

1 Q. **References: Tab 7; Volume II: Diesel Genset Replacement (2019-2020)**

2 Is Hydro considering the use of wind/battery hybrid technology, or other
3 technologies, for use in any of its isolated diesel systems that are nearing the end of
4 their service life? If so, please provide details on the technologies being considered.

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7 A. Hydro has been exploring opportunities for the use of alternative technologies in its
8 isolated diesel communities for some time. In the last ten years, Hydro has
9 completed monitoring projects for the Government of Newfoundland and Labrador
10 on the feasibility of using wind, solar, and mini-hydro on the Labrador coast to
11 supplement and replace energy from the existing diesel plants.¹ Hydro is also
12 closely monitoring other technologies such as storage as these technologies gather
13 more mainstream implementation.

14 Hydro signed a Power Purchase Agreement in 2017 to purchase energy from a mini-
15 hydro in Mary's Harbour and has been purchasing energy from a private wind farm
16 in Ramea since 2004. As well, the Ramea Wind-Hydrogen-Diesel project was
17 formulated to research ways to store and use renewable energy that would be lost,
18 due to operating within an isolated diesel system.

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20 All of this effort has been in the area of supplementing/replacing a portion of diesel
21 energy in existing diesel systems. However, the question is interpreted as an inquiry
22 as to whether Hydro is considering not only replacing energy from diesels, but
23 replacing the capacity as well (i.e., replacing the entire diesel generating unit with a
24 generation/storage system such as wind/battery hybrid technology).

¹ <https://www.nr.gov.nl.ca/nr/publications/energy/index.html>.

1 To replace an existing diesel, firm capacity is required. Replacing with only
2 renewable technology generation, such as wind and/or solar, is not considered to
3 be firm generation capacity as it is not dispatchable.² For firm generation capacity, a
4 storage medium, such as batteries, would be required to provide dispatchable, firm
5 capacity. While this is technically feasible, utilities must ensure that any technology
6 employed to serve its customers must provide least-cost, reliable service and, up to
7 this time, the cost of installing sufficient battery storage to provide reliable service
8 has been prohibitive.

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10 As a financially prudent way to progress toward a pilot project, Hydro is currently
11 partnering with an Indigenous group in Labrador to access funds under the federal
12 government's Clean Energy for Rural and Remote Communities program to deploy a
13 smart grid system in an isolated community currently supplied by diesel generation.
14 This proposal will involve constructing wind and solar generation sources and
15 battery storage and connecting them to the existing diesel plant through a grid
16 controller, to allow for the use of renewable energy to the greatest extent possible.
17 Smart metering will be installed to assist with studying opportunities for load
18 control and reduction.

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20 Deployment and operation of this system will provide information on the costs as
21 well as demonstrating actual performance of the system, including battery storage,
22 under actual operating conditions.

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24 Hydro will continue to monitor renewable storage systems and their applications in
25 replacing diesel generators on isolated diesel systems. However, as noted earlier,

²A dispatchable source of electricity refers to an electrical power system, such as a power plant, that can be turned on or off (i.e., power output supplied to the electrical grid on demand can be adjusted).

- 1 currently these systems are cost-prohibitive to ensure that reliable service is
- 2 provided.