

**EfficiencyOne Information Requests to Nova Scotia Power, Inc. (NS Power)
In the Matter of Nova Scotia Power Incorporated's 2024 Load Forecast Report (M11689)**

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

- and -

IN THE MATTER OF: Nova Scotia Power Incorporated's 2024 Load Forecast
Report (M11689)

NON-CONFIDENTIAL INFORMATION REQUESTS TO NS POWER

To: **Nova Scotia Power Inc.**
Mark Peachey
Manager, Regulatory System Planning & Innovation
Email: mark.peachey@nspower.ca

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

Responses Due: **June 19, 2024**

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

Contact Person: James R. Gogan
McInnes Cooper
Suite 300, 292 Charlotte Street
Sydney NS B1P 1C7
By e-mail: james.gogan@mcinnescooper.com
Telephone: (902) 563-1000

Issued at Halifax, Nova Scotia, this 29th day of May, 2024.

NON-CONFIDENTIAL

Request IR-01:

Reference: NS Power 2024 Load Forecast, Page 31, Line(s) 11-18

“As part of the updates for 2024, the E3 scenario used in the forecast has been updated to the hybrid scenario, where a portion of customers adopting heat pumps retain their non-electric backup heating systems to provide heating on the coldest days. This assumption is in line with the Nova Scotia Power Electrification Strategy Report released in late 2023, which states ‘Winter peak impacts on the electricity system from cold-climate heat pumps can be mitigated by encouraging hybrid (mini-split) systems and best-in-class performing heat pumps.’”

Within the hybrid scenario, what portion of customers adopting heat pumps with non-electric backup heating systems are assumed to retain their non-electric back-up heating system?

Request IR-02:

As part of the 2022 Evergreen IRP process, in *NS Power Responses to Stakeholder Comments: Final Evergreen IRP Modeling Results*¹ NS Power stated:

“NS Power has committed to further assessment of the hybrid peak scenario as part of the updated Acton Plan (Acton Plan Item 4b), which will include the assessment of the potential for the forecasted retainment of non-electric backup heating systems.”

- (a) Has NS Power completed any further assessment of the hybrid peak scenario before using it as an input to NS Power's heat pump assumptions?
- (b) If yes, please provide the full details of this analysis including any reports and analyses conducted by NS Power or third-parties.
- (c) What are the cost implications to customers of the hybrid peak mitigation strategy (i.e., retaining existing oil systems and a new heat pump system) compared to fully removing an

¹ NS Power Responses to Stakeholder Comments: Final evergreen IRP Modeling Results [evergreen-IRP-Final-Modeling-Results-Summary-of-Stakeholder-Feedback-and-NSPI-Responses.pdf](https://www.nspower.ca/evergreen-IRP-Final-Modeling-Results-Summary-of-Stakeholder-Feedback-and-NSPI-Responses.pdf) (nspower.ca), page 11.

NON-CONFIDENTIAL

oil system over the long-term? Please provide calculation details and analysis of the impact of such costs on the anticipated customer adoption of this hybrid approach.

(d) What are the economy-wide emissions impacts of the hybrid scenario compared to the current policy and trends scenario?

(e) If the analyses described above have not been conducted, how can NS Power be assured that this is the appropriate scenario for the load forecast?

Request IR-03:

Reference: NS Power 2024 Load Forecast, Page 31, Line(s) 3-5

“Heat pump usage continues to grow in the province as more customers find heat pumps an efficient way to heat and cool buildings as well as providing environmental and financial benefits.”

(a) Have any of the following heat pump performance characteristics changed in the 2024 Load Forecast compared to the 2023 Load Forecast? If yes, please describe the change and rationale for the change.

i) COP curves

ii) Capacity curves

iii) Outdoor air temperature cut-off point

(b) In the *2023 Load Forecast Report NSPI Responses to EfficiencyOne Information Requests*², NS Power stated:

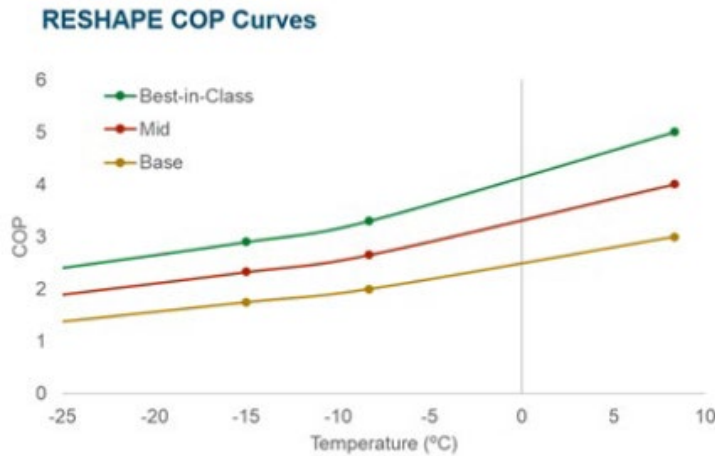
“All heat pumps are assumed to be sized to meet 93-95 percent hourly demand, and E3 assumed these heat pumps “lock out” below -7° C and only the auxiliary heating source (electric resistance) serves the load below these temperatures.”

i) Is NS Power still using this assumption in the 2024 Load Forecast?

² M11108, 2023 Load Forecast Report, NSPI Responses to EfficiencyOne Information Requests, RIR-1 to RIR-7, June 20, 2023, RIR-2, page 3 of 3.

NON-CONFIDENTIAL

In the same Information Request response, NS Power shared the E3 RESHAPE COP Curves which characterized heat pump COP performance between -25°C and 10°C.



ii) With the growing prevalence of cold climate heat pumps and the RESHAPE model data, is it not appropriate for NS Power to adopt a -15°C lockout for heat pumps in this current and future Load Forecasts? If not, why not?

Request IR-04:

Reference: NS Power 2024 Load Forecast, Page 39, Line(s) 4-7

“The peak impact assumes that 70 percent of charging is managed (including direct control through EV smart charging vehicle-grid-integration controlled by a distributed energy resource management system and influenced by rates) and 30 percent of charging is unmanaged.”

(a) What jurisdictions, research, or surveys were considered that suggested this might be an achievable level of managed charging given the updated forecast?

(b) Please provide the present number of electric vehicles that are enrolled in managed charging through:

i) Time-varying pricing rates

ii) Utility control through direct load control, subscription to an aggregator, or other means

NON-CONFIDENTIAL

1 (c) Please provide a forecast of the annual percent of managed electric vehicle charging
2 beginning with the current level of managed charging and current time-varying pricing
3 forecasts, and the by year increase to the anticipated achievable potential of 70% managed
4 charging.

5
6 **Request IR-05:**

7 Reference: NS Power 2024 Load Forecast, Figure 27, Page 43
8

9 (a) Please provide a breakdown of Figure 27 (annual new installs and annual load) by
10 residential and commercial/industrial.

11 (b) If Figure 27 does not account for commercial/industrial solar net metering projects, please
12 provide any forecasts, assumptions and analysis regarding commercial net metering, and
13 describe how it has been accounted for within the 2024 Load Forecast.
14

15 **Request IR-06:**

16 Reference: NS Power 2024 Load Forecast, Page 36-37

17 *"The EV forecast has been updated for 2024 based on the report entitled "Ensuring ZEV Adoption*
18 *in Nova Scotia", with a provincial vehicle sales forecast that aligns with the federal sales targets*
19 *of 20 percent by 2026, 60 percent by 2030 and 100 percent by 2035, but takes into account the*
20 *fact that the sales targets are at the national level and sales in Nova Scotia will likely lag larger*
21 *markets..."*

22
23 The *Ensuring ZEV Adoption in Nova Scotia*³ provides two scenarios for EV adoption in Nova Scotia,
24 both of which account for some extent of provincial differentiation regardless of whether it is the

³ Ensuring ZEV Adoption in Nova Scotia, Submitted to the Ecology Action Centre, Prepared by Dunskey Energy + Climate Advisors, March 31, 2023, https://ecologyaction.ca/sites/default/files/2023-05/RegionalZEVAdoptionOptions_Dunskey_March2023.pdf

NON-CONFIDENTIAL

1 high or low scenario. On page 17 of Dunsky's report, the high scenario is described in this paper
2 as an 'upper bound' whereas the low scenario is described as a 'lower bound'.

3
4 (a) Please provide further context on why the lower bound was utilized in the 2024 Load
5 Forecast rather than of the mid-point or upper bound?

6 (b) What would be the impact of altering the mid-point and upper bound assumptions on the
7 overall energy and demand projections in the 2024 Load Forecast?

8 (c) Has NS Power conducted a sensitivity analysis using the EV adoption mid-point or upper
9 bound? If so, E1 requests these results be shared so the overall impact can be assessed.

10 (d) What risks has NS Power identified concerning future system planning, if any, in using the
11 lower bound as opposed to the mid-point or higher bound?