
Nova Scotia Utility and Review Board

IN THE MATTER OF *The Public Utilities Act*, R.S.N.S. 1989, c.380, as amended

M11689

2024 Load Forecast Report

**NS Power
Rebuttal Evidence**

September 6, 2024

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1.0 INTRODUCTION

In accordance with the *Nova Scotia Wholesale Electricity and Renewable to Retail Market Rules*¹, the Nova Scotia Power System Operator (NSPSO) is required each year to provide the Nova Scotia Utility and Review Board (NSUARB, Board) with its 10-year energy and demand forecast by the end of April for the period beginning the following January (Load Forecast Report).

The requirements for preparing the Load Forecast Report are provided in Chapter 3 of the *Nova Scotia Wholesale Electricity and Renewable to Retail Market Rules*. Since 2007, Nova Scotia Power Inc. (NS Power, Company) has filed its annual Load Forecast Reports in compliance with this requirement.

Following the filing of the 2024 Load Forecast Report on April 30, 2024, the Board issued a Hearing Order directing a paper hearing associated with its consideration of the Report.² Interventions were received from the Consumer Advocate (CA), the Small Business Advocate (SBA), counsel for the Industrial Group (IG), EfficiencyOne (E1) and Eastward Energy.

On June 19, 2024, NS Power provided responses to Information Requests (IRs) issued by NSUARB staff, Synapse Energy Economics, Inc. (Synapse) on behalf of NSUARB Counsel, the CA, the SBA, and E1. Intervenor Evidence was subsequently filed by Synapse, the CA's consultant, John D. Wilson, Grid Strategies, LLC. A submission was also filed by the SBA. Synapse provided the following positive comments regarding the 2024 Load Forecast:

For many years, Nova Scotia Power, Inc. (NSPI) has filed annual load forecast reports, and Synapse Energy Economics Inc. (Synapse) has reviewed many of these. NSPI's load forecast reports have changed considerably over time. The 2024 Load Forecast Report (Report) continues the trend of improvement in expository quality by providing additional information.³

¹ Nova Scotia Wholesale and Renewable to Retail Electricity Market Rules, effective 2007 02 01, amended 2016 06 01.

² NSUARB Hearing Order, 2024 Load Forecast Report (M11689), May 6, 2024.

³ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 1.

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We support NSPI's ongoing efforts to improve the transparency and accuracy of the load forecast. There is still more to do; but overall, NSPI's Report is very well done and satisfactorily explains the underlying factors driving the forecast.⁴

NS Power has agreed to many intervenor recommendations, as outlined in Section 2 below. The Company's responses to the Intervenors' specific recommendations are set out in this Rebuttal Evidence. Some recommendations cannot be accommodated due to time and resources constraints or are better handled in other existing processes (in particular, scenario modeling that is already part of a comprehensive IRP or DSM consultation process). Other recommendations request integration of data from other initiatives, like the Demand Response and Smart Grid Nova Scotia pilots; these initiatives provide learnings that will be used to implement new programs and technologies going forward. That being said, they may not provide well-defined inputs for the forecast in the near term given their relatively nascent state. As the outcomes of these initiatives are developed into more comprehensive programs, their likely impacts to load and peak will be better defined and eligible for incorporated into the forecast. With respect specifically to incorporating AMI data into variance analysis activities and forecasting, the load forecast model will likely see significant changes in the coming years as more granular data becomes available, but this is a long-term process that will require a period of assessing the available data, and either integrating it into the existing model or building a new or modified version to make use of this data.

⁴ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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2.0 RECOMMENDATIONS

Synapse, the CA, and the SBA provided additional recommendations for future load forecasts. NS Power's responses to those recommendations are set out below.

2.1 Synapse

Synapse provides the following recommendations and requests for clarification.

2.1.1 Recommendation 1

We ask that NSPI explore the benefits of increasing DSM levels in the future.⁵

NS Power Response:

NS Power develops optimized resource plans via its Integrated Resource Planning (IRP) exercise. The most recent Evergreen IRP exercise evaluated a range of DSM investment profiles provided by E1 in its modeling assumptions. The Base DSM profile was included in the scenarios that demonstrated the lowest cost to customers.⁶ Otherwise, development of Demand Side Management (DSM) investment and associated programs are no longer the responsibility of NS Power. Recent Bill 228 amendments to the Nova Scotia *Public Utilities Act* removed the requirement for Efficiency One (E1) to jointly file a DSM application with NS Power. Efficiency One (E1) is the primary franchise holder in Nova Scotia for DSM programming. NS Power provides input into the development of DSM programming and investment through the Demand Side Management Advisory Group (DSMAG). Levels of DSM investment and programming are currently being developed by E1 in consultation with stakeholders (including NS Power) under the DSMAG, which will inform E1's next DSM application for NSUARB review and approval.

⁵ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

⁶ 2023 Evergreen IRP – Updated Action Plan and Roadmap, August 8, 2023, page 13.

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Synapse is also an active participant in the DSMAG and may raise the question of optimal DSM investment with E1 as part of that forum.

2.1.2 Recommendation 2

We ask NSPI to continue to investigate the energy and peak load effects of heat pumps in future forecasts, especially given the variance between NSPI's analysis and E3's for both whole home heat pumps and hybrid heat pumps and the increasing availability of AMI data that is expected in the future. NSPI should seek to validate any assumptions about the extent to which heat pumps displace legacy fossil-based heating equipment, and NSPI should also seek to validate any other assumptions about customer usage of secondary heating equipment. Finally, NSPI should model hybrid electric heating within its model instead of making a simplified adjustment based on E3's hybrid scenario.⁷

NS Power Response:

NS Power agrees with the recommendation to further evaluate the impact of the heating component of the forecast, and to use AMI data when available to further investigate energy and peak variances. NS Power will be looking at ways to integrate the hybrid scenario into the existing model over the coming years. Please also refer to NS Power's response to CA Recommendation 3.

2.1.3 Recommendation 3

We recommend that NSPI model heat pump water heaters as a separate end-use technology in the next load forecast.⁸

NS Power Response:

Please refer to the response to Synapse Recommendation 18.

⁷ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

⁸ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

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2.1.4 Recommendation 4

NSPI should carefully monitor EV adoption and update its forecast as needed. As part of this update, NSPI should examine the reasonableness of the Dunskey's low scenario for Nova Scotia. NSPI should also continue to examine load impacts from EVs including peak load impacts from EV managed charging and a reasonable share of EVs that can be under managed charging programs and reflect the results of the analysis in the next load forecast. Further, NSPI should develop and implement rate designs and other programmatic options to reduce on-peak EV charging as penetration increases. These load management strategies should be reflected in the next load forecast with greater detail, with all assumptions supported empirically to the maximum extent possible.⁹

NS Power Response:

NS Power agrees with the recommendation to continue to monitor EV adoption, in particular sales numbers as compared with the Dunskey scenarios, as well as load and peak impacts. Regarding rate design and load management strategies, please refer to the Company's response to Synapse Recommendation 16.

2.1.5 Recommendation 5

NSPI should continue to monitor the coincidence of solar generation with month system peaks and make updates to coincidence factors as warranted.¹⁰

NS Power Response:

NS power agrees with this recommendation.

2.1.6 Recommendation 6

NSPI should continue to investigate and report on opportunities for incentivizing cost-effective deployment of battery storage, including through rate design. NSPI

⁹ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

¹⁰ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

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1 should also continue to investigate the use of EV batteries, especially for peak
2 management.¹¹
3

4 **NS Power Response:**
5

6 Battery storage deployment and bi-directional EV charging were covered under the recently
7 concluded Smart Grid Nova Scotia Final Report proceeding (M11621). NS Power is amenable to
8 further consideration of study of those DERs and associated functionality and benefits where
9 appropriate, subject to the outcome of the NSUARB's decision in M11621.
10

11 **2.1.7 Recommendation 7**
12

13 NSPI should validate the use of new home construction as a proxy for customer
14 growth, addressing concerns about potential shortcomings of this proxy variable.¹²
15

16 **NS Power Response:**
17

18 NS Power disagrees that the use of new home construction as a proxy for new customers needs to
19 be validated further. Figure 11 provided in the 2024 Load Forecast report shows that new
20 customers are highly correlated with housing completions in the historic data set, and using this
21 variable for forecast years (as provided by the Conference Board of Canada) would be a logical
22 conclusion. NS Power is not clear on what further validation could be provided for this metric, or
23 why the high correlation with historic customer additions does not address concerns. Synapse
24 offers the example that new housing might partially displace existing housing, but there is nothing
25 to indicate this potential outcome is any different in future years than it would have been in past
26 years.
27

28 Synapse also advised that NS Power should consider household size and household resident age
29 in the Load Forecast.¹³ Regarding the inclusion of household size, as outlined on pages 24-25 of

¹¹ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

¹² Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

¹³ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 21.

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the 2024 Load Forecast report, this is an input to the forecast. Other than household size, demographics are not taken into account explicitly, but the impact of any other changes in the underlying demographics (average age for instance) would be difficult to isolate in the usage model compared to larger drivers such as household size, weather, pricing and economics. These smaller changes would also be present in the historic data and the corresponding trend would be included in the outputs of the regression model.

2.1.8 Recommendation 8

We ask that NSPI reassess its modeling approach for COVID-19 impacts on the residential class. NSPI should continue to collect data on work-for-home behavior, and it should make modifications to its modeling approach as warranted. We also reiterate the Board's 2023 suggestion to consider the impacts of household demographics on residential load.¹⁴

NS Power Response:

NS Power is not aware of any available variables or indices that would allow for further analysis of work from home behaviour beyond the present inclusion of the pseudo-binary in the model. NS Power agrees with the recommendation to reassess the statistical validity of the current treatment of the work from home in the next forecast. Household demographics are taken into account in the forecast through the impact of household size as outlined on pages 24 and 25 of the report.

2.1.9 Recommendation 9

Given that significant changes to the load forecast relative to the previous year's forecast owing to revisions to assumptions about EV and solar penetration and the impacts of the RTR and hybrid heating, NSPI should address the range of possibilities (sensitivities) in these domains to produce a more robust forecast.¹⁵

¹⁴ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

¹⁵ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 32.

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NS Power Response:

The primary purpose of the Load Forecast report is that it provides “the basis for the planning and overall operating activities to serve customer load.”¹⁶ Despite year-over-year variances from load forecast to load actuals, the load forecast continues to provide a reliable basis on which to plan and operate the system. Scenario analyses within the load forecast are beyond the scope of this primary purpose and would introduce significant additional complexity and effort without clear justification or benefit. Rather than specific scenarios, a sensitivity analysis is provided in Section 10, and the impact of several specific forecast inputs (DSM, solar, EV, hydrogen production, batteries, weather/economics) are outlined in Appendix D and provide the relative magnitude of their contribution to both energy consumption and peak. See also Synapse Recommendation 20 for additional context.

2.1.10 Recommendation 10

We further ask that NSPI explore the potential impacts of solar and DSM on the Large General Service forecast.¹⁷

NS Power Response:

Approximately 10 percent of commercial DSM is already included in the Large General forecast. Solar impacts are estimated for the commercial class and are currently assumed to impact primarily the general demand class, but any solar projects identified in the large general class will be incorporated in future load forecasts.

2.1.11 Recommendation 11

We ask NSPI to explore the likelihood and impacts of greater industrial electrification levels.¹⁸

¹⁶ 2024 Load Forecast Report (M11689), April 30, 2024, page 6 lines 11 -13.

¹⁷ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

¹⁸ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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NS Power Response:

NS Power does not have a view on the magnitude or timing of potential electrification in the industrial sector beyond the proposed projects identified through surveys and discussions with customers. Those amounts are outlined in Figures 47 and 51 of the 2024 Load Forecast report and are updated on an annual basis.

2.1.12 Recommendation 12

We ask NSPI to explore the potential for greater industrial savings.¹⁹

NS Power Response:

DSM is already incorporated into the forecast for the industrial classes, with any additional change in consumption provided through customer surveys and discussions with customers. Please refer to NS Power's response to Synapse Recommendation 1 for future information on evaluation of DSM programs.

2.1.13 Recommendation 13

We ask NSPI to explore the impacts of real time rates.²⁰

NS Power Response:

Please refer to NS Power's response to Synapse Recommendation 16.

2.1.14 Recommendation 14

We ask NSPI to explore the impacts of increases in industrial RTR.²¹

¹⁹ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

²⁰ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

²¹ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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NS Power Response:

Estimates for industrial customers migrating to RTR are provided by the associated Licenced Retail Supplier (LRS) and will be updated on an annual basis.

2.1.15 Recommendation 15

If DSM program savings are increased above historical levels, then the adjustment factors probably should be adjusted upward to reflect greater levels of incremental savings.²²

NS Power Response:

DSM program savings are determined as part of the NSUARB proceedings to approve DSM programming. E1 is currently developing its next DSM programming application with input from members of the DSMAG. New DSM savings assumptions will be determined as part of a forthcoming E1 DSM application Board proceeding. If DSM program savings assumptions are updated at that time, NS Power will consider and incorporate into future load forecasts where appropriate, as outlined on page 56 of the report.

2.1.16 Recommendation 16

We ask NSPI to investigate what can be done with time-of-use rates and other measures to mitigate the peak load increases for all these components, especially for the C&I sectors.²³

NS Power Response:

NS Power notes Synapse's observations with respect to price signal-based interventions (time-varying pricing, interruptibility rider, etc.) as tools to moderate and/or mitigate system peak

²² Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

²³ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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impacts due to heating and transportation electrification. As part of its 2024/25 Time-Varying Pricing (TVP) Tariff Application, filed July 31, 2024 under M11822, NS Power has proposed to establish an ongoing pricing innovation process to continue TVP tariff development and analysis in collaboration with stakeholders in a structured, analytics-based, and stakeholder-engaged manner. As part of its commitments in the 2024 TVP Consensus Agreement, the Company's pricing innovation 2024/25 areas of focus include analysis of commercial class customer segmentation of common use profiles, and a review of system planning related values as applicable to TVP including avoided costs and effective load carrying capability. The consideration of time-varying or time-of-use rates/tariffs to mitigate peak load increases is best explored through the stakeholder engagements and pricing innovation process under M11822.

2.1.17 Recommendation 17

NSPI should conduct an analysis of portfolio ELCC and develop an ELCC value for demand response based on a portfolio ELCC. Further, NSPI should analyze a greater level of demand response programs, that are consistent with a greater level of peak loads due to electrification.²⁴

NS Power Response:

With respect to development of an ELCC value for demand response (DR), as stated in the 2024 10-Year System Outlook (M11764), filed with the Board on June 27, 2024, NS Power supports updating the capacity study prior to the next IRP analysis, with the focus of the update being an examination of the interactive effect of the identified clean resources (wind, solar, battery energy storage, and demand response).

NS Power is considering DR programs in collaboration with E1. The Company's Smart Grid Nova Scotia Final Report provided the following:

²⁴ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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The NSUARB recently acknowledged that the Project outcomes may play a role in reaching 2030 environmental mandates. DR and associated programs are becoming an increasingly bigger part of enabling DSM activities and achieving broader efficiency goals and objectives. As previously noted, E1 received approval for its 2023-2025 DSM Plan activities in September 2022. The NSUARB-approved Plan targets 412.7 GWh in energy savings and 78.8 MW in demand savings over the three-year period and launches E1's first DR program with an available capacity target of 17.9 MW by the end of 2025. Furthermore, the Province's 2030 Clean Power Plan targets 150 MW of load management by 2030 (including hybrid peak, DR, efficiency, and EV smart charging, etc.). NS Power's The Path to 2030 is aligned with these DR targets. NS Power, with support from E1, is progressing DR pilot programming with the intent of meeting its 75 MW DR capacity target by 2025 and assisting in meeting the province's 150 MW DR target by 2030. DR programs are an important demand-side resource that, like interruptible load, can be called upon to reduce peak, if required.²⁵

2.1.18 Recommendation 18

We ask NSPI to further explore and evaluate the impacts of thermal storage, heat pump water heaters, and induction cooking technologies.²⁶

NS Power Response:

Thermal storage is already included in the underlying residential usage. The technology has been widely available for over 25 years and there are approximately 13,000 customers (end-use saturation of around 2.6 percent) on the associated time-of-day rate with around 200 new customers every year. The low uptake numbers are unlikely to change in the near term, and given the low overall saturation, the small relative impact of this end use does not warrant further investigation at this time.

Similarly, heat pump water heaters make up a very small percentage of water heater stock in the province (as outlined on page 35 of the 2024 Load Forecast report), and although NS Power does not have specific data on induction stovetops, they likely constitute a small part of the existing stock. While these could be included as their own category of end use, their small numbers and

²⁵ Smart Grid Nova Scotia Final Report (M11621), March 15, 2024, page 28, lines 2 – 14.

²⁶ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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1 lack of forecast data (EIA does not provide estimates for either due to the small number) mean that
2 adjustments in the expected efficiency of water heaters and stovetops (ECook end use) are a more
3 appropriate method to include potential impacts. These will be assessed in the next load forecast.
4

5 **2.1.19 Recommendation 19**
6

7 We ask NSPI to quantify specifically the electrification and EV impacts for the
8 commercial sector and to consider how this can be moderated.²⁷
9

10 **NS Power Response:**
11

12 Please refer to 2024 Load Forecast report Synapse IR-9, Attachment 1 for a breakdown of EV
13 impact to both residential and commercial energy and peak.
14

15 **2.1.20 Recommendation 20**
16

17 For the major resources and end uses that pose uncertainties about their future
18 adoption rates, in particular heat pumps, EVs, DSM, and demand response, we
19 highly recommend that NSPI develop a few different scenarios (e.g., low case and
20 high case) in addition to the reference case.²⁸
21

22 **NS Power Response:**
23

24 Please refer to NS Power's response to Synapse Recommendation 9.
25

26 **2.1.21 Recommendation 21**
27

28 NSPI should also evaluate the possibility of a higher than forecast peak in light of
29 the systematic under-forecasting of peak that is noted above.²⁹
30

²⁷ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

²⁸ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

²⁹ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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NS Power Response:

A “higher than forecast peak” is included in the sensitivity analysis provided in Section 11 of the report.

2.1.22 Recommendation 22

Finally, we recommend that there be future sensitivity analyses based upon thoughtful/critical examination of realistic but aggressive proactive actions to mitigate projected peak increases using newly available technology.³⁰

NS Power Response:

Please refer to NS Power’s response to Synapse Recommendations 9 and 17. Mitigation of peak increases and using newly available technology has been or is actively being considered in other proceedings such as the Smart Grid Nova Scotia (SGNS) project, Integrated Resource Planning (IRP), and Time Varying Pricing (TVP) proceedings, as well as E1’s work with the Demand Side Management Advisory Group (DSMAG). In particular, the learnings of SGNS project will be used as a foundational basis to explore potential future DR-related technology, including the use of a DERMS platform.

2.2 Consumer Advocate

The CA’s evidence provides the following recommendations.

2.2.1 Recommendation 1

NS Power should continue to investigate its method for adjusting residential heating intensities, including consideration of AMI data to gain a more granular

³⁰ Synapse Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 33.

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1 understanding of the cause of the variance between forecast and actual peak
2 energy.³¹
3

4 **NS Power Response:**
5

6 Please refer to NS Power's response to Synapse Recommendation 2.
7

8 **2.2.2 Recommendation 2**
9

10 NS Power should study whether its residential SAE model should be updated to
11 include the impacts of weather trends, the CDD trend forecast, a new increasing
12 maximum average temperature trend forecast, a cloud cover forecast, and a forecast
13 of wind gusts over 80 km/hr.³²
14

15 **NS Power Response:**
16

17 The SAE model already includes weather trends that impact HDD, CDD, and minimum daily
18 temperature values used in the forecast as outlined in section 4.2 of the 2024 Load Forecast report.
19 The increasing number of hours of wind gusts greater than 80 km/h cited by Grid Strategies was
20 identified as a driver of reliability investment, not as a driver of energy consumption, and wind
21 speed is already incorporated into the peak forecast model. NS Power agrees with the
22 recommendation to investigate trends in increasing maximum average temperature (summer peak)
23 and cloud cover.
24

25 **2.2.3 Recommendation 3**
26

27 The Board should convene an informational hearing to better understand how Nova
28 Scotia will meet winter peak heating demand in the future, seeking testimony from
29 NS Power and Eastward Energy, and invite comments from other key stakeholders,
30 including those involved in the propane and fuel oil markets.³³
31

³¹ Consumer Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 3.

³² Consumer Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 3.

³³ Consumer Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 3.

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NS Power Response:

NS Power's The Path to 2030, filed on December 22, 2024 under the 2024 ACE Plan (M11458), provided the following regarding hybrid peak scenario:

As a component of NS Power's development of its electrification strategy report, it worked with its consultant Energy and Environmental Economics (E3) to prepare load and system peak load forecasts for various heating electrification scenarios. Of the heating electrification load profiles considered, the hybrid peak electrification profile emerged as an opportunity for reduction of system peak load requirements and was studied as part of the evergreen IRP. This scenario assumes the adoption of mini-split heat pumps along with the retention of existing back up heating sources (such as oil and natural gas) to operate during the colder/peak system demand periods in the winter when heat pumps are less efficient. This potential program was discussed in NS Power's 2023 Load Forecast Report; additional details are available as part of E3's report, The Economics of Electrification in Nova Scotia, which was shared with stakeholders via NS Power's IRP website on December 8, 2023. The Evergreen IRP assumptions for this program incorporate a firm peak reduction of approximately 100 MW by 2030.

To fully assess the value of the hybrid peak scenario, NS Power is committed to participating in future study work to determine the corresponding cost impacts of potential customer programs (please refer to the Action Plan Item 4b). This study, with engagement and participation from multiple organizations including NS Power, will provide a balanced assessment of the cost impacts of the hybrid approach and provide the necessary information to conduct a more refined assessment of the program from an electricity system cost perspective.

//

The 2030 Clean Power Plan incorporates Load Management activities consistent with the Hybrid Peak program modeled in the Evergreen IRP. NS Power's updated IRP Action Plan and Roadmap supports the progression of the electrification strategy and annual updates on the progress of these initiatives will be communicated as part of the IRP process. Next steps include commencing a Hybrid Peak study in 2024 in partnership with other organizations in Nova Scotia.³⁴

³⁴ The Path to 2030 (M11458), December 22, 2023, page 35 – 36, lines 15 – 26, and 1-6, 16-20.

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1 Consistent with the Company's comments in The Path to 2030 regarding further exploration of the
2 hybrid peak scenario, NS Power anticipates participating in a corresponding proceeding initiated
3 by the Provincial government.

4
5 **2.2.4 Recommendation 4**

6
7 NS Power should remove the peak reduction benefits associated with time-varying
8 pricing from its load forecast.³⁵
9

10 **NS Power Response:**

11
12 NS Power disagrees with this recommendation. The TVP program has shown positive results and
13 increased enrollment with each additional iteration of the program. NS Power's TVP Year 3 report
14 indicates average savings of 0.15 kW per residential TOU participant and 0.9kW per CPP
15 participant during evening peaks.³⁶ With around 900 residential CPP customers and 2200
16 residential TOU customers in the winter of 2023/2024, savings were around 1.1 MW. The
17 proposed enrollment targets for the 2024/25 TVP season are 3,500 CPP and 7,000 TOU customers,
18 which would make the 4 MW forecast for 2025 achievable.
19

20 **2.2.5 Recommendation 5**

21
22 NS Power should use an estimate of 0.45 kW/vehicle for its EV charging forecast.³⁷
23

24 **NS Power Response:**

25
26 NS Power disagrees with this recommendation, but as outlined in response to Synapse
27 Recommendation 4, NS Power agrees with further investigation of the peak impact of EVs. The
28 values referenced by Grid Strategies are from a single weekend day in 2023, which is not

³⁵ Consumer Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 3.

³⁶ NS Power Time-Varying Pricing (TVP) Pilot Program - Year Three Report (M11823), July 31, 2024.

³⁷ Consumer Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 3.

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necessarily representative of a typical peak. The 2024 Load Forecast report cites SGNS results that indicate managed peak values of 0.35 kW/vehicle, with unmanaged averages across all winter months of 0.2-0.6 kW/vehicle and single highest unmanaged values of 1.9-2.3 kW/vehicle.³⁸ The results show a wide variation, and it is not a broad enough sample or timeframe to serve as a basis for the forecast. In addition, as discussed in the 2023 Load Forecast report, the Smart Grid Nova Scotia (SGNS) project data shows EV load peaks at around 11:00 pm due to some of the participants being on a TOU rate and others believing they save by charging at off-peak times. While the data gathered from the SGNS project do not allow for more detailed estimate of peak impact directly, they do show that the current estimates of 0.9 kW/vehicle for managed and 1.6 kW/vehicle for unmanaged charging are reasonable.

2.2.6 Recommendation 6

NS Power should revise its load forecast and distribution planning forecasts to rely on consistent assumptions about customer growth, electrification, and other matters. The Board should require an interim report indicating specific steps and a timeline by this fall, with the goal of incorporating changes into the 2025 ACE Plan.³⁹

NS Power Response:

The NSUARB recently issued its Decision regarding the 2023 Routines Authorization to Overspend (ATO) application for D004, D061 and D062 (M11783) on August 19, 2024. In its Decision, the Board provided the following direction:

In response to Board staff IRs, NS Power noted that the factors leading to cost growth for Routine D062 [are] interrelated with Routines D004 and D061. NS Power stated that population growth and economic growth in Nova Scotia were the primary causes of these Routines exceeding their budgets. Based on recent increased growth, the Company noted that an alternative methodology will be reviewed for forecasting the routine budgets, which will incorporate new housing start trends, population growth forecasts and electrification growth forecasts. In the

³⁸ 2024 Load Forecast Report (M11689), April 30, 2024, page 41 lines 11 -13.

³⁹ Consumer Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 4.

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1 2025 ACE Plan application, the Board directs NS Power to provide details on
2 changes to the D004, D061 and D062 Routine budget estimation methods that were
3 assessed and provide explanations as to why they were, or were not, applied.
4

5 The Board notes that an increase in the costs for Materials played a reoccurring role
6 in the overspending for each of these Routines. It is expected that an increase in
7 customer upgrades and service connections will result in an increase in materials,
8 but it appears that the cost of the materials is also a factor that was not sufficiently
9 budgeted. Although expenses for materials as a proportion of total budget spending
10 increased between 3% and 7%, materials represented a significant proportion of the
11 variance in expenditures. The Board directs NS Power to examine changes in costs
12 for materials in addition to housing starts, population growth and electrification
13 when examining alternate budget forecasting methodologies for these routines.⁴⁰
14

15 In light of the NSUARB's direction the above noted matter, the issues raised in the CA's
16 recommendation will be dealt with via NS Power's response in the 2025 ACE Plan. An interim
17 report is not required.
18

19 **2.3 Small Business Advocate**
20

21 The SBA's submission contained the following recommendations.
22

23 **2.3.1 Recommendation 1**
24

25 The SBA submits that it would be beneficial for NSPI to use the results derived and
26 lessons learned from the Smart Grid Nova Scotia pilot project (as described in the
27 report issued in M11621) as input to the load forecast models.⁴¹
28

29 **NS Power Response:**
30

31 As outlined in M11621, the SGNS project tested a variety of technologies and scenarios to serve
32 as a "guiding framework for future innovations initiatives" and centred on the use and benefits of
33 a distributed energy resource management system (DERMS) and management of distributed

⁴⁰ NSUARB Decision, ATO Distribution Routines ATO D004, D061, D062 (M11783), August 19, 2024, page 2 and 3.

⁴¹ Small Business Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 1.

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energy resources (DER). The learnings of SGNS project will be used as a foundational basis for potential future orchestration of DERs and related technology. As the outcomes of these initiatives are developed into more comprehensive programs, their likely impacts to load and peak will be better defined and eligible for incorporation into the forecast. The findings regarding the impact of EVs to peak load are discussed in the 2024 Load Forecast report in section 4.4, but the investigation of other technologies did not produce direct inputs for the load forecast.

2.3.2 Recommendation 2:

The SBA submits that NSPI should continue to recruit more small business customers to its different pilot load shifting (TVP/TOU/CPP, etc.) programs (as is being explored in M11267) so that the demand response potential of small business can be included in load forecasts (similar to Figure 56 of the Report), going forward. The contribution of small business customers to NSPI's demand response programs, particularly at peak demand times, could be significant. The impact of their load shifting can then be quantified and compared to other classes of customers, which will directly impact the results of the next load forecast.⁴²

NS Power Response:

Please refer to NS Power's response to Synapse Recommendation 16.

2.3.3 Recommendation 3:

The SBA submits that the issue of net-zero energy-ready (NZER) building codes is an important matter that is likely to arise in the near future. As Nova Scotia signed onto the Pan-Canadian Framework on Clean Growth and Climate Change in 2016, and therefore agreed to a net-zero energy-ready (NZER) code for new construction by 2030 it must be expected that we will see changes to the building codes soon to move towards NZER codes. It would be beneficial for NSPI to provide updates on that process in the annual load forecast reports, as once implemented, NZER building codes could potentially have significant impacts on NS Power's long-term load forecasts.⁴³

⁴² Small Business Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 1.

⁴³ Small Business Advocate Evidence, 2024 Load Forecast Report (M11689), July 11, 2024, page 1 and 2.

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NS Power Response:

The present national building code includes performance tiers, with the highest performance being the NZER standard (Tier 5). Tier 1 is the baseline requirement, with higher tier requirements being optional unless specified by provincial or local regulations, with the goal of moving to a Tier 5 requirement by 2030. According to Efficiency Canada,⁴⁴ “Nova Scotia originally announced plans to adopt Tier 1 of the NBC and the NEBC, and to reach NBC Tier 3 in 2026, and NEBC Tier 3 in 2028. However, the province recently announced a delay in these plans, citing perceived labour and supply chain challenges.” It is unlikely that the initial timeline would result in adopting Tier 5 as a requirement by 2030, and the delays cited would mean adoption of NZER codes would be even further into the future. Regardless, the increasing energy standards result from a combination of increased building envelope efficiency, reduced energy consumption in the form of more energy efficient heating, cooling, lighting and appliances, and incorporation of solar generation. All of these are captured in the SAE model, and although specific (and yet to be determined) building code requirements may accelerate improvements or adoption in some of these areas, they are largely captured by the existing assumptions. Any specific expected changes to projected efficiency requirements will be incorporated as they are adopted.

⁴⁴ [Provincial and Territorial Tiered Energy Code Adoption Landscape - Efficiency Canada](#), updated April 23 2024

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3.0 CONCLUSION

Submission of the Load Forecast Report is an annual requirement under the provisions of the Nova Scotia Wholesale and Renewable to Retail Market Rules. Since 2007, NS Power has continued to refine its load forecast, with input from Synapse, and over the last several years with input from other parties as part of a public proceeding. Each annual Load Forecast report reflects continuous improvement in methodologies and better explanation of the inputs and models as confirmed by Synapse.

NS Power appreciates the comments and feedback on the Load Forecast Report. Pursuant to the Company's responses in Section 2 of this reply, NS Power has considered the comments and feedback received and, subject to the Board's determination in this matter, will incorporate adjustments in the next annual Load Forecast Report where appropriate.

NS Power respectfully requests that the NSUARB accept the 2024 Load Forecast Report as filed.