

**EfficiencyOne Information Requests to Nova Scotia Power, Inc. (NS Power)
In the Matter of Nova Scotia Power Incorporated's 2023 Load Forecast Report (M11108)**

IN THE MATTER OF: ***THE PUBLIC UTILITIES ACT***

- and -

IN THE MATTER OF: Nova Scotia Power Incorporated's 2023 Load Forecast
Report (M11108)

NON-CONFIDENTIAL INFORMATION REQUESTS TO NS POWER

To: **Nova Scotia Power Inc.**
Mark Peachey
Manager, Capital Filings
Email: mark.peachey@nspower.ca

From: **EfficiencyOne**
c/o McInnes Cooper

Responses Due: **June 20, 2023**

Copies: **1 electronic copy (PDF searchable)**

Contact Person: James R. Gogan
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Issued at Halifax, Nova Scotia, this 30th day of May, 2023.

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Request IR-01:

Reference: NS Power 2023 Load Forecast, Page 33, Lines 6-7

"The estimated number customers who installed heat pumps in 2022 was almost 20,800, or 30 percent more than forecast."

How was the estimate of 20,800 customers calculated? Please provide any references, source materials, and/or calculations supporting this calculation.

Request IR-02:

Reference: NS Power 2023 Load Forecast, Page 36, Lines 8-14

"On average, the coefficient of performance (COP) of heat pumps modeled in the RESHAPE scenario supporting the Load Forecast declines from 400 percent at 8°C to 233 percent at -15°C. Poorer performance at cold temperatures leads to significant peak impacts relative to the annual load impacts. The capacity of heat pumps in the model is also assumed to decline as a function of COP which causes greater reliance upon backup electric resistance heating with lower efficiency during coldest hours increasing peak impacts."

(a) Please provide the COP performance curves modelled as a function of outdoor temperature. If multiple curves are considered, please include all.

(b) Please provide the heat pump capacity curves modelled as a function of outdoor temperature. If multiple curves are considered, please include all.

(c) Does the Load Forecast use heat pump performance characteristics of multiple heat pump types (i.e., ductless versus ducted)? If yes, please provide details with regard to each type of heat pump included in the Load Forecast. Please provide all assumptions for each type of heat pump included in the models. Please provide the supporting rationale for the assumptions made.

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- 1 (d) Have any of the following heat pump performance characteristics changed in the 2023 Load
2 Forecast compared to the 2022 Load Forecast? If yes, please describe the change and the
3 rationale for the change.
- 4 i. COP curves
5 ii. Capacity curves
6 iii. Outdoor air temperature cut-off point
- 7 (e) Are all types of heat pumps used within the model/Load Forecast assumed to have the
8 same low-temperature behaviour? If not, please describe all differences.
- 9 (f) Is any contribution from heat pumps expected below -15 °C?
- 10 (g) Is a heat pump outdoor air temperature cut-off used in the Load Forecast? If yes, what is
11 the cut-off temperature and how was the cut-off temperature determined for each heat
12 pump type modelled?
- 13 (h) For each type of heat pump modelled, at what outdoor air temperature is the back-up
14 electric resistance heating assumed to become operational?
- 15 (i) As outdoor air temperature drops and heat pump capacity drops, does the Load Forecast
16 assume the heat pump continues to provide heat at its maximum capacity? Does the
17 modelling assume that back-up heating provides only the incremental heat required to
18 meet the building's heat load requirement? If not, please fully describe all differences from
19 this description, and provide the rationale for these assumptions.

20
21 **Request IR-03:**

22 Reference: NS Power 2023 Load Forecast, Page 36, Figure 23

23 Please provide a version of Figure 23 that includes every year of the load forecast (2023-2033).

24
25 **Request IR-04:**

26 Reference: NS Power 2023 Load Forecast, Page 40, Lines 7-8

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1 *"The peak impact assumes that 70 percent of charging is managed by NS Power (including*
2 *smoothing through vehicle-to-grid integration) and 30 percent of charging is unmanaged."*

3
4 (a) Please provide the rationale for these levels of managed electric vehicle (EV) charging
5 assumptions. What jurisdictions, research, or surveys were considered that suggest this
6 may be an achievable level of managed charging? Please provide complete references and
7 citations.

8 (b) Does NS Power anticipate the growth and development of ratepayer funded EV adoption
9 programs in the future? Please provide details of all such assumptions related to both
10 growth and development.

11
12 **Request IR-05:**

13 Reference: NS Power 2023 Load Forecast, Page 40, Lines 13-17

14 *"The management of charging in this scenario was based on minimizing the cost of electricity to*
15 *charge with the electric rates referenced being the existing time of use tariffs that are currently*
16 *in the pilot stage, coupled with vehicle-to-grid integration to smooth large spikes in charging that*
17 *would occur during switches from peak to off-peak period."*

18
19 Do the EV managed charging assumptions used in the Load Forecast assume that all managed
20 EVs will utilize both a time-varying pricing rate structure and utility direct load control of the EV?
21 If no, please provide detail as to the assumptions included.

22
23 **Request IR-06:**

24 Reference: NS Power 2023 Load Forecast, Page 45, Figure 31

25 Please provide a version of Figure 31 that breaks out total new installs, load (GWh) and peak
26 (MW) by residential and non-residential projects.

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Request IR-07:

Reference: M10872. Commercial Net Metering. NS Power Closing Submission. Page 10, Lines 16-18.

“Following legislative amendments in April 2022, the consideration of net metering applications for installations over 27 kW was paused until the approval and subsequent implementation of this Commercial Net Metering Program.”

EfficiencyOne is interested in how these recent changes to commercial net metering are impacting the solar photovoltaic (PV) included in NS Power's 2023 Load Forecast.

- (a) In the 2023 Load Forecast, describe in detail how NS Power has accounted for the bottleneck of commercial solar net metering projects that have been on hold pending the new Commercial Net Metering Program?
- (b) Please provide the estimated number of commercial net metering projects, together with the total capacity, that have been paused pending implementation of the Commercial Net Metering Program.
- (c) Describe how NS Power has incorporated the new Commercial Net Metering Program, which is required to include projects up to 1 MW in capacity, into the 2023 Load Forecast.