

1 **Q. (Reference Application, 2022 Capital Plan, 2022 Capital Projects by Definition,**
 2 **Schedule B, pages ii - iii)**

3
 4 **a) Please provide details of Newfoundland Power approach to assessing the relative**
 5 **cost of non-wires alternatives (NWAs) such as distributed energy resources**
 6 **(DERs) to the capital investment in traditional assets that are included in**
 7 **Newfoundland Power’s proposed capital plan.**

8 **i. Please provide any reports or analyses that show the comparative analysis for**
 9 **the projects included in the 2022 Capital Budget Application.**

10 **ii. If NWAs have not been considered, please explain why they have been**
 11 **excluded as options without a comparison of alternatives.**

12 **b) Please provide a discussion of the feasibility of NWAs being utilized to address the**
 13 **requirements for each capital project definition identified in Schedule B.**

14 **c) Please provide a discussion of the consideration being given to NWAs in each of**
 15 **the other Canadian jurisdictions addressing the current practices of other**
 16 **Canadian integrated utilities, transmission companies and major distributors.**

17 **d) Please provide a discussion of the consideration being given to NWAs in each of**
 18 **the other Canadian jurisdictions addressing the current practices of Canadian**
 19 **regulators.**

20 **e) Please provide a discussion of the consideration being given to NWAs in each of**
 21 **the other Canadian jurisdictions addressing policy and information gathering**
 22 **initiatives that have been undertaken by integrated electric utilities, regulators,**
 23 **system operators and Canadian industry associations.**

24
 25 **A. a) Newfoundland Power is required to provide reliable service to customers at the**
 26 **lowest possible cost. The Company’s capital planning process includes an**
 27 **assessment of alternatives, where applicable, to ensure proposed projects meet this**
 28 **objective. This includes both traditional “poles and wires” alternatives as well as**
 29 **consideration of emerging technologies, such as non-wires alternatives (“NWA”).¹**

30
 31 Newfoundland Power participates in various industry groups and committees to stay
 32 informed of NWA solutions that may provide benefits to its customers. The
 33 Company’s participation in industry groups includes: (i) The Canadian Electricity
 34 Association (“CEA”);² (ii) The Centre of Energy Advancement through Technical
 35 Innovation (“CEATI”) International;³ (iii) Atlantic Power Utilities Distribution

¹ NWA include distributed energy resources (“DER”) and demand side management (“DSM”).

² The CEA includes 40 member utilities 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 CEA.

³ CEATI International includes 130 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.

1 Conference (“APUDC”);⁴ and (iv) Fortis Operating Group (“FOG”)⁵.

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

- 5
6 (i) In 2014, the Company evaluated the implementation of time-of-use rates
7 necessary to support some NWA initiatives. This was evaluated again in
8 the *2020-2034 Conservation Potential Study* completed by Dunsky Energy
9 Consulting (“Dunsky”).⁶
10 (ii) In 2015, the Company completed a DSM pilot project to evaluate the
11 direct control of hot water tanks of approximately 500 customers.⁷
12 (iii) In 2017, the Company introduced the net metering service option for
13 customers who generate electricity from small scale renewable sources to
14 offset their own use.⁸
15 (iv) In 2020, the Company evaluated the use of utility scale storage as an
16 alternative to defer the addition of substation transformer capacity.⁹
17

18 Additionally, the Company recently completed the *Electrification, Conservation and*
19 *Demand Management Plan: 2021-2025*, which determined that the management of
20 electric vehicle (“EV”) charging will be necessary to mitigate the impact of increased
21 EV penetration on system peak. Work on this initiative is expected to be undertaken
22 in the near future.

⁴ 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.

⁵ FOG includes representatives from all Fortis owned utilities sharing information on best practices throughout the organization. FOG includes various committees and sub-committees on particular focus areas including distribution engineering, electric vehicle adoption and sustainability.

⁶ Dunsky 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*.

⁷ 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.

⁸ 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 11 net metering customers.

⁹ 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.

1 Newfoundland Power’s approach to assessing NWAs ensures that the Company is
 2 well informed of existing and emerging NWAs, and that NWAs are evaluated and
 3 implemented if they are consistent with the Company’s obligation to provide reliable
 4 service to customers at least cost.

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 6 i. See part b).

7
 8 ii. See part b).

9
 10 b) The purpose of NWA solutions is to reduce load at a given power transformer,
 11 substation or distribution feeder to avoid exceeding capacity ratings resulting in
 12 necessary infrastructure upgrades.¹⁰ Based on this definition, Newfoundland Power
 13 has only 1 capital project in its 2022 *Capital Budget Application* that could be
 14 addressed with NWA solutions: the *Feeder Additions for Load Growth* project.

15
 16 Table 1 summarizes the 4 distribution feeders included in the 2022 *Feeder Additions*
 17 *for Load Growth* project.

Table 1
2022 Feeder Additions for Load Growth Project

Distribution Feeder	Description	Cost Estimate
PUL-03	Upgrade 2.5 kms of 2-phase to 3-phase and re-conductor all 2.5 kms	\$560,000
SPF-01	Upgrade 1.2 kms of 2-phase to 3-phase, upgrade 2.6 kms from 1-phase to 3-phase and re-conductor all 3.8 kms	\$600,000
HAR-02	Re-conductor 1.1 kms to accommodate expansion by a commercial customer	\$180,000
VIR-01	Upgrade 1.8 kms of 1-phase to 3-phase	\$350,000

¹⁰ 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.

1 These projects involve upgrades to distribution lines to mitigate overloaded
2 conductor. An evaluation of an NWA solution using battery storage as an alternative
3 for these projects demonstrated that Newfoundland Power’s proposed approach is the
4 least cost alternative.¹¹

- 5
6 c) The implementation of NWA solutions in Canada to date has largely been in the form
7 of pilots and demonstration projects. A number of pilot projects and regulatory
8 initiatives are underway to explore the implementation of NWA solutions.¹²

9
10 In Ontario, there are several demonstration projects and regulatory initiatives
11 exploring NWA solutions. The Ontario Energy Board (“OEB”) has initiated
12 consultation processes to investigate how Ontario can adapt current regulatory
13 practices and evolve the existing policy framework to address emerging issues, such
14 as NWA and DER.¹³

15
16 The OEB has also commenced the *DER Connections Review* to examine the technical
17 requirements for the connection of DERs by licensed electricity distributors. The
18 purpose of the review is to identify barriers to the interconnection of DERs and, to the
19 extent possible, standardize and improve the connection process.¹⁴

20
21 In addition to the OEB regulatory initiatives, the Independent Electricity System
22 Operator (“IESO”) has multiple NWA related initiatives ongoing. These include the
23 *IESO Innovation and Sector Evolution* and the *Regional Planning Review Process*.
24 The IESO and Natural Resources Canada have undertaken a demonstration project
25 with Alectra Utilities in York Region. The project will examine approaches to secure
26 energy and capacity services from 3rd party DERs and the potential of using DERs in
27 place of traditional infrastructure.¹⁵

¹¹ For example, an NWA solution using commercial grade battery storage technology as an alternative comparable to the upgrade of PUL-03 feeder from 2-phase to 3-phase could potentially address the conductor overload. The NWA solution would cost in excess of \$1,500,000 and provide 4 hours of on-peak capacity. The cost of the NWA solution does not include operating and maintenance costs or the dissimilar service life of the alternative. Similar cost challenges exist for the other 3 distribution feeder from an NWA solution perspective.

¹² See *Non-Wires Alternatives (NWAs), Energizing Distributed Energy Resources to Bring Value to Canadian Grids, Utilities and Ratepayers Discussion Paper*, March 2020 prepared for the Canadian Solar Industries Association by Power Advisory LLC and Dunsky Energy Consulting.

¹³ The OEB has initiated 2 consultation processes: *Utility Remuneration (EB-2018-0287)* and *Responding to Distributed Energy Resources (EB-2018-0288)*. See *Ontario Distributed Energy Resources Impact Study* completed by ICF, January 18, 2021.

¹⁴ Recent updates to the review have been released by the OEB. An update to the *Distributed Resources and Utility Incentives (EB-2021-0118)* process was provided on May 10, 2021 and *Guidance - Protection Philosophy for DER Connections (EB-2019-0207)* on November 26, 2020.

¹⁵ See <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/IESO-York-Region-Non-Wires-Alternatives-Demonstration-Project>.

1 Aside from the OEB, regions such as Toronto, York, Ottawa and Barrie have
2 identified that future local capacity needs can be addressed through NWA solutions,
3 and have recommended further assessments to evaluate the cost-effectiveness of
4 DERs in avoiding or deferring future infrastructure investments.¹⁶
5

6 In Alberta, the Alberta Utilities Commission (“AUC”) has been examining issues
7 related to DER in the distribution system. In 2017, the AUC issued a report on
8 matters related to distribution connected generation. Additionally, in February 2021,
9 a report released by the AUC outlined the challenges and opportunities associated
10 with modernizing Alberta’s electricity system.
11

12 The AUC’s 2021 report concluded the *Distribution System Inquiry*, which had been
13 ongoing for 2 years.¹⁷ The inquiry focused on DERs and the impact their increased
14 deployment could have on the electricity system.¹⁸ Following on the *Distribution*
15 *System Inquiry*, Energy Efficiency Alberta is undertaking a review to determine the
16 impacts of EVs on the electricity system.¹⁹
17

18 With respect to other Canadian jurisdictions, both British Columbia and Quebec have
19 identified transmission and distribution deferral benefits associated with NWA, but it
20 is unclear whether any viable NWA projects are being explored.²⁰
21

22 In Nova Scotia, Nova Scotia Power has initiated a feeder level pilot project using
23 commercially available battery storage technology. The pilot project will evaluate
24 NWA solutions and explore how DER and associated software systems can manage
25 peak demand and smooth renewable generation. The project will also explore the
26 potential of combining intelligent planning and DER management to provide utility
27 scale NWA solutions.
28

29 Despite ongoing demonstration projects and regulatory initiatives, NWA solutions
30 remain relatively new to the Canadian electricity sector and the customer benefits
31 continue to be evaluated.
32

33 d) See part c).

34
35 e) See part c).

¹⁶ See *Non-Wires Alternatives (NWA) Energizing Distributed Energy Resources to Bring Value to Canadian Grids, Utilities and Ratepayers, Discussion Paper*, March 2020 for the Canadian Solar Industries Association by Power Advisory LLC and Dunsky Energy Consulting.

¹⁷ See *AUC Distribution System Inquiry - Final Report*, AUC Proceeding 24116, February 19, 2021.

¹⁸ See *Distribution System Inquiry Report: Understanding Alberta’s Evolving Electric System*, April 2021, by Norton Rose Fulbright.

¹⁹ See *Non-Wires Alternatives Study How EE, DR and Managed Charging Can Cost-Effectively Offset EV Load Growth*, June 2020, by Navigant Consulting, Inc., prepared for Energy Efficiency Alberta.

²⁰ BC Hydro’s Gloucester Industrial Park pilot project is investigating whether DSM or NWA can result in deferment of capital management on poles and wires infrastructure upgrades. See <https://www.bchydro.com/work-with-us/alliance/news-features/gloucester-load-reduction.html>