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June 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: Ms. Cheryl Blundon
Director Corporate Services & Board Secretary

Dear Ms. Blundon:

Re: Monthly Energy Supply Report for the Island Interconnected System for May 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
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Monthly Energy Supply Report for the Island Interconnected System for May 2022

June 17, 2022

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 May 2022.

2.0 System Hydrology

Reservoir inflows in May 2022 were approximately 22% below the month's historical average. Inflows in 2022 are 153% 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-May-2022	2,533	2,194	2,103	1,220	2,588	98

The aggregate reservoir storage level on May 31, 2022 was 2,533 GWh, which is 2% below the seasonal maximum operating level and 208% above the minimum storage limit.[1] The current storage level is

[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 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.

shown in Figure 1 in relation to the 20-year average storage level for the end of May 2022 of 2,103 GWh. At the end of May 2021, the aggregate storage level was 2,194 GWh.

Warm temperatures and snowmelt in the Hinds Lake and Cat Arm watersheds resulted in total energy in storage increasing by approximately 189 GWh by month end. Snowpack in most of the Bay d'Espoir system was melted by the end of April which, combined with low precipitation, resulted in below average inflows for the month of May. Inflows to the Hinds Lake reservoir were close to average and increased throughout the first half of May before peaking on May 14, 2022. Spill commenced on May 13, 2022 and continued until May 21, 2022 when reservoir inflows were low enough for the generating facility alone to keep the reservoir below maximum operating level. Inflows to Cat Arm were above average for the month of May due to runoff from snowmelt and an above average snowpack. Inflows to the Cat Arm reservoir increased steadily throughout most of May because of warm temperatures before peaking on May 24, 2022, just as the reservoir began spilling water.

Generation at Hinds Lake and Cat Arm was prioritized whenever possible but at times priority had to shift back to the Bay d'Espoir Plant to prevent spill at the Salmon River Spillway. The risk of spill at Salmon River Spillway was because of forecasted rainfall and periods of low system load while storage in the Long Pond, Meelpaeg, and Victoria reservoirs was at or near their respective maximum operating levels. Beginning March 24, 2022, and continuing through May, Hydro engaged Energy Marketing to export energy on its behalf to aid in the mitigation of spill pursuant to the Pilot Agreement for the Optimization of Hydraulic Resources.[2] Energy Marketing was able to export 1.3 GWh of energy on Hydro's behalf in May.

Figure 1 plots the 2021 and 2022 storage levels, minimum storage limits, maximum operating level storage, and the 20-year average aggregate storage for comparison. In addition to the 2021 limits presented in Figure 1, Hydro has established the minimum storage limits to April 30, 2023. The 2022 limits were developed in consideration of the unlikely event that the Labrador-Island Link ("LIL") is unable to deliver energy to the Island Interconnected System for three months during winter 2023.[3] The 2022 analysis assumed that only one unit at the Holyrood TGS would be online at full capability while the LIL is delivering energy to the Island, and that the other two units would be available but not online until the hypothetical three month LIL outage starting in January 2023. The methodology was updated in

[2] 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.
[3] The three winter months are January to March 2023, inclusive.

this way to acknowledge the financial benefits of supporting island system storage with Muskrat Falls energy instead of Holyrood thermal energy. The two Holyrood TGS units that are available but not online are viewed as a reliability measure for a LIL outage event, but not as a preferred source of energy while the LIL is available.

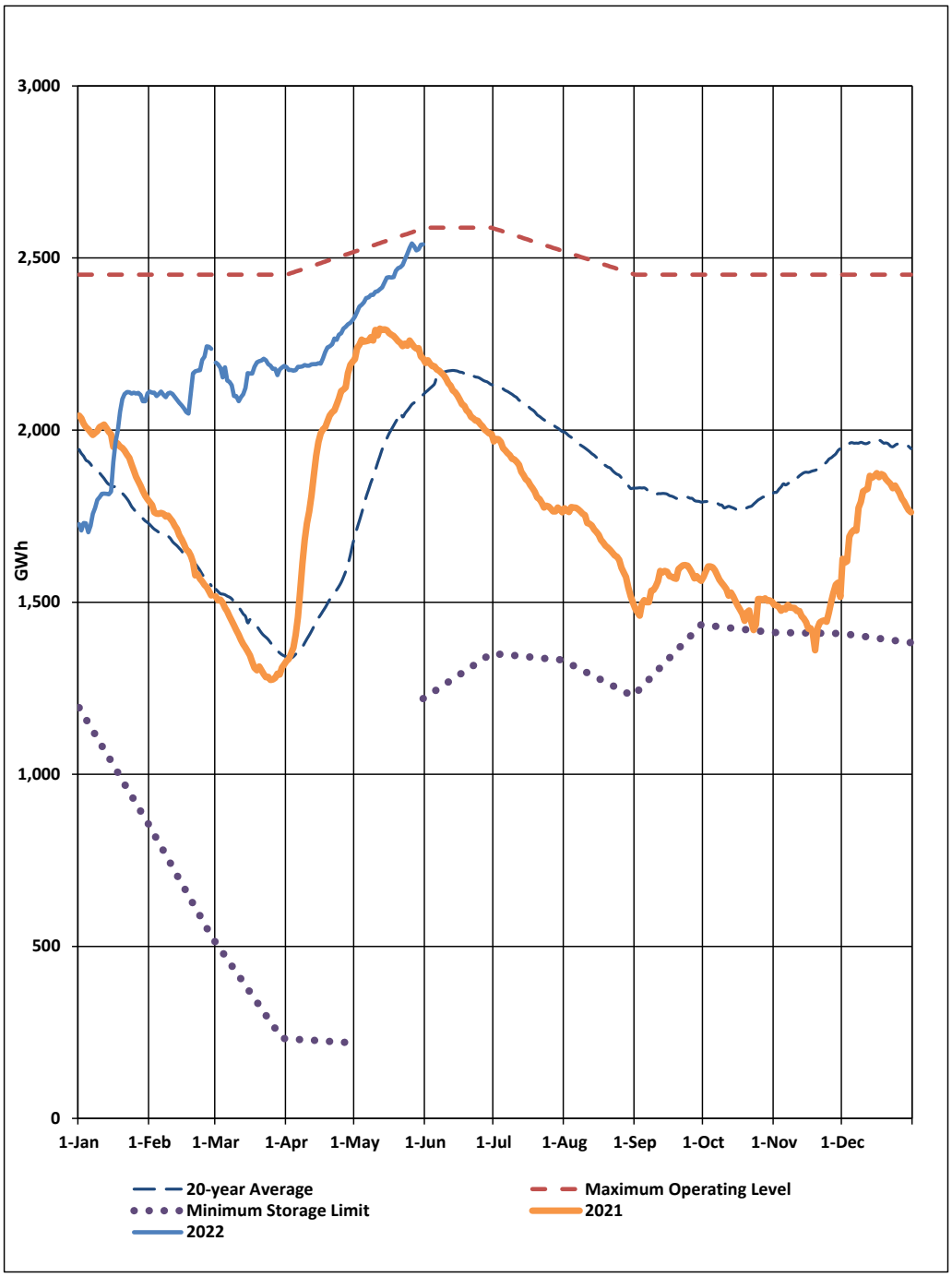

Figure 1: Total System Energy Storage

3.0 Production and Purchases

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

4.0 Thermal Production and Imports

Units 1 and 2 at the Holyrood TGS were required to generate during May 2022 for system requirements. Unit 1 was operated for 83 hours and Unit 2 was operated for 672 hours. Unit 3 was operated in synchronous condenser operational mode for 744 hours. Total energy production from the Holyrood TGS during the month of April 2022 was 41.5 GWh.

Standby units were operated for a total of 12.2 hours during the month to support system requirements and for testing purposes. Total standby production during the month was 0.3 GWh. Standby generation was not required to support reservoir storage.

Testing activities continued on the LIL in May 2022, resulting in the delivery of 115.7 GWh of energy at Soldiers Pond. Total metered energy over the Maritime Link to Nova Scotia for the month of May 2022 was 108.5 GWh.[4,5] Energy Marketing exported 109.4 GWh[6] associated with the delivery of the Nova Scotia Block and Supplemental Energy.[7] There were no exports over the Maritime Link associated with ponding activities, resulting in a month-end ponded balance of 0.0 GWh. In addition, 1.0 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.

5.0 Unit Deratings

Holyrood TGS Unit 1 was returned to service at full capability on May 6, 2022 for system requirements. It had been out of service since April 26, 2022, when the unit was taken offline because it was not required by the Newfoundland and Labrador System Operator ("NLSO") to support system loading. On May 9, 2022, Unit 1 was again taken offline because it was once again not required by the NLSO to support system loading. It remained on cold standby for the remainder of May.

[4] 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.
[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.

Holyrood TGS Unit 2[8] was online with full capability until May 28, 2022 when it was taken offline because it was not required by the NLSO to support system loading.

Holyrood TGS Unit 3 was operating in synchronous condenser mode for the entire month of May 2022. Annual outage work on Unit 3 assets that are not required for synchronous condenser operation, including the boiler, progressed in parallel.

The Hardwoods Gas Turbine was available at full capacity for the entire month of May 2022 with the exception of an unplanned derating to 25 MW on May 31, 2022 due to a faulty igniter lead on End A which prevented the engine from starting.

The Holyrood Gas Turbine was available at full capacity for the entire month of May 2022 with the exception of a planned outage from May 1, 2022 to May 14, 2022 to complete preventative and corrective maintenance activities.[9]

The Stephenville Gas Turbine was available at full capacity for the entire month of May 2022, with the exception of a planned outage from May 29, 2022 to June 4, 2022 to complete preventative and corrective maintenance activities.[10]

[8] 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.

[9] 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.

[10] 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

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Table A-1: Generation and Purchases[1]

	May 1–31, 2022 (GWh)	YTD[2] May 31, 2022 (GWh)
Hydro Generation (Hydro)		
Bay d'Espoir		
Unit 1	39.5	181.1
Unit 2	25.9	184.3
Unit 3	29.3	183.8
Unit 4	14.2	132.1
Unit 5	11.8	133.5
Unit 6	9.4	156.1
Unit 7	67.8	440.1
Subtotal Bay d'Espoir	198.0	1,411.0
Upper Salmon	43.2	253.2
Granite Canal	17.6	106.2
Hinds Lake	47.4	213.6
Cat Arm		
Unit 1	25.6	126.0
Unit 2	29.2	140.9
Subtotal Cat Arm	54.8	266.9
Paradise River	1.7	18.8
Star Lake	12.3	56.9
Rattle Brook	2.6	7.0
Nalcor Exploits	49.3	267.5
Mini Hydro	0.0	0.0
Total Hydro Generation (Hydro)	**426.8**	**2,601.1**
Thermal Generation (Hydro)		
Holyrood TGS		
Unit 1	4.2	194.3
Unit 2	37.3	210.5
Unit 3	0.0	139.2
Subtotal Holyrood TGS Units	41.5	544.0
Holyrood Gas Turbine and Diesels	0.1	0.8
Hardwoods Gas Turbine	0.1	0.4
Stephenville Gas Turbine	0.1	0.4
Other Thermal	0.0	0.4
Total Thermal Generation (Hydro)	**41.8**	**546.0**
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	3.3	19.1
Co-Generation	4.6	23.3
Subtotal CBPP	7.9	42.4
Wind Purchases	9.6	81.3
Maritime Link Imports[4]	0.0	0.3
New World Dairy	0.3	1.3
LIL Imports[5]	115.7	556.3
Total Purchases	**133.5**	**681.6**
Total[6]	**602.1**	**3,828.7**

[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.