

1 Q. **Reference: Application, 2024 Capital Budget Overview, page 28**

2 Regarding the Holyrood plant:

3 a) Please provide the most recent projections of the total capital expenditures associated
4 with Holyrood for each year until 2030 with a breakdown showing previously approved
5 expenditure, expenditure requested in the 2024 CBA, supplemental expenditure
6 requests, and anticipated requests in the 2025 CBA.

7 b) What is the current marginal cost of production at Holyrood TGS? What price per barrel
8 of oil and what production efficiency is used in this calculation?

9 c) What is the probability that Holyrood will be needed to operate in generation mode in
10 the upcoming winter of 2023/24 and the subsequent winter of 2024/25?

11 d) What has been Holyrood's DAUFOP in the last 5 years relative to target values, and
12 values assumed in system reliability simulations?

13 e) Hydro indicates that capital expenditures are needed to ensure all 3 units at Holyrood
14 TGS can operate reliably as generators during the bridging period to 2030.

15 i. What is the minimum production level at which the generators would operate
16 assuming LIL and the synchronous condensers at Soldiers Pond perform without
17 any substantive difficulty?

18 ii. At what production level would the generators operate if the LIL were not
19 available for the coming winter?

20 iii. At what production level would the generators operate if the LIL were available
21 at 60% of intended?

22 iv. Please confirm that the LIL was commissioned on April 14 of this year and that
23 all the project financing parties have recognized that commissioning. What
24 minimum performance standards were met for that commissioning to have
25 occurred? If the LIL were to operate at those minimum standards for its first few
26 years of operation, what would Holyrood's role be with respect to supply to the
27 Island Interconnected System?

1 v. Based on its current state of knowledge, at what level of operation does Hydro
 2 believe would be most appropriate and prudent for the Holyrood thermal plant
 3 for the coming winter of 2023/24? What would be the plant’s marginal cost per
 4 MWh at that level of operation?

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7 A. a) The most recent projections of the total capital expenditures associated with the Holyrood
 8 Thermal Generating Station (“Holyrood TGS”) for each year until 2030 are included in the
 9 2024 Capital Budget Application.¹ There is currently only one approved supplemental with
 10 planned 2024 expenditures, Purchase and Replace Last Stage Blades – Holyrood Units 1 and
 11 2.² With the extension of generation at the Holyrood TGS, Newfoundland and Labrador
 12 Hydro (“Hydro”) anticipates a significant reduction in “planned” supplemental expenditures;
 13 however, in exceptional cases, Hydro may be required to file supplemental capital budget
 14 applications.

15 b) Table 1 provides the marginal cost of production at Holyrood TGS as of July 31, 2023, the
 16 price per barrel of oil, and the production efficiency used in calculating the marginal cost.

Table 1: Incremental Energy Cost of Production at Holyrood TGS

Price (\$/bbl) ³	118.91
Production Efficiency (kWh/bbl) ⁴	583
Incremental Energy Cost (cents/kWh)	20.40

17 c) As stated in the Holyrood TGS Overview,⁵ Hydro plans to have one unit at the Holyrood TGS
 18 online in mid-October through November, two units online from December to February, and

¹ “2024 Capital Budget Application,” Newfoundland and Labrador Hydro, rev. August 18, 2023 (originally filed July 12, 2023), sch. 3, app. B, p. B-1.
² “Purchase and Replace Last Stage Blades for Units 1 and 2 – Holyrood Thermal Generating Station,” Newfoundland and Labrador Hydro, March 29, 2023 was approved in *Public Utilities Act*, RSNL 1900, c. P-47, Board Order No. P.U. 12(2023), Board of Commissioners of Public Utilities, May 5, 2023.
³ Average inventory cost.
⁴ 2019 Test Year efficiency factor.
⁵ “2024 Capital Budget Application,” Newfoundland and Labrador Hydro, rev. August 18, 2023 (originally filed July 12, 2023), sch. 3, p. 11.

1 one unit online in March for the period 2023–2030, or until additional generation is online
2 and reserve requirements are met.

3 **d)** At present, Hydro tracks performance data for units at the Holyrood TGS using the Derated
4 Adjusted Forced Outage Rate (“DAFOR”) metric. As stated in the 2022 Update to the
5 Reliability and Resource Adequacy Study,⁶ the units at the Holyrood TGS are to remain base
6 loaded in the near term and will strategically move to standby operation if system
7 conditions allow. When operation of Holyrood TGS becomes standby, DAUFOP⁷ will be the
8 preferred performance measure given the frequency of deratings historically experienced by
9 these units, and Hydro will adjust targets accordingly.

10 Table 2 shows the Holyrood TGS DAFOR performance data for the last five years. The annual
11 performance target is set at 20% and a 20% forced outage rate is now assumed for resource
12 adequacy planning purposes.⁸

Table 2: Holyrood TGS DAFOR Performance

<u>Year</u>	<u>DAFOR (%)</u>
2018	28.97
2019	4.48
2020	4.76
2021	33.72
2022	7.09

13 **e) i.** Hydro has assumed that two units will be required to be online through the winter period;
14 however, the number of units and level of production is dependent on system conditions.
15 If the Labrador-Island Link (“LIL”) is found to perform well for an extended period and
16 system conditions permit, Hydro may have the opportunity to strategically remove the
17 Holyrood TGS units from operation. During periods of anticipated high demand,
18 Holyrood TGS could be placed online proactively in anticipation of a potential need.

⁶ “Reliability and Resource Adequacy Study – 2022 Update,” Newfoundland and Labrador Hydro, October 3, 2022, vol. III, p. 25/6-10.

⁷ Derated Adjusted Utilization Forced Outage Probability (“DAUFOP”).

⁸ “Reliability and Resource Adequacy Study – 2022 Update.” Newfoundland and Labrador Hydro, October 3, 2022, vol. III, sec. 5.3, pp. 20–26.

1 However, all three Holyrood TGS units must remain available for operation until sufficient
2 alternative generation can be placed in service.

3 **e) ii.** If the LIL was not available for the coming winter, all three Holyrood TGS units would be
4 required to be online to meet system demand.

5 **e) iii.** If the LIL was available only 60% during the winter period, all three Holyrood TGS units
6 would need to be online in order to consistently meet system requirements. The
7 production level of each unit would be dependent on system conditions, such as load and
8 other available generation.

9 **e) iv.** On April 13, 2023, the Newfoundland and Labrador System Operator (“NLSO”) issued an
10 NLSO Asset Acceptance Form for the LIL assets confirming the following:

11 Through testing and early operation, LIL assets have demonstrated acceptable
12 performance to enable commissioning. Labrador-Island Link Limited
13 Partnership, asset owners, and its contractors are currently working to resolve
14 specified punch list items. Hydro has implemented monitoring programs and
15 has developed engineering solutions and procedures to permit operation in the
16 interim. With these mitigations in place, the NLSO is satisfied that the assets will
17 support reliable system operation while punch list items are addressed.

18 On April 14, 2023, the Collateral Agent issued a Commissioning Confirmation that
19 confirmed each of the LIL conditions precedent to commissioning set forth in the LIL
20 Project Finance Agreement had been satisfied and that the Commissioning Date shall be
21 April 14, 2023. The Collateral Agent made that declaration on behalf of all project
22 financing parties.

23 The minimum performance standards required to achieve commissioning under the LIL
24 Project Finance Agreements, verified by the Independent Engineer, include the following:

- 25 • The static and dynamic commissioning inspections and test have been achieved in
26 accordance with the approved commissioning procedures and the project has
27 been constructed and mechanically completed in all material respects, in
28 accordance with the Project Plans (referring collectively to the plans,
29 specifications, drawings, philosophies, design data, purchase order and contract
30 drawings and documents which refer to the project, produced by various persons,

1 including the partnership, suppliers, engineering consultants and contractors,
2 general and construction contractors, commissioning and startup specialists for
3 the purpose of development of the project) and Good Utility Practices, save for
4 any Punch List Items and Demobilization List Items.

5 • All Commissioning Tests (meaning specified static and dynamic commissioning
6 tests and inspections in accordance with the approved commissioning procedures
7 and the specified reliability and performance tests, in order to demonstrate that
8 the projects are able to meet the requirements of the Basis of Design),
9 interconnection and reliability tests necessary to demonstrate that the project
10 meets the specifications and the operating objectives for the project pursuant to
11 the Project Plans and the Basis of Design (meaning the basis of design described in
12 Schedule Z of the LIL Project Finance Agreement) have been successfully
13 completed save for any Punch List Items and Demobilization List Items.

14 • Confirmation that the designated Officer of LIL has no reason to believe that,
15 assuming the proper operation and maintenance of the plant and related
16 equipment and devices forming part of the project, it will not be able to maintain
17 such required specifications and operating objectives for a period of at least
18 40 years.

19 As stated in the 2022 Update to the Reliability and Resource Adequacy Study,⁹ during the
20 early operational stages of the LIL, the three Holyrood TGS units will be base loaded to
21 ensure the availability of capacity for the power system. This will remain the case as Hydro
22 continues to monitor LIL performance and reliability. If the LIL is found to perform well for
23 an extended period and system conditions permit, Hydro would have the opportunity to
24 strategically remove the Holyrood TGS units from service. The units at the Holyrood TGS
25 shall remain available for a “Bridging Period”¹⁰ until 2030, or until such time that sufficient

⁹ “Reliability and Resource Adequacy Study – 2022 Update,” Newfoundland and Labrador Hydro, October 3, 2022, vol. III, p. 25/6-10.

¹⁰ Hydro considers the Bridging Period to be from 2023 to 2030. During the Bridging Period, the system would rely primarily on existing sources of generation capacity to maintain reliability while new generation capacity is being built. The primary, readily available supply options in this period are extending the retirements of the Holyrood TGS and the Hardwoods Gas Turbine until their capacities can be adequately replaced.

1 alternative generation is commissioned, adequate performance of the LIL is proven, and
2 generation reserves are met.

3 **e) v.** At this time, Hydro believes it to be appropriate to have a minimum of two Holyrood TGS
4 units online during winter 2023–2024 at minimum loading, subject to unit availability. As
5 stated in the 2024 Capital Budget Application,¹¹ Hydro has assumed that two units will
6 remain online at minimum load throughout the winter season; however, the number of
7 units online and the production level of each unit is subject to system conditions
8 throughout the winter operating season.

9 The Holyrood TGS marginal cost per MWh is not calculated based on the number of units
10 required online to meet system reliability requirements. The cost of running
11 Holyrood TGS, based on the current fuel in storage, is approximately \$204/MWh. This cost
12 will increase if the cost of subsequent fuel deliveries rise.

¹¹ “2024 Capital Budget Application,” Newfoundland and Labrador Hydro, rev. August 18, 2023 (originally filed July 12, 2023), sch. 3.