

1 Q. **Reference: Midgard Consulting March 28, 2023 Report - Southern Labrador Communities –**  
2 **Integrated Resource Plan**

3 The Board’s correspondence to Hydro dated April 7, 2022 stated that “The information to be  
4 provided should include analysis with respect to reliability, including the potential need for  
5 back-up generation, and the timing and costs of replacing or removing the existing diesel  
6 generating stations.” The Midgard Consulting report uses the same diesel generating station  
7 retirement dates as Hydro used in its original application in July 2021.

8 a) Did Midgard perform its own independent analysis as to the appropriateness of these  
9 retirement dates? If so, please provide the analysis. If not, please explain.

10 b) Did Midgard conduct analysis on the considerations and risks associated with not having  
11 local backup in the individual communities? If so, please provide the analysis. If not,  
12 please explain.

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15 A. *This response has been provided by Midgard Consulting Inc. (“Midgard”).*

16 Midgard reviewed the diesel generators in service, including their manufactured dates and  
17 service hours, and clarified several items regarding the life expectancy of some of the units,  
18 including generators installed in 1986 and 1994 at the St. Lewis facility. Newfoundland and  
19 Labrador Hydro’s (“Hydro”) facility replacement (40 years) is consistent with replacement cycles  
20 of facilities in harsh climates. Based on maintenance schedules and outages consistent with  
21 other utilities, Midgard concluded that Hydro’s maintenance program (and retirement dates)  
22 were generally consistent with other, similar utilities, and was prudent in retention of units.

23 Table 13 of the “Southern Labrador Communities - Integrated Resource Plan” (“Midgard IRP”),<sup>1</sup>  
24 (provided as Figure 1), filed with the Board of Commissioners of Public Utilities on March 31,

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<sup>1</sup> “Southern Labrador Communities – Integrated Resource Plan,” Midgard Consulting Inc., March 28, 2023, p. 41, table 13.

1           2023,<sup>2</sup> contains a summary of Midgard’s reliability assessment. Midgard concluded that N-1  
2           reliability, with the ability to deploy mobile generators temporarily in the case of an extended  
3           outage, was more appropriate than N-2 reliability in the regional powerhouse. Including  
4           dedicated local backup installed in each community was ruled out at a high level because of the  
5           relatively low probability of a line loss (25 kV system outage) of less than 0.1%, and the ability to  
6           further mitigate the risk of line loss by deploying mobile backup units when required. If it is  
7           assumed that a local backup plant were to come online immediately in the event of a 25 kV  
8           system outage, the Expected Unserved Energy (“EUE”) associated with an N-1 regional plant  
9           would be reduced to 21 MWh;<sup>3</sup> in practice, the EUE in this scenario would be higher as time  
10          would be required to perform isolations and bring diesel units online. Therefore, local backup in  
11          the individual communities would be expected to provide marginal reliability benefits at a  
12          significant cost of maintaining three additional diesel plants.

**Table 13: NLH Reliability Assessment Results**

Scenario	Loss of Supply	25 kV System Outage	Total	EUE (MWh)
2015-2019 Southern Labrador Individual Systems (Average)	0.177%	-	0.177%	26
Forecast S. Lab. Regional Plant (N-1)	0.139%	0.0816%	0.2206%	33
Forecast S. Lab. Regional Plant (N-2)	0.037%	0.0816%	0.1186%	18

Note: EUE is the Expected Unserved Energy which is calculated by multiplying the total unavailability (excluding local distribution unavailability which is assumed common to all scenarios) by the 2023 forecasted Gross Energy Consumption of ~15,000 MWh.

**Figure 1: Table 13 from Midgard IRP**

<sup>2</sup> “Long-Term Supply for Southern Labrador – Phase 1 – Midgard Consulting Inc. Report,” Newfoundland and Labrador Hydro, March 31, 2023, att. 1.

<sup>3</sup> EUE = 0.139% X 15,000 MWh.