Q. Reference: *2024 Resource Adequacy Plan*; Technical Conference #2: Issue #3: Existing Generation and Transmission, October 1, 2024, Slide 6.

Holyrood TGS is required in the near term, as part of the Bridging Plan, until new generation has been reliably integrated into the system.

a) Please provide a high-level operational comparison of how Hydro currently operates the Holyrood Thermal Generating Station, which was designed and continues to operate as a baseload power plant, with how Hydro would operate the planned addition to Bay d'Espoir (Unit 8) and the planned 150 MW combustion turbine. In the comparison, please include information on startup capabilities, operating hours, fuel consumption, and greenhouse gas emissions.

b) Please quantify the annual capital, operating, and fuel costs associated with the continued operation of the Holyrood Thermal Generating Station throughout the Bridging Plan.

c) Please explain and quantify how a one-year delay in the addition of Bay d'Espoir Unit 8 or a new combustion turbine can be expected to postpone the partial or full retirement of the Holyrood Thermal Generating Station and result in higher supply costs to customers.

A. **a)** The Holyrood Thermal Generating Station ("Holyrood TGS") is operated as a base-load generation asset. As discussed in the 2022 update to the Reliability and Resource Adequacy Study ("2022 Update"), there are reliability concerns associated with the operation of the units at the Holyrood TGS in a standby capacity. Because of this, it is necessary to operate two units at Holyrood TGS continuously through the winter operating season, whether the capacity is required or not. In addition to this, the units at the Holyrood TGS have a relatively high minimum generation of 70 MW. These two facts mean that a significant amount of generation is required at Holyrood TGS in order to provide capacity in a relatively small number of hours.

A new combustion turbine ("CT") would be operated as a peaking plant, used only when its capacity is needed to meet the load. It is expected that a new CT would be operated much less frequently than the Holyrood TGS currently is, with associated reductions in fuel consumption. Emissions from a new CT would also be expected to be greatly reduced in comparison to the emissions from the Holyrood TGS. Total system emission estimates for all Scenarios and Sensitivities are provided in the 2024 Resource Adequacy Plan.[1] Fast-start capability (i.e., the ability to bring the unit from offline status to rated capacity within 10 minutes) will be a requirement for the new CT. This means that the CT would be able to contribute to 10-minute reserves, even when offline, thereby reducing operating hours and increasing system flexibility.

The operation of Bay d'Espoir Unit 8 would be co-optimized with the seven existing units to ensure the most efficient operation of the plant as a whole. There would be no fuel consumed and no greenhouse gas emissions associated with its operation. It is expected that Bay d'Espoir Unit 8 would have fast-start capabilities, similar to the existing units at Bay d'Espoir.

b) Please refer to Table 1 for the forecasted capital, operating and fuel costs from 2024 to 2030.

Table 1: Total Holyrood TGS Costs
2024–2030 Forecast
($000)

	2024	2025	2026	2027	2028	2029	2030
Capital	29,495	29,716	27,127	32,714	14,584	20,003	3,250
Operating	26,179	26,804	27,436	28,095	28,768	29,456	7,540
No. 6 Fuel	110,925	63,786	60,608	57,502	56,466	56,835	32,094

Forecasted capital expenditures through 2030 were extracted from the Five-Year Capital Plan included with Newfoundland and Labrador Hydro's ("Hydro") 2025 Capital Budget

[1] "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), app. C, sec. 6.2.1.3.

Application.[2] Hydro notes that Hatch Ltd. is currently completing an update of their 2021 Life Extension Study, which may recommend changes to the Five-Year Capital Plan.

Forecasted operating costs through 2030 are those reflected in Hydro's 2024 forecast escalated using an equal weighting of the GDP[3] Implicit Price Deflator and forecast labour increases. Estimates are based on a point-in-time forecast and are subject to change such as in the event of incremental maintenance requirements or changes in operating regime.

Forecasted 2024 fuel costs are based on actual consumption through July 2024, with the remaining months based on forecast consumption. Forecasted fuel costs through 2030 are those reflected in Hydro's 2023 Production Plan and Load Forecast.

As identified in the 2022 Update, there is a need to maintain aging assets on the Island Interconnected System until the Labrador-Island Link ("LIL") is proven reliable and new generation can be approved, and constructed. This timeframe is referred to as the "Bridging Period" and is currently defined to be the period between 2023 and 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. There will likely be some overlap between the Bridging Period and the Future Period (i.e., the period beyond 2030) while the existing thermal generation is retired and new generation is brought into service. As new capacity is added and deemed reliable, existing thermal generation can be retired while closely monitoring system reliability in the interim to also ensure that Muskrat Falls Hydroelectric Generating Facility and the LIL are reliable before proceeding with on-Island retirements. Hydro will continue to update its plans for asset retirements as schedules for the construction of new assets are confirmed. The Bridging Period timeframe will also continue to be assessed in the annual Near-Term Reliability Report filings.

The retirement of Holyrood TGS represents the removal of 490 MW of thermal generation from the Island Interconnected System, following the addition of BDE Unit 8 (154 MW) and an On-Avalon CT (142 MW), totalling 296 MW of new generation. The early retirement of one unit at Holyrood TGS without replacing it with new generation capacity is not feasible as

[2] "2025 Capital Budget Application," Newfoundland and Labrador Hydro, July 16, 2024, sch. 2.
[3] Gross Domestic Product ("GDP").

it would result in the violation of the 2.8 LOLH planning criteria. This was demonstrated in the 2024 Near-Term Reliability Report and summarized in Table 2.

Table 2: Scenario 1 and Scenario 1A LOLH Results[4]

LOLH (hours)	2025	2026	2027	2028	2029
Scenario 1: Reference Case	2.0	1.1	1.2	1.3	2.0
Scenario 1A: Holyrood Unit 1 Out of Service for Winter 2024–2025	4.1	-	-	-	-

Scenario 1A results indicate that if Holyrood Unit 1 were to remain out of service for the full winter of 2024–2025, the risk of having a loss of load event doubles for the year 2025, and exceeds Hydro's probabilistic planning criteria. Therefore, there is no opportunity to retire even one Holyrood TGS unit before new generation is in place.

c) Should a one year delay in the implementation of either the On-Avalon CT or Bay d'Espoir Unit 8 occur, resulting in the necessary extension of Holyrood TGS by an additional year, this would result in an estimated $87.2 million of additional fuel and operating costs. Capital costs for Holyrood TGS would depend on the capital investment required in that year.[5] These costs are in addition to the cost impact of a delay of either major project, currently estimated between $30 and $50 million per year.

[4] The results in other years are unchanged from Scenario 1 since there was no change in inputs for those years.
[5] Hydro is currently working with Hatch Ltd. to refresh its Life Extension Condition Assessment to include capital estimates required for operation beyond the current bridging period, which will be filed in the first quarter of 2025.