Q. **Reference: Application Volume 2, Diesel Genset Replacement Unit 2039 – St. Lewis and Unit 2012 – L'Anse au Loup**

a) Do these diesel stations have remote fire protection?

b) What is the probability that the diesels could become stranded before the end of their assumed life?

c) In the case of Unit 2012 replacement, does Hydro need "*firm backup*" for this system given that the diesel units will replace power from Quebec only when interrupted, expected to be about 6% of the time? Please explain.

d) Has Hydro studied the technical feasibility and economics of supplementing the L'Anse au Loup system with wind generation? In particular, what has been the cost per kWh for purchases from Quebec and how does that compare to the energy cost from a wind facility that could be added to the system?

A. a) The L'Anse-au-Loup Diesel Generating Station has a fire protection system which was installed in 2016. The St. Lewis Diesel Generating Station does not have a fire protection system.

b) It is unlikely that the gensets which replace Unit 2039 in St. Lewis and Unit 2012 in L'Anse-au-Loup will become stranded before the useful life of the diesel genset is reached. As per Newfoundland and Labrador Hydro's ("Hydro") Asset Management Program, 1,800 rpm diesel gensets are typically replaced when they incur 100,000 hours of operation.[1] For gensets to become stranded, they would have to be replaced with another genset before

[1] Sometimes replacement outside of this criteria is required. For example, early replacement of diesel gensets is sometimes required if additional capacity is required and the replacement of an existing genset is determined as the alternative with the lowest cumulative net present value. Alternatively, in the case of Unit 2012 at L'Anse-au-Loup, most power required by the community is supplied by Hydro-Québec. Therefore, its diesel generating station does not run as frequently as most other units on Hydro's isolated diesel systems, making its units more likely to require replacement due to age and obsolescence than reaching the threshold for replacement based on operating hours.

they incur 100,000 hours of operation or reach obsolescence and also not be able to be used elsewhere on Hydro's system.

In St. Lewis, following the replacement of Unit 2039, the installed and firm capacity will be 1,020 kW and 820 kW respectively. Based on the Labrador Isolated Load Forecast – Spring 2021, the load in St. Lewis is forecasted to remain steady and additional firm capacity is not expected to be required in the foreseeable future. Based on normal accumulation of operating hours, Hydro's diesel generators tend to reach 100,000 hours of operation in 25 years. If St. Lewis is connected to the proposed southern Labrador interconnection in 2045 as planned, this unit will likely be at or near the end of its expected useful life.

In L'Anse-au-Loup, following the replacement of Unit 2012, the installed and firm capacity will be 8,425 kW and 6,600 kW, respectively. Based on the Labrador Isolated Load Forecast – Spring 2021, Load in L'Anse-au-Loup is not expected to exceed its firm capacity for the foreseeable future.

c) The power purchase agreement with Hydro-Québec is for surplus energy produced at the Lac-Robertson Generating Station and it is made available to Hydro at the full discretion of Hydro-Québec. This means that Hydro-Québec has no obligation to sell power to Hydro and, if the need arises (e.g., additional load growth on Hydro-Québec's system), Hydro-Québec can immediately reduce or completely cancel the supply of power to Hydro. It is necessary to maintain full firm capacity at the L'Anse-au-Loup Diesel Generating Station to protect Hydro's customers from the risk associated with a reduction in supply from Hydro-Québec.

d) Hydro has not completed a detailed technical feasibility study on supplementing the L'Anse-au-Loup system with wind generation; however, preliminary assessments regarding integrating renewable energy into Hydro's isolated communities have been complete. Once such study titled "Labrador Interconnection Options Study"[2] demonstrates that the total cost of ownership of wind generation plus storage systems designed to supply 50% of the energy required in Hydro's isolated systems is approximately 50% higher than that of the continued community supply using only diesel generation. Further, the provision of 50% of

[2] Provided in Hydro's response to LAB-NLH-015 of the regulatory proceeding for Hydro's "Long-Term Supply for Southern Labrador – Phase 1" application.

energy from renewable sources would still require diesel generation to provide the remaining energy and provide firm capacity during periods of time when wind energy was not available and would have little impact on Hydro's capital budget. Since the L'Anse-au-Loup distribution system receives energy from Hydro-Québec at a cost of roughly half the cost of diesel fuel (on average, 9.8¢/kWh in 2020 and 12.5 ¢/kWh in 2019), there would be an even greater discrepancy between Hydro's current total ownership costs and those if the system was partially supplied with wind energy instead of the power purchase agreement with Hydro-Québec.

Although Hydro has determined that development of wind and solar power in the region on its own behalf is not the least-cost alternative, Hydro is willing to engage in discussions for power purchase agreements with independent power producers who may be able to avail of different funding opportunities which enable them to cost-effectively develop renewable facilities so long as the outcome of such an arrangement would result in the provision of least-cost power for Hydro’s customers.