

1 Q. **Reference: Application**

2 With respect to Isolated Systems, please provide an update on all studies being undertaken to
3 connect Isolated Communities to the grid, or alternatively, replace diesel gensets with more
4 environmentally friendly alternatives. Are any such initiatives included in Hydro's CBA?

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7 A. The two most recent independent studies undertaken to investigate connecting isolated
8 communities to the grid, or alternatively, replace diesel gensets with more environmentally
9 friendly alternatives are the "Labrador Interconnection Options Study – 2020"¹ ("2020 Options
10 Study") by Hatch Ltd. ("Hatch") and "Southern Labrador Communities Integrated Resource
11 Plan"² ("Midgard IRP") by Midgard Consulting Inc. ("Midgard"). The purpose of the "Southern
12 Labrador Communities Integrated Resource Plan" was to review Hydro's 2021 Supplemental
13 Capital Budget "Application for Approval of the Construction of Hydro's Long-Term Supply Plan
14 for Southern Labrador" ("Long-Term Supply Plan for Southern Labrador Application") and
15 complete an assessment of other supply options for the region.

16 **Labrador Interconnection Options Study - 2020**

17 The 2020 Options Study was completed by Hatch for Hydro to assess seven different
18 interconnection options at a preliminary level to reduce diesel fuel consumption in Hydro's
19 isolated communities. This includes options to fully interconnect isolated systems to the
20 Labrador Interconnected System, partial interconnection of isolated systems in larger isolated
21 grids, and continued isolation with significant renewable integration. This study concluded that
22 the least-cost option is the base case operation, keeping the diesel gensets within each
23 community; however, it did not consider the savings associated with avoiding diesel unit and

¹ Please refer to Attachment 3 of Hydro's response to Revision 2 of LAB-NLH-015 from the Application for Approval of the Construction of Hydro's Long-Term Supply Plan for Southern Labrador proceeding.

<http://pub.nl.ca/applications/NLH2021Capital/NLH2021Capital_SUPP_Phase1SouthernLabrador/rfis/LAB-NLH-015%20-%20Revision%201.PDF>.

² "Southern Labrador Communities – Integrated Resource Plan," Midgard Consulting Inc., March 28, 2023, att. 1

<http://pub.nl.ca/applications/NLH2021Capital/NLH2021Capital_SUPP_Phase1SouthernLabrador/reports/From%20NLH%20-%20Midgard%20Consulting%20Inc.%20Report%20-%202023-03-31.PDF>.

1 diesel generating station replacement costs, such as the ones identified in Hydro’s Long-Term
2 Supply Plan for Southern Labrador Application.

3 The 2020 Options Study identified that the total cost of ownership of wind generation and
4 storage to supply approximately 50% of energy, based on a 20-year study period, is
5 approximately 50% higher than that of the continued operation of individual diesel generating
6 stations, an option that Hydro has concluded is a more expensive alternative than regional
7 interconnection supplied by a single regional diesel generating station. Further, the provision of
8 50% of energy from renewable sources would still require diesel generation to provide the
9 remaining energy and provide firm capacity in the event of reduced renewable generation.

10 **Southern Labrador Communities Integrated Resource Plan**

11 The Midgard IRP was completed for Hydro, at the request of the Board of Commissioners of
12 Public Utilities to evaluate numerous alternative long-term supply solutions for southern
13 Labrador. It considered the viability of ten different resource technologies, the practicality of
14 using battery energy storage systems as a source of firm capacity, and numerous detailed
15 alternatives based on eight base scenarios and multiple sub-variations to account for different
16 reliability criteria, development timing, and other factors. The scenarios aimed to satisfy three
17 supply criteria—capacity, energy, and reliable backup. The alternatives considered ranged from
18 refurbishing existing stations and maintaining isolated community services to constructing new
19 regional generating stations (thermal or hydraulic) supplying multiple isolated systems and a
20 138 kV interconnection with the Labrador Interconnected System. Midgard’s analysis largely
21 confirms the conclusions of Hydro’s analysis provided in the Long-Term Supply Plan for Southern
22 Labrador Application. Midgard’s recommendation is for Hydro to proceed with the
23 interconnection of the communities of southern Labrador and the establishment of a regional
24 diesel generating station.

25 Midgard acknowledged that intermittent renewable energy sources, such as wind and solar
26 generation, may be viable for the provision of energy; however, to provide firm capacity,
27 intermittent resources must be paired with energy storage with the capacity to supply the
28 system for several days in the event of low renewable generation. Regarding the future cost-
29 effectiveness of battery energy storage systems, Midgard concluded that renewable energy
30 sources with sufficient battery storage to provide firm capacity remain cost-prohibitive at this

1 time. Midgard's report indicates that based on the most optimistic projections, battery prices
2 may drop by up to 70% over the next 25 years, with the largest price drops expected in the next
3 10 years being approximately 55%. Despite these potential price reductions, Midgard concluded
4 that it is unlikely for renewable systems with battery firming to become cost-competitive with
5 thermal generation systems within the next decade.

6 Midgard noted that the use of diesel gensets in Hydro's isolated systems is consistent with
7 practices in other similar jurisdictions across Canada. Diesel generation remains a common
8 solution for remote communities due to its reliability, ease of installation, and cost-
9 effectiveness. Midgard's analysis of similar jurisdictions provides context for the proposed
10 approach and supports its suitability for the southern Labrador system.

11 Midgard recommends that Hydro pursue power purchase agreements, particularly through
12 partnerships with Indigenous stakeholders, to integrate renewable energy sources into the
13 system. This approach will help offset diesel fuel usage, reduce greenhouse gas emissions, and
14 provide potential economic benefits to the communities. By considering a maximum
15 displacement of 25 to 50% of energy from renewables depending on the scenario, Midgard
16 acknowledges the role of renewable energy in enhancing the overall sustainability of fossil fuel
17 alternatives. Midgard emphasizes the importance of Indigenous involvement in renewable
18 energy projects and recommends that Hydro actively support and engage Indigenous groups in
19 the procurement of renewable energy supplies. This approach aligns with federal policies that
20 favour Indigenous-led development of renewable energy projects, contributing to the growth of
21 Indigenous communities and fostering a more inclusive energy sector, which is consistent with
22 Hydro's existing strategy for the integration of renewable energy.

23 No such initiatives to connect isolated communities to the grid, or replace diesel gensets with
24 more environmentally friendly alternatives are included in Hydro's 2024 Capital Budget
25 Application.