

Office of the Consumer Advocate

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July 13, 2023

Board of Commissions of Public Utilities
120 Torbay Road, P.O. Box 2140
St. John's, NL A1A 5B2

Attention: G. Cheryl Blundon, Director of
Corporate Services / Board Secretary

Dear Ms. Blundon:

Re: Newfoundland Power Inc. – Application for
Electric Vehicle Load Management Pilot Project

On June 2, 2023 Newfoundland Power (“NP”) filed an Application with the Public Utilities Board (the “Board”) entitled *Application for EV Load Management Pilot Program* (the “Application”). Newfoundland Power submits that the purpose of the pilot project is:

“to assess the cost-effectiveness of strategies to manage light-duty EV load in this jurisdiction that is consistent with sound public utility practice. The EV Load Management Pilot Project will collect information on local EV owners’ charging behaviours, the effectiveness of various strategies in shifting load to off-peak periods, and the costs and challenges of implementing these strategies. This information is needed to inform the development of cost-effective customer programs to manage EV load in this jurisdiction prior to the widespread adoption of EVs.”

Newfoundland Power proposes that the project:

“take place from the third quarter of 2023 to the second quarter of 2025. The total budget estimate for the EV Load Management Pilot Project is \$1,504,000. It is proposed that actual costs incurred to complete the EV Load Management Pilot Project be recovered through the Applicant’s Electrification Cost Deferral Account.”

Newfoundland Power provided responses to Requests for Information (“RFIs”) on June 29, 2023. The Board requested the parties to make submissions by July 13, 2023. This document is the Consumer Advocate’s submission on Newfoundland Power’s Application.

Background

- NL Hydro’s May 2023 presentation entitled “*Reliability and Resource Adequacy Study Review – Technical Conference*” provides an overview of Hydro’s view of the future electricity market

in the province and the challenges being faced by the electric utilities. The presentation states that the Government of Newfoundland and Labrador is committed to achieving net zero emissions by 2050 supported by: 1) increased renewable hydro generation development, 2) legislative actions, and 3) program funding to enable electrification of government buildings and private sector facilities, increased electric vehicle (EV) penetration, and residential fuel switching from fuel oil to electricity (slide 11). This will have profound effects on the electricity demand. The total new peak supply required in the province by 2032 to meet demand is expected to be 170 MW (slide 18).

- The Consumer Advocate does not take issue with Hydro’s forecast of government net zero programs on demand growth in the province. In addition to Hydro’s synopsis, technology is also shaping the energy sector with rooftop solar and wind, the potential for the wide-ranging application of hydrogen fuel cells, and smart devices run by applications such as telematics, which can control EV charging, smart thermostats that can control home heating and cooling using a smartphone, artificial intelligence, etc. As stated in NP’s Application, the latter development provides utilities a potential means for managing the growth in peak electricity demand in the province.
- The Consumer Advocate is aware of the significant changes taking place in the industry. It was for this reason that during Newfoundland Power’s 2022/23 General Rate Application (GRA) we successfully negotiated the conduct of load research and rate design studies (see para. 11 of the *Settlement Agreement for the Proposed Resolution of Issues Arising from the Application* effective November 22, 2021) estimated to cost a total of \$1.8 million over the 2022 to 2025 timeframe (see *Rate Design and Load Research Framework* dated December 2022). A basic tenet of rate design is that electricity rates accurately reflect the cost of supply. When designed properly, rates will encourage customers to consume the correct amounts of electricity resulting in the efficient allocation and use of the province’s energy resources.
- Newfoundland Power has initiated work on the load research study, submitting a report entitled *Load Research Study Plan*, dated June 15, 2023. As stated in the report (page 1) since 2006 (when the last load research study was undertaken), customer end-use activities have evolved including: conversions from oil heat to electric heating, adoption of heat pumps to offset baseboard heating, conservation and demand management activities, replacement of old equipment and appliances with more efficient options, and more recently, increased adoption of electric vehicles and government incentives to reduce carbon emissions. It is also stated in that report (page 1), “*When completed, the 2023 Load Research Study will be used in NP’s future cost of service studies, used to assess future customer rate designs, and provide information for other planning activities at NP.*”

Comments on the Application

This section starts with an overarching comment and then turns to enumerated comments specific to the Application. The overarching comment is that ratepayers are very concerned with the growing

cost burden for electricity. At the beginning of this month, ratepayers experienced an average 6.9% increase in electricity rates. Rising costs at the electric utilities and, especially, the prospects of having to bear the enormous cost of the Muskrat Falls Project, which despite rate-mitigation efforts, are likely to increase electricity rates significantly. Therefore, any new spending by utilities that is passed on to ratepayers should be limited to what can be demonstrated to be truly necessary.

As to the Application, specific comments with elaboration follow.

1. The Load Research and Rate Design Studies Are Sufficient

- The Application represents a subset of the load research and rate design studies agreed to at Newfoundland Power's 2022/23 GRA. Newfoundland Power (Application, para. 8) indicates that the information gleaned from the proposed EV charging load management study *"is needed to inform the development of cost-effective customer programs to manage EV load in this jurisdiction prior to the widespread adoption of EVs."* In PUB-NP-004, NP states *"it is Newfoundland Power's goal to use the results of the pilot project to inform the next suite of customer demand management programs to be launched by the utilities in 2026."* This is very similar to the objective of the load research and rate design studies, although less comprehensive in the sense that it relates only to EV charging rather than all customer end-uses. Nevertheless, the impact of EVs, like heat pumps, electric furnaces and other new contributors to load growth –even if not separated out – should be captured by the Load Research Study.
- Newfoundland Power states (CA-NP-009) *"The internal resource hired to manage the ongoing Load Research Study and Rate Design Review is Newfoundland Power's Rates and Cost Specialist."* The response goes on to say *"The work description for the Rates and Costs Specialist includes developing documentation for the Load Research Study and Rate Design Review, such as frameworks and scopes of work. It also includes coordinating internal efforts at Newfoundland Power to complete the studies, such as coordination with the technology, meter reading, procurement, customer rates and customer relations functions of the Company."* It appears that monitoring the results of EV charging load management pilots in other Canadian jurisdictions and incorporating results in the load research study fits with this job description, as would experience elsewhere with electric furnaces, heat pumps other electrification phenomena. Surely, this information will be assessed and incorporated into these ongoing studies.

2. The Pilot Project is not Needed at this Time

- As stated in the Application (page 4) *"EV adoption in Newfoundland and Labrador continues to lag behind other provinces. At the end of the first quarter of 2023, EVs accounted for only 787 of the 383,000 vehicles on the province's roads."* CA-NP-003(a) confirms that this represents about 0.2% of the total number of light-duty vehicles in the province. According to CA-NP-003(b), *"The number of light-duty EVs in the province is forecast to be about 6.1% of*

total light-duty vehicles under the “moderate growth” scenario in 2030.” The proposed pilot project’s purpose is to obtain results that *“will inform the next suite of customer demand management programs anticipated to be launched by the utilities in 2026.”* 2026 is not far away. While the number of light-duty EVs is expected to grow, their numbers will not be substantial in the 2026 to 2030 period, relative to the total stock of light-duty vehicles.

- While an increase in the number of EVs is beneficial in terms of reduction in greenhouse gas emissions and in generating revenue for Hydro to assist in paying for the Muskrat Falls Project, the concern is the extent to which additional EVs will increase peak load. In the Application’s Figure 3 (page 8) NP provides forecasts of unmanaged peak demand impacts due to light-duty EV adoption from 2025 to 2040 for low, moderate and high growth scenarios. For the period 2025 to 2030, the growth in peak demand is much less than later years. Table 1 of CA-NP-004(e) indicates that under the moderate growth scenario, the expected unmanaged peak demand impact is forecast to be 4.8 MW in 2025 rising to 35.6MW in 2030. However, what matters is the extent to which the peak demand impact can be reduced or shifted. In response to CA-NP-004(b), NP states that *“up to approximately 14 MW of EV load could be shifted off peak in 2030 under the moderate growth scenario.”* In Table 2 of CA-NP-004(e) the amounts that could be shifted during 2025 to 2040 are given. They are all smaller than those presented in Figure 3. For the moderate growth scenario for each year from 2025 to 2030 the forecast amounts go from 1.9MW to 14.4 MW and under the low growth scenario, the forecasts of potential shifts magnitudes are 1.3 MW in 2025 rising to 8.6MW in 2030. In short, the potential amount of peak demand impact due to EV adoption that can potentially be shifted from 2025 to 2030 is very modest.
- The majority of residential charging in the province is via Level 1 chargers and a Level 1 charger adds only 1 kW to peak demand whereas use of a Level 2 charger adds as much as 19kW (CA-NP-005(c)). If that trend continues then more EV adoption may not lead to substantial increase in peak demand before 2030. Electrification of home heating may well be a much more serious challenge for peak load management; and the Load Research Study is examining that.
- Figure 1 (page 6) of the Application indicates that growth of EV adoption (by all types of customers, not just residential ones, see CA-NP-003c) will increase after 2030. The technology of EVs appears to be changing quite rapidly, e.g., the vehicle telematics, improvement in batteries, increases in range distances. Thus, the characteristics of EVs purchased after 2030 may be quite different than those relatively few on the road in this province now and in the next few years. The proposed pilot study, which is based on a very small population of EVs and ends in 2025, may yield very little information about EV load management in the 2030s.
- The Application (page 11) states *“Newfoundland Power surveyed 19 electric utilities across Canada and identified 10 utilities that have concluded or are currently completing or developing EV load management pilot projects. Of these 10 utilities, two utilities have used the results of their pilot projects to launch fulsome programs to manage EV charging load.”* It

is worth pointing out that about half (9 of the 19 utilities surveyed) are not undertaking EV load management projects at this time. Thus, by not proceeding with the proposed pilot project now, NP would not be an outlier. A better time to consider such a study, if needed, could be closer to 2030 when more EVs are on the road and more people in this province will have had time to gain experience with them. According to CA-NP-007a, of the nine utilities not undertaking EV load management studies “*some are considering the development of EV load management pilot projects in the coming years.*” That would be appropriate for NP as well.

3. The Proposed Pilot Project Design Diminishes its Usefulness

- The Application (page 13) indicates “*Participants in the proposed pilot project would have to have access to either vehicle telematics or Level 2 smart chargers.*” Also, in footnote 32 (page 14), NP states “*up to 75% of participants may require the installation of a new Level 2 smart charger.*” According to PUB-NP-005, “*For budgeting purposes, Newfoundland Power assumed a total cost of \$2,000 per unit installed.*” Thus, as many as 150 participants in the EV charging load management study out of a total of 200 participants would each be given about \$2,000 (for a total of \$300,000) of free Level 2 EV charging infrastructure. While the cost of providing these Level 2 chargers is a concern, a more substantial issue relates to impact on the sample of residential customers. This provision of Level 2 chargers ensures that the sample is entirely of owners of Level 2 chargers. Yet, apparently most current owners of light-duty EVs decided to use Level 1 chargers rather than incurring the cost of Level 2 smart chargers. As such, how can the sample be representative of the current population of residential EV owners? By giving Level 2 chargers to owners of Level 1 chargers to participate, the pilot project would be changing the behaviour of a large portion of the sample rather than giving insight into their behaviour. If the pilot project were approved, participants should not be given EV chargers but should be accepted with whatever charger they are currently using. The result would be a more representative sample with the side benefit of a reduced cost for the study.
- Newfoundland Power’s argument for excluding Level 1 chargers from the project sample is convoluted. NP indicates (Application, para.8) that the purpose of the pilot is to “*collect information on local EV owners’ charging behaviours, the effectiveness of various strategies in shifting load to off-peak periods, and the costs and challenges of implementing these strategies.*” PUB-NP-004 indicates that the pilot will explore both active and passive load management strategies. It is stated (CA-NP-011b) “*Newfoundland Power notes that, while prospective participants may have Level 1 chargers, Level 1 chargers cannot be used to investigate load management strategies as they are not equipped with wireless or cellular communication.*” However, Level 1 chargers can be controlled by customers via passive load management techniques such as time-of-day rates. Consider the following example. An EV owner with a Level 1 charger typically charges the EV after returning home from work on weekdays at 5 pm. The utility offers its customers a flat energy rate, or alternatively, a time-varying rate with a significant price decrease during the off-peak period from 7 pm to 7 am on weekdays. In an effort to reduce electricity costs, the EV owner opts for the time-varying rate and places a timer on the electrical outlet used to charge the EV. The timer could be an

electronic timer, or a smart plug programmed with an app such as Alexa. In this case, the Level 1 charger load would be shifted from the peak hours of 5 pm to 7 pm, to the off-peak hours of 7 pm to 7 am. Therefore, there is value including Level 1 chargers in the pilot, particularly since NP indicates they are the majority of EV chargers currently in residential use in the province.

- Even if the sample used in the study were representative of the current population of EV owners, would it be representative of the population of future owners? The limited number of light-duty EV owners are early adopters. That is a distinguishing characteristic by itself. Another distinguishing characteristic of current EV owners is that they chose to purchase EVs at substantially higher prices than comparable non-electric vehicles even after the impact of federal and provincial rebates ((CA-NP-010c(viii))). Doing so indicates a higher willingness and, likely, ability to pay.

Summary

The proposed EV Load Management Pilot Project has an estimated cost of \$1,504,000. If the project were approved, the actual cost plus interest would be recovered from ratepayers by NP through its Electrification Cost Deferral Account. Newfoundland and Labrador Hydro has written a letter of support for this Application (Attachment C) but that letter offers no financial support for this project. Yet, providing adequate generation and transmission capacity is primarily Newfoundland and Labrador Hydro's responsibility. No funding from the provincial government is available either. And all ratepayers will be required to pay.

However, Newfoundland Power has failed to provide convincing evidence that the proposed project would be beneficial to all ratepayers. We see little utility in approving the Application for three reasons: (1) the on-going load research and rate design studies would address the overall capacity and peak-demand issues in the near term; (2) the proposed pilot project is not needed at this time because, despite growth, there will be relatively few EVs on NL roads in 2026 to 2030 and, if current practice continues, the majority of them will use Level 1 chargers for at-home charging; and (3) the design of the proposed study is based on a sample that is not representative of current owners or future purchasers of EVs.

Finally, even in the event of an earlier and more rapid adoption of EVs and a disproportionate increase in use of at-home Level 2 chargers, the techniques for dealing with consequent impacts on peak demand are well known and relevant information from other jurisdictions will be available. Therefore, even a better-designed lower-cost pilot project would offer very little value-added.

Having carefully considered the Application, the Consumer Advocate recommends that the application be rejected. It remains our position that all ratepayers should not be paying any of the costs associated with those who choose to purchase electric vehicles. If this Board decides to allow this project, ratepayers will be justifiably concerned.

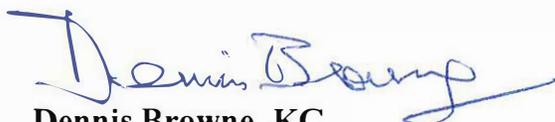
Anecdotally, VOXM polled this issue in a January 2023 "Question of the Day" which stated:

Question: *Should electricity ratepayers be expected to pay for the development of charging stations and other infrastructure needed for electric vehicles.*

Answer: *No – 92%*
Yes – 8 %

If there are any questions, please contact the undersigned.

Yours truly,



Dennis Browne, KC
Consumer Advocate

/bb

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