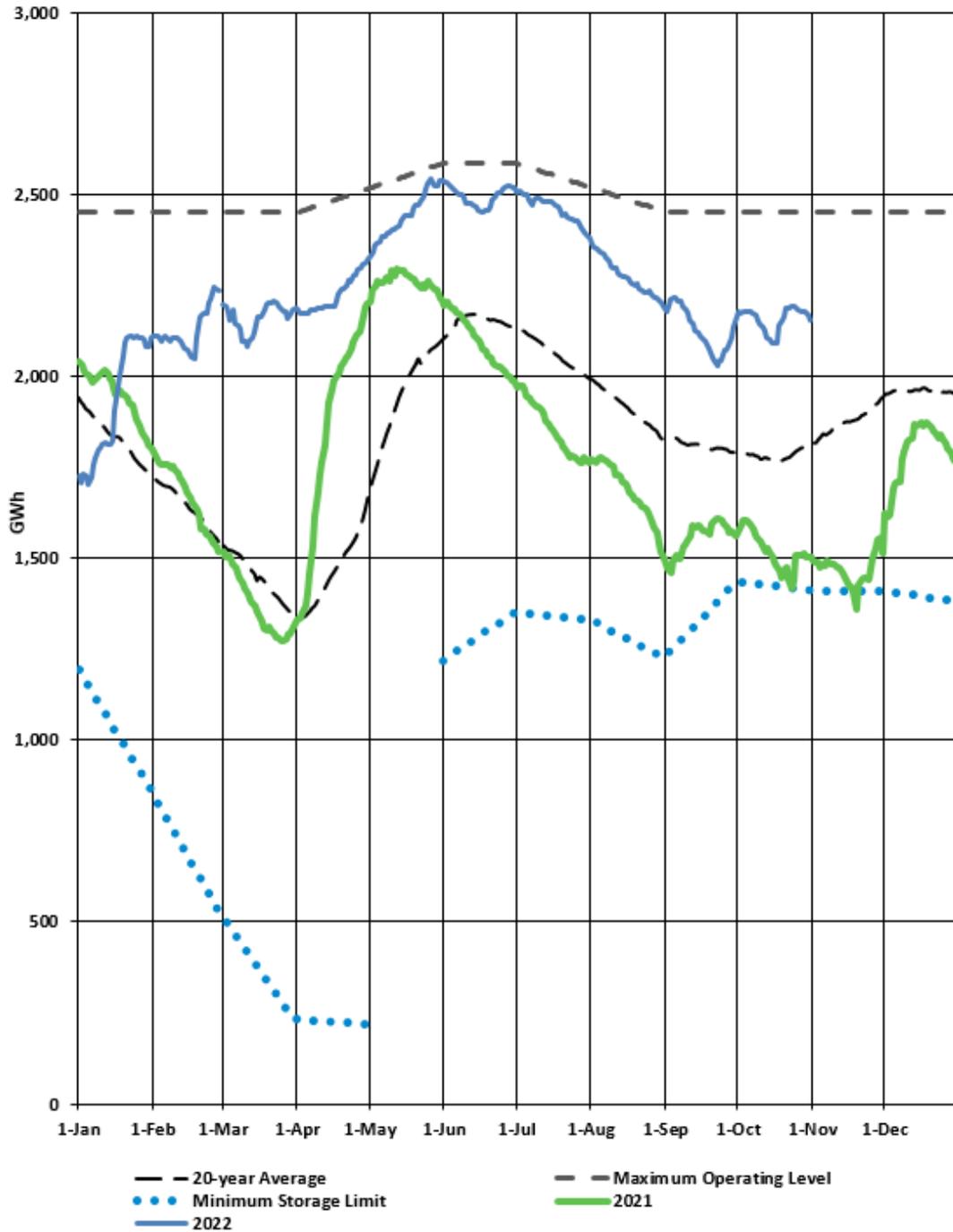


Figure 1: Total System Energy Storage

1 **3.0 Production and Purchases**

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

4.0 Thermal Production and Imports

One unit at the Holyrood TGS was required to generate in October 2022 for system requirements.

Holyrood Unit 1 operated for a total of 239.9 hours throughout the month. Unit 2 was also online near the end of the month starting on October 30, 2022 for a total of 37 hours. Unit 3 operated in synchronous condenser mode throughout the entire month. Total energy production from the Holyrood TGS during October 2022 was 19.8 GWh.

Standby units were operated for a total of 8.2 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 485.6 hours.

Power transfers on the Labrador-Island Link (“LIL”) in October 2022 resulted in a total metered energy value of 158.3 GWh at Soldiers Pond. The total energy delivered to Hydro under the Muskrat Falls Power Purchase Agreement was 30.9 GWh. Total metered energy over the Maritime Link to Nova Scotia for the month of October 2022 was 128.3 GWh.^{5,6} Energy Marketing exported 96.9 GWh⁷ associated with the delivery of the Nova Scotia Block and Supplemental Energy⁸ as well as 38.4 GWh of bulk surplus energy.⁹ There were no ponding exports in October 2022 and the negative balance has remained at 9.8 GWh since August 22, 2022. A total of approximately 0.8 GWh of emergency energy was supplied to Nova Scotia Power in October 2022, pursuant to the Interconnection Operators Agreement between Hydro and Nova Scotia Power. In addition, 0.4 GWh was repaid to Energy Marketing by Corner Brook Pulp and Paper Limited (“CBPP”) pursuant to the Temporary Energy Exchange Agreement. This energy was also 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 Hydro’s behalf.

⁶ Physical delivery of the Nova Scotia Block will only occur when the LIL is online and able to transfer power.

⁷ Due to power system operations, metered quantities may not match commercially transacted volumes.

⁸ Nova Scotia Block and Supplemental Energy quantities are reflected at the point of commercial transaction.

⁹ Bulk surplus energy includes Muskrat Falls energy and energy repaid to Energy Marketing by CBPP that is sold to external markets.

5.0 Unit Deratings

On September 29, 2022 Holyrood TGS Unit 1 was synchronized for approximately eight hours to exercise and prove systems after completion of the annual overhaul. It was then returned to a cold standby state, with a scheduled derating to 90 MW while awaiting the installation of the second cooling water pump after it was returned from overhaul. Unit 1 was returned to service on October 11, 2022 and the second cooling water pump was commissioned, removing that scheduled derating. A scheduled derating to 150 MW remained pending completion of online safety valve testing. Safety valve testing was completed on October 19, 2022 and the unit was rated for full load of 175 MW. On October 21, 2022 the unit was removed from service at the request of the Newfoundland and Labrador System Operator because it was not required to be in service to meet system demand. The unit remained on cold standby with full capability for the remainder of October.

Unit 2 at the Holyrood TGS was offline on a planned annual maintenance outage until October 29, 2022. It was returned to service on October 30, 2022 with a scheduled derate to 150 MW pending completion of online safety valve testing.

Unit 3 at the Holyrood TGS operated as a synchronous condenser for the entire month of October 2022.

The Hardwoods Gas Turbine was available at full capacity for the entire month of October 2022 with the exception of a planned outage from October 17 to October 28, 2022 to complete corrective and preventative maintenance activities.

The Holyrood Gas Turbine was available at full capacity for the entire month of October 2022.

The Stephenville Gas Turbine became available at full capacity on October 16, 2022 after the completion of corrective maintenance to repair the generator cooling system which resulted in the unit becoming unavailable on September 27, 2022 and a planned outage which started on October 11, 2022 to complete preventative and corrective maintenance activities. The unit remained available at full capacity for the remainder of October 2022.

Appendix A

Production and Purchases



Table A-1: Generation and Purchases¹

	October 2022 (GWh)	YTD ² 2022 (GWh)
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	40.9	380.5
Unit 2	40.7	383.2
Unit 3	4.5	294.8
Unit 4	3.2	164.3
Unit 5	12.7	171.3
Unit 6	13.1	176.3
Unit 7	38.3	687.0
Subtotal Bay d'Espoir	153.6	2,257.4
Upper Salmon	48.4	427.2
Granite Canal	25.5	185.4
Hinds Lake	26.6	320.0
Cat Arm		
Unit 1	17.0	249.3
Unit 2	25.4	281.5
Subtotal Cat Arm	42.4	530.8
Paradise River	1.9	26.1
Star Lake	9.2	113.9
Rattle Brook	0.7	13.1
Nalcor Exploits	46.2	484.6
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	354.4	4,358.3
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	17.1	212.0
Unit 2	2.6	213.1
Unit 3	0.0	139.2
Subtotal Holyrood TGS Units	19.8	564.4
Holyrood Gas Turbine and Diesels	0.1	1.6
Hardwoods Gas Turbine	0.0	0.8
Stephenville Gas Turbine	0.0	0.5
Other Thermal	0.1	0.5
Total Thermal Generation (Hydro)	19.9	567.8
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	0.4	34.3
Co-Generation	0.0	36.9
Subtotal CBPP	0.4	71.1
Wind Purchases	12.2	143.5
Maritime Link Imports ³	0.0	1.7
New World Dairy	0.3	2.7
LIL Imports ⁴	158.3	1,038.9
Total Purchases	171.2	1,258.0
Total⁵	545.5	6,184.1

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.