

1 **Q. Reference: Volume I, Section 6.2.3, Tables 6-1 and 6-2; and Volume III, Exhibit 15**

2 Hydro proposes to replace the reserve-at-criteria calculation of Newfoundland Power's
3 hydraulic generation credit with a 64 MW credit based on the five-year (2020–2024) historical
4 average of Newfoundland Power hydraulic generation at the time of system peak.

5 **a)** Provide the underlying event-level data for each observation used in the analysis,
6 including the date and hour of each system peak, system load, Newfoundland Power
7 hydraulic output, installed hydraulic capability at the time, and whether Hydro had
8 issued a request to maximize hydraulic generation.

9 **b)** Explain the rationale for a simple five-year average rather than a capability-based or
10 probabilistic measure (e.g., median or a percentile consistent with planning criteria),
11 and provide the credit that would result under each alternative.

12 **c)** Explain why the hydraulic credit moves to demonstrated historical performance while
13 the thermal credit continues to be based on forecast capability reduced by reserve at
14 criteria, and explain why different standards are appropriate for the two components.

15 **d)** Excluding the effects of rate mitigation funding, quantify the sensitivity of class revenue
16 requirements and the Newfoundland Power revenue requirement to a 10 MW change
17 in the total generation credit.

18 **e)** State whether energy or storage limitations constrained Newfoundland Power's
19 hydraulic output during the observed peaks, and whether comparable limitations are
20 reflected in the ratings assigned to Hydro's own hydraulic fleet in the Cost of Service.

21 **f)** Explain if Hydro's requests to Newfoundland Power to run its hydraulic generation and
22 the impacts on Newfoundland Power's storage levels to provide benefits other than
23 meeting system peaks (e.g., reduced requirement for Holyrood TGS operations) was
24 considered in deriving the 64 MW generation credit. Would the hydraulic credit be
25 higher if these operating requests did not occur and does Hydro expect these requests
26 continue in the future?

1 A. a) Please refer to slides 42-44 of the Cost of Service Methodology Technical Conference
2 presentation, which is available on the Board of Commissioners of Public Utilities ("Board")
3 website at the following link: [NLH – Cost of Service Methodology – Technical Conference](#)
4 [Presentation](#).

5 Only instances where Newfoundland and Labrador Hydro ("Hydro") requested to maximize
6 Newfoundland Power Inc. ("Newfoundland Power") hydraulic generation are included in the
7 analysis. The data set has been extended back five additional years to cover all events from
8 2015 forward.

9 PUB-NLH-108, Attachment 1 includes all Hydro-requested "maximize" events during system
10 peak from 2015 through 2024. For each event, the attachment provides:

- 11 • The event date;
- 12 • The installed capability at the time of each event;
- 13 • Newfoundland Power's available hydraulic capacity as reported by Newfoundland
14 Power in Newfoundland Power's Morning Report ("Island Reserve MW");
- 15 • Newfoundland Power's actual hydraulic generation during the system peak period ("NP
16 Generation MW"); and
- 17 • The resulting surplus or shortfall, calculated as actual generation less reported available
18 hydraulic capacity by Newfoundland Power ("Delta").
- 19 • For certain event days, a direct comparison is not applicable and is identified in the
20 attachment due to:
 - 21 o No request by Hydro to maximize Newfoundland Power's hydro generation; or
 - 22 o Hydro's request applied only to Avalon Hydro Generation, rather than all Hydro
23 Generation.
- 24 • Lastly, the Newfoundland Power Morning Report for February 21, 2020, was not
25 provided; therefore, the available hydraulic capacity for that date could not be verified.

Hydro completed this comparison to assess whether Newfoundland Power's reported available hydraulic capacity, as reflected in the Morning Report Island Reserve values, was consistently reflected in actual generation delivered during peak-demand events.

The comparison identified a recurring pattern of shortfalls between reported available hydraulic capacity and actual generation when requested by Hydro to maximize. Hydro considers this observation material to the determination of a hydraulic generation credit, as it suggests that reported reserve capability may not be fully representative of the contribution that can be relied upon during system peak conditions.

Accordingly, Hydro considers actual historical generation during peak-demand events to be a more reliable determination than reported reserve capability. The hydraulic generation credit methodology therefore relies on actual generation performance, which reflects the generation delivered under historical operating conditions, rather than reported available reserve capacity.

- b) The five-year average was selected because it reflects the expected long-term contribution of the resource over the planning horizon and is simple, transparent, and reproducible. The averaging approach treats each study year consistently and avoids placing undue weight on a single atypically low or high year. While capability-based metrics such as the median or lower-percentile values may provide a more conservative estimate of dependable performance, they may also understate the expected contribution by focusing on a subset of outcomes rather than the full range of modeled conditions. The five-year average therefore provides an unbiased estimate of the resource's expected capacity contribution across the study period. For reference, the values in Table 1 were used to calculate an alternative credit if capability-based metrics were applied.

Table 1 Historic Capacity at Peak (MW)

Year	Capacity Credit
2020	66
2021	60
2022	71
2023	76
2024	48

- Median = 66 MW.
- P80 (20th percentile) = 58 MW.¹
- P90 (10th percentile) = 53 MW.²

Using alternative capability-based measures, the resulting capacity credit would be 66 MW (median), 58 MW (P80), and 53 MW (P90), compared with 64 MW under the five-year average methodology.

As discussed in Hydro's response to CA-NLH-135 of this proceeding, a five-year averaging period was considered appropriate because it provides a sufficient range of historical observations while maintaining a focus on current operating conditions. In assessing an appropriate averaging period, Hydro examined historical data back to 2015 and determined that the most recent five-year period was the most representative window for establishing a generation credit. That response also includes a 10-year average, resulting in a credit of 60 MW, as well as a recalculation of the generation credit using a rolling five-year average for each year from 2015 to 2024, including the standard deviation of the annual observations within each period.

An effective load-carrying capability-based capability/probabilistic measure was also not adopted for this calculation because the objective of the analysis was to determine a capacity credit from the annual historic results rather than to undertake a separate probabilistic reliability assessment. This would require detailed reliability modeling of system conditions, outage behavior, load characteristics, and resource performance. Applying this methodology to Newfoundland Power's assets would introduce additional modeling complexity and assumptions that are outside the scope of the capacity credit calculation. Furthermore, the annual credits used in this assessment were themselves developed through historic data intended to reflect the resource's contribution under peak system conditions. As a result, calculating a simple multi-year average of those annual values provides a reasonable estimate of expected capability while maintaining methodological transparency and reproducibility.

¹ $48 + 0.8 (60-48) = 57.6$, where 0.8 was calculated by $(5-1) \times 0.2 = 0.8$.

² $48 + 0.4 (60-48) = 52.8$, where 0.4 was calculated by $(5-1) \times 0.1 = 0.4$.

c) The hydraulic credit is based on demonstrated historical performance during Island Interconnected System peak loading periods. Historical operating and inflow conditions provide direct evidence of the amount of dependable capacity that has been available from the hydraulic system under a range of water conditions. By evaluating actual historical performance over multiple years, the hydraulic credit reflects the practical capability of the resource at peak, while inherently capturing the effects of varying hydrology, operational constraints, and system conditions.

In contrast, the thermal credit is based on forecast capability reduced by reserve-at-criteria because thermal resources are not limited by hydrology and their capacity contribution is principally determined by installed capability, equipment availability, and can generally be dispatched when required. The process for requesting Newfoundland Power to maximize thermal generation to support the Island Interconnected System is to request, in advance, the thermal unit(s) to be staffed. While Hydro has requested staffing of Newfoundland Power's thermal units over the last five-year period (January 2020 through December 2024) as a precaution in advance of a forecasted peak, the units have not subsequently been asked to generate. As a result, there is a lack of generation data to perform a similar analysis as utilized to calculate the hydraulic generation credit.³

d) Please refer to Table 2 for a summary of the impact of an increase and decrease of 10 MW on the Hydraulic generation credit after the rural deficit allocation.

Table 2: Hydraulic Credit 10 MW Sensitivity

	As Filed	74 MW Hydraulic Credit	Difference	% of RR	54 MW Hydraulic Credit	Difference	% of RR
Newfoundland Power	636,815,801	636,646,062	(169,739)	-0.03%	636,984,157	168,356	0.03%
Island Industrial	42,815,548	42,978,845	163,297	0.38%	42,653,582	(161,966)	-0.38%
Labrador Industrial	9,172,200	9,172,200	-		9,172,200		
Rural Labrador Interconnected	22,230,560	22,237,002	6,442	0.03%	22,224,170	(6,390)	-0.03%
Rural Deficit Areas							
Island Interconnected	68,909,058	68,909,058	-		68,909,058	-	
Island Isolated	1,717,949	1,717,949	-		1,717,949	-	
Labrador Isolated	11,969,343	11,969,343	-		11,969,343	-	
L'Anse-au-Loup	4,077,137	4,077,137	-		4,077,137	-	
Total	797,707,596	797,707,596	-		797,707,596	-	

³ For further information, please refer to "Cost of Service Methodology Application," Newfoundland and Labrador Hydro, August 22, 2025, sch. 1, att. 4, <http://www.pub.nl.ca/applications/NLH2025CostOfServiceMethodology/app/From%20NLH%20-%20Application%20for%20Cost%20of%20Service%20Methodology%20-%202025-08-22.PDF>.

1 The value of the 74 MW (+10 MW) and 54 MW (-10MW) hydraulic credit for Newfoundland
2 Power before the deficit allocation is (\$319,253) and \$316,858, respectively.

3 **e)** Please refer to slide 46 of the Cost of Service Methodology Technical Conference
4 presentation. Production from Hydro's hydraulic resources is based on average hydrology of
5 4600 GWh, which was used to develop production costs for the 2027 Test Year Cost of
6 Service Study.

7 **f)** Please refer to slides 47–48 of the Cost of Service Methodology Technical Conference
8 presentation. Hydro assessed Newfoundland Power's hydraulic generation contribution
9 during the top 5% and top 10% of Island Interconnected System demand hours. The
10 resulting average capacity contribution under both approaches was lower than the
11 proposed hydraulic generation credit of 64 MW.

12 The top 5% and top 10% demand-hour methodologies capture a broader range of high-
13 demand system conditions beyond the annual peak period, including periods during which
14 Newfoundland Power may be requested to maximize hydraulic generation output. As a
15 result, these approaches include hours that may not be representative of system conditions
16 where incremental hydraulic generation is required to support peak capacity needs.

17 Under normal system operating conditions, deliveries over the Labrador-Island Link ("LIL")
18 provide sufficient energy to maintain operation of the Holyrood Thermal Generating Station
19 at minimum generation levels. Consequently, opportunities for Newfoundland Power to
20 maximize hydraulic generation specifically to reduce the requirement for Holyrood TGS
21 operations have been limited.

22 As discussed in Hydro's response to NP-NLH-106 of this proceeding, provided that the
23 proposed hydraulic generation credit methodology is approved and Hydro's 2026 General
24 Rate Application schedule as proposed by the Board proceeds as planned, Hydro believes it
25 to be a reasonable assumption that winter 2027–2028 will be the first opportunity for
26 Newfoundland Power to maximize its hydraulic generation during periods of high demand
27 when requested by Hydro.

1 Newfoundland Power's hydraulic generation facilities also continue to provide operational
2 support for transmission system constraints. However, the frequency of these requirements
3 has decreased significantly following the in-service of Transmission Line TL267 and the LIL.⁴
4 While Hydro may still request hydraulic generation to offload the transmission corridor from
5 Western Avalon into Soldiers Pond, these situations are typically associated with non-winter
6 operating conditions.

⁴ Hydro does not use Newfoundland Power generation to economically offset LIL flows.

	NP Morning Report		ACTUAL	
	28-Dec-2015		28-Dec-2015	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	41.70			
Hydro Other	25.18			
Subtotal Hydro	66.88	51.58	-15.30	

	NP Morning Report		ACTUAL	
	29-Dec-2015		29-Dec-2015	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	41.70			
	26.13			
	67.82	58.15	-9.67	

	NP Morning Report		ACTUAL	
	30-Dec-2015		30-Dec-2015	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	43.70			
	30.29		N/A (no ECC request)	
	74.00	10.82		

	NP Morning Report		ACTUAL	
	16-Dec-2016		16-Dec-2016	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	37.19			
Hydro Other	26.49			
Subtotal Hydro	63.68	59.88	-3.80	

	NP Morning Report		ACTUAL	
	17-Dec-2016		17-Dec-2016	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	37.61			
	25.92			
	63.53	52.23	-11.30	

	NP Morning Report		ACTUAL	
	18-Dec-2016		18-Dec-2016	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	38.80			
	26.28			
	65.08	53.86	-11.22	

	NP Morning Report		ACTUAL	
	7-Feb-2017		7-Feb-2017	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	36.16			
Hydro Other	27.16			
Subtotal Hydro	63.31	66.00	2.69	

	NP Morning Report		ACTUAL	
	8-Feb-2017		8-Feb-2017	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	28.31			
	25.66			
	53.97	58.00	4.03	

	NP Morning Report		ACTUAL	
	9-Feb-2017		9-Feb-2017	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	38.99			
	24.36		N/A ECC request was for Avalon Hydro	
	63.35	36.00		

	NP Morning Report		ACTUAL	
	7-Jan-2018		7-Jan-2018	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	40.91			
Hydro Other	13.58			
Subtotal Hydro	54.49	46.26	-8.24	

	NP Morning Report		ACTUAL	
	8-Jan-2018		8-Jan-2018	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	34.72			
	6.53			
	41.25	52.78	11.53	

	NP Morning Report		ACTUAL	
	9-Jan-2018		9-Jan-2018	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	35.77			
	24.33		N/A ECC request was for Avalon Hydro	
	60.09	32.85		

	NP Morning Report		ACTUAL	
	19-Feb-2019		19-Feb-2019	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	44.87			
Hydro Other	20.12			
Subtotal Hydro	65.00	58.00	-6.99	

	NP Morning Report		ACTUAL	
	20-Feb-2019		20-Feb-2019	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	43.91			
	23.11			
	67.02	51.77	-15.25	

	NP Morning Report		ACTUAL	
	21-Feb-2019		21-Feb-2019	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	45.05			
	22.44		N/A ECC request was for Avalon Hydro	
	67.49	54.11		

	NP Morning Report		ACTUAL	
	20-Feb-2020		20-Feb-2020	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	44.92			
Hydro Other	31.83			
Subtotal Hydro	76.75	65.05	-11.69	

	NP Morning Report		ACTUAL	
	21-Feb-2020		21-Feb-2020	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	Report Not Available			
		74.10		

	NP Morning Report		ACTUAL	
	22-Feb-2020		22-Feb-2020	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	41.51			
	31.83			
	73.34	57.93	-15.41	

	NP Morning Report		ACTUAL	
	10-Feb-2021		10-Feb-2021	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	32.59			
Hydro Other	33.05			
Subtotal Hydro	65.64	60.89	-4.75	

	NP Morning Report		ACTUAL	
	11-Feb-2021		11-Feb-2021	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	38.52			
	33.05			
	71.57	52.29	-19.28	

	NP Morning Report		ACTUAL	
	12-Feb-2021		12-Feb-2021	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	34.38			
	33.05			
	67.43	66.41	-1.02	

	NP Morning Report		ACTUAL	
	15-Feb-2022		15-Feb-2022	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	47.68			
Hydro Other	33.05			
Subtotal Hydro	80.73	76.24	-4.49	

	NP Morning Report		ACTUAL	
	16-Feb-2022		16-Feb-2022	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	36.30			
	33.05			
	69.35	66.26	-3.08	

	NP Morning Report		ACTUAL	
	17-Feb-2022		17-Feb-2022	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	45.89			
	33.05			
	78.95	70.06	-8.89	

	NP Morning Report		ACTUAL	
	26-Feb-2023		26-Feb-2023	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	49.34			
Hydro Other	31.74			
Subtotal Hydro	81.08	75.71	-5.37	

	NP Morning Report		ACTUAL	
	27-Feb-2023		27-Feb-2023	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	49.34			
	31.74			
	81.08	76.43	-4.65	

	NP Morning Report		ACTUAL	
	28-Feb-2023		28-Feb-2023	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	48.20			
	31.74			
	79.95	75.94	-4.01	

	NP Morning Report		ACTUAL	
	23-Jan-2024		23-Jan-2024	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
Hydro Avalon	49.56			
Hydro Other	33.05			
Subtotal Hydro	82.61	49.68	-32.93	

	NP Morning Report		ACTUAL	
	24-Jan-2024		24-Jan-2024	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	49.56			
	27.38			
	76.94	50.63	-26.31	

	NP Morning Report		ACTUAL	
	25-Jan-2024		25-Jan-2024	
	Island Reserve MW	NP Generation MW	Delta (Actual Gen vs. Reserve)	
	47.77			
	33.05			
	80.82	44.91	-35.91	

Notes:
1 Capacity Factor based on the ratio of Generation Credit and Winter Capacity Applied to Hydro Units only.