



Hydro Place, 500 Columbus Drive,  
P.O. Box 12400, St. John's, NL  
Canada A1B 4K7  
t. 709.737.1400 f. 709.737.1800  
www.nlh.nl.ca

December 17, 2021

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 November 2021**

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**

A handwritten signature in blue ink, appearing to read "Shirley A. Walsh", written over a horizontal line.

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

Encl.

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

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

**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

**Industrial Customer Group**

Paul L. Coxworthy, Stewart McKelvey  
Denis J. Fleming, Cox & Palmer  
Dean A. Porter, Poole Althouse

**Praxair Canada Inc.**

Sheryl E. Nisenbaum  
Peter Strong

**Teck Resources Limited**

Shawn Kinsella



# Monthly Energy Supply Report for the Island Interconnected System for November 2021

December 17, 2021



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 November 2021.

## 2.0 System Hydrology

Reservoir inflows in November 2021 were approximately 7% above the month’s historical average. Inflows in 2021 increased to 91% 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	2021 (GWh)	2020 (GWh)	20-Year Average (GWh)	Minimum Storage Limit (GWh)	Maximum Operating Level (GWh)	Percentage of Maximum Operating Level (%)
30-Nov-2021	1,626	1,838	1,957	1,186	2,452	66

The aggregate reservoir storage level on November 30, 2021 was 1,626 GWh, which is 34% below the seasonal maximum operating level and 37% above the minimum storage limit.<sup>1</sup> The current storage level

<sup>1</sup> 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 is shown in Figure 1 in relation to the 20-year average storage level for the end of November of  
2 1,957 GWh. At the end of November 2020, the aggregate storage level was 1,838 GWh.

3 On November 5, 2021, the Upper Salmon Plant tripped offline due to damage on the flex leads on C  
4 Phase of transformer T1. On November 10, 2021, after replacing the damaged flex leads, the unit  
5 experienced a rotor ground fault when put online. As a result, it was determined that bypass of the  
6 Upper Salmon Plant was required to support storage in the Long Pond Reservoir until all necessary  
7 repairs could be completed. Bypass of the Upper Salmon plant commenced on November 12, 2021 and  
8 ended on November 18, 2021 when the Upper Salmon Plant returned to service. A total of 10.0 GWh  
9 was bypassed.

10 On November 3, 2021, Hydro began generating above minimum on the available unit at the Holyrood  
11 Thermal Generating Station (“Holyrood TGS”) and engaged Nalcor Energy Marketing (“Energy  
12 Marketing”) to import energy to offset thermal generation on its behalf. This action was required given  
13 low major reservoir levels that were aggravated by sustained below average inflows, issues at both the  
14 Upper Salmon Plant and the Holyrood TGS, and uncertainty in the scheduled Labrador-Island Link (“LIL”)  
15 flows. A combination of the efforts taken helped to slow the decline of total system energy. Beginning  
16 November 19, 2021, a series of rainfall events occurred over all reservoir basins which significantly  
17 increased the total system energy in storage by the end of the month.<sup>2</sup> The addition of a second  
18 Holyrood TGS unit in early December has since allowed for a reduction in the production from the  
19 Holyrood TGS units to minimum levels and Maritime Link imports to support reservoir levels were  
20 stopped on December 4, 2021.

21 Standby units have not been used for water management purposes and Hydro does not currently  
22 foresee using production from standby generation to support reservoir levels.

23 Figure 1 plots the 2020 and 2021 storage levels, minimum storage limits, maximum operating level  
24 storage, and the 20-year average aggregate storage for comparison.

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<sup>2</sup> Reservoir inflows received to November 23, 2021 were 66% of average. Following the rain events which began on November 19, 2021, monthly reservoir inflows increased to 107% of average by November 30, 2021.

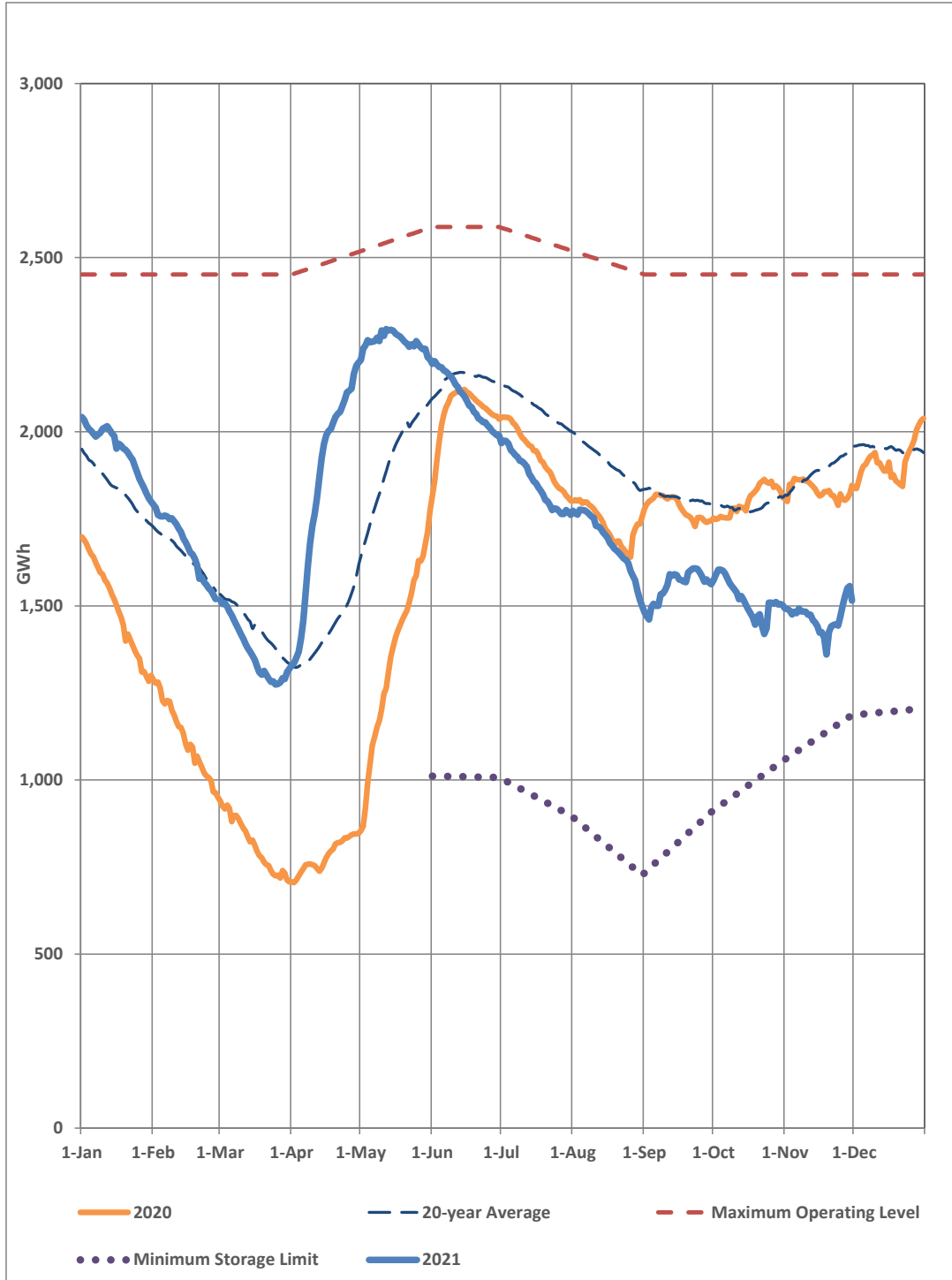


Figure 1: Total System Energy Storage

### 3.0 Production and Purchases

Appendix A provides a breakdown of power purchases, including imports, and production by plant during November 2021.

### 4.0 Thermal Production and Imports

Units 2 and 3 at the Holyrood TGS were required to generate during November 2021 for system requirements. Holyrood TGS Unit 2 was operated for 272.5 hours, and Holyrood TGS Unit 3 was operated for 268.4 hours. Unit 1 was not operated during November 2021. Total energy production from Holyrood TGS during the month of November 2021 was 57.1 GWh.

Standby units were operated during the month to support system requirements and for testing purposes. Standby units were operated for a total of 95.2 hours during the month. Total standby production during the month was 3.5 GWh. Standby generation was not required to support reservoir storage.

Testing activities continued on the LIL in November 2021, resulting in the delivery of 92.0 GWh of energy at Soldiers Pond. Imports totalling 5.7 GWh over the Maritime Link were delivered to the Island Interconnected System in November 2021. Energy Marketing made purchases totalling 21.9 GWh to offset the use of thermal generation above minimum and support reservoir storage.<sup>3</sup> Total exports over the Maritime Link for the month of November 2021 were 21.8 GWh.<sup>4,5</sup> Delivery of the Supplemental Block commenced in November, with the first physical delivery taking place on November 1, 2021.<sup>6,7</sup> Energy Marketing exported 38.4 GWh associated with the delivery of the Nova Scotia Block and Supplemental Energy. Pondering activities did not occur in November 2021. The ponded balance at month end remained at -5.4 GWh. On November 17, 2021, approximately 0.1 GWh<sup>8</sup> was generated to supply

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<sup>3</sup> Total imports include the receipt of inadvertent energy from Nova Scotia Power Inc.

<sup>4</sup> Total exports 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.

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

<sup>6</sup> Pursuant to the Energy and Capacity Agreement between between Nalcor Energy and Emera Inc.

<sup>7</sup> Physical delivery of the Supplemental Block will only occur when the LIL is online and able to transfer power.

<sup>8</sup> Total energy supplied amounted to 123 MWh.



1 emergency energy to Nova Scotia Power, pursuant to the Interconnection Operators Agreement<sup>9</sup>  
2 between Hydro and Nova Scotia Power.<sup>10</sup>

### 3 **5.0 Unit Deratings**

4 Holyrood TGS Unit 1 remained on a forced outage throughout November 2021 to complete the  
5 investigation of, and remedial work resulting from, the cold reheat piping event that occurred on  
6 October 25, 2021. The unit was returned to service on December 1, 2021.

7 Holyrood TGS Unit 2 tripped offline on November 12, 2021 as a result of a failure of the unit output  
8 transformer. The unit remained offline for the remainder of the month. Transmission and Rural  
9 Operations is in the process of replacing the transformer with the spare transformer stored on site.  
10 Return to service is expected the week of December 20, 2021.<sup>11</sup>

11 Holyrood TGS Unit 3 was returned to service on November 19, 2021 after completion of the  
12 investigation and remedial work associated with the September 11, 2021 boiler tube failure. The unit  
13 was returned to service with a scheduled derate to 135 MW pending completion of online safety valve  
14 testing. Safety valve testing was completed on November 25, 2021, which removed the scheduled  
15 derate.

16 The Hardwoods Gas Turbine was available at full capacity for the entire month of November 2021.<sup>12</sup>

17 The Stephenville Gas Turbine was available at full capacity for the entire month of November 2021, with  
18 the exception of planned deratings on November 2, 2021 and November 3, 2021 to complete borescope  
19 inspections of gas generators and a planned outage on November 25, 2021 to complete black start  
20 testing.<sup>13</sup>

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<sup>9</sup> Article 5, Schedules A3 and C9.

<sup>10</sup> 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.

<sup>11</sup> Following replacement of the main power transformer T2.

<sup>12</sup> 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.

<sup>13</sup> 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.

- 1 The Holyrood Gas Turbine was available at full capacity for the entire month of November 2021 with the
- 2 exception of a planned outage on November 25, 2021 to complete corrective maintenance on the
- 3 vibration monitoring system.<sup>14</sup>

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<sup>14</sup> 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 Purchases<sup>1</sup>

	November 1–30, 2021 (GWh)	YTD <sup>2</sup> November 30, 2021 (GWh)
<b>Hydro Generation (Hydro)</b>		
Bay d'Espoir Plant		
Unit 1	38.7	402.6
Unit 2	38.6	394.1
Unit 3	28.2	322.8
Unit 4	13.8	154.4
Unit 5	0.0	132.4
Unit 6	20.0	139.5
Unit 7	72.1	780.6
Subtotal Bay d'Espoir Plant	211.6	2,326.4
Upper Salmon Plant	32.9	395.8
Granite Canal Plant	26.2	217.3
Hinds Lake Plant	17.9	309.9
Cat Arm Plant		
Unit 1	24.4	361.1
Unit 2	32.0	383.3
Subtotal Cat Arm Plant	56.4	744.4
Paradise River	3.7	20.7
Star Lake Plant	10.8	119.8
Rattle Brook Plant	1.6	12.9
Nalcor Exploits Plants	47.3	529.5
Mini Hydro	0.0	0.0
<b>Total Hydro Generation (Hydro)</b>	<b>408.4</b>	<b>4,676.7</b>
<b>Thermal Generation (Hydro)</b>		
Holyrood TGS		
Unit 1	0.0	206.8
Unit 2	29.7	285.8
Unit 3	27.4	140.2
Subtotal Holyrood TGS Units	57.1	632.8
Holyrood Gas Turbine and Diesels	3.1	18.6
Hardwoods Gas Turbine	0.4	3.0
Stephenville Gas Turbine	0.0	0.8
Other Thermal	0.0	0.1
<b>Total Thermal Generation (Hydro)</b>	<b>60.6</b>	<b>655.4</b>
<b>Purchases</b>		
Requested Newfoundland Power and Vale	0.0	0.1
CBPP <sup>3</sup>		
Capacity Assistance	0.0	0.0
Firm Energy Power Purchase Agreement	0.0	0.0
Secondary	3.8	24.3
Co-Generation	2.8	45.6
Subtotal CBPP	6.6	69.9
Wind Purchases	15.4	165.8
Maritime Link Imports <sup>4</sup>	5.7	10.9
New World Dairy	0.3	3.1
LIL Imports <sup>5</sup>	92.0	501.7
<b>Total Purchases</b>	<b>119.9</b>	<b>751.5</b>
<b>Total<sup>6</sup></b>	<b>588.9</b>	<b>6,083.5</b>

<sup>1</sup> Gross generation.

<sup>2</sup> Year-to-date ("YTD").

<sup>3</sup> Corner Brook Pulp and Paper Limited ("CBPP").

<sup>4</sup> Includes energy flows as a result of purchases and inadvertent energy.

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

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