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May 17, 2023

The Board of Commissioners of Public Utilities  
Prince Charles Building  
120 Torbay Road, P.O. Box 21040  
St. John's, NL A1A 5B2

Attention: Cheryl Blundon  
Director Corporate Services and Board Secretary

**Re: Monthly Energy Supply Report for the Island Interconnected System for April 2023**

Enclosed please find Newfoundland and Labrador Hydro's ("Hydro") Monthly Energy Supply Report for the Island Interconnected System as directed by the Board of Commissioners of Public Utilities ("Board").

For the purpose of increasing regulatory efficiency, on May 2, 2023, Hydro proposed opportunities to streamline some of the reporting requirements effective for its Quarterly Regulatory Report for the quarter ended March 31, 2023, including the reporting of Ponding and Spill information.<sup>1</sup> In its decision, the Board accepted Hydro's proposal to continue with the Monthly Energy Supply Report and to discontinue the duplicate energy supply information in its Quarterly Regulatory Report, effective for Hydro's Quarterly Regulatory Report for the quarter ended March 31, 2023.<sup>2</sup> As a result, Hydro has now included sections 2.1 Ponding and 2.2 Spill Activities, as well as Appendix A: Ponding and Spill Transactions, effective for the Monthly Energy Supply Report for April 2023.

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:

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Sheryl E. Nisenbaum  
Peter Strong

**Teck Resources Limited**  
Shawn Kinsella

<sup>1</sup> "Streamlining of Quarterly Regulatory Report," Newfoundland and Labrador Hydro, May 2, 2023.

<sup>2</sup> "Newfoundland and Labrador Hydro – Streamlining of Quarterly Regulatory Report to Parties – Board's Decision on Reporting," Board of Commissioners of Public Utilities, May 11, 2023.

Cheryl Blundon  
Board of Commissioners of Public Utilities

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# Monthly Energy Supply Report for the Island Interconnected System for April 2023

May 17, 2023

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 April 2023. For the purpose of increasing regulatory efficiency, in May 2023, the Board accepted Hydro’s proposal to discontinue the duplicate energy supply information in its Quarterly Regulatory Report, effective for Hydro’s Quarterly Regulatory Report for the quarter ended March 31, 2023.<sup>1</sup> As a result, effective April 2023, Hydro added sections 2.1 Ponding, 2.2 Spill Activity and Appendix A: Ponding and Spill Transactions within this report.

## 2.0 System Hydrology

Reservoir inflows in April 2023 were approximately 33% below the month’s historical average.<sup>2</sup> 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	2023 (GWh)	2022 (GWh)	20-Year Average (GWh)	Minimum Storage Limit (GWh)	Maximum Operating Level (GWh)	Maximum Operating Level (%)
30-Apr-2023	1,551	2,328	1,704	220	2,516	62

<sup>1</sup> “Newfoundland and Labrador Hydro – Streamlining of Quarterly Regulatory Report to Parties – Board’s Decision on Reporting,” Board of Commissioners of Public Utilities, May 11, 2023.

<sup>2</sup> Calculated in terms of energy (gigawatt hours).

1 The aggregate reservoir storage level on April 30, 2023 was 1,551 GWh, which is 38% below the  
2 seasonal maximum operating level and 705% above the minimum storage limit.<sup>3</sup> Weather conditions  
3 continued to be mostly dry across the Island in April, with very little precipitation recorded in all of  
4 Hydro’s reservoirs. Inflows due to spring runoff in April were also low due to cooler temperatures and a  
5 prolonged melt, as well as a below average snow pack in many areas. April inflows to the Bay d’Espoir  
6 system were approximately 20% below average, while Hinds Lake and Cat Arm inflows were  
7 approximately 29% and 37% below average during the month.

8 A snow survey was conducted from April 3, 2023 to April 6, 2023 which found that overall remaining  
9 snow pack across Hydro’s major Island reservoirs was approximately 92% of the historical average for  
10 April. Snow pack varied considerably across the Island reservoirs, with some areas in the Bay d’Espoir  
11 system such as Long Pond and Upper Salmon having insufficient remaining snow to survey. Many other  
12 areas of the Bay d’Espoir system also had a below average snow pack. Meelpaeg Reservoir snow pack  
13 was found to be 84% of average, while Granite Reservoir and Burnt Pond were 65% and 68%,  
14 respectively. Victoria Reservoir snow pack exceeded the April average, however, and was 144% of  
15 average. Hinds Lake snow pack was found to be 99% of average, while Cat Arm snow pack was 134% of  
16 the historical average.

17 The Paradise River unit outage that began on March 26, 2023 ended on April 5, 2023. Bay d’Espoir Unit 3  
18 was taken offline for a planned outage on April 2, 2023 and remained offline for the remainder of the  
19 month. Hinds Lake was shutdown briefly on April 6, 2023 due to potential frazil ice risk and returned to  
20 service later that day. Bay d’Espoir Unit 1 underwent a brief outage from April 17, 2023 to  
21 April 18, 2023. Bay d’Espoir Unit 2 underwent a brief outage from April 18, 2023 to April 19, 2023. Bay  
22 d’Espoir Unit 4 was taken offline for a brief planned outage on April 20, 2023 and returned to service  
23 later the same day. Paradise River also underwent a brief outage on April 20, 2023 and returned to  
24 service later the same day. Bay d’Espoir Unit 5 had a brief planned outage on April 25, 2023 and was  
25 returned to service the same day.

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<sup>3</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 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 considered during this analysis to ensure that no other shorter-term historic dry sequence could result in insufficient storage.

- 1 Figure 1 plots the 2022 and 2023 storage levels, minimum storage limits, maximum operating level storage, and the 20-year average aggregate storage for comparison.
- 2

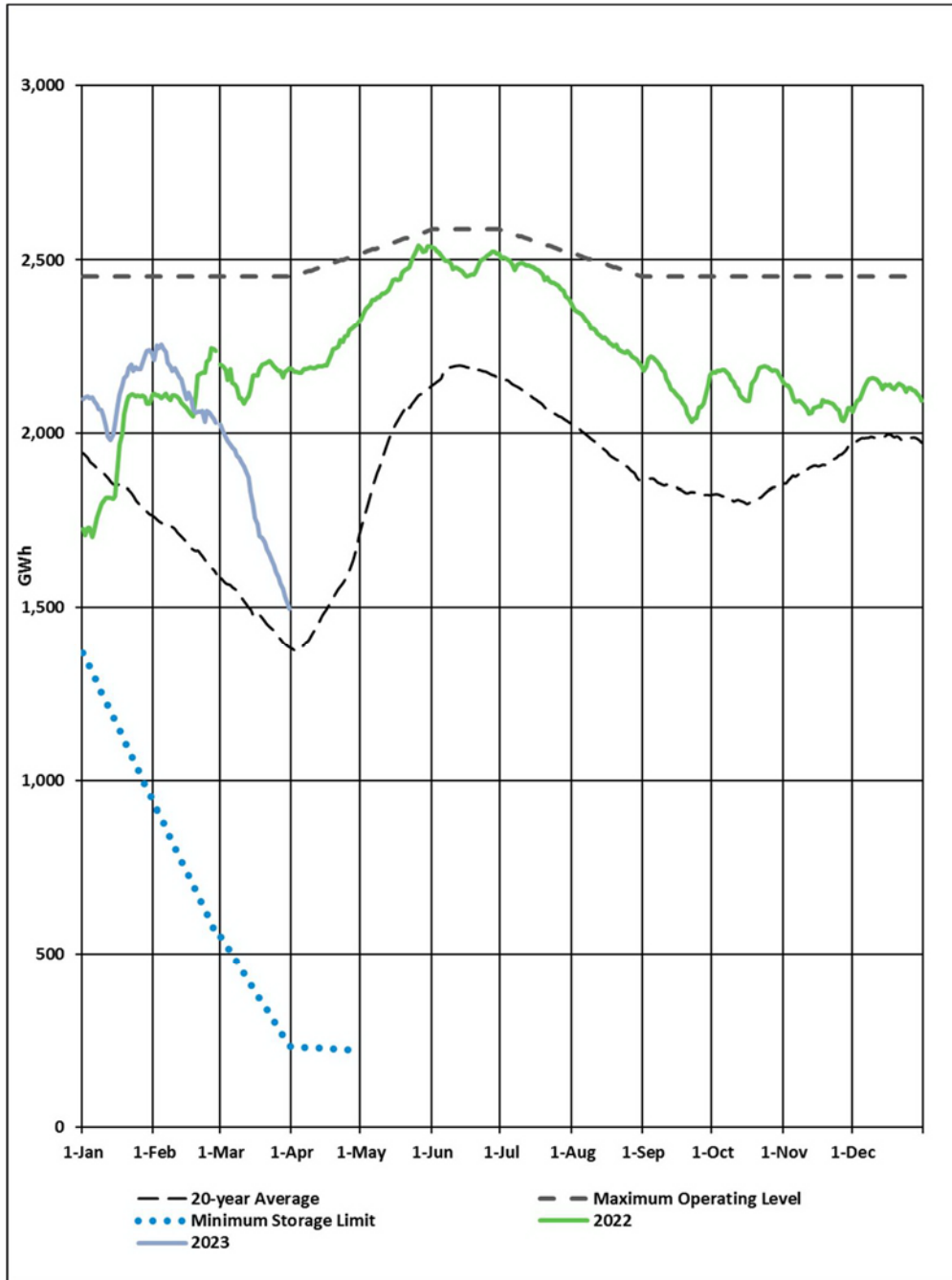


Figure 1: Total System Energy Storage<sup>4</sup>

<sup>4</sup> Data points in Figure 1 represent storage at the beginning of each day. Table 1 reports the end-of-day storage values which results in a small difference between the storage data presented in Table 1 and Figure 1.

**2.1 Ponding**

In Order No. P.U. 49(2018),<sup>5</sup> the Board approved Hydro’s application for approval of a Pilot Agreement for the Optimization of Hydraulic Resources (“Pilot Agreement”).<sup>6</sup> The intent of the Pilot Agreement is to optimize Hydro’s hydraulic resources through the strategic use of its storage capabilities, taking advantage of the variability of energy pricing in external markets over time.

Appendix A provides a log of imported and exported energy transactions under the Pilot Agreement during the month. No ponding imports or exports occurred in April 2023.

**2.2 Spill Activity**

Bypass flows at North Salmon Spillway continued throughout April to support Long Pond reservoir storage while the Upper Salmon unit remains offline. Bypass at this location is expected to continue until the Upper Salmon generating unit is released for service. No spill occurred at any other locations during April 2023.

A summary of the amount spilled or bypassed in both MCM<sup>7</sup> and GWh for April 2023 as well as year-to-date totals are provided in Table 2. Appendix A provides a log of spill avoidance export transactions during the month. Energy exports to mitigate spill were not required in April 2023.<sup>8</sup>

**Table 2: Spill Activity<sup>9</sup>**

	Burnt Dam Spillway		Granite Canal Bypass		Upper Salmon Bypass	
	MCM	GWh	MCM	GWh	MCM	GWh
30-Apr-2023	0	0	0	0	448.6	58.5
<b>Total</b>	<b>122.7</b>	<b>80.8</b>	<b>19.8</b>	<b>1.9</b>	<b>1186.5</b>	<b>154.7</b>

<sup>5</sup> *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 49(2018), Board of Commissioners of Public Utilities, December 18, 2018.

<sup>6</sup> The Third Amended and Restated Pilot Agreement for the Optimization of Hydraulic Resources was approved in *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 35(2022), Board of Commissioners of Public Utilities, December 16, 2022.

<sup>7</sup> Million cubic metres (“MCM”).

<sup>8</sup> Pursuant to the Pilot Agreement for the Optimization of Hydraulic Resources, exporting when system load is low allowed for sustained generation from Island hydraulic facilities and the utilization of water (energy) that would have otherwise been spilled, while not increasing the risk of spill elsewhere in the system.

<sup>9</sup> Numbers may not add due to rounding.



1 **3.0 Production and Purchases**

2 Appendix B provides a breakdown of power purchases, including imports, and production by plant  
 3 during April 2023.

4 **4.0 Thermal Production and Imports**

5 All three units at the Holyrood TGS were required to generate in April 2023 for system requirements.  
 6 Total energy production from the Holyrood TGS units was 70.8 GWh. Standby generation was not  
 7 required to support reservoir storage. Holyrood TGS and gas turbine operating hours are summarized in  
 8 Table 3.

**Table 3: Holyrood TGS and Gas Turbine Operating Hours**

	<b>Operating Hours</b>	<b>Synch Condense Hours</b>	<b>Available Hours</b>
<b>Holyrood TGS</b>			
Unit 1	720	0	720
Unit 2	448.4	0	448.4
Unit 3	192.1	0	192.1
<b>Gas Turbines</b>			
Hardwoods	1.1 <sup>10</sup>	718.9	720
Stephenville	0	115.0	720
Holyrood	0	0	720

9 Table 4 summarizes the Muskrat Falls energy deliveries, Corner Brook Pulp and Paper Limited (“CBPP”)  
 10 energy repaid to Energy Marketing, and emergency supply to Nova Scotia in April 2023.

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<sup>10</sup> Hardwoods Gas Turbine generation was approximately 22 MWh for the month of April.

**Table 4: Muskrat Falls Energy Deliveries and Export Activity**

	<b>Energy (GWh)</b>
<b>Muskrat Falls Energy Deliveries</b>	
Muskrat Falls Power Purchase Agreement (Hydro)	133.7
Nova Scotia Block and Supplemental Energy <sup>11</sup>	119.4
Energy Marketing Bulk Surplus Exports <sup>12</sup>	56.6
<b>Other Activity</b>	
CBPP Energy repaid to Energy Marketing	0.0
Emergency Supply to Nova Scotia <sup>13</sup>	0.0

## 1   **5.0 Unit Deratings**

2   Unit 1 at the Holyrood TGS was online with full capability for the month of April 2023.

3   Unit 2 was online with full capability from the beginning of April 2023, until it was removed from service  
4   on April 4, 2023 for a brief planned maintenance outage to replace generator brushes. The unit was  
5   returned to service later the same day with full capability. On April 16, 2023 the unit was removed from  
6   service for a planned outage to perform an inspection of the last stage blades on the turbine. After  
7   completion of this inspection, the unit was returned to service ahead of schedule on April 27, 2023 with  
8   full capability. On April 29, 2023 the east boiler feed pump tripped, which caused a forced derating to  
9   80 MW. The issue was determined to be a sensor on the recirculation valve on this pump. This was  
10   corrected on April 30, 2023 and the east boiler feed pump was returned to service; restoring full load  
11   capability.

12   Unit 3 was online with full capability until April 9, 2023 when it was removed from service in preparation  
13   for the planned annual maintenance outage.

14   The Hardwoods, Stephenville, and Holyrood Gas Turbines were available at full capacity for the entire  
15   month of April 2023.

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<sup>11</sup> Nova Scotia Block and Supplemental Energy quantities are reflected at the point of commercial transaction.

<sup>12</sup> Energy Marketing has updated its reporting of Bulk Surplus Exports and CBPP energy repaid to Energy Marketing. The Bulk Surplus Exports figure now reports only Muskrat Falls energy exported to external markets. CBPP Energy repaid to Energy Marketing continues to be reported separately.

<sup>13</sup> Under the Interconnection Operators Agreement between Hydro and Nova Scotia Power.

# Appendix A

## Ponding and Spill Transactions



Table A-1: Ponding Transactions<sup>1</sup>

Date	Ponding Imports (MWh)	Ponding Exports (MWh)	Ponding Imports Purchased by Hydro (MWh)	Transfer of Pond Balance to Spill Avoidance (MWh)	Energy Losses to Export (MWh)	Cumulative Poned Energy (MWh)
Opening Balance						-
Total <sup>2</sup>	-	-	-	-	-	

Table A-2: Avoided Spill Revenue

Date	Avoided Spill Exports (MWh)	Energy Losses to Export (MWh)	Transfer of Pond Balance to Spill Avoidance (MWh)	Cumulative Avoided Spill Energy (MWh)
Opening Balance				73,427
Total <sup>2</sup>	-	-	-	

<sup>1</sup> Numbers may not add due to rounding.

<sup>2</sup> As of April 30, 2023.

# Appendix B

## Production and Purchases



Table B-1: Generation and Purchases<sup>1</sup>

	April 2023 (GWh)	Year-to-Date 2023 (GWh)
<b>Hydro Generation (Hydro)</b>		
Bay d'Espoir		
Unit 1	41.1	169.0
Unit 2	40.7	167.8
Unit 3	2.2	127.2
Unit 4	20.8	129.5
Unit 5	22.7	121.6
Unit 6	24.9	141.2
Unit 7	92.4	376.8
Subtotal Bay d'Espoir	244.8	1,233.1
Upper Salmon	0.0	108.9
Granite Canal	20.7	86.5
Hinds Lake	30.5	143.5
Cat Arm		
Unit 1	29.1	124.1
Unit 2	30.3	129.9
Subtotal Cat Arm	59.3	254.0
Paradise River	3.0	12.2
Star Lake	11.5	48.0
Rattle Brook	1.5	3.2
Nalcor Exploits	58.2	216.9
Mini Hydro	0.0	0.0
<b>Total Hydro Generation (Hydro)</b>	<b>429.5</b>	<b>2,106.2</b>
<b>Thermal Generation (Hydro)</b>		
Holyrood TGS		
Unit 1	37.2	148.6
Unit 2	24.0	178.1
Unit 3	9.6	126.2
Subtotal Holyrood TGS Units	70.8	452.9
Holyrood Gas Turbine and Diesels	0.0	12.9
Hardwoods Gas Turbine <sup>2</sup>	0.0	1.4
Stephenville Gas Turbine	0.0	1.3
Other Thermal	0.0	0.3
<b>Total Thermal Generation (Hydro)</b>	<b>70.8</b>	<b>468.9</b>
<b>Purchases</b>		
Requested Newfoundland Power and Vale CBPP	0.0	0.1
Capacity Assistance	0.0	0.0
Firm Energy Power Purchase Agreement	0.0	0.0
Secondary	2.0	8.8
Co-Generation	3.8	16.6
Subtotal CBPP	5.8	25.3
Wind Purchases	16.8	70.2
Maritime Link Imports <sup>3</sup>	0.0	0.2
New World Dairy	0.3	1.1
LIL Imports <sup>4</sup>	292.1	822.5
Maritime Link Exports <sup>5, 6</sup>	171.9	503.5
Net LIL Delivery to IIS <sup>7</sup>	120.3	319.0
<b>Total Purchases</b>	<b>315.0</b>	<b>919.4</b>
<b>Total<sup>8</sup></b>	<b>815.3</b>	<b>3,494.5</b>

<sup>1</sup> Gross generation.

<sup>2</sup> Hardwoods Gas Turbine generation was approximately 22 MWh for the month of April.

<sup>3</sup> Includes energy flows as a result of purchases and inadvertent energy.

<sup>4</sup> Includes purchases as a result of testing activity as well as deliveries that are then exported over the Maritime Link.

<sup>5</sup> 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.

<sup>6</sup> Physical delivery of the Nova Scotia Block will typically only occur when the Labrador-Island Link ("LIL") is online and able to transfer power. CBPP energy repaid to Energy Marketing may be used to supply the Nova Scotia Block while the LIL is offline.

<sup>7</sup> Net energy delivered to the Island Interconnected System ("IIS") is less than the total energy purchased by Hydro under the Muskrat Falls Power Purchase Agreement because of transmission losses on the LIL.

<sup>8</sup> Actuals reflect rounded values to the nearest tenth of a GWh. Differences between total versus addition of individual components due to rounding.