Q. In regard to the Technical Conference #3 presentation, page 47 (Maritime Link – LIL relationship) and the Firm Energy Criteria:

Daymark indicated in their March 9, 2024 memo (2024 Resource Plan Appendix A, page 5 of 11):

> "However as the nature of the analysis is deterministic, it presents worst case scenario conditions and results. To draw more general conclusions, a probabilistic analysis would be informative."

Hydro indicates at Technical Conference Presentation 1 that the "critical dry sequence" occurred between 1959 and 1962 (slide 45).

a) Please provide a probability assessment of the firm energy criteria implications, as described by Daymark.

b) Please describe in detail how Hydro arrived at an annual firm energy requirement criteria based on a 3 year dry sequence. For example, did Hydro use the situation limited to the worst year of the 3 years? Is it based on a sequence of sequential drawdowns of island reservoirs? Please explain the analytical approach.

A. **a)** While Daymark Energy Advisors ("Daymark") noted in their summary of the work they completed for the 2024 Resource Adequacy Plan that a probabilistic analysis would be informative to draw more general conclusions, the full review that Daymark completed of Newfoundland and Labrador Hydro's ("Hydro") firm energy methodology and analysis concludes that *"the firm energy analysis which Hydro performed in association with the 2024 Reliability and Resource Adequacy filing is technically sound and comports with industry-standard planning practices."*[1] As such, Hydro did not complete a probabilistic analysis for information purposes for the 2024 Resource Adequacy Plan.

[1] This review can be found in "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. B, att. 2.

b) The establishment of the firm energy criteria for long-term planning occurred in the 1990s and it requires the Island Interconnected System to have sufficient generating capability to supply all its firm energy requirements with firm system capability. The firm capability of Island hydroelectric resources is the annual generation of those resources under the most adverse three-year sequence of reservoir inflows (the critical dry sequence) occurring within the historical record. The critical dry sequence occurred between 1959 and 1962.[2] There are other instances in the hydraulic record, for example in the early 1980s, where inflows are similar to those that occurred during the critical dry sequence.

As the Island supply is hydro-dominant, meaning it is largely dependent upon localized inflows, it is critical to ensure that the firm energy needs of the Island Interconnected system are met. To do so, reservoir storage is carefully managed to ensure that generation can be sustained, meeting the demand and energy needs of the province. This becomes even more critical with the future retirement of Holyrood TGS which has the capability of injecting a significant quantity of energy into the Island Interconnected System, when required. Once that plant has retired, the flexibility of injecting energy into the system when it is required diminishes considerably.

This is a multi-year analysis and incorporates a sequential draw-down of the reservoirs. The three year horizon was chosen based on the fact that the longest dry period in the historical record was three years long, after which inflow levels returned to their normal range. The firm capability is based on the lowest annual generation during the critical dry sequence, which occurs in the final year of the sequence. This is a longstanding assumption and is consistent with past analysis. To date, there is no evidence to suggest that the Island's inflows, compared to the historic record, have changed to warrant a deviation from this methodology.

[2] Minimum storage limits are developed for the Island Interconnected System 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 limits are designed to show 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 imports. Hydro's long-term critical dry sequence is defined as January 1959 to March 1962 (39 months). Other dry periods are also examined, such as a period in the 1980s, during the derivation to ensure that no other shorter-term historic dry sequence could result in insufficient storage.