Q. (2021 Electrification, Conservation and Demand Management Application, Volume 1, page 15) It is stated (lines 8 – 9) "*The Customer Electrification Portfolio is also forecast to increase peak demand by 3.2 MW by 2025.*"

(a) Please provide this calculation and all assumptions.

(b) Does this assume "*managed*" charger stations? The Dunsky report notes that if unmanaged, the benefits of EV adoption are negative (page 32 of 325). If managed, please explain how the charger stations will be managed.

(c) Please explain how "*at-home*" charging will be managed in the absence of time-of-use rates since at-home charging is likely to represent a significant component of electricity consumption for electric vehicle charging (Volume 2, Schedule D, page 3 of 5).

(d) Has NP considered development of a time-of-use rate specifically for customers with electric vehicle charging? If so, would such customers be required to make a contribution to metering necessary to measure consumption during different time periods?

A. (a) Table 1 provides the calculation and assumptions used to forecast the 2025 peak demand increase of 3.2 MW.[1]

Table 1:
Peak Demand Increase
2025 Forecast
(MW)

Electrification Program	Participants (A)[2]		Per Participant Demand Impact (kW) (B)[3]	Demand Increase (MW) (C)[4]
Residential Rebates	5,463	Units	0.3473	1.9
Commercial Rebates	1,242	Units	0.6632	0.8
Custom Commercial	190	Projects	2.568	0.5
Total				**3.2**

[1] Demand increases are cumulative. The figures in the tables reflect the cumulative effect of the programs on peak demand by 2025.

[2] Participants are listed in terms of projects, units or customers based on the type of program. Per participant demand increase amounts can vary year to year depending on the mix of technologies rebated in each year for each program.

[3] Peak demand impacts for various classifications of electric vehicles and electrical technologies were provided by Dunsky Energy Consulting in the 2020-2034 potential study. See the *2021 Electrification, Conservation and Demand Management Application*, Volume 2, Schedule C.

[4] Annual demand reductions (C) are forecasted by multiplying the number of participants in a program (A) by the deemed value of demand increase for that electrification technology (B).

(b) No, charging at public charging sites will not be limited during system peak hours.[5] Providing sufficient access to charging infrastructure is necessary to eliminate customers' concerns about their ability to reach their destinations. If customers were uncertain of the availability of public charging, the purpose of the public charging sites would not be met. Throughout the 2020-2034 potential study (the "Study"), Dunsky Energy Consulting ("Dunsky") reiterates the importance of the availability of public charging to enable EV adoption in the province.[6]

In the Study, Dunsky assessed the impact of unmanaged versus managed charging of *all* EV load at times of system peak in 2034.[7] The Study estimates 85% of EV load can be shifted off-peak through load management to provide for the positive NPV results through 2034.[8] The Study recommended the utilities pilot managed EV charging to determine the most effective approach at mitigating the impact of EV charging on system peak.

Consistent with the Study, the *Electrification, Conservation and Demand Management Plan: 2021-2025* (the "2021 Plan") was developed based on managing EV load throughout the 2021 to 2034 period and assumes that 85% of EV load can be shifted off-peak. To address EV load management, the 2021 Plan provides:

(i) Under both the Residential and Commercial EV and Charging Infrastructure programs, only Level 2 chargers that are capable of demand management will qualify for incentives, allowing for future demand management initiatives.[9]

(ii) The 2021 Plan expands the Business Efficiency Program to include an increased focus on demand management. This is necessary to manage impacts on system peak as commercial customers electrify their business processes.[10]

(iii) The Custom Fleet Pilot Program will allow the utilities to investigate opportunities to monitor and manage system peak impacts associated with electrifying large vehicle loads.[11]

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5 It is estimated that about 2% of total EV charging occurs at public charging stations with the majority of charging occurring at work or home. See the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, Schedule D, page 3.

6 See for example, the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, Schedule C, pages 146 and 198.

7 Unmanaged EV charging, which takes place during on-peak hours, could contribute to capacity-related system costs. Managed EV charging shifts charging to off-peak hours which will have the effect of avoiding capacity-related system costs.

8 See the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, Schedule C, page 144.

9 See the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, 2021 Plan, pages 16-17.

10 See the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, 2021 Plan, page 17.

11 See the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, 2021 Plan, page 22.

(iv) The EV Demand Response Pilot Program will allow the utilities to assess a number of approaches to control the demand impacts of EVs.[12] 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.[13]

Further, customer conservation and demand management ("CDM") programs will complement the customer electrification initiatives. As customers' energy usage increases through electrification, it becomes increasingly important to manage impacts on system peak and related system costs through CDM. As a result of CDM programs, customers are also forecast to achieve a peak demand reduction of approximately 70 MW by 2025,[14] more than offsetting the increase in peak demand of 3.2 MW resulting from the electrification initiatives.[15]

(c) Residential EV load management approaches will be assessed throughout the EV Demand Response Pilot Program.[16] The pilot will help inform the best long-term approach to EV demand management, including at-home charging. The pilot will consider various technologies such as smart chargers and direct load controllers that will help customers reduce charging at times of system peak.

For example, with the use of these technologies, a direct load control program could be offered to provide customers with a financial incentive to allow the utility to manage their EV charging. Incentives may be a combination of equipment purchase and a monthly participation credit.[17] Utility direct load control EV programs are common in North America. Between 2012 and 2019, 35 utilities implemented direct load control electric vehicle programs.[18]

All Program Costs (Column B) included in the NPV analysis from 2026 to 2034 reflect incentives paid to customers to participate in a direct load control program to manage their EV charging load.[19]

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[12] The EV Demand Response Pilot Program targets EV owners who will charge their EV at home using a Level 2 charger.

[13] See the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, 2021 Plan, pages 22-23.

[14] See response to Request for Information CA-NP-008.

[15] See the *2021 Electrification, Conservation and Demand Management Application,* Volume 1, Evidence, page 10.

[16] For further information on the EV Demand Response Pilot Program, see the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, Schedule K, pages 1-2.

[17] If a customer chose to not participate at particular times (i.e. opt out), the customer may lose part of their potential credit, similar to the Company's curtailment program. Time-of-use data from the charger will also be considered as a basis to provide participation credits.

[18] See *A Comprehensive Guide to EV Managed Charging,* page 42 to 49. BC Hydro also had an *Electric Vehicle Load Management Demonstration Project.*

[19] See the *2021 Electrification, Conservation and Demand Management Application,* Volume 1, Exhibit 2, Appendix A, Column B. Incentive credits to customers total $34 million over the 2026 to 2034 period.

(d) No, Newfoundland Power does not currently have any plan to implement time-of-use rates. Based on the results of the Study, time-of-use rates, which require interval metering, are currently forecast to be cost-effective for customers in the 2030 to 2034 timeframe.[20]

[20] See the *2021 Electrification, Conservation and Demand Management Application,* Volume 2, Schedule E, pages 1-2.