

NOVA SCOTIA UTILITY AND REVIEW BOARD

IN THE MATTER OF: THE PUBLIC UTILITIES ACT

- and -

IN THE MATTER OF: AN APPLICATION by NOVA SCOTIA POWER INCORPORATED
(NS Power) 2024 Load Forecast Report

INFORMATION REQUESTS

To: **Nova Scotia Power Incorporated**
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From: **Nova Scotia Utility and Review Board**
Board Staff

Responses Due: **Wednesday, June 19, 2024**

Copies: 1 electronic copy (PDF searchable)

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for Crystal Henwood, Regulatory Affairs Officer/Clerk

Request IR-1:

Figure 3: Historic and Forecast Net System Requirement and System Peak shows that System Peak growth from 2023 to 2024F is -3.7% and the NSR growth from 2024F to 2025F is -0.7%.

- a) NS Power states on page 7 at lines 4 to 5 “higher growth in the near term due to more new customer additions and higher average use when adjusted for weather in 2023”. Why does NS Power anticipate a reduction in NSR in 2025?
- b) Given the growth in customers and NSR in 2024F why does NS Power expect a reduction of 3.7% in system peak?

Request IR-2:

Figure 5: 10 Year Normal Monthly HDD and CDDs on page 19 of the Report, please explain why there are HDD in July and August.

Request IR-3:

Page 19 explains that to reflect global warming, a trend is applied to the annual HDD and CDD variables using an analysis of 30 years of data and a 10-year moving average which finds that HDD are declining by 17 per year and CDD are increasing by 1.4 per year. These are the same figures presented in the 2023 Load Forecast on page 19. Are the changes in HDD and CDD re-estimated every year? If not, why not?

- a) Does NS Power find that load is increasing on days that qualify as CDD, as more people may be inclined to switch to their heat pumps to cooling?
 - i. Although the number of CDD is not increasing at the same rate that HDD are decreasing, with the availability of cooling units in Nova Scotia, does NS Power consider that CDD may be driving load at a greater rate than in the past? Please discuss.

Request IR-4:

In Figures 7 and 8, the values applied in the equations and the resulting R^2 have changed from the 2023 Load Forecast Report.

- a) Please explain the changed values in the equation.
- b) Please briefly discuss the change in R^2 and fit of the model.

Request IR-5:

Page 23 of the Report indicates that NS Power expects Nova Scotia's annual population growth peaked in 2023.

a) Why does NS Power consider that the trend of population growth will not continue into the near term?

i. And how does this expectation compare with Provincial government's population target of 2 million by 2060?

b) Figure 11 shows that population expectations have been reduced from the 2023 Load Forecast Report, now showing a more gradual change from 2023 to 2024. However, there appears to be a significant drop in population growth after 2024 with year over year growth below 5,000 starting in 2028. In the 2023 Load Forecast Report these years were above 5,000. Please explain the reason for the change in expectations.

i. Please provide the source data for Figure 11, and the data used to estimate *ResEcon*, *SmlGenVar* and *GenVar*.

Request IR-6:

Page 23 of the Report states "NS Power is aware of the ongoing housing shortage in the province and will continue to monitor any government initiatives that address the shortage and increase housing supply." Has NS Power adjusted the housing completion forecast in anticipation of the 2,600 housing units to be added in Halifax between 2023 and 2026 under the Housing Accelerator Fund?

Request IR-7:

In reference to Economic Drivers, please explain why the following data has changed from the 2023 Load Forecast Report.

a) Figure 13: Residential Economic Drivers for the years 2014 to 2017 and 2022 under New Construction and 2022 for Household Compensation.

b) Figure 14: Commercial Economic Drivers 2022 Non-Manufacturing GDP and 2014, 2015-2018, 2020 and 2022 under Non-Manufacturing Employment.

c) Figure 14: Commercial Economic Drivers, 2027 Non-Manufacturing GDP has improved from the 2023 Load Forecast Report, please explain the factors that are anticipated to improve this metric.

d) Figure 15: Industrial Economic Drivers, 2014, 2016-2019 and 2022 under Manufacturing Employment.

Request IR-8:

Figure 16: Economic Forecast Comparison employs data from three of Canada's Big 5 banks and National Bank. Board Staff find this table provides a useful comparison against the Conference Board of Canada forecast.

- a) Are there any specific reasons as to why NS Power omitted Bank of Nova Scotia published in October 2023 and Canadian Imperial Bank of Commerce published in February 2024?
- b) The Employment 2024 projected by the Conference Board of Canada is 0.2% which is lower than all the banks projections in the table. Has NS Power adjusted this metric in its forecast to reflect the Banks' forecast? If so, please explain how.
 - i. If not, why not?

Request IR-9:

Page 30 of the Report explains that space heating forecasts use an adoption rate needed to meet stated emission goals over a 20-year period.

- a) What is the uptake rate applied to meet emission goals?
- b) Does the rate vary over time?
 - i. Given many homes in Nova Scotia use oil for home heating as the primary or secondary energy source, does the model project a slow uptake in the near term?
- c) Can the modeled uptake rate be confirmed with actuals from 2021, 2022 and 2023?

Request IR-10:

Page 31 of the Report explains that the Residential Space Heating forecast assumes a 100% heat pump saturation by 2050. On what evidence is the 100% saturation assumption based? Please provide examples where 100% saturation has been achieved.

Request IR-11:

In reference to Figure 21: Heat Pump Forecast on page 34.

- a) In the 2023 Load Forecast Report, NS Power forecast 20,887 total cumulative new installs. Is there an actual figure available? If so, has it been incorporated into the forecast model?
- b) The report explains that the heat pump part of the intensities was adjusted to reflect the large unexplained variance in winter that is considered to be weather dependent. Is this assumption based on data presented on particularly cold days in 2023?
 - i. Is this the result of the 2023 Polar Vortex? If so, does that justify a permanent adjustment to the intensities? Please explain.

- 1 c) The report notes that there are increased heating hours from more customers working
2 from home. Has there been an increase in cooling intensity to reflect greater work from
3 home employment? Please explain.
4

5 **Request IR-12:**

6 Figure 23: Water Heater Forecast projects the percentage saturation for 2024 to 2034. In the 2023
7 Load Forecast Report, it was projected that 71% would be achieved in 2023. What level of
8 saturation was actually achieved in 2023?

- 9 a) Why has the overall percentage saturation for 2025-2028 been scaled upward?
10

11 **Request IR-13:**

12 On page 39, the report discusses the peak impact assumptions for charging. NS Power identifies
13 that the model assumes 70% of charging is managed and 30% is unmanaged.

- 14 a) What are these percentages based on?
15 b) Have other utilities found this ratio to be stable?
16

17 **Request IR-14:**

18 Figure 27: PV Impact to Energy (cumulative) presents the projections of Total New Installs. Board
19 Staff note that the 2024 to 2033 projections have been revised from the 2023 Load Forecast
20 Report. Please explain why these revisions were made.
21

22 **Request IR-15:**

23 Figure 30: Historic and Projected Small General Commercial End-Use Intensity and Figure 31:
24 Historic and Projected General Commercial End-Use Intensity show that End-Use Intensities
25 kWh/m² have changed from those applied in the 2023 report in the Attachments.

- 26 a) Please explain why the historic intensities have been revised.
27 b) Please explain the drivers leading to changes in projected intensities.
28

29 **Request IR-16:**

30 Figure 32: Commercial and Industrial Electrification Forecasts (cumulative) present values that
31 are different from the 2023 Load Forecast Report. Please explain the factors that have changed
32 from the 2023 report, resulting in lower estimates.

Request IR-17:

Page 52 of the Report discusses the price impact to sales through imposed price elasticities and explains that the SAE models use a price elasticity of -0.15. In matter M11683 NS Power identified that -0.15 would be applied in the Load Forecast Report. As part of the Report in M11683 NS Power submitted as Appendix C Testimony on The Effect of Restructuring on Price Elasticities of Demand and Supply by Steves and Lerner for the California Energy Commission in 1996.

a) Table 1 in Appendix C presents short and long run elasticities for Residential, Commercial and Industrial classes noting that customer classes have different demand and response to changes in cost which is why they estimate by class. Why has NS Power not applied different elasticities to its rate classes?

b) Appendix C also notes that customers have a greater chance to respond to changes in price over time, therefore applying a short run and long run elasticity would make modeling more robust. Why has NS Power not followed the same approach?

Request IR-18:

Page 60 of the Report examines residential sales and discusses the province's population growth and new housing. Lines 10-12 state "The Conference Board of Canada predicts continued population growth, with almost 87,000 more people in the province by 2034." However, this figure is lower than forecast for 2033 of 92,000 as presented in the 2023 Load Forecast Report.

a) Does NS Power consider previous population projections were over-optimistic?

b) How does NS Power reconcile the population growth against deaths and projected emigrations?

Request IR-19:

On page 60, the Report notes that the structural index, which considers building shell efficiency, is based on estimates from 2013. This appears to be stale data. Has NS Power considered other more recent sources of building efficiency?

Request IR-20:

Figure 40: Building Characteristics and Structural Index; the forecast for BSE Heat EIA (New England), BSE Heat NS decreased from the figures presented in the 2023 Load Forecast Report, while Floor Area increased. Please explain the changes.

Request IR-21:

Section 6.0 examines the Commercial Sector and indicates that a detailed breakdown of the two commercial SAE models are in Attachments 6 and 7. Page 65 explains that the variable was added in 2023 to account for continued lag in sales. However, Statistics Canada, Table 36-10-0402-01, reports the economic growth in Nova Scotia since 2020 has been positive: 2021 6.0%; 2022 3.0%; and 2023 1.3%. Please explain why it is appropriate for the model to continue using the COVID variable.

- a) In Attachments 2 and 3, the economic inputs are a decade out of date. Will NS Power use current information in future reports?

Request IR-22:

Section 9.0 reviews the Net System Requirement (NSR). Please explain the specific factors that result in a decrease in NSR in 2025 and 2026 and either how they level out or are offset by other factors in 2027 to 2034.

Request IR-23:

Figure 55: Forecast Components indicate that the model expects Renewable to Retail (RTR) will lead to an increase of 139 GWh for the Other category. Please explain this category and the expected increase in GWh from RTR.

Request IR-24:

Section 10 Peak Demand forecast estimates that the system peak is higher in the near term because of heating load. Please explain why heating load is expected to stabilize and not increase with customer growth and increased heat pump saturation.

Request IR-25:

Figure 62: Forecast Peak Variance vs Actuals presents data on the actual system peak that took place on February 4, 2023. Board Staff note that this table is different from Figure 67 in the 2023 Load Forecast Report which presented system peak data for the same event. Please explain the reason for the discrepancies.

1 **Request IR-26:**

2 In Appendix D, NS Power's sensitivity analysis incorporates total GWh and Peak MW of firm
3 supply for two hydrogen facilities in 2034. Please explain why NS Power is only anticipating two
4 hydrogen facilities by the end of the forecast period.

5 a) Please provide a table demonstrating overtime the demand on load from these facilities
6 as they begin operations and increase their demand for firm supply.