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July 31, 2025

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

Attention: Jo-Anne Galarneau
Executive Director and Board Secretary

Re: Quarterly Report on Asset Performance in Support of Resource Adequacy for the Twelve Months Ended June 30, 2025

Please find enclosed Newfoundland and Labrador Hydro's ("Hydro") Quarterly Report on Asset Performance in Support of Resource Adequacy for the Twelve Months Ended June 30, 2025.[1]

As included in the previous quarterly report, Hydro has included an update on the Muskrat Falls Assets to provide the Board of Commissioners of Public Utilities with additional information. This is provided as Appendix B to this report.

Should you have any questions, please contact the undersigned.

Yours truly,

NEWFOUNDLAND AND LABRADOR HYDRO

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

Encl.

ecc:

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Bernice Bailey, Browne Fitzgerald Morgan & Avis

Newfoundland Power Inc.
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Regulatory Email

[1] Formerly titled "Quarterly Report of Generating Units for the Twelve Months Ended []."

Quarterly Report on Asset Performance in Support of Resource Adequacy

For the Twelve Months Ended June 30, 2025

July 31, 2025

A report to the Board of Commissioners of Public Utilities

newfoundland labrador hydro

Contents

List of Appendices

1.0 Introduction

In this report, Newfoundland and Labrador Hydro ("Hydro") provides data on forced outage rates of its generating facilities and the Labrador-Island Link ("LIL"). The data provided pertains to historical forced outage rates and assumptions Hydro uses in its assessments of resource adequacy. This report covers the performance for the current 12-month reporting period of July 1, 2024 to June 30, 2025 ("current period").

This report contains forced outage rates for the current period for individual generating units at regulated hydraulic facilities,[1] the Holyrood Thermal Generating Station ("Holyrood TGS"), Hydro's combustion turbines, and the non-regulated Muskrat Falls Hydroelectric Generating Facility ("Muskrat Falls Facility"). In addition, equivalent forced outage rates are provided for the 900 MW LIL.[2] This report also provides, for comparison purposes, the individual asset forced outage rates for the 12-month reporting period of July 1, 2023 to June 30, 2024 ("previous period"). Further, total asset class data is presented based on the calendar year for the remainder of the ten most recent years—2015 to 2024—with the exception of the Muskrat Falls Facility[3] and the LIL.[4]

The forced outage rates of Hydro's generating units are calculated using two measures:

1) Derated adjusted forced outage rate ("DAFOR") for the continuous (base-loaded) units; and

2) Derated adjusted utilization forced outage probability ("DAUFOP") for the standby units.

DAFOR is a metric that measures the percentage of time that a unit or group of units is unable to generate at its maximum continuous rating due to forced outages or unit deratings. The DAFOR for each unit is weighted to reflect differences in generating unit sizes to provide a combined total and reflect the relative impact a unit's performance has on overall generating performance. This measure is applied to

[1] Regulated hydraulic facilities include the Bay d'Espoir Hydroelectric Generating Facility ("Bay d'Espoir Facility" or "BDE"), the Cat Arm Hydroelectric Generating Station ("Cat Arm Station" or "CAT"), the Hinds Lake Hydroelectric Generating Station ("Hinds Lake Station" or "HLK"), the Upper Salmon Hydroelectric Generating Station ("Upper Salmon Station" or "USL"), the Granite Canal Hydroelectric Generating Station ("Granite Canal Station" or "GCL"), and the Paradise River Hydroelectric Generating Station ("Paradise River Station" or "PRV").
[2] The LIL has been commissioned and is currently rated at 700 MW. Hydro is planning to execute the 900 MW pole overload test late in the fall of 2025 when higher system load conditions will be present.
[3] The final generating unit at the Muskrat Falls Facility was released for commercial operation on November 25, 2021. Annual DAFOR performance data is available beginning in 2022.
[4] The LIL was officially commissioned on April 13, 2023. Annual equivalent forced outage rate ("EqFOR") data is only available for 2024 year end.

hydraulic units and, historically, was used for the thermal units; however, it does not apply to combustion turbines because of their operation as standby units and their relatively low operating hours.

DAUFOP is a metric that measures the percentage of time that a unit or group of units will encounter a forced outage and not be available when required. DAUFOP is a measure primarily used for combustion turbines; however, this measure may be applicable to thermal units, should their operation move towards standby operation in the future. This metric includes the impact of unit deratings.

The forced outage rates include outages that remove a unit from service completely as well as instances when units are derated. If a unit's output is reduced by more than 2%, the unit is considered derated under Electricity Canada guidelines. These guidelines require that the derated levels of a generating unit be calculated by converting the operating time at the derated level into an equivalent outage time.

As the LIL is not a generating unit, the above noted forced outage rate measures do not apply to this asset. Instead, Hydro has determined an appropriate metric to be an EqFOR to measure the performance of this asset as it relates to the supply of electricity to the Island. This EqFOR measures the percentage of time that the LIL bipole is unable to deliver its maximum continuous rating[5] to the Island due to forced outages, derates, or unplanned monopole outages. The effect of deratings and unplanned monopole outages is converted to equivalent bipole outage time using the same methodology as outlined above for generating units.

In addition to forced outage rates, this report provides details for those outages which occurred in the current period that contributed materially to forced outage rates exceeding those used in Hydro's resource adequacy planning analysis for both the near and long-term.

[5] The LIL maximum continuous rating is 700 MW at present.

2.0 Assumptions Used in Hydro's Assessment of System Reliability and Resource Adequacy

Hydro continually assesses the reliability of its system and its ability to meet customer requirements, filing both near- and long-term assessments with the Board of Commissioners of Public Utilities.[6]

As part of the ongoing *Reliability and Resource Adequacy Study Review* proceeding, Hydro detailed the process undertaken for determining the forced outage rates most appropriate for use in its near-term reliability assessments and long-term resource adequacy analysis. Table 1 and Table 2 summarize the most recent forced outage rate assumptions, as determined using the forced outage rate methodology.[7] Forced outage rate assumptions will be re-evaluated on an annual basis to incorporate the most recent data available.

Table 1: Hydro's Reliability and Resource Adequacy Study Analysis Values – Generating Units (%)

Asset Type	Measure	Near-Term Analysis Value	Resource Planning Analysis Value
Hydraulic: Regulated	DAFOR	3.60	3.03
Hydraulic: Muskrat Falls	DAFOR	2.30	3.03
Thermal	DAUFOP	20.00[8]	20.00
Combustion Turbines			
Happy Valley	DAUFOP	4.65	4.65
Hardwoods and Stephenville	DAUFOP	30.00	30.00
Holyrood	DAUFOP	4.90	4.90

A three-year, capacity-weighted average was applied to the regulated hydraulic units (Bay d'Espoir Facility, Cat Arm Station, Hinds Lake Station, Granite Canal Station, Upper Salmon Station, and Paradise River Station) for a near-term analysis, resulting in a DAFOR of 3.60%, while a ten-year, capacity-weighted average was applied for use in the long-term resource planning model, resulting in a DAFOR of

[6] Hydro currently files an assessment of near-term system reliability and resource adequacy annually in November, the Near-Term Reliability Report. Hydro also files an assessment of longer-term system reliability and resource adequacy. The most recent filing was the "2024 Resource Adequacy Plan – An Update to the Reliability and Resource Adequacy Study," Newfoundland and Labrador Hydro, rev. August 26, 2024 (originally filed July 9, 2024), ("2024 Resource Plan").
[7] Values indicated for Hydro's near-term analysis reflect those used in the 2024 Resource Plan and the "Reliability and Resource Adequacy Study Review – 2024 Near-Term Reliability Report – November Report," Newfoundland and Labrador Hydro, November 20, 2024 ("November 2024 Near-Term Report").
[8] The Holyrood TGS base assumption is 20.00%. The sensitivity assumption is 34.00%. A sensitivity value of 34.00% was chosen to reflect actual performance at the Holyrood TGS for the 2021–2022 winter operating period.

3.03%. The DAFOR value was based on historical data reflective of Hydro's maintenance program over the long-term.

For the Muskrat Falls Facility, the near-term forced outage rate was based on the forced outage rates of the units to date, to reflect the possibility of outages early in the lifetime of the Muskrat Falls Facility. In the long-term resource planning model, the regulated hydroelectric forced outage rate was used, as it is assumed that these assets will be maintained to the same standards as the remainder of the hydraulic fleet.

Historically, forced outage rates for the three units at the Holyrood TGS have been reported using the DAFOR metric, which is predominately used for units that operate in a continuous (base-loaded) capacity. As presented in Hydro's RRA Study 2022 Update,[9] there are reliability concerns associated with the operation of the units at the Holyrood TGS in an emergency standby capacity. When considering standby or peaking operations of units at the Holyrood TGS, DAFOR is no longer the most appropriate measure of forced outage rates; instead, UFOP[10] and DAUFOP should be considered. Given the frequency of deratings historically experienced by these units, DAUFOP is a more appropriate measure.

Analyses performed for a range of Holyrood TGS DAUFOP assumptions indicate the sensitivity of supply adequacy to changes in the availability of the Holyrood TGS. From this analysis, a forced outage rate of 20.00% was recommended in the near-term, with a sensitivity value of 34.00%. Hydro will continue to analyze the operational data to ensure that forced outage rate assumptions for the Holyrood TGS are appropriate.

At present time, the operation of the units at the Holyrood TGS remains base-loaded to ensure the availability of capacity for the power system, as the LIL is recently commissioned and in the early operational stages. This will remain the case as Hydro continues to monitor LIL performance and reliability. If the LIL is found to perform well for an extended period, and system conditions permit, Hydro will have the opportunity to incrementally remove the Holyrood TGS units from service. To ensure alignment with the assumptions used in the resource planning model (PLEXOS)[11] while

[9] "Reliability and Resource Adequacy Study – 2022 Update," Newfoundland and Labrador Hydro, October 3, 2022 ("RRA Study 2022 Update").
[10] Utilization forced outage probability ("UFOP").
[11] The resource planning model does not differentiate between DAFOR and DAUFOP metrics; rather, it applies a forced outage rate only.

appropriately reporting on current period versus historical performance, Hydro will continue to use the DAFOR performance measure and the 20.00% forced outage rate for the units at the Holyrood TGS.

As the combustion turbines in the existing fleet vary in age and condition, each was considered on an individual basis. For the Happy Valley Gas Turbine, a three-year, capacity-weighted average was applied to the unit for the near-term analysis while a ten-year capacity-weighted average was applied for use in the resource planning model. The DAUFOP values were based on historical data to reflect the unit's past performance. For the Holyrood Combustion Turbine ("Holyrood CT") the DAUFOP was calculated based on a scenario-based approach rather than historical data, due to the unit's minimal operating time and resultant small data set. For the Hardwoods and Stephenville Gas Turbines, a fixed DAUFOP consistent with values considered in Hydro's previous near-term reliability reports was used for the near-term and long-term analyses.[12] As presented in Hydro's 2024 Resource Plan, the Hardwoods and Stephenville Gas Turbines are proposed for retirement in 2030.

Now that the LIL is commissioned, multiple years of operational experience are required to better inform the long-term selection of a bipole forced outage rate. In the interim, the bipole forced outage rate will be addressed with a range of upper and lower limits as additional scenarios in the analysis - currently 10% and 1%, respectively. As LIL performance statistics become available in the coming years, the forced outage rate range may be narrowed. However, the current base-case assumption is a 5% LIL forced outage rate.

Table 2: Hydro's Reliability and Resource Adequacy Study Analysis Values – LIL (%)

Asset Type	Measure	Base Planning Analysis Value	Range of Planning Analysis Values
LIL	EqFOR	5	1–10

3.0 Current Period Overview

Table 3 presents an overview of the current period performance, compared to previous period performance and most recent Planning Analysis values.

[12] "Reliability and Resource Adequacy Study Review – 2024 Near-Term Reliability Report – November Report," Newfoundland and Labrador Hydro, November 20, 2024.

Table 3: DAFOR and DAUFOP Overview (%)

Asset Type	Measure	1-Jul-2023 to 30-Jun-2024	1-Jul-2024 to 30-Jun-2025	Near-Term Planning Analysis Value	Resource Planning Analysis Value
Hydraulic: Regulated	DAFOR	4.24	1.28	3.60	3.03
Hydraulic: Muskrat Falls Facility	DAFOR	0.42	2.32	2.30	3.03
Thermal	DAFOR/DAUFOP[13]	48.69	28.69	20.00	20.00
Combustion Turbines					
Happy Valley	DAUFOP	19.12	0.00	4.65	4.65
Hardwoods/Stephenville	DAUFOP	55.23	17.53	30.00	30.00
Holyrood	DAUFOP	3.36	8.16	4.90	4.90

As shown in Table 3, regulated hydraulic DAFOR and thermal DAFOR performance improved for the current period, while the Muskrat Falls Facility DAFOR performance declined for the current period, when compared to the previous period.

The DAUFOP performance for the Hardwoods and Stephenville Gas Turbines and the Happy Valley Gas Turbine have improved in the current period, while the Holyrood CT has declined in the current period, compared to the previous period.

Table 4 presents LIL data for the current and the previous period. Since the previous filing, the performance of the LIL has improved, with no significant impacts to the EqFOR because of any operational events that have occurred.

Table 4: EqFOR Overview (%)

Asset Type	Measure	1-Jul-2023 to 30-Jun-2024	1-Jul-2024 to 30-Jun-2025	Base Planning Analysis Value	Range of Planning Analysis Values
LIL	EqFOR	2.79[14]	0.65[15]	5	1–10

[13] The resource planning model does not differentiate between DAFOR and DAUFOP; rather, it requires the selection of a forced outage rate percentage.
[14] The LIL was not commissioned until April 14, 2023.
[15] This EqFOR is calculated on a base LIL capacity of 700 MW. On a base capacity of 900 MW, the EqFOR is calculated to be approximately 1.16%. Following the completion of the 900 MW test, all calculations will be adjusted to reflect the change in assumptions.

4.0 Hydraulic Unit DAFOR Performance – Regulated Hydro

Detailed results for the current period and the previous period are presented in Table 5 and Chart 1. These results are compared to Hydro's near-term and resource planning analysis values for forced outage rates, as used in the 2024 Resource Plan and the November 2024 Near-Term Report. Any individual unit with forced outage rates which exceed the established near-term and/or resource planning analysis values is discussed herein.

Table 5: Hydraulic Weighted DAFOR – Regulated Hydro

Generating Unit	Maximum Continuous Unit Rating (MW)	12 Months Ended Jun 2024 (%)	12 Months Ended Jun 2025 (%)	Near-Term Analysis Value (%)	Resource Planning Analysis Value (%)
All Hydraulic Units – Weighted	**954.4**	**4.24**	**1.28**	**3.60**	**3.03**
Hydraulic Units					
BDE Unit 1	76.5	0.00	0.00	3.60	3.03
BDE Unit 2	76.5	0.00	0.00	3.60	3.03
BDE Unit 3	76.5	2.54	0.00	3.60	3.03
BDE Unit 4	76.5	0.23	0.53	3.60	3.03
BDE Unit 5	76.5	4.32	0.00	3.60	3.03
BDE Unit 6	76.5	34.39	0.00	3.60	3.03
BDE Unit 7	154.4	0.00	3.88	3.60	3.03
CAT Unit 1	67	1.02	0.06	3.60	3.03
CAT Unit 2	67	0.00	0.07	3.60	3.03
HLK Unit	75	0.88	1.50	3.60	3.03
USL Unit	84	15.93	0.37	3.60	3.03
GCL Unit	40	2.57	4.94	3.60	3.03
PRV Unit	8	0.30	9.24	3.60	3.03

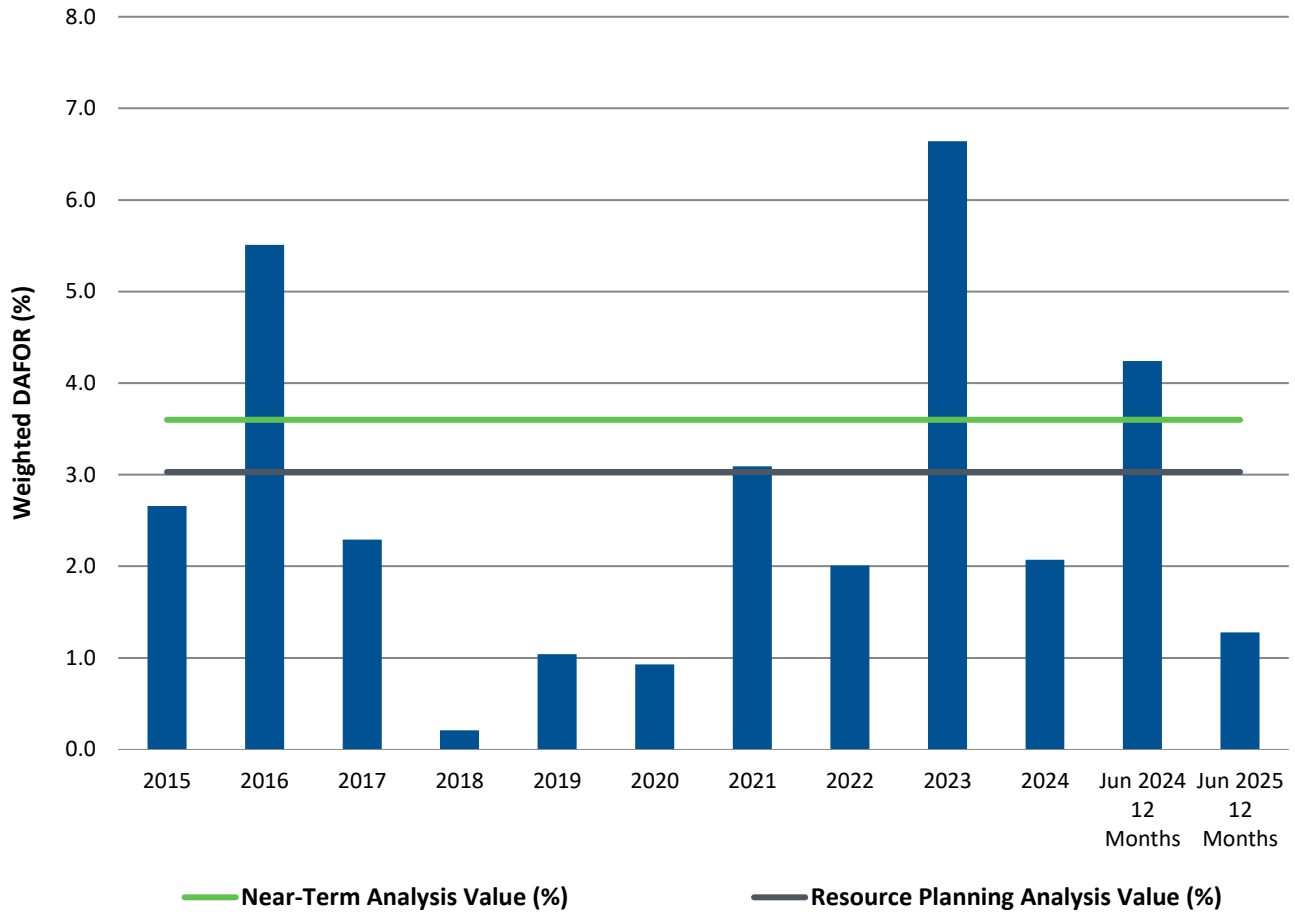

Chart 1: Hydraulic Weighted DAFOR – Regulated Hydro

4.1 Bay d'Espoir Facility Unit 7

The Bay d'Espoir Unit 7 DAFOR of 3.88% for the current period is above the resource planning analysis value of 3.03% and the near-term planning analysis value of 3.60% for an individual hydraulic unit. This increase in DAFOR was the result of a forced outage, which occurred on August 2, 2024, when leaks were discovered in the generator bearing coolers following the completion of the scheduled annual outage on Unit 7, as previously reported.[16] As of December 2024, all coolers currently installed on the unit are new.

[16] "Quarterly Report on Asset Performance in Support of Resource Adequacy for the Twelve Months Ended September 30, 2024", Newfoundland and Labrador Hydro, October 31, 2024.

4.2 Granite Canal Facility

The Granite Canal unit DAFOR of 4.94% for the current period is above the resource planning analysis value of 3.03% and the near-term planning analysis value of 3.60% for an individual hydraulic unit. This increase in DAFOR is primarily the result of eight forced outages in the current period, including one that occurred since the previous filing.

As previously reported, the unit experienced three forced outages due to vibration that occurred during operation in the hydraulic rough zone, resulting in trips to the unit on September 13, 2024, October 19, 2024 and December 22, 2024, and in all instances, Operations staff were dispatched to site to inspect the plant for anomalies and return the unit to service. Additionally, there were four forced outages that were a result of high bearing oil level alarms on November 2, 2024, November 24, 2024, December 5, 2024, and finally from January 24–28, 2025. Following the January outage, modifications were made to the piping layout to prevent air from entering the assembly, and monitoring of oil level readings over time confirmed the situation has been resolved.

Since the previous filing, the Granite Canal unit experienced an additional forced outage on June 4, 2025, which was the result of governor system alarms. The unit was returned to service within hours and the investigation into the outage is ongoing.

4.3 Paradise River Facility

The Paradise River unit DAFOR of 9.24% is above the resource planning analysis value of 3.03% and the near-term planning analysis value of 3.60% for an individual hydraulic unit. This increase in DAFOR was the result of four forced outages. Two as previously reported included a leak in the penstock expansion joint located in the lower level of the plant and a low bearing oil level alarm.

Since the previous filing of this report, the unit has experienced two additional forced outages. The first on May 5, 2025, when the unit failed to start, and the second on May 9, 2025, when the unit experienced a cooling water alarm.[17] For both outages, maintenance crews were able to troubleshoot the issue and return the unit to operation in less than 24 hours.

[17] The outage on May 9, 2025 was omitted from Hydro's Monthly Energy Supply for May 2025 report in error.

5.0 Hydraulic Unit DAFOR Performance – Muskrat Falls

Detailed results for the current period and the previous period are presented in Table 6 and Chart 2. These results are compared to Hydro's near-term and resource planning analysis values for forced outage rates, as used in the 2024 Resource Plan and the November 2024 Near-Term Report. Overall, the plant performance for the Muskrat Falls Facility shows a decline over the previous period, with the performance of all individual units meeting the established near-term and resource planning analysis values, with the exception of Muskrat Falls Unit 1, which is discussed below.

Table 6: Hydraulic Weighted DAFOR – Muskrat Falls

Generating Unit	Maximum Continuous Unit Rating (MW)	12 Months Ended Jun 2024 (%)	12 Months Ended Jun 2025 (%)	Near-Term Analysis Value (%)	Resource Planning Analysis Value (%)
Muskrat Falls Units - weighted	**824**	**0.42**	**2.32**	**2.30**	**3.03**
Muskrat Falls Units					
Muskrat Falls 1	206	0.37	7.68	2.30	3.03
Muskrat Falls 2[18]	206	1.21	0.00	2.30	3.03
Muskrat Falls 3	206	0.11	0.14	2.30	3.03
Muskrat Falls 4	206	0.01	0.02	2.30	3.03

[18] Muskrat Falls Unit 2 was taken offline on a planned outage for major turbine repairs on October 16, 2024, and is expected to return to service in August 2025 due to findings associated with that turbine work.

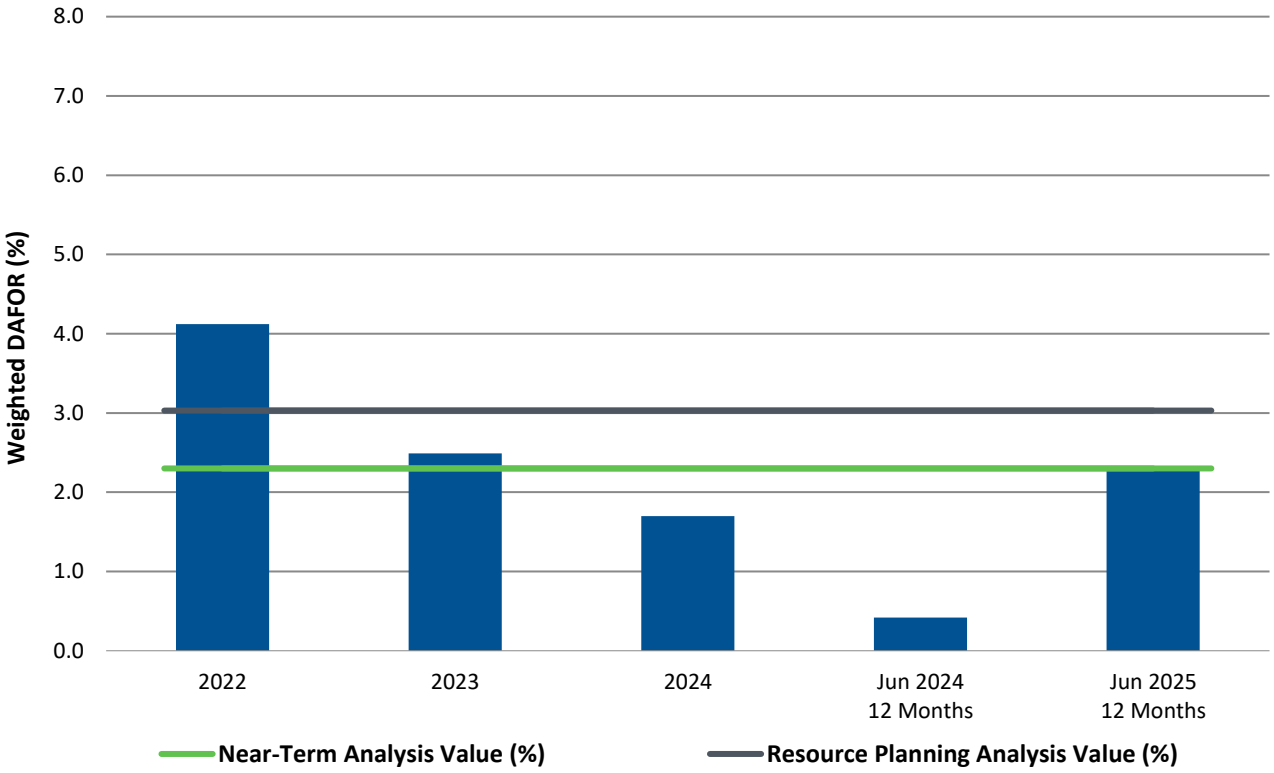

Chart 2: Hydraulic Weighted DAFOR – Muskrat Falls

5.1 Muskrat Falls Unit 1

The Muskrat Falls Unit 1 DAFOR of 7.68% is above the resource planning analysis value of 3.03% and the near-term planning analysis value of 2.30% for an individual Muskrat Falls unit. As previously reported,[19] this increase in DAFOR was the result of the forced extension of the planned outage, which lasted from September 29 to October 16, 2024 as a result of concrete which had dislodged from the intake and travelled through the unit.[20]

As previously reported, the unit experienced another forced outage on March 12, 2025, when the unit tripped due to loss of turbine wicket gate position feedback. Further investigation revealed the cause of the trip to be an unseated PLC card in the Governor Control cabinet. The unit was returned to service on March 16, 2025, and has operated reliably since that time.

[19] "Quarterly Report on Asset Performance in Support of Resource Adequacy for the Twelve Months Ended December 31, 2024," Newfoundland and Labrador Hydro, January 31, 2025, sec. 5.1, pp. 11-12.
[20] Final repairs to the intake civil works are planned during the Unit 1 annual outage in 2025.

6.0 Thermal Unit DAFOR Performance

Detailed results for the current and previous periods are presented in Table 7 and Chart 3. These results are compared to Hydro's near-term and resource planning analysis values for forced outage rates, as used in the 2024 Resource Plan and the November 2024 Near-Term Report. Any individual unit with forced outage rates which exceed the established near-term and/or resource planning analysis values is discussed herein.

Table 7: Thermal Weighted DAFOR

Generating Unit	Maximum Continuous Unit Rating (MW)	12 months Ended Jun 2024 (%)	12 months Ended Jun 2025 (%)	Near-Term Planning and Resource Planning Analysis Value (%)
All Thermal Units – Weighted	**490**	**48.69**	**28.69**	**20.00**
Thermal Units				
Holyrood TGS Unit 1	170	11.13	70.95	20.00
Holyrood TGS Unit 2	170	95.68	9.84	20.00
Holyrood TGS Unit 3	150	19.51	3.61	20.00

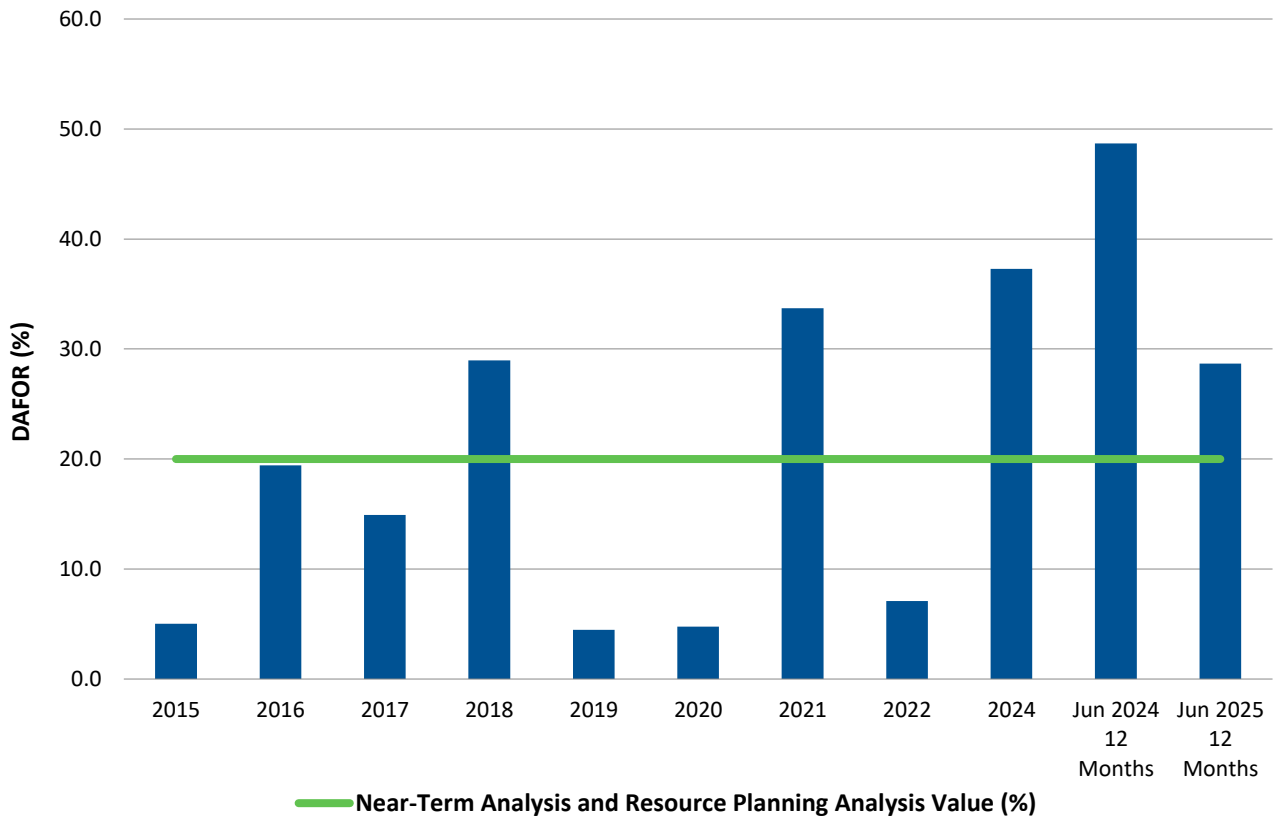

Chart 3: Thermal DAFOR

For the current period, the weighted DAFOR for all thermal units of 28.69% is above the 20.00% near-term and resource planning analysis values. The individual unit DAFOR outcome for the current period of 9.84% for Unit 2 and 3.61% for Unit 3 at the Holyrood TGS are below the 20.00% analysis value. The performance of Unit 1 at the Holyrood TGS is discussed in Section 6.1.

6.1 Holyrood TGS Unit 1

Considering individual thermal unit performance, the DAFOR of 70.95% for Unit 1 at the Holyrood TGS is above the near-term and resource planning analysis value of 20.00% for a unit at the Holyrood TGS, and shows a decline in performance over the previous period. This elevated DAFOR is the result of a forced extension to the planned unit outage to overhaul the Unit 1 turbine and replace the L-0 and L-1 blades at the General Electric ("GE") shop in the United States.[21] The blades were replaced; however, it was

[21] "2024 Capital Budget Application," Newfoundland and Labrador Hydro, rev. September 21, 2023 (originally filed July 12, 2023), sch. 6, prog. 2.

found that additional work was required to restore the bearing journals, which resulted in extension to the outage. All work was completed and the rotor was shipped back to Holyrood site in late 2024. Start-up activities in January 2025 were delayed due to issues found with the turbine stop valve, which were resolved and the unit brought online on February 12, 2025. Following return to service, an issue with the main steam controls valves prevented movement beyond 56% opening, which resulted in a forced derating to 105 MW. This derating remained until March 10, 2025, when a planned outage was taken to investigate and correct the issue with the control valves. The unit returned to operation on March 17, 2025 at full capacity.

Since the previous filing of this report, Holyrood Unit 1 entered the annual planned outage on May 4, 2025 which means the DAFOR will remain unchanged until the unit is returned to operation later in 2025.

7.0 Combustion Turbine DAUFOP Performance

DAUFOP Performance for the Hardwoods, Stephenville and Happy Valley Gas Turbines as well as the Holyrood Combustion Turbine for the period are presented in the charts and tables below.

The combined DAUFOP for the Hardwoods and Stephenville Gas Turbines was 17.53% for the current period, as shown in Table 8 and Chart 4. This is below the near-term and resource planning analysis value of 30.00%.

The Stephenville Gas Turbine DAUFOP for the current period is 32.45%, which is above the near-term and resourcing planning assumption of 30.00%. The Hardwoods Gas Turbine DAUFOP for the current period is 0.00%, which is below the near-term and resource planning assumption of 30.00%. On a per-unit basis, both units have improved performance when compared to the previous period. As the forced outage rate for the Stephenville Gas Turbine exceeds the established near-term and resource planning analysis values, a discussion on same is included in Section 7.1.

Table 8: Hardwoods/Stephenville Gas Turbine DAUFOP

Gas Turbine Units	Maximum Continuous Unit Rating (MW)	12 months Ended Jun 2024 (%)	12 months Ended Jun 2025 (%)	Near-Term Planning and Resource Planning Analysis Value (%)
Gas Turbines	**100**	**55.23**	**17.53**	**30.00**
Stephenville	50	96.29	32.45	30.00
Hardwoods	50	10.37	0.00	30.00

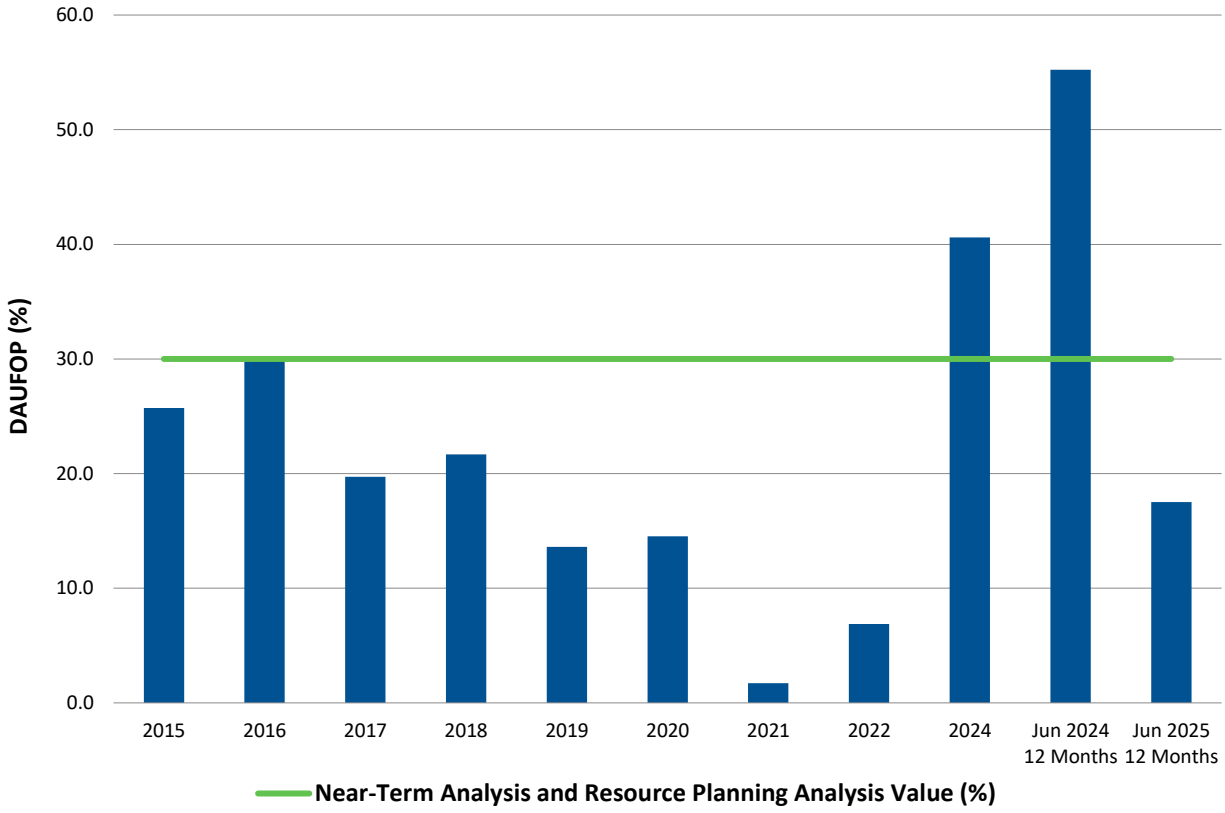

Chart 4: Gas Turbine DAUFOP: Hardwoods/Stephenville Units

The DAUFOP for the Happy Valley Gas Turbine was 0.00% for the current period, as shown in Table 9 and Chart 5. This is below the near-term and resource planning analysis value of 4.65% and indicates an improvement in performance over the previous period.

Table 9: Happy Valley Gas Turbine DAUFOP

Gas Turbine Unit	Maximum Continuous Unit Rating (MW)	12 months Ended Jun 2024 (%)	12 months Ended Jun 2025 (%)	Near-Term Planning and Resource Planning Analysis Value (%)
Happy Valley	25	19.12	0.00	4.65

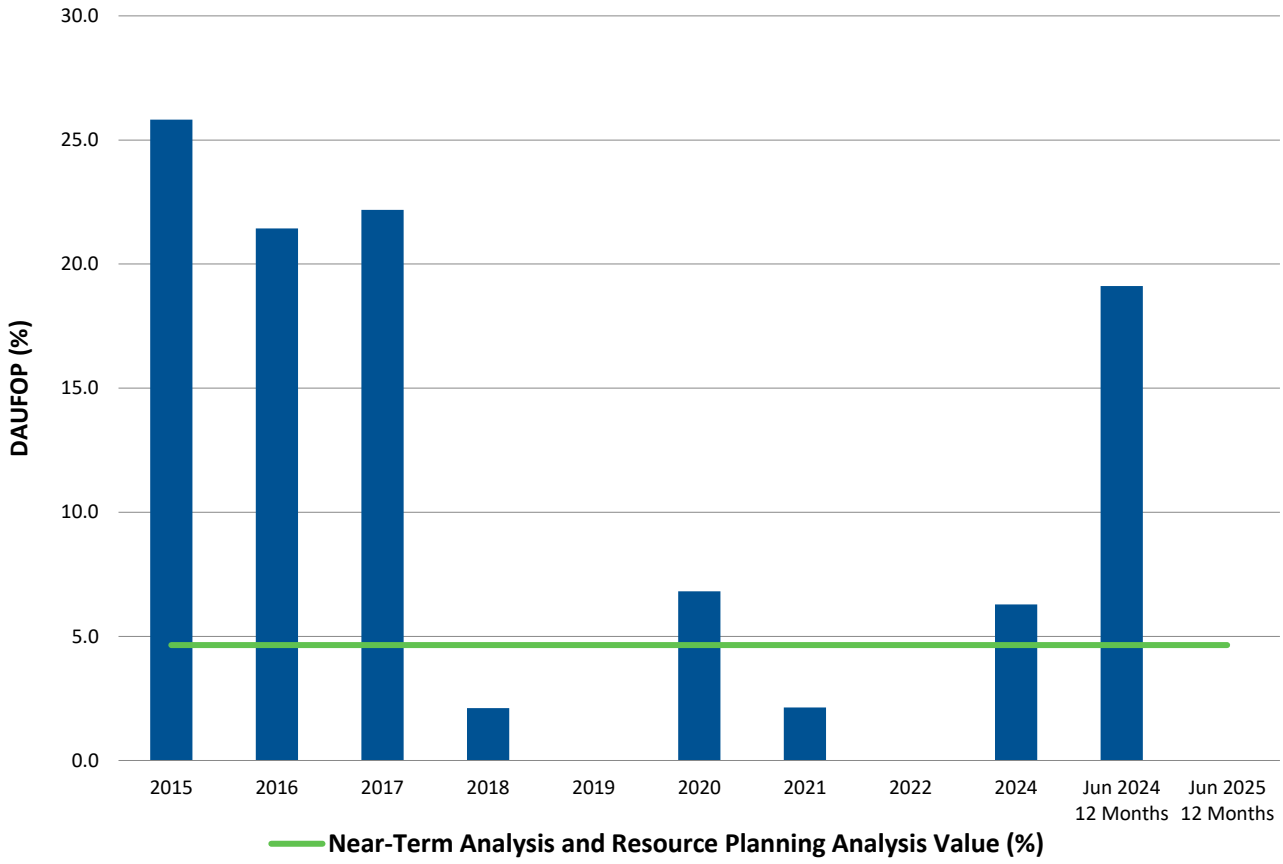

Chart 5: Gas Turbine DAUFOP: Happy Valley Unit

The Holyrood Combustion Turbine DAUFOP of 8.16% for the current period is above the near-term and resource planning analysis value of 4.90%, and indicates a decline in performance when compared to the previous period, as show in Table 10 and Chart 6. As the forced outage rate for the Holyrood CT exceeds the established near-term and resource planning analysis values, a discussion on same is included in Section 7.2.

Table 10: Holyrood Combustion Turbine DAUFOP

Combustion Turbine Unit	Maximum Continuous Unit Rating (MW)	12 Months Ended Jun 2024 (%)	12 Months Ended Jun 2025 (%)	Near-Term Planning and Resource Planning Analysis Value (%)
Holyrood	123.5	3.36	8.16	4.90

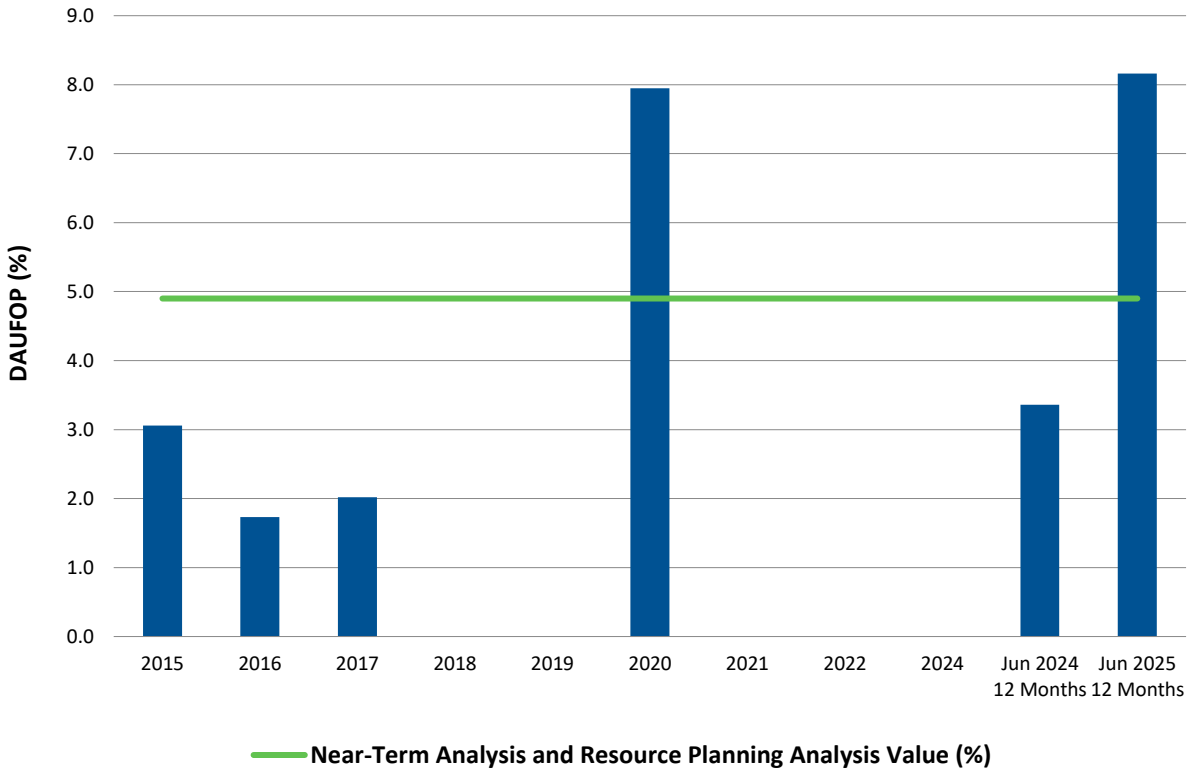

Chart 6: Combustion Turbine DAUFOP– Holyrood Unit

7.1 Stephenville Gas Turbine

The Stephenville Gas Turbine DAUFOP was 32.45% for the current period, which is above the near-term and resource planning analysis value of 30.00%. This decline in performance is a result of the failure of the alternator cooling fan, as previously reported, which occurred on July 14, 2023.[22]

[22] Additional information was provided in the "2023–2024 Winter Readiness Planning Report," Newfoundland and Labrador Hydro, December 11, 2023, sec. 2.2, p. 8 and sec. 7.4.1, p. 38.

Commissioning was successfully completed and the unit returned to service on September 27, 2024.

7.2 Holyrood Combustion Turbine

The Holyrood CT DAUFOP was 8.16% for the current period, which is above the near-term and resource planning analysis value of 4.90%. This decline in performance is the result of two forced outages as previously reported. The unit was unavailable from February 12–14, 2025 due to a failed blade path thermocouple. The second outage occurred February 25–26, 2025 due to a failed jacking oil pump. Both outages were resolved by replacing the failed components.

8.0 Labrador-Island Link EqFOR Performance

The EqFOR for the LIL was 0.65%[23] for the current period, as shown in Table 11. This is slightly below the range of values used by Hydro in the resource planning analysis scenarios.

Table 11: LIL EqFOR (%)

Asset Type	Measure	12 Months Ended Jun 2024 (%)	12 Months Ended Jun 2025 (%)	Base Planning Analysis Value	Range of Planning Analysis Values
LIL	EqFOR	2.79	0.65	5	1–10

The availability of the three Soldiers Pond synchronous condensers ("SC") is critical to the reliable delivery of electricity to the Island Interconnected System via the LIL. No operational issues concerning the Soldiers Pond SCs resulted in outages or derating to the LIL in the current period.

A fulsome update on the total number of hours of operation for the Soldiers Pond SCs for the rolling 12-month period is provided in in Appendix A of this report.

[23] This EqFOR is calculated on a base LIL capacity of 700 MW. On a base capacity of 900 MW, the EqFOR is calculated to be approximately 1.16%. Following the completion of the 900 MW test, all calculations will be adjusted to reflect the change in assumptions.

Appendix A

Soldiers Pond Synchronous Condensers

Table A-1: Quarterly Rolling 12-Month Operating Hours for Soldiers Pond Synchronous Condensers ("SC")

Unit	Operating Hours[1]	% Availability[2]
SC1	8732.50	99.41
SC2	8326.62	94.79
SC3	7577.53	86.27

1 Further information on the operation of the Soldiers Pond SC is provided in Appendix B.

[1] Hydro has provided its best estimate of operating hours for each unit for the 12 months ended June 30, 2025 based on an assumption of 24/7 operation of all three SCs, and known outages (both planned and unplanned) recorded in its database.
[S]SC availability is calculated on the basis of the unit's operating hours, and therefore assumes that the unit is operating when available.

Appendix B

Muskrat Falls Assets Update

Reporting period up to June 30, 2025

1.0 Introduction

The Muskrat Falls Assets, made up of the LIL, the Labrador Transmission Assets including the Soldiers Pond Synchronous Condensers ("SC"), and Muskrat Falls have all been commissioned in recent years and are in the early years of their asset lifespan.

As is normal for the early operation of assets, Hydro has encountered some challenges with equipment due to manufacturing issues or defective components. Such issues are expected early in the equipment's life. Equipment failure rates plotted over time generally exhibit a 'bathtub-shaped curve.' Incidents of failure tend to be high when equipment is new and again near the end of the equipment's useful life, depending on equipment type. In addition to routine ongoing preventative maintenance activities and sustaining capital programs for each of these assets, there are a number of one-off capital projects, corrective maintenance activities and engineering studies ongoing with the purpose of addressing and repairing these early life issues, with the ultimate goal of improving asset reliability over time to expected levels.

Hydro provides the following update to the Board on the status of these activities and other information as requested by the Board.

2.0 Muskrat Falls Hydroelectric Generating Facility

Muskrat Falls was commissioned in November 2021. The Muskrat Falls plant continues to outperform similar units across Canada with a total plant DAFOR performance through the end of the second quarter of 2025 of 2.32%, which was significantly better than the Electricity Canada average of 5.27%.

2.1 Capital Projects

Muskrat Falls – Repair Unit 2 Turbine

As recommended by the original equipment manufacturer ("OEM") and reported by The Liberty Consulting Group in its June 2023 monitoring report, vibration issues observed on Unit 2 require permanent corrective action, including full unit dismantling, to be completed under warranty by the turbine OEM. There have been no issues with vibration, or the identification of other characteristics through internal inspections, which would indicate a problem similar to that of Unit 2 on Units 1, 3, or 4.

This project is to repair the Unit 2 turbine, which will result in the unit being unavailable for the 2024–2025 winter season. The expected return to service date for this generating unit is now August 2025 due to findings associated with the turbine work; the issue is anticipated to be resolved following completion of this project.

3.0 Soldiers Pond Synchronous Condensers

Hydro continues to address the remaining items that were noted in punch list reports submitted with the commissioning certificate and outstanding warranty claims.

3.1 Operations Items

Brush Gear

Hydro's Engineering team, with the OEM for the brush equipment and SC, has been working to identify the root cause of the brush performance issues. Multiple actions have been taken to improve the reliability of the brush gears for the 2024–2025 winter, including:

- 12 brushes per ring removed (24 total) on each unit to increase the current density (heat) on remaining brushes in an effort to improve patina development[1] and overall brush gear performance;
- Maintaining the machine hall temperature near 20°C;
- Nord-lock washers installed on holders to lessen the likelihood of brush holders vibrating loose and contacting the running face of the slip ring;
- Humidity levels being measured and trended by Hydro's Engineering team to ensure brushes are operating in ideal conditions to support patina development;
- Managing system voltages to increase load on SC (i.e., increase current density); and
- Regular inspections performed to identify changes in performance, allowing for early intervention prior to damages.

[1] During operation a protective film, or patina, is automatically formed on the surface of the slip ring, at the interface point between the brush face and ring surface. When formed properly, this film reduces brush wear to the lowest possible level, and is essential to ensure optimum operation of the brushes.

In spring 2024, the existing slip ring was removed from SC1, and sent for machining to correct a runout causing excessive brush vibration. At this time, a modified brush with the ability to operate in a higher vibration environment was also provided by the OEM and installed. These modifications have resulted in improved performance to date. Hydro's Engineering and Operations teams will continue to monitor the overall impact of these changes, with the potential to complete this work on SC2 and SC3 in 2025. Additionally, General Electric ("GE") has been working with a different brush gear manufacturer, and has proposed a different brush assembly with a more robust spring design to lessen the likelihood of spring failure. Timing of delivery did not allow for installation on SC3; therefore, this design will be installed on SC2 later in 2025 for performance evaluation through the first quarter of 2026.

Forced Outages

Outside of planned outages, the Soldiers Pond SCs have been in operation at all times during the quarter.

4.0 Labrador-Island Link

Since commissioning in April 2023, LIL has been in service and successfully providing power to the provincial grid. During the quarter, the LIL has been operating at various power transfer levels, as required by the system. In total, approximately 719 GWh were delivered over the LIL from April 1, 2025 to June 30, 2025. Hydro continues to ensure the availability of generation at the Holyrood Thermal Generating Station; however, energy and capacity delivered over the LIL are used to minimize thermal generation whenever possible.

In the early stages of its operation, as is normal for the operation of assets early in life, the current reliability of the LIL is anticipated to be lower than in the long-term, due to failures associated with new assets (e.g., due to manufacturing issues or defective components). In addition to routine ongoing corrective and preventative maintenance activities and sustaining capital programs, there are a number of capital projects identified to repair these issues.

4.1 Operations Items

Forced Outages

Outside of planned outages, the LIL has been in operation at all times during the quarter.

Cable Switching

As reported in Hydro's final 2024–2025 Winter Readiness Report,[2] new equipment was successfully installed to mitigate cable switching transients at the LIL Transition Compounds in mid-October 2024.

Since the Winter Readiness Report, Hydro has identified an icing issue with transition compound disconnects that can impact cable switching in winter conditions. Hydro is working with GE to engineer a solution to resolve this issue. In the interim, Hydro is developing operating procedures to ensure reliable operation in winter conditions, including high power testing.

Replacement of Direct Current Current Transformers ("DCCT")

In 2023, the OEM and Hydro determined that very low air temperatures at Muskrat Falls Converter Station were influencing the measurement accuracy of DCCTs, resulting in false protection trips and power control issues on the LIL. The OEM identified the root cause of the issue to be a manufacturing defect with the Delay Coil Fiber Optical Cable located within the DCCTs; this issue occurred with a select batch of fiber optic cables, affecting six DCCTs at the Muskrat Falls HVdc Converter Station, which have since been replaced.[3]

As noted in Hydro's final 2024–2025 Winter Readiness Report, the OEM discovered additional DCCTs that require replacement due to cold temperature issues.[4] Three DCCTs were identified to be replaced as a precaution based on site measurements; with one replaced during December 2024.

The remaining DCCTs identified to be replaced are targeted for replacement as soon as possible, depending on outage availability. Four additional DCCTs were identified as low risk for this issue, and due to lead time for manufacturing, are being targeted for replacement during scheduled outages in 2025 and 2026.

[2] Reliability and Resource Adequacy Study Review – 2024–2025 Winter Readiness Planning Report – Final Report," Newfoundland and Labrador Hydro, December 10, 2024.
[3] One of these DCCTs has an operation rating to -40°C, and will be replaced with a DCCT rated to -50°C as soon as is practical.
[4] While none of these additional DCCTs have experienced issues associated with cold temperatures, there are indicators the issue could present itself; therefore, as a precaution, they have been identified for replacement.

Conductor Testing

Following a bipole trip on March 30, 2024, line patrol determined that the electrode conductor was broken and damaged during an ice storm at several locations in Southern Labrador. As a result, conductor testing was completed and determined no material issues with the conductor, and found that the failure was due to overload, which is consistent with past findings. There is evidence that cyclic loading due to ice and wind on the conductor may be causing fatigue and could contribute to the failure. This was consistent with previous testing results. There will be additional conductor testing completed in 2025.

4.2 Capital Projects

Replace Turnbuckles and Install Airflow Spoilers Program

With regard to the Turnbuckles Replacement and Airflow Spoiler Installation Program, Hydro continues to actively address the recommendations resulting from the localized failures experienced on the LIL over the past three winters. Hydro's capital programs to replace turnbuckles and install airflow spoilers intend to reduce galloping are ongoing, prioritizing the high-priority areas of the LIL first.

At the end of 2024, Hydro had completed 100% of the planned replacements of turnbuckles for that year. To date, 74% of air spoilers have been installed, with the remaining to be completed during planned outages in September and October 2025.[5]

Optimizing Clamp Designs

Hydro has identified, through its preventative maintenance program and component failure investigations, multiple opportunities for clamp and conductor inspection, with refurbishment or replacement of parts made according to findings. As a result, Hydro is optimizing clamp designs for the electrode conductor and optical ground wires ("OPGW").

Three alternative suspension clamp designs have been installed on the electrode conductor at ten structures and will be inspected for performance on an annual basis. The contract was awarded to a

[5] Based on the outcome of its galloping study, Hydro is installing airflow spoilers on priority areas of the LIL to control galloping and mitigate further damage to the line. Hydro has mitigated the risk of prolonged customer outage as a result of fatigue failures due to galloping by prioritizing the most remote locations where galloping has been observed.

consultant for the electrode suspension assembly analysis, who completed the assessment in the first quarter of 2025, with the alternate design received in the second quarter of the year.

An alternate OPGW clamp assembly with improved slip strength was selected, ordered and received in January 2025. As the OPGW relates to communications functionality, Hydro does not anticipate that further occurrences of similar damage would result in a prolonged power interruption or customer outage.

Top Plate Design

In December 2022 there were two incidents impacting two adjacent structures of the LIL where the connection of the top plate of the OPGW suspension detached from the tower, falling onto the cross arm. As a result, Hydro has completed the reinforcement of the top plate on all 61 A3 type towers.

Analysis of potential modifications to this plate for other tower types was completed in the second quarter of 2025, and alternate designs have been received from the consultant. To date, there have been minimal issues with other tower types. Hydro will keep the alternate design in stock as a precaution, and will schedule installation on other tower types as required if deformation of the top plate occurs.

Ice Monitoring

In response to icing experienced on the LIL, Hydro is undertaking capital projects in 2025 for the installation of a real-time weather station, as well as the installation of on-line ice and galloping monitoring equipment. Installation of the weather station is scheduled for the third/fourth quarter of 2025. The contract for monitoring equipment was awarded in 2024, to be installed in 2025.

4.3 High-Power Testing

As reported in its first quarter of 2025 LIL Quarterly Update, Hydro postponed the 900 MW test until the late fall of 2025, when system conditions permit.[6]

Planning for the 900 MW test is underway. As previously reported, the following are prerequisite conditions for the test to occur:

- Satisfactory system conditions are present, including both those in Newfoundland and Labrador, where a high system load can be reasonably expected to occur, and neighbouring jurisdictions;
- Successful coordination with all relevant neighbouring system operators is attained; and
- Identification of risks and implementation of all necessary risk mitigation actions are in place.

4.4 Software

New LIL software was commissioned in October 2024. This software, as with the previous version, allows for full operation of the LIL up to 900 MW. Through dynamic commissioning, non-critical software-related issues were identified. Hydro continues to work with GE on the development of a version of software to resolve these issues, and installation is now anticipated once Factory Acceptance Testing is completed and system conditions allow. A version of software was already delivered by GE, and an attempt was made to install it in April of 2025; however, a version control error prevented full installation, and the software had to be removed. The new version of the software is expected to be delivered in the third quarter of this year, and installation will be coordinated to occur during an upcoming planned outage.

4.5 Engineering Studies and Reports

Since its commissioning in April 2023, Hydro has gained valuable insight into LIL operations. Using Hydro's operating experience and recommendations from its investigations, supplemented by the recommendations made by Haldar and Associates Inc., Hydro has identified three potential reinforcements to LIL assets to sustain reliability, address common failure modes, and mitigate risks to the Island Interconnected System. While these potential reinforcements have been identified, further

[6] "Reliability and Resource Adequacy Study Review – Labrador-Island Link Update for the Quarter Ended March 31, 2025, Newfoundland and Labrador Hydro, April 3, 2025, p. 2.

engineering assessment is required to determine the benefits, costs, schedule, and feasibility of these modifications. These include:

- Review of unbalanced ice loads for the entire line length to determine appropriate design unbalanced ice loading, followed by design and cost estimates for tower design modifications to meet unbalanced design loads;
- Feasibility assessment and cost estimates for installation of mid-span structures to reduce tower loading in critical areas; and
- Engineering design and cost estimates to relocate electrode conductors from towers to wood poles in some sections, to reduce tower loading, improve access and logistics, and minimize outages to address electrode line issues in critical areas.

These assessments have been completed, and Hydro will evaluate these projects based on their anticipated reliability benefits and their estimated cost during the third quarter of 2025. A detailed update on each of these assessments is provided below.

Ice Loading Analysis

The ice loading assessment has been completed. The unbalanced ice loads causing failures have been determined and provided to a consultant for the design of tower modifications, and feasibility of mid span structures.

Tower Design

Analysis is ongoing to determine the requirement for modifications to the tower or transmission line design to further reduce the risk of incidents. Specifically, this includes design for strengthening electrode cross arm; electrode suspension assembly assessment and design; and design for OPGW tower peak strengthening. These studies are ongoing and are now anticipated to be completed by the consultant in the third quarter of 2025.

Line Modifications

Hydro completed engineering assessments on the potential installation of mid-span structures to reduce load on towers and to remove the electrode line from the towers (in specific sections) to reduce load on towers.

4.6 Ongoing Investigations

Investigations are completed for incidents related to the Muskrat Falls Assets as required, and the results are reviewed and finalized by Hydro. There are no investigation outcomes to report this period.

4.7 Restoration Plans and Operational Strategy

In addition to engineering studies to inform potential reinforcements to mitigate the risk of component failures and outages, Hydro is currently in the process of contracting a consultant to review Hydro's restoration plans, including review and development of specific restoration plans for a variety of potential and previously experienced scenarios. It is expected that this review will include the identification of alternative restoration approaches that can be selected based on the situation for the most efficient and effective execution of the work. Restoration plans will consider geographic and weather challenges. Restoration plan reviews will include estimates of the time to effect the repairs, as well as time challenges and opportunities for restoration duration and provide cost and benefit information to identify incremental investment in restoration time improvement and quantify the associated benefits.

5.0 Conclusion

Hydro recognizes the criticality of the Muskrat Falls Assets to the supply of the Island Interconnected System, which helps to limit the thermal generation required from the Holyrood TGS and impacts the overall reliability of the grid will continue to monitor the performance of these assets address early life incidents such as those due to manufacturing issues or defective components.