Q. At Attachment 1, Appendix C to Schedule 1, Hydro's Southern Labrador Reliability Study concluded the following:

> A southern Labrador interconnection would improve the overall system performance of the southern Labrador isolated diesel systems **as long as the regional diesel plant has a redundancy of N-2.** This would improve the overall unavailability average of the four communities by 0.058%, which is equal to approximately 8.72 MWh of EUE or a 5.08 hour reduction in time spent without power per year. This project will also provide many benefits that were not able to be quantified in the reliability calculations which will have operational and planning benefits and could further improve system reliability beyond what was calculated. Overall the proposed interconnection is expected to improve the overall reliability of the southern Labrador system. [emphasis added]

At Section 3.7.3 at page 8 of Schedule 2, Hydro states that it:

> has accepted Midgard's recommendations regarding generating unit redundancy and has revised the design of the regional diesel generating station to N-1 redundancy. Hydro decided to retain the regional diesel generating station footprint as originally proposed, with the additional engine bay available to establish N-2 redundancy if required. This approach ensures that the regional diesel generating station meets standard redundancy criteria while providing the option for N-2 redundancy if necessary in the future. Hydro will monitor the reliability of the interconnected system to determine if N-2 redundancy is required to ensure reliable service.

a) Please provide details on the analysis that was completed since the original application and in response to the Midgard Report which supports the change from N-2 to N-1.

b) Please expand on the difference in system reliability outcomes now that the revised application lowers the system reliability from N-2 to N-1 standards. How would system reliability be impacted in the six NCC communities based on this change?

c) What is the probability that the additional engine bay would be needed to increase to N-2? Explain difference in proposal and evaluation from original application.

A. **a)** As the original analysis included both configurations (N-1 and N-2), no additional analysis has been completed since the initial application in response to Midgard Consulting Inc.'s ("Midgard") "Southern Labrador Communities - Integrated Resource Plan" ("Midgard IRP"),[1] filed with the Board of Commissioners of Public Utilities on March 31, 2023.[2] The results of this analysis are included in Newfoundland and Labrador Hydro's ("Hydro") application.[3]

b) The relative difference in expected unserved energy is 7 MWh. Assuming a total annual energy requirement of 15,000 MWh, the average customer would experience an average of four additional hours of outages per year.

c) Hydro is unable to estimate the probability that a transition to N-2 redundancy would be required. Hydro would consider such a transition in the event that diesel plant reliability performance is significantly worse than anticipated, or in the event that supply chain conditions present unacceptable lead times for new generating units required to restore N-1 redundancy in the event of a unit failure. Based on Hydro's experience with its diesel plants across its system, Hydro considers this unlikely, but has included this provision given its low incremental cost compared to the incremental cost of plant expansion in the event that a requirement for additional redundancy is identified after the plant is constructed.

[1] "Southern Labrador Communities - Integrated Resource Plan," Midgard Consulting Inc., March 28, 2023.
[2] "Long-Term Supply of Southern Labrador – Phase 1 – Midgard Consulting Inc. Report," Newfoundland and Labrador Hydro, March 31, 2023, att. 1.
[3] "Long-Term Supply for Southern Labrador – Revision 1," Newfoundland and Labrador Hydro, rev. May 31, 2023 (originally filed July 16, 2021), sch. 1, att. 1, app. C.