

1 **Q. (Reference Application) Please provide details of Newfoundland Power’s**
 2 **approach to assessing the relative cost of non-wires alternatives (NWAs) such**
 3 **as distributed energy resources (DERs) to the capital investment in traditional**
 4 **assets that are included in Newfoundland Power’s proposed capital plan.**
 5 **Please provide any reports or analyses that show the comparative analysis for**
 6 **the projects included in the 2023 Capital Budget Application.**

7
 8 A. Newfoundland Power is required to provide reliable service to customers at the lowest
 9 possible cost. The Company’s capital planning process includes an assessment of
 10 alternatives, where applicable, to ensure proposed projects meet this objective.¹ This
 11 includes both traditional “poles and wires” alternatives as well as consideration of
 12 emerging technologies, including non-wires alternatives (“NWA”).²

13
 14 The Company’s approach to assessing NWAs ensures that Newfoundland Power is well
 15 informed of existing and emerging NWAs, and that NWAs are evaluated and
 16 implemented if they are consistent with the Company’s obligation to provide reliable
 17 service to customers at least-cost.

18
 19 Newfoundland Power participates in various industry groups and committees to stay
 20 informed of NWA solutions that may provide benefits to its customers. The Company’s
 21 participation in industry groups includes: (i) Electricity Canada (“EC”);³ (ii) The Centre of
 22 Energy Advancement through Technical Innovation (“CEATI”) International;⁴ (iii) Atlantic
 23 Power Utilities Distribution Conference (“APUDC”);⁵ and (iv) Fortis Operating Group
 24 (“FOG”).⁶

25
 26 In Order No. P.U. 36 (2021), the Board noted that the implementation of NWA solutions
 27 in Canada appears to be in early stages.⁷ NWA activity in Canada continues to be
 28 largely in the form of pilots and demonstration projects. For example, Ontario, British
 29 Columbia and Quebec have active NWA initiatives, however the majority of projects are
 30 in the pilot phase.⁸

¹ The *2023 Capital Budget Application* includes assessments of alternatives for 19 projects and programs.

² NWA include distributed energy resources (“DER”) and demand side management (“DSM”).

³ EC includes 42 members from across Canada. Newfoundland Power is a member utility and participates in various councils focused on distribution, transmission, generation and customer issues. The Company also participates in the National Emerging Issues Committee of EC.

⁴ CEATI International includes over 150 member utilities globally. Newfoundland Power is a member utility that participates in numerous research groups across all asset classes. This provides access to various reports on traditional poles and wires asset management, along with emerging technologies such as NWA.

⁵ The APUDC is an annual conference of the Atlantic Canadian utilities including Newfoundland Power, Newfoundland and Labrador 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.

⁶ FOG includes representatives from all Fortis owned utilities sharing information on best practices throughout the organization. FOG includes various committees and sub-committees for particular focus areas, including distribution engineering, electric vehicle adoption and sustainability.

⁷ For further information, see the response to Request for Information CA-NP-103.

⁸ See, for example, *Table 46: Non-wires/pipes planning processes, projects, and pilots and demonstrations* in the *2021 Canadian Provincial Energy Efficiency Scorecard* completed by Efficiency Canada.

1 Newfoundland Power has also undertaken a number of initiatives and analyses related
2 to NWAs in its service territory. These include:

- 3
- 4 (i) In 2014, the Company evaluated the implementation of time-of-use rates
5 necessary to support some NWA initiatives. This was evaluated again in the
6 *2020-2034 Conservation Potential Study* completed by Dunskey Energy Consulting
7 (“Dunskey”).⁹
- 8
- 9 (ii) In 2015, the Company completed a DSM pilot project to evaluate the direct
10 control of hot water tanks of approximately 500 customers.¹⁰
- 11
- 12 (iii) In 2017, the Company introduced a net metering service option for customers
13 who generate electricity from small scale renewable sources to offset their own
14 use.¹¹
- 15
- 16 (iv) In 2020, the Company evaluated the use of utility-scale storage as an alternative
17 to defer the addition of substation transformer capacity.¹²
- 18
- 19 (v) In 2021, the Company evaluated the use of a solar battery generation facility as
20 an alternative to replacing a hydro plant.¹³ In 2021, the Company also assessed
21 the addition of commercial-grade battery storage in its assessment of
22 alternatives for the *2022 Feeder Additions for Load Growth* project.¹⁴

⁹ Dunskey concluded that Newfoundland and Labrador’s relatively flat peak-day load shape limits demand response potential in residential and commercial buildings. This limits the usefulness of time-of-use rates to offer additional demand response potential at this time. See the *2021 Electrification, Conservation and Demand Management Application, Volume 2, Schedule C*.

¹⁰ The objective of the pilot was to assess the economic, market, and technical feasibility of direct load control to reduce overall peak demand. The pilot confirmed that a residential hot water tank direct load control program made available to a larger participation base could be used to reduce peak demand on the Island Interconnected System. The pilot concluded that a larger direct load control program is feasible from a technical and market perspective, but it is not economically justified.

¹¹ As approved in Order No. P.U. 17 (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. Currently there are 21 net metering customers.

¹² The *2021 Capital Budget Application* included an *Additions Due to Load Growth* project to replace the substation power transformer at Dunville Substation with a larger capacity unit. As part of the planning process, a preliminary investigation was undertaken into the use of utility scale battery storage as an alternative to replacement of the transformer. At that time, the cost associated with battery storage solutions was significantly greater than the \$701,000 capital cost of a traditional power transformer upgrade and was therefore not pursued as a viable alternative.

¹³ Capital expenditures of approximately \$6 million were associated with the *Sandy Brook Hydro Plant Penstock Replacement* project. The capital cost of a similar sized solar/battery generation facility was estimated at approximately \$43 million.

¹⁴ For example, an NWA solution using commercial-grade battery storage technology as an alternative comparable to the upgrade of distribution feeder PUL-03 from two-phase to three-phase could have potentially addressed the conductor overload. The NWA solution would have cost in excess of \$1.5 million compared to the approved alternative with expenditures of \$560,000.

(vi) In 2022, the Company included the addition of commercial-grade battery storage in its assessment of alternatives for the *2023 Feeder Additions for Load Growth* project.¹⁵

Additionally, the Company's *Electrification, Conservation and Demand Management Plan: 2021-2025* (the "2021 Plan"), determined that management of electric vehicle ("EV") charging will be necessary to mitigate the impact of increased EV penetration on system peak. The 2021 Plan includes the *EV Demand Response Pilot Program*, which will allow the utilities to assess a number of approaches to control the demand impacts of EVs.¹⁶ Peak demand reduction impacts, cost effectiveness and customer perspectives will be evaluated for each technology, helping to inform the best long-term approach to EV demand management.

The purpose of NWA solutions is to reduce load at a given power transformer, substation or distribution feeder to avoid exceeding capacity ratings resulting in necessary infrastructure upgrades.¹⁷ Based on this definition, in the *2023 Capital Budget Application*, only the *Feeder Additions for Load Growth* project could include NWA solutions.

Table 1 summarizes the two distribution feeders included in the *2023 Feeder Additions for Load Growth* project, including the recommended alternative and the NWA.

Distribution Feeder	Description	Recommended Alternative	NWA ¹⁸
PUL-01	Upgrade 1.0 km of single-phase distribution to three-phase distribution	\$312,000	\$482,000
PUL-04	Upgrade 1.2 km of single-phase distribution to three-phase distribution	\$358,000	\$1.4 million

¹⁵ See the *2023 Capital Budget Application*, report *1.2 Feeder Additions for Load Growth*, Section 3.0 Project Description.

¹⁶ See the response to Request for Information PUB-NP-011.

¹⁷ California's *Distribution Investment Deferral Framework* recognizes that NWA solutions are not capable of addressing specific utility infrastructure projects such as repair or replacement of damaged/deteriorated infrastructure, non-capacity related reliability issues and dedicated infrastructure required to serve customers. These types of projects would require pursuing traditional poles and wires solutions. See *Distribution Infrastructure Deferral Framework and Distribution Deferral Advisory Group* meeting, December 12, 2016, presentation by Pacific Gas and Electric, San Diego Gas and Electric and California Edison.

¹⁸ The cost of NWA alternatives evaluated do not include operating and maintenance costs.

- 1 This project proposes upgrades to distribution feeders to mitigate overload conditions
- 2 resulting from customer growth in the Torbay area. An evaluation of NWA using battery
- 3 storage as an alternative for these projects demonstrated that the poles and wires
- 4 approach was the least cost alternative in this instance.¹⁹

¹⁹ For more information see the *2023 Capital Budget Application*, report *1.2 Feeder Additions for Load Growth*.