Matter No. M11689

In the Matter of Nova Scotia Power's 2024 Load Forecast Report

EVIDENCE OF

JOHN D. WILSON

ON BEHALF OF

THE CONSUMER ADVOCATE

Grid Strategies, LLC

JULY 11, 2024

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I. Identification & Qualifications

Q: Mr. Wilson, please state your name, occupation, and business address.

A: I am John D. Wilson. I am the Vice President of Grid Strategies, LLC, Bethesda, MD.

Q: Summarize your professional education and experience.

A: I received a BA degree from Rice University in 1990, with majors in physics and history, and an MPP degree from the Harvard Kennedy School of Government with an emphasis in energy and environmental policy, and economic and analytic methods. I have been employed by Grid Strategies since 2023, and previously I performed similar duties as an employee of Resource Insight.

Previously, I was deputy director of regulatory policy at the Southern Alliance for Clean Energy for more than twelve years, where I was the senior staff member responsible for SACE's utility regulatory research and advocacy, as well as energy resource analysis. I engaged with southeastern utilities through regulatory proceedings, formal workgroups, informal consultations, and research-driven advocacy.

My work has considered, among other things, the cost-effectiveness of prospective new electric generation plants and transmission lines, retrospective review of generation-planning decisions, conservation program design, prudency review, ratemaking and cost recovery for utility efficiency programs, allocation of costs of service between rate classes and jurisdictions, design of retail rates, and performance-based ratemaking for electric utilities.

My professional qualifications are further summarized in Attachment 1.

Q: Have you testified previously in utility proceedings?

A: Yes. I have testified or filed reports more than 60 times before utility regulators in ten U.S. states and Nova Scotia, and I have appeared numerous additional times before various regulatory and legislative bodies.

Q: Have you previously testified in other proceedings before this Board?

A: Yes. I have filed testimony in over twenty matters. I have also assisted the Consumer Advocate in preparing comments and developing positions in numerous proceedings and stakeholder processes.

Q: On whose behalf are you testifying?

A: My testimony is sponsored by the Nova Scotia Consumer Advocate.

II. Introduction and Summary

Q: Please summarize the topics you will address in your review of the 2023 Load Forecast Report.

A: I have reviewed one notable change to NS Power's load forecast methods that is reported this year. I will also discuss several areas in which load forecast methods could be improved. Finally, I will discuss inconsistencies between the load forecast and the distribution system planning forecast.

Q: Please summarize your recommendations.

A: I have six recommendations.

1. NS Power should continue to investigate its method for adjusting residential heating intensities, including consideration of AMI data to gain a more granular understanding of the cause of the variance between forecast and actual peak energy. I recommend that NS Power make the following changes in future load forecast reports.
2. NS Power should study whether its residential SAE model should be updated to include the impacts of weather trends, the CDD trend forecast, a new increasing maximum average temperature trend forecast, a cloud cover forecast, and a forecast of wind gusts over 80 km/hr.
3. The Board should convene an informational hearing to better understand how Nova Scotia will meet winter peak heating demand in the future, seeking testimony from NS Power and Eastward Energy, and invite comments from other key stakeholders, including those involved in the propane and fuel oil markets.
4. NS Power should remove the peak reduction benefits associated with time-varying pricing from its load forecast.
5. NS Power should use an estimate of 0.45 kW/vehicle for its EV charging forecast. Finally, I also have a recommendation related to aligning the load forecast and distribution system planning forecast.

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.

III. New Methods in 2024 Load Forecast Report

Q: Please summarize the significant modeling changes NS Power has made in the 2024 Load Forecast Report.

A: NS Power made one notable change to its methods in the 2024 Load Forecast Report. NS Power has increased the residential heat pump heating intensity (kWh/house), as shown in Figure 1.

Figure 1: NS Power Change to Residential Heating Intensity[1]

Year	2024 Heating Intensity (kWh/house)	2023 Heating Intensity (kWh/house)	Change (Percentage)
2024	2,066	1,511	+37
2025	2,271	1,639	+39
2026	2,454	1,770	+39
2027	2,636	1,899	+39
2028	2,814	2,026	+39
2029	2,973	2,140	+39
2030	3,128	2,250	+39
2031	3,277	2,357	+39
2032	3,422	2,459	+39
2033	3,554	2,552	+39
2034	3,680	2,631	+40

NS Power explains this change as follows:

> The heat pump heating component intensities were adjusted to account for the fact that the large unallocated variance occurred mainly in the winter months and was determined to be primarily weather dependent. The increase in heating intensity is likely due to increased hours of heating resulting from increased work-from- home activity but may also be driven by higher overall equipment intensity (higher temperature setpoints, more heating load served by the heat pumps).[2]

[1] Exhibit N-1, 2024 Load Forecast Report, p. 34.

[2] Exhibit N-1, 2024 Load Forecast Report, p. 34.

By "unallocated variance," NS Power is referring to the difference between forecast energy and actual energy in 2023, after adjustment for weather impacts.[3]

Q: Do you agree with NS Power's adjustment to residential heating intensities?

A: NS Power's adjustment is reasonable, given the information it has available. However, it should be recognized that the adjustment is inferred as being weather dependent. Other possibilities include errors in NS Power's weather adjustment,[4] NS Power's assumptions regarding residential space heating saturation,[5] and the accuracy of NS Power's residential new customer forecast (Section V).

Q: What is your recommendation on the adjustment to residential heating intensities?

A: The Board should direct NS Power to continue to investigate this topic, including consideration of AMI data to gain a more granular understanding of the cause. This is necessary because further investigation into the possibilities identified above could alter the electrification forecast, which is an input to planning and budgeting for electrification programs and should also be an input to distribution planning (see Section V).

IV. Issues with 2024 Load Forecast Report

A. Consideration of weather trends

Q: How is NS Power considering weather trends in its load forecast?

A: NS Power considers a trend in the minimum 12-hour lagged average temperature as well as trends in the heating degree days and cooling degree days. In the winter, the minimum average temperature is rising and the number of heating degree days is falling. In the summer, the number of cooling degree days is rising.[6]

[3] Exhibit N-4, NSUARB RIR-11(b).

[4] Exhibit N-1, 2024 Load Forecast Report, p. 78.

[5] Exhibit N-1, 2024 Load Forecast Report, p. 32.

[6] Exhibit N-1, 2024 Load Forecast Report, p. 21;]. Note that a larger impact on residential energy use for cooling is a side-effect of the adoption of residential heat pumps. Exhibit N-4, NSUARB RIR-3.

Q: Are there other weather trends that NS Power should evaluate?

A: Yes, there are two other weather trends that NS Power should evaluate. First, just as it evaluates the trend in the minimum average temperature, NS Power should also evaluate the trend in the maximum average temperature. Second, NS Power should evaluate wind and cloud cover trends to determine if they may significantly impact either annual energy use or peak demand.

Q: Why should NS Power evaluate the trend in the maximum average temperature?

A: First of all, the maximum average temperature is probably of little or no use for either the annual energy or peak forecasts included in the report. This is because cooling degree days adequately captures the impact of hot summers on energy demand and it is unlikely that NS Power will experience a summer peak within the period covered by the load forecast.

While there is no *direct* relationship between maximum average temperature and the load forecast results, there may be a significant *indirect* relationship. The residential Statistically-Adjusted End Use (SAE) model includes assumptions about cooling saturation and building shell integrity measures.[7]

Customers may respond to increasing CDDs or they may respond to increasing maximum average temperatures, or both, in making decisions to invest in cooling equipment (saturation rate) or shell integrity (energy efficiency).

Q: Why should NS Power evaluate wind and cloud cover trends to determine if they may significantly impact either annual energy use or peak demand?

A: NS Power should evaluate these trends because each has been identified as of significant relevance in day-to-day operations. It stands to reason that those trends may also become relevant to future energy use patterns.

NS Power indicates that its operational dispatch load forecast model considers cloud cover as an input weather forecast variable.[8] It is not reasonable to forecast cloud cover conditions on an hourly basis because, as NS Power points out, it would require "more granular weather data" than is used in its load forecast model.[9] Nonetheless, it is reasonable to use historical data and learnings from its operational dispatch load forecast model to

[7] Exhibit N-1, 2024 Load Forecast Report, Appendix B, pp. 3, 31.

[8] Exhibit N-2, CA RIR-1, M11108.

[9] Exhibit N-2, CA RIR-1(a).

determine (a) the relationship between cloud cover, energy use, and peak demand and (b) the relationship between cloud cover and trends in SAE model inputs.

Similarly, NS Power has identified trends in the "number of hours of wind gusts greater than 80 km/h."[10] Again, while wind gusts have been mainly associated with NS Power's concerns about damage from storms, there may also be statistically-valid relationships related to the load forecast or SAE model inputs.

Where statistically-valid relationships are identified, NS Power should then evaluate the practicality of developing a forecast of cloud cover and wind trends. As NS Power notes, cloud cover is not a metric provided by Environment Canada, so it would have to use its own or another party's database to evaluate cloud cover.

Q: What is your recommendation?

A: The Board should direct NS Power to study whether its residential SAE model should be updated to include the impacts of weather trends, the CDD trend forecast, a new increasing maximum average temperature trend forecast, a cloud cover forecast, and a forecast of wind gusts over 80 km/hr.

B. Hybrid scenario for electrification

Q: Please summarize the hybrid scenario for electrification of building heat.

A: NS Power created a hybrid scenario for electrification of building heat to reflect peak mitigation through the use of non-electric heat sources. I have raised this issue in my evidence for the 2022 and 2023 load forecast reports.[11]

In its 2023 report, NS Power found that the hybrid scenario would have a moderate (perhaps insignificant) impact on energy use. Changing the model assumption from customers fully relying on heat pumps to customers using some non-electric backup system during peak periods would reduce 2033 peak demand by 257 MW, a "large impact on the peak impact of heating electrification."[12]

NS Power did not perform a sensitivity analysis to determine the impact of the hybrid scenario on energy use and peak demand for the 2024 report. It also appears that the nearly

[10] Exhibit N-1, 2024 ACE Plan, M11458, p. 128.

[11] Exhibit N-5, Evidence of John D. Wilson (July 29, 2022), Matter No. M10569, p. 10.

[12] Exhibit N-1, 2023 Load Forecast Report, M11108, Appendix D, p. 8.

40 percent increase in residential heating intensities (discussed in Section III) has not led to any updated evaluation of the hybrid scenario for electrification of heat.

Q: What are the implications of this finding for NS Power's decarbonization strategy?

A: A key challenge to NS Power's decarbonization strategy is meeting peak winter heating load. In response, NS Power began studying the hybrid peak electrification scenario in early 2022 and formally added it to its Evergreen IRP Action Plan in August 2023.[13]

NS Power is pursuing multiple strategies, including time-varying rates, battery storage, gas-fueled peaking units (backed up by diesel fuel), and increased transmission interconnections. Together, these strategies are intended to provide NS Power with the resources it requires to deliver reliable electricity to its customers.

There may also be a role for customer-sited resources. If customer-sited resources take up the load, so to speak, NS Power's sensitivity suggests that it could reduce system peak demand by 257 MW, using data from the 2023 report. For perspective, this is large enough to fully offset its forecast for EV charging. (Although I believe the EV charging forecast to be overstated, as discussed in Section IV.D.) And that role may be larger if the updated residential heating intensity values are validated as reflecting actual customer loads.

Relying on customer-sited resources comes with infrastructure issues that are not being engaged at scale. One option is customer-sited battery storage, which would require significant adjustments to NS Power's distribution system infrastructure if implemented at scale. Other options - natural gas and propane – would require upgrades to existing fuel delivery systems to provide sufficient fuel for a larger number of NS Power's customers, and raise issues related to long-term compliance with federal carbon emissions regulations.

If the infrastructure to support customer-sited is not built, then NS Power will need to rely on natural gas or fuel oil to meet future peak winter demand loads. It isn't clear that the natural gas pipeline capacity exists or that there is an opportunity to expand it. NS Power has stated that its current plans to supply its current and planned natural gas plants are already constrained by natural gas infrastructure. In a document supporting its Evergreen IRP development process, NS Power states,

[13] NS Power, *2023 Evergreen Integrated Resource Plan* (August 8, 2023), p. 16.

> Based on the 2020 IRP and 2022 evergreen Early Insight modeling, new gas units are expected to operate at low capacity factors with correspondingly low natural gas offtake. Thus, for new gas resources, NS Power will model a supply source that can serve this need *without long-term infrastructure upgrades, requiring long-term fixed commitments.*[14] (*emphasis added*)

NS Power's investment strategy is to use natural gas to support peak periods of electric demand, but in combination with other fuels and resources and does not rely on development of expanded pipeline capacity.

Q: Has NS Power made meaningful progress on the hybrid peak electrification scenario?

A: No. It has been two years since this issue was first identified by NS Power. NS Power appears to have determined that the Province of Nova Scotia is "accountable for the assessment and implementation" of this program.[15]

In its decision on the Evergreen IRP, the Board stated:

> The Consumer Advocate, E1 and Eastward Energy supported continued study about the value of the Hybrid Peak Mitigation electrification profile, particularly about the potential costs of this strategy. While NS Power noted that future assessment of the strategy is included in Action Plan Item 4b, the Utility stated the study should be led by an external 3rd party to coordinate a multi-stakeholder study process.[16]

And further that,

> NS Power must not delay or defer any part of the Evergreen IRP process in anticipation that the IRP responsibilities will be assumed by the new IESO at some point in the future. Given the impending 2030 deadline, it is essential that the Evergreen IRP process continue uninterrupted, and the Evergreen IRP Updated Action Plan and Roadmap be diligently executed.[17]

Yet NS Power has not begun work on its assessment of the Hybrid Peak Electrification Scenario (IRP Action Plan Item 4b). Specifically, it has not established a timeline for participation in a study in partnership with other organizations.[18] Considering the long

[14] NS Power, *2022 Evergreen IRP Updated Assumptions* (January 26, 2023), M11307, p. 38.
[15] Exhibit N-2, CA RIR-3.
[16] Board Decision, Matter No. M11307, p. 4.
[17] Board Decision, Matter No. M11307, p. 5.
[18] Exhibit N-6, EONe RIR-2(a), M11458.

timeline involved in implementing the recommendations from such a study, it would seem that time would be of the essence.

Q: Does this failure to address the winter peak heating issue place customers at risk?

A: Yes. If the federal government continues to implement carbon emissions reduction measures that result in higher costs for alternatives to electric heat, customers will bear increasingly high winter heating costs. The alternative for customers is to switch to electric heat, either resistance or heat pumps. That may also be costly, and may put system reliability at risk because NS Power's load forecast does not anticipate customers shifting to electric heat at the rates that could occur.

Customers may solve the problem for NS Power on their own. Many customers are retaining non-electric heating systems for backup purposes. In its study of participants in NS Power's residential heat pump financing program, Itron found that over one-third of customers installed "heat pumps to supplement current heating sources and/or sizing to meet cooling loads."[19]

On the other hand, federal and provincial policy is clearly attempting to drive building electrification. Considering the constraints on natural gas pipeline capacity and other non-electric choices for customer-sited power, it isn't clear that customers will be able to maintain (or even add) backup heating sources that have greenhouse gas emissions.

Q: What is your recommendation?

A: Clearly, if NS Power is correct and the Province is "accountable" for resolving this issue, then the matter is out of the Board's hands. However, the Board could at least convene a hearing and seek testimony from NS Power and Eastward Energy, Inc. (EEI), and invite comments from other key stakeholders, including those involved in the propane and fuel oil markets. The Board can obtain what information is available and identify inconsistencies between various parties' expectations as to how federal carbon emissions policies will be implemented in Nova Scotia and the actual investments in infrastructure that are occurring to fulfill those expectations.

[19] Itron, *Nova Scotia Power Cold Climate Heat Pump Load Study* (July 2022), p. 18; filed as Appendix A to NS Power, *On-Bill Financing Final Report* (July 12, 2022), M09321.

C. Forecast for peak demand impact of time-varying pricing tariffs

Q: What forecast is NS Power using for the peak demand impact of time-varying pricing tariffs?

A: NS Power is using the same forecast that it developed for the 2021 Load Forecast Report, except that the forecast has been shifted three years later.[20] NS Power expects time-varying pricing tariffs to reduce demand by 4 MW in 2025, 12 MW in 2026, and by 32-36 MW in 2086 and thereafter.[21]

Q: Is this forecast reasonable?

A: No, not given the current status of the time-varying pricing program.

The 2025 forecast of 4 MW demand reduction is unreasonable because the current pilot is reported to have achieved load reductions of 943 *watts* through winter 2022-2023, an increase of 148 watts over the previous year.[22] While NS Power has revised the design of its critical peak pricing tariff, it does not appear to have substantially increased recruitment goals.[23] NS Power is unlikely to quadruple participation in this program before this winter without having filed plans to expand the program by this time of the year.

One positive note is that the current critical peak pricing tariff, revised for implementation in November 2023, is designed in a manner that could achieve significant demand reduction. As I noted in last year's evidence, this change could enable NS Power to achieve demand reduction in 2026 or later.

Nonetheless, it seems unlikely that the pilot will be scaled up enough to deliver 12 MW of demand reduction from customers in 2026. NS Power has engaged stakeholders to develop a plan to extend the pilot to a fourth year.[24] While NS Power *might* achieve demand reduction of greater than 1 MW by 2026, it does not seem very likely that NS Power could file a new program and receive approval in time to enroll sufficient customers to achieve 12 MW of demand reduction in 2026.

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[20] Exhibit N-1, *2021 Load Forecast Report*, Matter No. M10109 (April 30, 2021), p. 74.

[21] Exhibit N-1, *2023 Load Forecast Report,* p. 78.

[22] Exhibit N-1, *Time Varying Pricing Pilot Program, Year Two Report*, Matter No. M11267 (July 28, 2022), p. 18.

[23] NS Power, *Time Varying Pricing Pilot Program, Year Two Report, Compliance Filing* (October 26, 2023), M11267.

[24] Exhibit N-6, Synapse RIR-9(g).

Q: What estimated load reduction for time-varying pricing (or CPP) programs should be included in the load forecast?

A: Notwithstanding the improved program design, I recommend that the Board direct NS Power to remove the peak reduction benefits associated with time-varying pricing from its load forecast. It has been too many years of missed expectations for this program to continue shifting the expectations forward a year or two at a time.

NS Power originally expected the program to enroll 15 percent of residential customers on a time-varying pricing tariff by 2022, reducing winter peak demand by 26 MW.[25] While it may be reasonable for NS Power to continue to invest in this program until it finds a successful approach, it should not include fanciful future savings in the load forecast.

Instead, NS Power should plan to meet customers' reliability needs with resources that it is able to acquire in a reasonable time frame. Whether it should do so at its own expense or at customers' expense is a matter for another proceeding. What is important is that NS Power should stop planning on the assumption that customers will respond to a program that does not and may not ever exist.

D. Forecast peak demand for electric vehicle charging

Q: What is the basis for the report's forecast of peak demand for electric vehicle charging?

A: NS Power assumes that the overall peak demand contribution of EV charging is 0.9 kW/vehicle, with 70 percent of charging managed by NS Power and 30 percent of charging unmanaged.[26]

Q: Do you believe this forecast makes the best use of available evidence?

A: No. The EV charging data obtained from the Smart Grid Nova Scotia project indicate that the peak demand contribution of EV charging is likely to be significantly lower than 0.9 kW/vehicle. For 2022, NS Power was not offering managed charging, demand during system peak hours averaged only 0.6 kW/vehicle.[27] A similar calculation for 2023, using

[25] Board Decision, *NS Power Advanced Metering Infrastructure Project Application (CI #47124)*, Matter No. M08349 (June 11, 2018), para. 93.

[26] Exhibit N-1, 2024 Load Forecast Report, p. 39.

[27] Exhibit N- 8, Evidence of John D. Wilson, M11108, p. 7.

"counterfactual" unmanaged charging data indicates only 0.4 kW/vehicle, with the measured contribution to peak being 0.24 kW/vehicle.[28]

One of the purposes of the Smart Grid Nova Scotia project was to obtain useful information for planning purposes. At this point it is clear that a working assumption of 0.9 kW/vehicle is unreasonable given the demonstrated charging patterns of a sample of actual Nova Scotia electric vehicle owners. Considering the impact of managed charging, which further reduces the contribution to peak, a more reasonable forecast assumption is 0.45 kW/vehicle.

Q: What would be the impact of adjusting to your proposed 0.45 kW/vehicle peak demand contribution estimate?

A: NS Power forecasts that EVs will add 240 MW to the 2033 peak using the 0.9 kW/vehicle peak demand contribution estimate. Assuming a linear response in the model, adopting my recommendation would reduce the peak demand impact by 120 MW to 120 MW in 2033.

Even this number may overstate the peak demand impact of EV charging because it is based on the "unmanaged counterfactual" estimate, and NS Power could develop a full-scale managed charging program to further reduce peak demand. Whether that would be cost-effective is a matter for another proceeding.

Correcting the peak demand estimate would have a material impact on NS Power's resource planning process. For example, it would more than compensate for the increase in the load forecast due to removing peak savings attributed to the time-varying pricing pilot program.

V. Inconsistencies between Load Forecast and Distribution Planning

Q: What aspects of electrification is NS Power considering in its distribution facilities planning?

A: NS Power states that large loads (>1 MW) and generation (>100 kW) are evaluated in distribution system impact studies. NS Power has also updated its transformer sizing charts to account for increased load from heat pumps and EVs.[29]

[28] Exhibit N-2, CA RIR-4.

[29] Exhibit N-2, CA RIR-8(b).

NS Power has not provided any information indicating that its distribution system planning includes consideration of solar systems smaller than 100 kW.[30]

Q: Do you have any concerns regarding how NS Power considers the impact of electrification on its distribution facilities planning?

A: Yes. As discussed in Section IV.A, NS Power appears to be overstating the on-peak demand of EV charging as 0.9 kW/vehicle, where a more reasonable estimate is 0.45 kW/vehicle.

However, for purposes of its transformer sizing, NS Power sizes its transformers to serve 100% of an EV charger's fuse.[31] So, for the 12 kW ChargePoint charger used in the Smart Grid Nova Scotia Program, the transformer would be sized to 12 kW when the actual load averaged 0.6 kW/vehicle.

Similarly, NS Power sizes its transformers to serve 80% of the fuse rating for heat pumps and tankless hot water heaters.[32] This effectively assumes that during a distribution system peak, 80% of all heat pumps and tankless hot water heaters are working at full output and 20% are inactive.

In contrast to the methods NS Power has adopted for EV charger, heat pumps, and tankless hot water heater loads, for other domestic service, both a demand factor and a coincidence factor are used to reduce the expected maximum load on the transformer from the fuse size.

Q: Is the 2024 load forecast consistent with the 2024 new customer budget used for distribution planning?

A: It does not appear so. NS Power's 2023 residential load forecast for 2024 included 2,017 new single-family units and 3,765 new multi-family units,[33] and its 2024 residential load forecast for 2024 includes a net increase of 7,021 new customers,[34] which is based on the Conference Board of Canada's housing completions forecast.[35] In contrast, NS Power's 2024 new customer installation forecast for its distribution planning purposes is only 4,374 new

[30] Exhibit N-2, CA RIR-4.

[31] Exhibit N-2, CA RIR-8(b).

[32] Exhibit N-2, CA RIR-8(b).

[33] Exhibit N-12, Refiled NSUARB RIR-79(c), M11458. NS Power's commercial load forecast does not include an estimate of the number of new customers.

[34] Exhibit N-6, Synapse RIR-5, Attachment 1.

[35] Exhibit N-26, NSUARB Undertaking U-5.

customer installs.[36] So the 2024 load forecast includes 2,647 more new customers than the forecast used for planning investments in the distribution system.

I also note that neither NS Power's load forecast nor its distribution planning forecast takes into account the efforts to increase housing supply under the Housing Accelerator Fund.[37]

Another discrepancy relates to unmetered services, such as streetlights and area lights. In its load forecast, NS Power assumes that sales will "remain constant over the forecast."[38] But NS Power attributes some of the difference between its load forecast and its distribution planning forecast to unmetered services.[39] So one forecast has constant unmetered services, the other anticipates significant service growth.

Q: Is it reasonable to have such a disconnect between the distribution cost forecast and the Load Forecast Report?

A: No. While this may have been reasonable in the past, it is no longer a reasonable approach. NS Power's electrification strategy report recommends that NS Power "Support cost-effective grid modernization and panel upgrades, as well as all-electric ready new construction, to ensure the utility doesn't become a bottleneck to electrification," and further to "Fully incorporate electrification strategy findings … into utility planning models."[40] More specifically,

> E3 recommends that Nova Scotia Power proactively identify needed transmission and distribution facilities to ensure that customers do not experience delays in upgrading to electrified equipment. At a high level, this involves building out spatially explicit load forecasts under key electrification planning scenarios, and typically using commercially available tools to allocate expected load growth at the substation level.[41]

[36] Exhibit N-12, Refiled NSUARB RIR-79(c), M11458. NS Power's commercial load forecast does not include an estimate of the number of new customers.

[37] Exhibit N-4, NSUARB RIR-6.

[38] Exhibit N-7, Matter No. M11108, Synapse RIR-28(d).

[39] Exhibit N-5, CA RIR-2(a), M11458.

[40] Exhibit N-8, *The Economics of Electrification in Nova Scotia* (October 2023), Matter No. M11307, pp. 22-23.

[41] *Id.*, p. 24.

It appears that NS Power has not logically incorporated electrification impacts into its distribution planning strategy. On the one hand, it appears to be oversizing transformers. On the other hand, it appears to be planning for too few new residential customers.

Or perhaps the distribution planning forecast methods are right, and NS Power's resource planning activities anticipate far too little electrification load from EV chargers and home electrification, while building generation and transmission for new customers who will not materialize. Both forecasts can't be best practices.

Q: What do you recommend?

A: I recommend that the Board direct NS Power to 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.

Q: Does this conclude your testimony?

A: Yes.