



Newfoundland and Labrador Hydro
Hydro Place, 500 Columbus Drive
P.O. Box 12400, St. John's, NL
Canada A1B 4K7
t. 709.737.1400 | f. 709.737.1800
nlhydro.com

April 18, 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: Ms. Cheryl Blundon
Director Corporate Services & Board Secretary

Dear Ms. Blundon:

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

Shirley A. Walsh
Senior Legal Counsel, Regulatory
SAW/kd

Encl.

ecc:

Board of Commissioners of Public Utilities
Jacqui H. Glynn
PUB Official Email

Praxair Canada Inc.
Sheryl E. Nisenbaum
Peter Strong

Teck Resources Limited
Shawn Kinsella

Consumer Advocate
Dennis M. Browne, QC, Browne Fitzgerald Morgan & Avis
Stephen F. Fitzgerald, Browne Fitzgerald Morgan & Avis
Sarah G. Fitzgerald, Browne Fitzgerald Morgan & Avis
Bernice Bailey, Browne Fitzgerald Morgan & Avis
Bernard M. Coffey, QC

Newfoundland Power Inc.
Dominic J. Foley
Lindsay S.A. Hollett
Regulatory Email

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 March 2022

April 18, 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 March 2022.

2.0 System Hydrology

Reservoir inflows in March 2022 were approximately 94% above the month’s historical average. Inflows in 2022 are 264% of the year-to-date historical average.

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)	Percentage of Maximum Operating Level (%)
31-Mar-2022	2,178	1,329	1,344	233	2,452	89

The aggregate reservoir storage level on March 31, 2022 was 2,178 GWh, which is 11% below the seasonal maximum operating level and 834% above the minimum storage limit.¹ The current storage

¹ 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 Holyrood Thermal Generating Station, 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 level is shown in Figure 1 in relation to the 20-year average storage level for the end of March 2022 of
2 1,344 GWh. At the end of March 2021, the aggregate storage level was 1,329 GWh.

3 The second snow survey of 2022 was completed in mid-March 2022. The survey indicated that, for the
4 system as a whole, snow water equivalent was approximately 38% of average and equivalent energy
5 was approximately 33% of average. Based on the available snowpack data, the snowpack was
6 approximately 51.5 mm of snow water equivalent at the Bay d’Espoir Hydroelectric Generating Facility
7 (“Bay d’Espoir”),² and approximately 117.3 mm at the Hinds Lake Hydroelectric Generating Station. The
8 Cat Arm watershed was not surveyed due to inclement weather.

9 Following the snow survey, a rain event occurred that brought up to 150 mm of rainfall to the Bay
10 d’Espoir watershed. The combination of mild temperatures, rain, and strong winds lead to significant
11 snowmelt and total energy in storage increased by approximately 115 GWh following this event. Visual
12 observation in the field following this event indicated that there was little to no snow remaining in the
13 Long Pond and Meelpaeg watersheds, with the exception of a layer of ice. The persistent periods of
14 rainfall in conjunction with inflows resulting from snowmelt experienced throughout this winter has led
15 to very high reservoir levels throughout the Bay d’Espoir System. Generation has remained high in the
16 Bay d’Espoir System to the extent possible to manage the risk of spill and mitigate spill quantities,
17 though this has meant decreasing generation at other generating stations in advance of spring freshet.
18 Beginning March 24, 2022 Hydro engaged Energy Marketing to export energy on its behalf to aid in the
19 mitigation of spill pursuant to the Pilot Agreement for the Optimization of Hydraulic Resources.^{3,4} Energy
20 Marketing was able to export 3.7 GWh of energy on Hydro’s behalf in March.

21 Figure 1 plots the 2021 and 2022 storage levels, minimum storage limits, maximum operating level
22 storage, and the 20-year average aggregate storage for comparison. The minimum storage limits are
23 established to the end of April 2022. The remaining 2022 targets will be established following the
24 freshet.

² The snowpack value at the Bay d’Espoir location represents a weighted total.

³ Further pursuant to the Pilot Agreement for the Optimization of Hydraulic Resources, while exporting spilled energy Hydro assumed the negative ponding balance of -10.0 GWh from prior ponding exports as spill exports, bringing the ponded balance to 0.0 GWh at the end of March.

⁴ Exporting when system load is light 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.

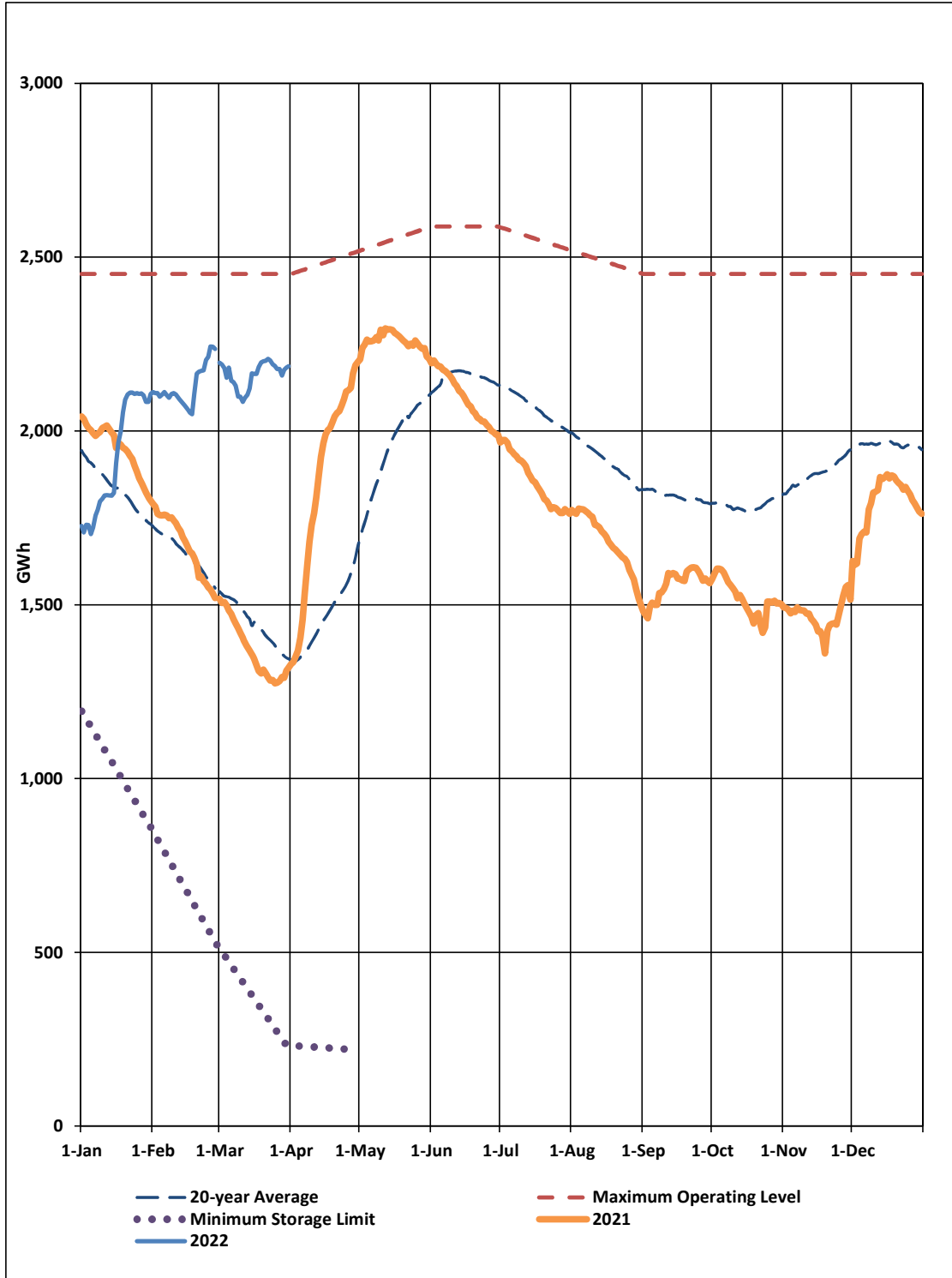


Figure 1: Total System Energy Storage

3.0 Production and Purchases

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

4.0 Thermal Production and Imports

Units 1, 2, and 3 at the Holyrood Thermal Generating Station (“Holyrood TGS”) were required to generate during March 2022 for system requirements. Unit 1 was operated for 744 hours, Unit 2 was operated for 744 hours, and Unit 3 was operated for 517 hours. Total energy production from the Holyrood TGS during the month of March 2022 was 150.7 GWh.

Standby units were operated for a total of 7.2 hours during the month to support system requirements and for testing purposes. Total standby production during the month was 0.5 GWh. Standby generation was not required to support reservoir storage.

Testing activities continued on the Labrador-Island Link (“LIL”) in March 2022, resulting in the delivery of 30.5 GWh of energy at Soldiers Pond. Total metered energy over the Maritime Link to Nova Scotia for the month of March 2022 was 41.7 GWh.^{5,6} Energy Marketing exported 33.6 GWh⁷ associated with the delivery of the Nova Scotia Block and Supplemental Energy.⁸ Exports of 2.1 GWh occurred over the Maritime Link associated with ponding activities. The ponded balance at month-end was 0.0 GWh.⁹ Throughout March 1, 2022 to March 14, 2022, a total of approximately 0.8 GWh¹⁰ was generated to supply emergency energy to Nova Scotia Power, pursuant to the Interconnection Operators Agreement¹¹ between Hydro and Nova Scotia Power.¹² In addition, 3.9 GWh was repaid to Energy Marketing by Corner Brook Pulp and Paper Limited as per 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 Due to Hydro’s assumption of the negative pond balance as spill exports as noted above.

¹⁰ Total energy supplied amounted to 757 MWh.

¹¹ Article 5, Schedules A3 and C9.

¹² A copy of the agreement was provided in “The Board’s Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System – Availability of Requested Information from Hydro, July 5, 2017 Update,” Appendix C.

1 **5.0 Unit Deratings**

2 Holyrood TGS Unit 1 and Unit 2¹³ were online with full capability for the entire month of March 2022.

3 Holyrood TGS Unit 3 was online with full capability until March 22, 2022 when the unit was removed
4 from service because it was not required by Newfoundland and Labrador System Operator to support
5 system loading.

6 The Hardwoods, Stephenville, and Holyrood Gas Turbines were available at full capacity for the entire
7 month of March 2022.¹⁴

¹³ 150 MW, as noted in the “Monthly Energy Supply Report for the Island Interconnected System for January 2022,” Newfoundland and Labrador Hydro, February 17, 2022, s. 5.0, p. 4.

¹⁴ Due to limitations inherent in the design of combustion turbines, the output of combustion turbines may be reduced in the event that ambient temperatures exceed the threshold required for full rated output. This threshold is dependent on the design of each turbine.



Appendix A

Production and Purchases

Table A-1: Generation and Purchases¹

	March 1–31, 2022 (GWh)	YTD ² March 31, 2022 (GWh)
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	43.9	127.1
Unit 2	43.5	126.6
Unit 3	39.5	112.7
Unit 4	30.1	84.5
Unit 5	32.1	86.5
Unit 6	43.7	108.7
Unit 7	98.6	275.6
Subtotal Bay d'Espoir	331.4	921.7
Upper Salmon	59.8	157.2
Granite Canal	25.0	70.3
Hinds Lake	40.6	128.8
Cat Arm		
Unit 1	23.5	84.4
Unit 2	27.4	90.2
Subtotal Cat Arm	50.9	174.6
Paradise River	4.1	14.3
Star Lake	11.0	32.7
Rattle Brook	0.8	2.7
Nalcor Exploits	62.4	160.3
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	585.9	1,662.5
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	55.5	162.1
Unit 2	55.6	144.1
Unit 3	39.6	139.2
Subtotal Holyrood TGS Units	150.7	445.4
Holyrood Gas Turbine and Diesels	0.4	0.5
Hardwoods Gas Turbine	0.0	0.1
Stephenville Gas Turbine	0.0	0.1
Other Thermal	0.2	0.4
Total Thermal Generation (Hydro)	151.4	446.5
Purchases		
Requested Newfoundland Power and Vale CBPP ³	0.0	0.0
Capacity Assistance	0.0	0.0
Firm Energy Power Purchase Agreement	0.0	0.0
Secondary	2.1	8.3
Co-Generation	5.3	13.9
Subtotal CBPP	7.4	22.2
Wind Purchases	18.6	55.0
Maritime Link Imports ⁴	0.2	0.3
New World Dairy	0.3	0.8
LIL Imports ⁵	30.5	325.1
Total Purchases	57.0	403.3
Total⁶	794.3	2,512.3

¹ Gross generation.

² Year-to-date ("YTD").

³ Corner Brook Pulp and Paper Limited ("CBPP").

⁴ Includes energy flows as a result of purchases and inadvertent energy.

⁵ Includes purchases as result of testing activity as well as deliveries that are then exported over the Maritime Link.

⁶ Actuals reflect rounded values to the nearest tenth of a GWh. Differences between total vs. addition of individual components due to rounding.