

NOVA SCOTIA UTILITY AND REVIEW BOARD

IN THE MATTER OF: THE PUBLIC UTILITIES ACT

- and -

**IN THE MATTER OF: NOVA SCOTIA POWER INCORPORATED (NS Power) 10 – Year
Energy and Demand Forecast (2023 Load Forecast Report)**

INFORMATION REQUESTS

To: **Mark Peachey**
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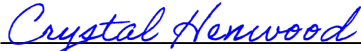
From: **Nova Scotia Utility and Review Board**
Board Staff

Responses Due: **Tuesday, June 20, 2023**

Copies: 1 electronic copy (PDF searchable)

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Crystal Henwood, Regulatory Affairs Officer/Clerk

Request IR-1:

Pages 16 and 17 of the Application discuss customers taking service under the Renewable to Retail (RTR) Tariff in 2023. Lines 3 and 4 on page 17 state: "...the corresponding energy amounts have been subtracted from the forecast starting in 2024."

- a) Is NS Power prepared for any delay in customers moving to RTR?
- b) Is NS Power prepared for a stronger take-up of RTR service than the current forecast?

Request IR-2:

In section 4.2 Weather Data on page 17 of the Application, the Heating Degree Day (HDD) uses a reference temperature of 18°C, below which NS Power expects customers will require heating for their home and above 18°C customers will require cooling in their home.

- a) Why is only one reference temperature used?
- b) Is there evidence supporting the use of 18°C? If so, please provide. If not, please explain why a different temperature was not applied.
- c) Is there evidence to support the use of a single reference temperature over two or more reference temperatures? If so, please provide.

Request IR-3:

In section 4.3 Economic Information on page 27, lines 16 to 17 of the Application state: "Housing completion numbers continue to be highly correlated with residential customer count...". Has the forecast for years beyond 2023 been examined against housing starts and under construction to adjust for potential outliers from forecast?

Request IR-4:

In reference to Figures 17 to 19 on pages 29 to 31 of the Application:

- a) Page 28 of the Application notes that financial variables have been adjusted to constant dollars to eliminate inflation effects. Have all the variables back to 2013 been adjusted?
- b) Figure 17 Residential Economic Drivers provides the number of New Construction with a growth rate of 35.5% in 2023. Is this data provided by or verified with the Canadian Mortgage Housing Corporation?
 - i. The figures for New Construction from 2013 onward have been revised from the 2022 Load Forecast report. Please explain why and describe how does this revised data effect the load forecast?
- c) Figure 17 provides Household Compensation which shows a decline in 2023.

- 1 i. The figures for 2020 onward have been revised from the 2022 Load Forecast
2 report. The 2022 report forecasted compensation in 2022 at 18,637 and 2023 at
3 18,747. This report forecasts compensation at higher levels, 19,174 for 2022 and
4 19,133 for 2023. Please explain why and describe how does this revised data
5 effect the load forecast?
- 6 ii. Is this data from the Conference Board of Canada long term forecast? Please
7 provide justification for the decline in 2023.
- 8 a. If an explanation for the decline of household compensation in 2023 is
9 not available, please confirm this forecast was checked against other
10 Nova Scotia forecasts for 2023.
- 11 d) Figure 18 Commercial Economic Drivers provides Non-Manufacturing GDP and Non-
12 Manufacturing Employment with very small growth in 2023.
- 13 i. The figures for Non-Manufacturing Employment from 2013 onward have been
14 revised from the 2022 Load Forecast report. Notably, the 2022 forecast provided
15 an employment high of 452,000 occurring in 2031 and 2032, whereas this forecast
16 exceeds this figure for 2023 and onward. Please explain why and describe how
17 does this revised data effect the load forecast?
- 18 ii. Have the authors of this data provided a reason for the reduced growth in 2023 for
19 GDP and for diminishing growth in manufacturing employment? If so, please
20 provide a copy.
- 21 iii. Has the data been checked against other forecasts?
- 22 e) Figure 19: Industrial Economic Drivers provides the historical and forecast manufacturing
23 GDP and employment both declining in 2023.
- 24 i. The figures for Manufacturing GDP from 2019 onward have been revised from the
25 2022 Load Forecast report, similarly the Manufacturing Employment numbers from
26 2014 onwards have been revised from the 2022 Load Forecast report. Please
27 explain why and describe how does this revised data effect the load forecast?
- 28 ii. Have the authors of this data provided a reason for the negative growth in 2023?
29 If so, please provide a copy.
- 30 iii. Have the authors provided a reason for the negative employment growth in 2025
31 to 2027 against positive GDP growth? If so, please provide a copy.
- 32 a. Please explain the impact on the load forecast of the decline in
33 manufacturing employment with positive manufacturing GDP growth.
- 34 iv. Has the data been checked against other forecasts?

Request IR-5:

Page 33 of the Application lines 5 to 6 state: "The end-use model uses an estimated saturation of 40 percent of customers supplying their heat via heat pumps in 2023." In the 2021 and 2022 Load Forecast report, the model used a saturation of 33 percent (Exhibit N-1 M10109, Exhibit N-1 M10569). Please explain the reasons for increasing the saturation in the end-use model for heat pump heating and provide justification for increasing from 33% to 40%.

Request IR-6:

Page 37 of the Application addresses heat pump water heaters, lines 11 and 12 state: "Growth is expected to remain steady, with saturation increasing to 87 percent by 2033."

- a) When will the existing financial incentives/rebates for installing heat pumps end?
 - i. Has this been accounted for in the forecast?
- b) How effective are heat pump water heaters at providing both hot water for consumption while simultaneously providing hot water for space heating, particularly in cold climates?

Request IR-7:

Page 38 of the Application, lines 12 to 13 state: "It is estimated that there were approximately 1900 EVs in the province as of the end of 2022."

- a) Has this estimate been checked against the Nova Scotia government Open Data for EV registration and/or EV rebate data?
- b) Is the forecast based on a combination of historical/actual EV adoption and government targets? If not, why not?

Request IR-8:

Page 41 of the Application indicates that bi-directional chargers have been installed at non-residential locations.

- a) How many have been installed in 2022?
- b) How many are forecast to be installed in 2023?
- c) How many are forecast to be installed in residential locations in 2023?

Request IR-9:

Page 53 of the Application lines 1 to 2 state "The SAE models are estimated using a -0.15 price elasticity."

- a) Is this a short-run or long-run price elasticity?

- 1 b) With increasing electrification in Nova Scotia, how is this elasticity forecast to change
2 between 2023 and 2033?
- 3 c) Have any estimates of price elasticity been calculated for each of the rate classes? If not,
4 why not?

5

6 **Request IR-10:**

7 Page 53 of the Application indicates that the price elasticity in the SAE model was developed by
8 Itron with other utilities.

- 9 a) Did Itron work with any Canadian utilities to estimate this elasticity? If not, what makes
10 this a reasonable elasticity for Nova Scotia?
- 11 b) Did the utilities that Itron worked with to develop this elasticity only peak in the winter
12 months like NS Power? If not, please explain why this is a reasonable elasticity for Nova
13 Scotia.
- 14 c) Did the utilities that Itron worked with to develop this elasticity have similar weather
15 patterns and daylight hours during peak as Nova Scotia? If not, please explain why this
16 is a reasonable elasticity for Nova Scotia.
- 17 d) Did the utilities that Itron worked with to develop this elasticity have any competition? If
18 so, please explain why this is a reasonable elasticity for NS Power.
- 19 e) Did the utilities that Itron worked with to develop this elasticity have the same level of
20 electrification as in Nova Scotia? If not, please explain why this is a reasonable elasticity
21 for NS Power.

22

23 **Request IR-11:**

24 With reference to Attachment 5 Residential Model Inputs & Outputs:

- 25 a) Under the inputs tab in the column WtXHeat, the values in July are higher than for
26 WtXCool. Please explain why heating has a higher value than cooling in July.
- 27 b) Under the inputs and outputs tabs in the column WtXHeat, the values in July are higher
28 than October. Please explain.
- 29 c) Under the inputs and outputs tabs in column WtXCool there are values for November and
30 December in many years that are higher in those months than June. Please explain why
31 there are values for cooling in November and December and why the values are higher
32 than June.
- 33 d) In the outputs tab July has higher values for WtXHeat than for WtXCool. Please explain.

Request IR-12:

Page 59 of the Application states in lines 5 to 7 “Building efficiency is expected to improve, although based on calibration done in 2013, improvements are expected to be lower in Nova Scotia than in the EIA forecast for New England.” At 10 years, old this report is out of date. Have other resources been evaluated for NS Power to obtain similar, but up-to-date, information for modeling?

Request IR-13:

Figure 42: Residential Sales Components by Year on page 60 of the Application project 54 GWh for New Customers in 2023 and 106 GWh for 2024. In the 2022 Load Forecast the New Customer forecast was 56 GWh for 2022 and 92 GWh for 2023. The 2021 Load Forecast the New Customer forecast was 44 GWh for 2021, 77 GWh for 2022 and 106 GWh for 2023. It appears that the forecast for New Customers is overstated in the near term. Please explain and provide justification for the forecasted growth.

Request IR-14:

Page 62 of the Application states in lines 26 to 28, “Approximately 35 percent of the energy for EVs is allocated to the commercial class, while approximately 30 percent of the peak is allocated to the commercial class.” Please elaborate on why the allocations for energy and peak are appropriate; please cite external support were possible.

Request IR-15:

Page 63 of the Application presents the forecast for Commercial Class sales and identifies that sales lag the rebound in economic variables. Please explain if there has been any consideration given to a potential for an economic downturn or recession from quantitative tightening, and if not, why not.

Request IR-16:

Page 63 of the Application indicates that a COVID variable was added to the General rate class model to account for the drop in sales.

- a) Please explain how this variable is formulated and how long it will be applied to the model.
- b) Has any consideration been given to the possibility that the relationship between commercial sales and GDP and/or employment may be changing?

Request IR-17:

Page 65 of the Application states in line 13 “the addition of EV loads adds 272 GWh by 2023....”
Please explain how the EV load has been verified.

Request IR-18:

Page 67 of the Application indicates that Large General Service growth is driven by several hospital projects. This was cited in the 2022 Load Forecast to have a strong effect.

- a) Does NS Power have confidence in these projects taking place in 2023?
- b) Does the long-term portion of the load forecast account for sustained higher annual consumption from these projects?
 - i. Have the customers identified any DSM or other energy mitigation investments to their infrastructure, like solar panels?

Request IR-19:

Page 68 of the Application states that Small Industrial sales “have been flat for the last 10 years and are expected to grow at 1.0 percent annually over the forecast period due to underlying economic growth.” Is the underlying economic growth weighted or is the GDP growth directional for sales?

Request IR-20:

Page 69 of the Application indicates that Medium Industrial sales are forecast to fall leading to “an average decline of 0.7 percent.”

- a) Are there other metrics that support this decline, such as employment?
- b) The graph in Figure 50 is flat after 2024, is the forecast decline simply the loss of load to RTR or is it also a reflection of other forecasted factors?

Request IR-21:

Figure 51: New Large Industrial Projects forecast.

- a) What is the confidence in this forecast level of new project energy requirements?
- b) Have high and lows been estimated?
- c) Have any DSM or other energy mitigation measures been incorporated?

Request IR-22:

Figure 53 of the Application indicates that under the Residential Class, 263 GWh are the result of an unexplained variance from the 2022 forecast. This is a significant increase from the 2022 report when the unexplained variance was 42 GWh and from the 2021 report, when the unexplained variance was 26 GWh. Given the significant size of this unexplained variance, what factors have been explored to determine the cause?

Request IR-23:

Page 74 of the Application states “From 2023 to 2033, NSR is forecast to increase at an average of 0.7 percent per year...”. This is an increase from previous forecasts. Please explain what this forecast accounts for that previous forecasts have not.

Request IR-24:

Figure 55: Forecast Components on page 76 of the Application allocates 224 GWh for the residential forecast to Model contributing to a NSR of 446 GWh. This is a significant increase from the previous forecasts that allocated 60 GWh to the residential component for a total of 226 GWh for NSR. Please explain the increase.

Request IR-25:

Page 8 of 8 of Appendix D Forecast Sensitivity Analysis, NS Power states “Other scenarios include the potential development of large-scale hydrogen production in the province. At this time, the effects on the Net System Requirement and System Peak are not sufficiently developed to be included in the load forecast. NS Power will continue to monitor the development of this new sector in future Load Forecast Reports.”

- a) What further information, that the company does not currently have, does NS Power require before it can incorporate the development of large-scale hydrogen in the load forecast?
- b) Given the legislative regime related to green hydrogen is now in place, and EverWind Fuels has made public statements about striving to be in production by 2025, could NS Power’s inability to address hydrogen in the 2023 Load Forecast Report impact its ability to meet potentially growing energy needs?
- c) Will green hydrogen scenarios be developed as part of the IRP Evergreen process?

1 **Request IR-26:**

2 In reference to matter M11084 PLT Staffing Levels and Reliability of Service 2023 Report, Exhibit
3 N-2, IR-1 requested the sources of the increase in hours for customer driven work. In response,
4 NS Power provided in lines 13 to 14 “There has been an increase in new customer connections,
5 upgrades to existing services due to customers increase load...”.

6 a) Does NS Power know, or have an estimate of, the size of electrical panels in customers’
7 homes and businesses?

8 b) Does NS Power have a forecast for upgrades to existing services to accommodate
9 increased electrification by customer class? If so, please provide.

10 i. If not, why not?

11 c) With increasing electrification, customers will demand higher load. Does the Sensitivity
12 Analysis for Distribution of Energy 90th percentile capture such an increase in demand
13 before DSM?

14 i. If so, how many customers, by customer class, will need to upgrade their existing
15 services, and to what level of service, to reach the 90th percentile?
16