

April 10, 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: Monthly Energy Supply Report for the Island Interconnected System for March 2019

Enclosed please find one original and eight copies of Newfoundland and Labrador Hydro's Monthly Energy Supply Report for the Island Interconnected System as directed by the Board in correspondence dated February 8, 2016 and with schedule modifications on July 26, 2016 and July 29, 2016.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO

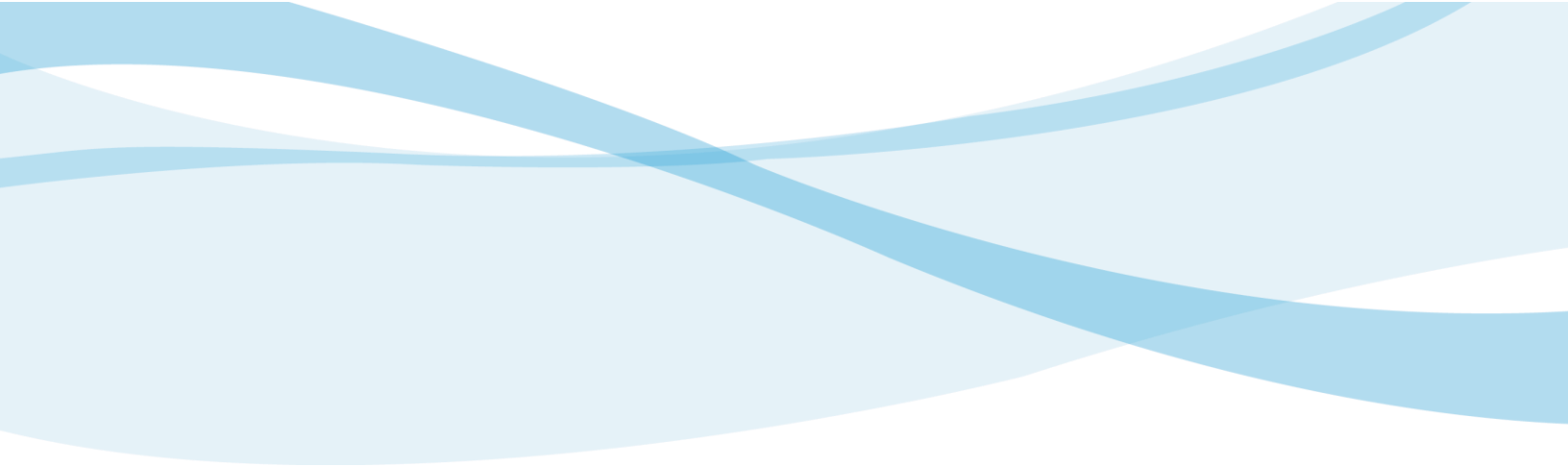


Shirley A. Walsh
Senior Legal Counsel, Regulatory
SAW/sk

Encl.

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

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



Monthly Energy Supply Report for
the Island Interconnected System for March 2019

April 10, 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.....	3
4.0	Thermal Production and Imports.....	5
5.0	Unit Deratings	6

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 biweekly report containing, but not limited
 4 to, the following:

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

10

11 In July 2016, the Board indicated that a monthly report would thereafter be sufficient. This
 12 report covers data for March 2019.

13

14 **2.0 System Hydrology**

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

Table 1: System Hydrology Storage Levels

Storage Level	2019 (GWh)	2018 (GWh)	20-Year Average (GWh)	2019 Minimum Storage Target (GWh)	Maximum Operating Level (GWh)	Percent of Maximum Operating Level
31-Mar-2019	811	970	1,461	304	2,452	33%

17 Reservoir inflows in March 2019 were approximately 63% of average. To date, 2019 inflows
 18 have been 84% of average.

19

20 The second snow survey of 2019 was completed in mid-March. The snow water equivalent
 21 depth for the system at that time was approximately 79% of average for this time of year; on
 22 an equivalent energy basis it was 81% of average. Based on the available snowpack data, the
 23 snow pack was approximately 701 mm of snow water equivalent at the Bay d’Espoir
 24 Hydroelectric Generating Facility (“Bay d’Espoir Facility”), approximately 167 mm at Hinds

1 Lake Hydroelectric Generating Station, and approximately 219 mm at the Cat Arm
2 Hydroelectric Generating Station.
3
4 On February 23, 2019, to ensure the continued ability to generate at maximum output at the
5 Bay d’Espoir Facility, the decision was made to bypass water around the Upper Salmon
6 Hydroelectric Generating Station through the North Salmon Spillway to increase inflows into
7 Long Pond, the head pond for the Bay d’Espoir Facility. On March 15, 2019 the storage level at
8 Long Pond was considered to be sufficient to maintain generation at the Bay d’Espoir Facility
9 and bypassing water into Long Pond was no longer required. Through February and March
10 2019, a total of 12.5 GWh of system energy was bypassed.
11
12 The aggregate reservoir storage level on March 31, 2019 was 811 GWh, 67% below the
13 seasonal Maximum Operating Level and 167% above the minimum storage level. This storage
14 level compares with the 20-year average storage level at the end of March 2019 of 1,461
15 GWh. At the end of March 2018, aggregate storage level was 970 GWh.
16
17 Figure 1 plots the 2018 and 2019 storage levels, Maximum Operating Level storage, and the
18 20-year average aggregate storage for comparison.

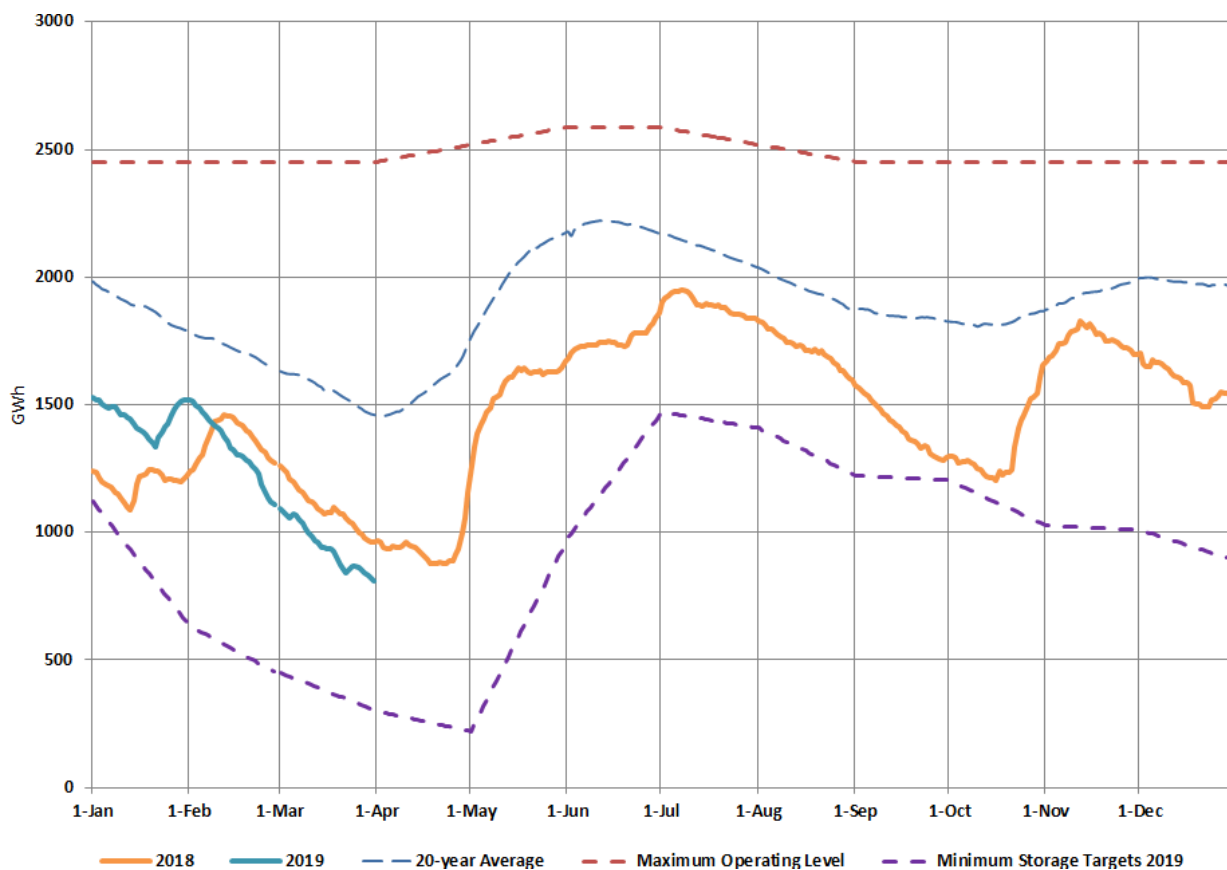


Figure 1: Total System Energy Storage for March 31, 2019

1 **3.0 Production by Plant**

- 2 Production during March 2019 by plant and unit, both hydraulic and thermal, is provided in
 3 Table 2. Quantities imported are also provided in Table 2.

Table 2: Generation Production from March 1 to 31, 2019¹

	Generation (GWh)	Year to Date (GWh)
Newfoundland and Labrador Hydro Hydro Generation		
Bay d'Espoir Plant		
Unit 1	42.0	122.9
Unit 2	42.0	123.6
Unit 3	35.1	103.8
Unit 4	19.9	65.6
Unit 5	6.1	56.2
Unit 6	14.9	66.1
Unit 7	<u>91.9</u>	<u>264.4</u>
<i>Bay d'Espoir Plant Total</i>	251.9	802.5
Upper Salmon Plant	59.5	155.4
Granite Canal Plant	22.8	66.5
Hinds Lake Plant	34.6	98.4
Cat Arm Plant		
Unit 1	45.3	132.6
Unit 2	<u>46.4</u>	<u>136.2</u>
<i>Cat Arm Plant Total</i>	91.7	268.7
Paradise River	3.0	8.0
Star Lake Plant	12.9	37.1
Rattle Brook Plant	0.2	1.4
Nalcor Exploits Plants	58.5	160.3
Mini Hydro	0.2	0.8
Total Hydro Generation	535.3	1599.3
Newfoundland and Labrador Hydro Thermal Generation		
Holyrood		
Unit 1	52.2	191.8
Unit 2	56.6	206.0
Unit 3	<u>30.4</u>	<u>171.6</u>
<i>Holyrood Units Total</i>	139.1	569.4
Holyrood Gas Turbine and Diesels	1.0	5.1
Hardwoods Gas Turbine	0.1	0.3
Stephenville Gas Turbine	0.3	0.5
Other Thermal	0.0	0.0
Total Thermal Generation	140.6	575.4
Purchases		
Requested Newfoundland Power and Vale	0.0	0.1
Corner Brook Pulp and Paper Secondary	3.3	6.7
Corner Brook Pulp and Paper Co-Generation	3.3	15.6
Wind Purchases	18.1	53.6
Maritime Link Imports ²	59.5	91.3
New World Dairy	0.3	0.8
Labrador-Island Link Imports ³	51.4	142.0
Total Purchases	136.0	309.9
Total⁴	811.8	2484.6

¹ Gross generation.

² Includes energy flows as a result of purchases and inadvertent energy.

³ Includes purchases as a result of testing activity.

⁴ Actuals reflect rounded values to the nearest tenth of a GWh. Differences between total and addition of individual components due to rounding.

4.0 Thermal Production and Imports

Units 1, 2, and 3 at the Holyrood Thermal Generating Station (“Holyrood”) were required to generate during March 2019 to meet Hydro’s customer and system reliability requirements. System energy in storage remained above the minimum storage target throughout March 2019 and reservoir storage at Long Pond was supplemented until March 15, 2019 by inflows from bypassing the Upper Salmon Hydroelectric Generating Station. Thermal production above minimum was also required through March 2019 at varying levels to support reservoir levels at Long Pond and meet Hydro’s customer and system reliability requirements. The necessary thermal generation was supplemented by deliveries over the Labrador-Island Link and purchases over the Maritime Link when available and economic.

To minimize thermal production, Hydro decreased the minimum unit loading for the Holyrood units to 50 MW per unit on March 15, 2019. The minimum unit loading was temporarily increased to the previous minimum of 70 MW per unit on March 20, 2019 while a trip on Unit 1 and deration of Unit 2 were investigated. The minimum unit loading has since returned to 50 MW per unit after it was determined that those events were not related to the change in operation.

In March, Holyrood Unit 1 was operated for 641.8 hours, Holyrood Unit 2 was operated for 713.9 hours and Holyrood Unit 3 was operated for 313.6 hours. Total Holyrood generation was 139.1 GWh.

Standby units were operated for a total of 50.0 hours during the month. Total standby generation was 1.4 GWh. No standby generation was used for water management.

Imports on the Maritime Link through March 2019 were primarily procured to offset thermal generation that would have otherwise been required. This enabled the economic shut down of the first unit at Holyrood on March 9, 2019. Imports over the Maritime Link also slowed

1 the decline of storage at the Long Pond reservoir. Total imported energy over the Maritime
2 Link was 59.5 GWh.

3

4 A total of 51.4 GWh was delivered to the system via the Labrador-Island Link in March 2019 as
5 a result of testing activity.

6

7 **5.0 Unit Deratings**

8 At the beginning of March 2019, Holyrood Unit 1 was capable of full load. On March 19, 2019
9 Unit 1 tripped and was returned to service about five hours later on the same day. The trip
10 was suspected to be caused by the operation of the oil over-temperature protection device on
11 unit transformer T1. On March 20, 2019 the unit was derated to 125 MW for about three
12 hours due to an issue with the fuel oil heater controls. Corrective maintenance work was done
13 and the unit was returned to full load capability. However, the issue returned on March 25,
14 2019 and the unit was derated to 95 MW for approximately one day. A maintenance outage
15 was taken from March 26 to 30, 2019 to work on the fuel oil system. Problems were resolved
16 and the unit was returned to service on March 30, 2019 with full load capability.

17

18 Holyrood Unit 2 was capable of operating at full load capability during the month of March
19 2019. From March 5 to 6, 2019, the unit was taken off line for a maintenance outage, which
20 included an air heater wash and change of some generator brushes. On March 18, 2019 the
21 unit was derated to 50 MW for about three hours due to fouling of the west fuel oil heater.
22 Operations switched to the redundant east fuel oil heater and full load capability was
23 restored. The west heater will be cleaned during the 2019 planned annual outage.

24

25 Holyrood Unit 3 was also capable of operating at full load capability during the month of
26 March 2019. On March 9, 2019 the unit was taken offline and placed on hot standby because
27 it was not needed to meet customer or system reliability requirements. It was returned to
28 service from March 25 to 30, 2019 to support the maintenance outage on Unit 1. On March
29 30, 2019 Unit 3 was shut down and placed on planned annual outage.

1 The Stephenville Gas Turbine remains available at full capacity of 50 MW.
2
3 The Hardwoods Gas Turbine is currently derated to 25 MW following a unit trip on February
4 21, 2019 while placing End B in service. The trip occurred as a result of high exciter vibration,
5 which occurs only when End B is being placed online. The Original Equipment Manufacturer,
6 Brush, advises a delivery of 16 weeks for the required bearing components, resulting in a
7 worst case return to service of October 2019. In the interim, Brush is being engaged to
8 complete a non-intrusive inspection of the bearing to determine whether the unit can be
9 placed in service while awaiting replacement components. A potential earlier return to service
10 date cannot be determined until the inspection has been scheduled. Hydro intends to file a
11 supplemental application to the 2019 Capital Budget Application for the bearing replacement
12 project.