Q. **Reference: Application**

Please provide details of Hydro's approach to assessing the relative cost of non-wires alternatives (NWAs) and distributed energy resources (DERs) to the capital investment in traditional assets that are included in Hydro's proposed capital plan, including any reports or analyses that show the comparative analysis for the projects included in the 2023 Capital Budget Application. If NWAs have not been considered, please explain why they have been excluded as options without a comparison of alternatives.

A. Newfoundland and Labrador Hydro ("Hydro") considers a broad range of available options as part of its strategic and capital planning processes to ensure it continues to provide customers with the least-cost, reliable service. This includes consideration of non-wire alternatives ("NWA"). Hydro's long-term approach to planning for the interconnected system was presented to the Board of Commissioners of Public Utilities ("Board") in its 2018 Reliability and Resource Adequacy Study.[1,2] As part of the study, alternative resources including wind, solar, battery installations, rate design, customer demand management, and capacity assistance, as well as traditional resources (e.g., hydraulic units, combustion turbines) were considered as potential sources of supply to meet changing requirements on the Newfoundland and Labrador Interconnected System. The following provides some specific examples of Hydro's implementation and approach considering NWA in both its interconnected and isolated systems.

Energy Efficiency

Energy efficiency is considered during the development of Hydro systems load forecasts that are then used in the development of a number of projects, either as part of the primary justification, or when determining equipment size. These forecasts are based on historical energy and

[1] "Reliability and Resource Adequacy Study," Newfoundland and Labrador Hydro, rev. September 6, 2019 (originally filed November 16, 2018).
[2] An update to the 2018 Reliability and Resource Adequacy Study was filed on November 15, 2019.

demand trends from each area under consideration, and inherently include the impact of ongoing conservation and demand management programs that have been present in Hydro's systems over the past number of years. The savings associated with delaying the requirement for infrastructure additions or downsizing infrastructure due to reduced energy and demand are realized by planning infrastructure additions based on this load forecast. In isolated systems, Hydro believes that it has captured a significant portion of the most cost-effective energy-efficiency opportunities that existed in the residential sector over the years. Hydro has recently placed a stronger focus on energy audits for commercial customers, with the intention they will identify energy-efficiency opportunities that may be more complex and require different strategies to successfully execute.

Distributed Energy Resource

In 2017, Hydro introduced the net metering service option for customers who generate electricity from small-scale renewable sources to offset their own usage.[3]

Distribution energy resources in isolated communities are considered in a similar fashion to renewable energy in general. Hydro considers the integration of wind, solar, and run-of-river hydro generation to be viable alternatives for energy displacement only, as these technologies do not provide firm capacity. As an example of the integration of these technologies in Hydro's isolated systems, Hydro has supported the interconnection of solar panel rooftop installations at five of its most northern regulated communities between 2019 and 2022. The integration of these systems has reduced diesel fuel consumption resulting in lower billings for the customer. However, given the intermittent nature of renewable energy sources such as wind and solar, these resources are not considered to provide firm capability to its isolated systems. Hydro is further investigating the role of renewable energy in its isolated systems as part of its application for approval of the construction of Phase 1 of its long-term supply plan for southern Labrador.[4]

[3] As approved in *Public Utilities Act*, RSNL 1990, c P-47, Board Order No. P.U. 17(2017), Board of Commissioners of Public Utilities, May 18, 2017, to qualify for the net metering service option, a customer's generation must: (i) be designed not to exceed the customer's annual energy requirements; (ii) be 100 kW or less; and (iii) produce electricity from a renewable resource. Hydro has two net metering customers.

[4] At the request of the Board, Hydro is in the process of hiring an independent expert to review, develop, and compare alternative supply options for southern Labrador.

Demand Response and Capacity Assistance

On the Island Interconnected System, both demand response and capacity assistance programs have been used to help manage peak demand. In terms of demand response, Hydro supports the continued use of Newfoundland Power Inc.'s ("Newfoundland Power") curtailable load program, which provides the system with up to 12 MW of curtailable load during the winter operating season.

With respect to capacity assistance programs on the Island Interconnected System, Hydro has arrangements with some of its industrial customers to provide generation directly to the Island Interconnected System upon request. These agreements help to manage peak demand on the system in advance of the completion of the Lower Churchill Project.

In its isolated systems, Hydro has been investigating incorporating demand response into its operations by undertaking two pilot programs in recent years; the Postville Load Control and L'Anse-au-Loup Smart Thermostat Pilot Programs. The results of these pilot programs indicate that direct load control in isolated systems can reduce the impact on system peak; however, the corresponding "bounce back" peaks can be higher than the original avoided peak. Further development and experience are required with these strategies to improve their reliability before they can be considered firm demand response capacity, along with better managing of "bounce back" demand peaks, which can be higher than the original avoided peak. Hydro will continue to explore opportunities for demand response strategies and further investigate the viability of using electric thermal storage technologies in interconnected systems.

Widespread demand response programs, such as offering interruptible supply agreements, are not normally considered alternatives to projects on Hydro's distribution and isolated generation system, given the remote nature of their location and the required infrastructure and process to enable smart technologies.

Rate Design

Hydro seeks to offer customer rates that promote efficient usage while maintaining compliance with provincial legislation and government policy. The impacts of efficient rate design are reflected in Hydro's load forecasts and therefore the 2023 Capital Budget Application.

On the Island Interconnected System, Hydro's retail rates mirror those offered by Newfoundland Power consistent with government policy. General Service rates on the Island Interconnected System include demand charges that are higher during peak months of the year, which provides a financial incentive for customers to minimize their winter peak. On its isolated systems, Hydro's domestic diesel customers have an inclining block rate, which charges higher energy rates for increased levels of consumption each month.

Industry Groups

Hydro is involved in a number of industry groups and committees as a way to stay informed of advancements in technology and their role in the regulated utility business. This includes advancements in NWA solutions. Some of these industry groups and committees include:

- Electricity Canada; [5]
- The Center of Energy Advancement through Technical Innovation ("CEATI") International; [6]
- Atlantic Power Utilities Distribution Conference ("APUDC"); [7]
- Off-Grid Utility Association ("OGUA");[8] and
- Efficiency Canada. [9]

[5] Electricity Canada includes 40 member utilities from across Canada. Hydro is a member utility.
[6] CEATI International includes 130 member utilities globally. Hydro is a member utility. This provides access to various reports on traditional poles and wires asset management, along with emerging technologies such as NWA.
[7] The APUDC is an annual conference of the Atlantic Canadian utilities including Newfoundland Power, Hydro, Nova Scotia Power, Maritime Electric, Saint John Energy, and NB Power. These conferences include presentations and discussion by the utilities on various utility initiatives, research, and projects including NWA.
[8] The OGUA is a group of all major Canadian utilities that operate isolated diesel-powered electrical system for remote communities across Canada.
[9] Efficiency Canada is a research and policy group that focuses on maximizing the benefits of energy efficiency resulting in a sustainable environment and a productive economy. This includes access to a policy database that include NWAs.