

- 1 **Q. (Reference Application, Feeder Additions for Load Growth, page 2) It is stated**  
 2 **"Non-wires alternatives comprise a broad category that encompasses various**  
 3 **innovative alternatives to standard "poles and wires" solutions. These**  
 4 **include, but are not limited to, distributed energy resources, microgrids and**  
 5 **battery storage."**
- 6 **a) Are rooftop or "community" solar and wind viable alternatives in NL for**  
 7 **off-loading feeders?**
- 8 **b) How is the increasing number of electric vehicles in the province and the**  
 9 **associated battery storage assessed in the feeder additions for load**  
 10 **growth program?**
- 11 **c) How has NP incorporated rate design such as load control in its analysis of**  
 12 **feeder additions for load growth alternatives?**
- 13 **d) Are utility-scale battery systems in use elsewhere?**
- 14 **e) What are the expected operating and maintenance costs for utility-scale**  
 15 **battery systems?**
- 16 **f) Are the costs of utility-scale battery systems expected to decrease going**  
 17 **forward?**
- 18 **g) Do cost decreases in utility-scale battery systems, increasing numbers of**  
 19 **electric vehicles and decreasing costs of wind and solar suggest that some**  
 20 **portions of the feeder additions for load growth program may become**  
 21 **stranded?**
- 22
- 23 **A. a) No, Newfoundland Power does not consider rooftop or community solar or wind to**  
 24 **be viable alternatives for off-loading feeders at this point in time.<sup>1</sup> The Company**  
 25 **continues to monitor penetration of customer-owned generation and battery storage**  
 26 **through its Net Metering Service Option, as well as the impact of customer-owned**  
 27 **generation on feeder loading in general. At this time, penetration of customer-owned**  
 28 **generation and battery storage remains low.<sup>2</sup>**
- 29
- 30 **b) Since the filing of Newfoundland Power's 2021 Capital Budget Application, all**  
 31 **distribution feeders identified within the Company's Feeder Additions for Load**  
 32 **Growth program have dealt exclusively with upgrading either one or two-phase taps**  
 33 **with overload conditions that had already materialized. The Company continues to**  
 34 **forecast peak demand across entire feeders and has been monitoring trends**  
 35 **associated with electrification in general, which may or may not be a result of**  
 36 **increased electric vehicles ("EV"). On an individual-feeder basis, the Company**  
 37 **considers the impact of 217 known level two and level three EV chargers as part of**  
 38 **its feeder-level demand forecasting. The Company does not specifically track**  
 39 **residential EV charging; rather, potential impacts resulting from residential charging**

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<sup>1</sup> Rooftop solar and wind alternatives are not currently viable from both a technical and financial standpoint. Newfoundland Power's system peak typically occurs during the winter and often in the evening times. In addition, wind generation is often intermittent. In order to achieve offloading during peak times, these alternatives would also require battery storage solutions. From a financial perspective, battery storage alternatives were evaluated for work proposed in the *Feeder Additions for Load Growth* project and were determined to not be least cost.

<sup>2</sup> Presently, there are no customers served by either of the feeders identified in report *1.1 Feeder Additions for Load Growth* that have availed of Newfoundland Power's Net Metering Service Option.

1 would be expected to be captured through analysis of historical load shapes year  
2 over year, on a per-feeder basis.

3  
4 The feeders identified in report *1.1 Feeder Additions for Load Growth* have overload  
5 conditions that have already materialized. With respect to battery storage capability,  
6 the impact of potential bidirectional charging would be monitored through the  
7 Company's Net Metering Service Option. To date, Newfoundland Power has three  
8 net metering installation applications that included customer-owned battery storage.  
9

- 10 c) Newfoundland Power does not have infrastructure in place for demand-side load  
11 control, nor do such rate designs exist in the Company's *Schedule of Rates, Rules &*  
12 *Regulations*. The *Feeder Additions for Load Growth* project assesses the need for  
13 feeder upgrades or additions on a case-by-case basis. With respect to the feeders  
14 identified in report *1.1 Feeder Additions for Load Growth* as having overloaded two-  
15 phase sections, deferral of necessary upgrades to a future period, which may  
16 implement demand-side load control, would expose customers on these distribution  
17 feeders to an increased risk of unnecessary outages. The Company will continue to  
18 assess the potential for load control in its planning going forward.
- 19  
20 d) Newfoundland Power does not currently use utility-scale battery systems, nor does it  
21 specifically track their usage in other jurisdictions.
- 22  
23 e) Newfoundland Power's understanding of operating and maintenance ("O&M") costs  
24 for utility-scale battery systems are based on *Cost Projections for Utility-Scale*  
25 *Battery Storage: 2023 Update* by Wesley Cole and Akash Karmakar (the "2023  
26 Update").<sup>3</sup> Projected battery system costs provided in the 2023 Update include fixed  
27 O&M costs of 2.5% of the \$/kW capacity cost for a 4-hour battery, which is based on  
28 surveys conducted by the authors.<sup>4</sup> However, O&M costs specific to their usage in  
29 Newfoundland are currently unavailable. Due to the relatively high capital costs  
30 associated with their procurement and installation, further estimates of O&M costs  
31 have not been pursued.
- 32  
33 f) According to the 2023 Update, the total costs associated with utility-scale battery  
34 systems are expected to decrease going forward.<sup>5</sup> However, per Newfoundland and  
35 Labrador Hydro, costs of battery solutions increased in 2023 as compared to 2022.<sup>6</sup>  
36 The Company acknowledges that the future price of battery systems remains  
37 uncertain, and their costs and feasibility as potential non-wires alternatives to  
38 traditional poles-and-wires solutions in Newfoundland will continue to be assessed.  
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<sup>3</sup> See the response to Request for Information CA-NP-107, Attachment A for a copy of the 2023 Update.

<sup>4</sup> See *Cost Projections for Utility-Scale Battery Storage: 2023 Update* by Wesley Cole and Akash Karmakar, June 2023, page 7.

<sup>5</sup> Ibid., page iv.

<sup>6</sup> See Newfoundland and Labrador Hydro's *Battery Energy Storage System Report*, September 29, 2023, page 4.

- 1 g) No, Newfoundland Power does not expect that the proposed three-phase upgrades  
2 to the distribution feeders referenced in report *1.1 Feeder Additions for Load Growth*  
3 will become stranded. The areas supplied by distribution feeders APT-02 and  
4 GOU-03 continue to experience increased property development with larger service  
5 sizes. Furthermore, due to overload conditions that have already materialized, as  
6 well as expected load increases associated with electrification in general, the  
7 Company affirms that the three-phase upgrades proposed will ensure the continued  
8 provision of least-cost, reliable electricity to these areas.