

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

January 16, 2019

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: Energy Supply Report – Monthly Report – December 2018 – Revision 1

Enclosed please find one original and eight copies of Newfoundland and Labrador Hydro's revision to the Monthly Energy Supply Report – December 2018. Revision 1 contains additional information regarding the operation of Hydro's thermal assets above minimum in support of hydrology.

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.

cc: Gerard Hayes – Newfoundland Power
Paul Coxworthy – Stewart McKelvey
ecc: Sheryl Nisenbaum – Praxair Canada Inc.
Dean Porter – Poole Althouse

Dennis Browne, Q.C. – Browne Fitzgerald Morgan & Avis
Denis Fleming – Cox & Palmer
Larry Bartlett – Teck Resources Limited

Monthly Energy Supply Report for the Island Interconnected System

December 2018

January 10, 2019

Revised January 16, 2019

A Report to the Board of Commissioners of Public Utilities



Table of Contents

1.0	Introduction	1
2.0	System Hydrology	1
3.0	Production by Plant.....	2
4.0	Thermal Production and Imports.....	4
5.0	Unit Deratings	5

1 **1.0 Introduction**

2 On February 8, 2016, the Board of Commissioners of Public Utilities (the “Board”) requested
3 Newfoundland and Labrador Hydro (“Hydro”) file a bi-weekly report containing, but not
4 limited to, the following:

- 5 1. System Hydrology Report as contained in Hydro's Quarterly report;
- 6 2. the thermal plant operated in support of hydrology;
- 7 3. production by plant/unit; and
- 8 4. details of any current or anticipated long-term de-rating.

9
10 In July 2016, the Board indicated that a monthly report would henceforth be sufficient. This
11 report covers data for December 2018.

12
13 **2.0 System Hydrology**

14 Table 1 summarizes the aggregate storage position of Hydro’s reservoirs at the end of the
15 reporting period.

Table 1: System Hydrology Storage Levels

Storage Level	2018 (GWh)	2017 (GWh)	20 Year Average (GWh)	2018 Minimum Storage Target (GWh)	Maximum Operating Level (GWh)	Percent of Maximum Operating Level
31 Dec 2018	1,526	1,239	1,958	1,121	2,452	62%

16 Reservoir inflows in December were approximately 70% of average. 2018 inflows ended at
17 20% above average.

18
19 The aggregate reservoir storage level on December 31, 2018 was 1,526 GWh, 38% below the
20 seasonal Maximum Operating Level (MOL) and 36% above the minimum storage level. This
21 storage level compares with the 20-year average storage level at the end of December of
22 1,958 GWh. At the end of December 2017, aggregate storage level was 1,239 GWh.

- 1 Figure 1 plots the 2017 and 2018 storage levels with the minimum storage target, maximum
- 2 operating level storage and the 20-year average aggregate storage for comparison.

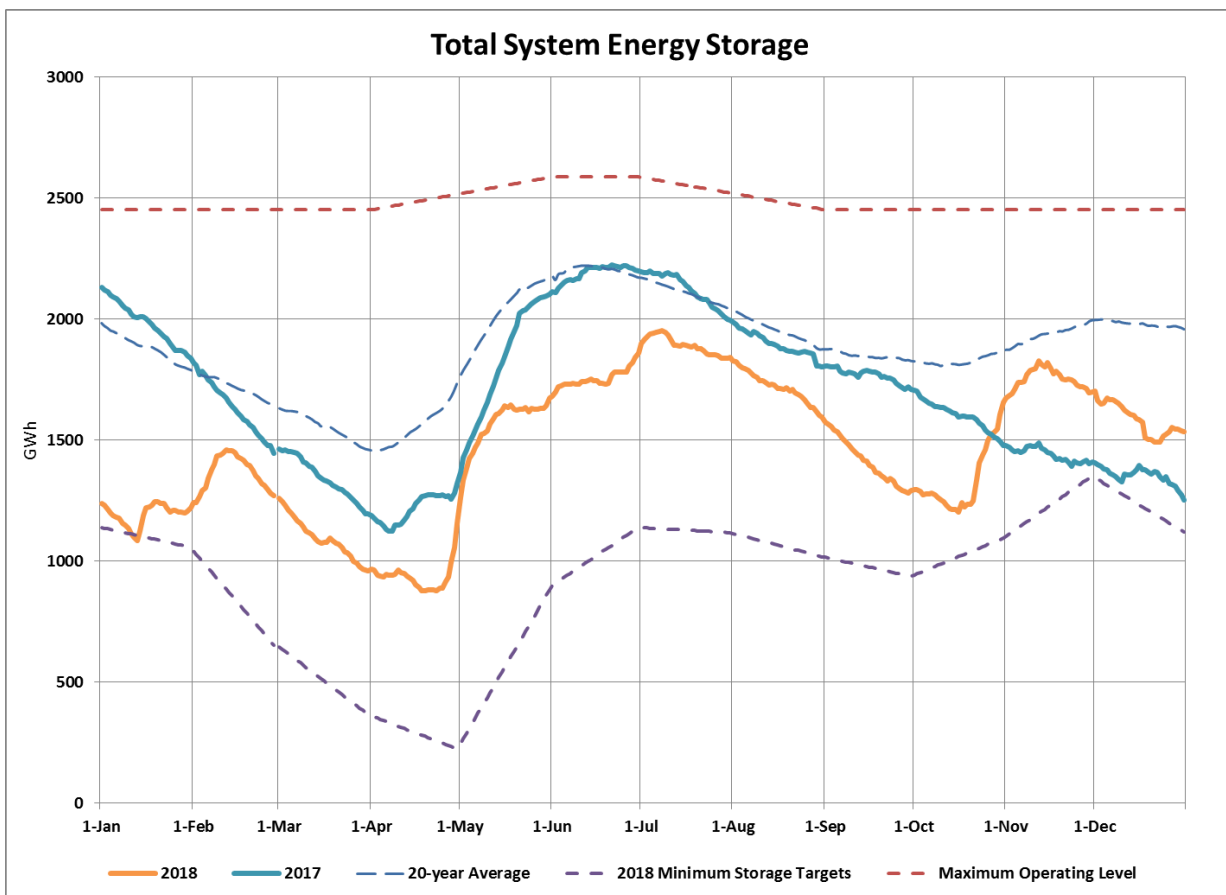


Figure 1: Total System Energy Storage – December 31, 2018

3 3.0 Production by Plant

- 4 Production during December 2018 by plant and unit, both hydraulic and thermal, is provided
- 5 in Table 2. Quantities imported are also provided in Table 2.

Table 2: Generation Production – December 1 to December 31, 2018¹

		Generation, GWh	Year to Date, GWh
Newfoundland and Labrador Hydro - Hydro Generation			
Bay d'Espoir Plant	Unit 1	43.0	465.6
	Unit 2	42.0	392.9
	Unit 3	32.5	368.1
	Unit 4	18.7	228.0
	Unit 5	19.4	212.7
	Unit 6	31.8	251.2
	<u>Unit 7</u>	<u>85.2</u>	<u>961.0</u>
	<i>Total Bay d'Espoir Plant</i>	272.6	2879.5
Upper Salmon Plant		51.6	562.6
Granite Canal Plant		22.0	246.7
Hinds Lake Plant		37.0	331.7
Cat Arm Plant	Unit 1	45.2	440.2
	<u>Unit 2</u>	<u>46.5</u>	<u>455.5</u>
	<i>Total Cat Arm Plant</i>	91.7	895.7
Paradise River		3.4	38.9
Star Lake Plant		12.8	140.4
Rattle Brook Plant		0.9	14.5
Nalcor Exploits Plants		50.9	569.7
Mini Hydro		0.3	3.1
Total Hydro Generation		543.2	5682.7
Newfoundland and Labrador Hydro - Thermal Generation			
Holyrood	Unit 1	67.3	379.0
	Unit 2	63.4	470.8
	<u>Unit 3</u>	<u>78.6</u>	<u>294.3</u>
	<i>Total</i>	209.3	1144.1
Holyrood GT and Diesels		4.5	55.8
Hardwoods GT		0.2	4.4
Stephenville GT		0.2	1.8
Other Thermal		0.0	1.3
Total Thermal Generation		214.2	1207.3
Purchases			
Requested NP and Vale		0.0	0.8
CBPP Secondary		1.0	15.1
CBPP Cogen		4.9	66.0
Wind Purchases		19.3	205.5
Maritime Link Imports ²		0.9	60.4
New World Dairy		0.3	2.8
Labrador Island Link Imports ²		42.9	53.1
Total Purchases		69.4	403.6
Total³		826.8	7293.6

¹ Gross generation.

² Includes purchases as a result of testing activity.

³ Actuals reflect rounded values to the nearest tenth of a GWh. Differences between total vs. addition of individual components due to rounding.

4.0 Thermal Production and Imports

Units 1, 2 and 3 at Holyrood were required to generate during December to meet Hydro's customer and system reliability requirements. While system energy in storage remains above minimum storage targets, reservoir storage at Long Pond (the head pond for the Bay d'Espoir generating station) continued to decline through December 2018. On December 11, 2018, Hydro decided to increase generation at Holyrood and reduce hydraulic generation to enable an increase in water storage at Long Pond. At that time, Long Pond was at the second lowest storage point for the past 20 years. Vista simulation and water management analysis, using Hydro's hydraulic records, indicated that Holyrood generation higher than the minimum loading of 70 MW per unit was required in all scenarios. Holyrood target generation was then increased to a minimum loading of 100 MW per unit, to be supplemented by imports when available and economic. On December 19, 2018, the combined target for thermal generation and imports over the Maritime Link and Labrador Island Link ("LIL") was increased further to 450 MW, with a minimum unit loading of 100 MW at Holyrood. This was to further alleviate low reservoir levels at Long Pond. Hydro notes that of the 450 MW target, the LIL contributed an average of approximately 80 MW once testing activities resumed. In December 2018, Holyrood Unit 1 was operated for 629.3 hours, Holyrood Unit 2 was operated for 586.6 hours, and Holyrood Unit 3 was operated for 743.2 hours. Total Holyrood generation was 209.3 GWh.

Stand-by units were operated for a total of 127.0 hours during the month. Total standby generation was 4.9 GWh. No stand-by generation was used for water management. Approximately 0.1 GWh was generated to supply Emergency Energy to Nova Scotia Power on December 12, 2018, pursuant to the Interoperator's Agreement⁴ between Newfoundland and Labrador Hydro and Nova Scotia Power.⁵

⁴ Article 5, Schedules A3 and C9.

⁵ A copy of the Interconnection Operators Agreement (dated July 31, 2014) between Hydro and Nova Scotia Power was attached as Appendix "C" to Hydro's correspondence to the Board on July 5, 2017 with updates and information regarding the Board's Investigation and Hearing into Supply Issues and Power Outages on the Island Interconnected System.

1 Imports on the Maritime Link were used in December to offset use of thermal units and
2 increase energy in storage. Total imported energy was 0.9 GWh. Following the Board’s
3 approval of Hydro’s Pilot Agreement for the Optimization of Hydraulic Resources, it was
4 determined that ponded energy provided the least-cost option for acquiring additional system
5 energy.⁶ At that time, Hydro elected to use that ponded energy, totaling 2.0 GWh, pursuant to
6 the Pilot Agreement for the Optimization of Hydraulic Resources.

7
8 A total of 42.9 GWh was delivered to the system via the Labrador Island Link in December
9 2018 as a result of testing activity.

11 **5.0 Unit Deratings**

12 Holyrood Unit 1 was capable of 162 MW for the month of December. Load was limited by high
13 opacity at loads above 162 MW, indicating insufficient combustion air at the burners. A boiler
14 tuning expert was brought to site from December 17 to 21, 2018 to study and correct this
15 issue. Boiler tuning improved stability at all loads, but the maximum available load could not
16 be increased as a result of the tuning. The boiler contractor for Hydro is further studying this
17 limitation with an update expected by mid-January 2019. On December 9, 2018 the unit
18 tripped due to a failure of two potential transformers (“PTs”). The PTs were replaced with
19 spares. Extensive testing was completed on the generator and other PTs, prior to returning
20 the unit to service on December 14, 2018.

21
22 Holyrood Unit 2 was capable of operating at full capability during the month of December
23 2018. On November 30, 2018 the unit was taken off-line for a planned maintenance outage to
24 complete a stack inspection and to refurbish the turbine hydraulic system. This was
25 completed ahead of schedule on December 7, 2018, and the unit was returned to service with
26 full load capability.

⁶ The Pilot Agreement for the Optimization of Hydraulic Resources was approved in Board Order No. P.U. 49(2018).

1 Holyrood Unit 3 was capable of operating at full load for the month of December 2018. On
2 December 3, 2018 the unit tripped due to a faulty drum level transmitter. The unit was
3 returned to service within one hour.

4

5 The Stephenville gas turbine was returned to full capacity (50 MW) on November 28, 2018
6 following repairs to the vibration monitoring system and successful testing of End A. The unit
7 remains available at full capacity.

8

9 The Hardwoods gas turbine was returned to full capacity (50 MW) on December 12, 2018
10 following replacement of engine s/n 202204 with a spare. It is expected that the engine will be
11 returned in late January or early February 2019, following detailed inspection and repair, and
12 will then be available as a spare.