

1 Q. **Reference: Application Rev. 1, Volume 2, Diesel Genset Replacements**

2 In the analysis only two alternatives are considered: 1) defer, and 2) install new genset. Would
3 this be an ideal time to consider other alternatives for supply to isolated communities such as
4 connection to the grid or development of renewable energy sources such as hydro or wind?

5

6

7 A. Newfoundland and Labrador Hydro (“Hydro”) does not consider the interconnection of isolated
8 communities to the Labrador Interconnected System as an economically comparable alternative
9 to diesel genset overhauls or replacements.

10 In 2014, Hydro completed a preliminary study to assess the potential to fully interconnect all
11 Hydro Isolated Systems in Labrador and the Voisey’s Bay mine to Churchill Falls and Muskrat
12 Falls. Based on Hydro’s assessment in 2014, the estimated capital cost of the interconnection
13 north of Happy Valley-Goose Bay was approximately \$1.3 billion and the estimated capital cost
14 of the interconnection south of Happy Valley-Goose Bay was approximately \$0.8 billion.

15 Earlier this year, Hydro engaged Hatch to perform an updated assessment of interconnection
16 alternatives for isolated customers in Labrador. The study is not yet complete; however, early
17 results indicate that the costs of large interconnection alternatives far exceed those involving
18 continued isolated operation. On this basis, interconnection is not considered to be an
19 economically feasible alternative.

20 Hydro does not consider the integration of wind, solar, or run-of-the-river hydro generation to
21 be viable alternatives as they do not provide firm capacity. Rather, renewable energy sources
22 such as wind and solar installed in isolated systems are considered non-firm energy sources due
23 to the random nature of the energy supply (wind/solar) which would not necessarily be
24 available when needed. Similarly, run-of-the-river hydroelectric plants do not provide firm
25 capacity. Only hydroelectric plants with larger storage reservoirs would provide firm capacity to
26 the system; however, the amount of capacity would be dependent on the particular site and the
27 design of the plant.

1 Further, renewable energy sources are not considered to be firm even when combined with
2 energy storage systems. This is supported by a National Renewable Energy Laboratory (“NREL”)
3 report titled “2017 U.S. Utility-Scale Photovoltaics-Plus-Energy Storage System Costs
4 Benchmark.”¹ This report includes a comparison of average energy storage durations for such
5 systems and indicates that most storage technology is limited to 10 hours in duration and none
6 exceed average energy storage duration of 100 hours.

7 For Hydro to rely on non-firm renewable energy sources such as wind, solar, or run-of-the-river
8 hydro, energy storage technologies would need to bridge extended periods of time where there
9 is little wind, sunlight, or water flow. As such periods may extend for several days, current
10 energy storage solutions do not provide a viable alternative.

¹ Fu, R; Remo, T; and Margolis, R. “2018 U.S. Utility-Scale Photovoltaics-Plus-Energy Storage System Costs Benchmark,” National Renewable Energy Laboratory, November 2018, < <https://www.nrel.gov/docs/fy19osti/71714.pdf>>