M12861

NOVA SCOTIA ENERGY BOARD

IN THE MATTER OF:	**The *Public Utilities Act***
	-and -
IN THE MATTER OF:	**NOVA SCOTIA POWER INCORPORATED's 2026 Load Forecast Report**

JOHN D. WILSON

ON BEHALF OF

THE CONSUMER ADVOCATE

Grid Strategies, LLC

JULY 21, 2026

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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.

Prior to entering consulting in 2019, I was deputy director of regulatory policy at the Southern Alliance for Clean Energy ("SACE") 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 more than eighty times before utility regulators in twelve U.S. states and Nova Scotia, and appeared numerous additional times before various regulatory and legislative bodies.

Q: Have you previously provided evidence in other matters before this Board?

A: Yes. I have filed evidence in over thirty matters on behalf of the Consumer Advocate and one matter on behalf of the Minister of Energy. 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 providing evidence?

A: My evidence 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 2026 Load Forecast Report.

A: My evidence reviews several technical or program-based adjustments to the base load forecast that I find do not reflect best practice.

Q: Please summarize your recommendations.

A: As discussed in Sections III and IV, I have significant concerns about the quality of the residential heating intensity forecast, which is a key input into the hybrid heating forecast. Because the hybrid heating forecast is a critical input to the ongoing IESO NS IRP, I recommend that the Board direct immediate changes to this forecast as well as direct longer-term corrections.

1. The should Board direct NS Power to revise its load forecast workbooks to identify factors used in formulas in separate tables. Each set of factors should be accompanied by a source (if based on hard data) or a suitable narrative explanation as to why NS Power believes it has reasonably selected those factors. Ideally, this would be supplied as a compliance filing but it could be deferred to the 2027 Load Forecast Report.

2. The Board should immediately reject NS Power's flawed residential hybrid heating forecast as unsupported by facts or sound reasoning. The Board should direct NS Power to instead adopt a forecast based on its proposed hybrid heat pump adoption rate (e.g., the 27,378 customers with hybrid heat pumps in 2036) and the per customer peak demand and energy savings rate associated with the temperature below -10°C scenario in its modeling (2.76 kW peak reduction and 527 kWh annual energy savings).

3. The Board should direct NS Power to expedite its use of AMI data and other external data sources to fully revisit this topic no later than in its 2027 Load Forecast, and to publish its findings on an expedited basis if possible.

As discussed in Section V, I find that NS Power's forecasts for demand reduction due to Direct Load Control (DLC), Time Variable Pricing (TVP) and business, non-profit and institutional (BNI) Curtailment are not reasonable. I recommend that the Board direct immediate changes to these forecasts, and generally direct NS Power to improve its forecasting practices for these programs.

4. The Board should direct that the DLC forecast be reduced to 4 MW beginning in 2032 until there is a basis for a forecast increase.

5. The Board should direct that the TVP forecast be reduced to 4 MW in 2027 with a growth rate no higher than 0.5 MW per year until there is a basis for a forecast increase.

6. The Board should direct that the BNI curtailment program forecast be increased to 26 MW beginning in 2032.

As discussed in Section VI, I have identified a relatively minor, unsupported practice in NS Power's heating and cooling trends.

7. The Board should direct NS Power to remove the damping method in its 2027 load forecast.

III. Residential Heating Intensity Forecast for Customers with Heat Pumps

Q: What is the heating intensity forecast?

A: NS Power's load forecast includes a forecast of residential heating intensity for homes with and without heat pumps, which is measured as kWh per house. The heating intensity forecast is intended to reflect the effect of new installations and replacements of existing heating systems, by technology, on residential end use loads. A critical variable is the adoption rate for electric heat pumps.

Q: Has NS Power used a consistent heating intensity forecast over the past several years?

A: No. NS Power's residential heating intensity forecasts have varied considerably over the past several years. In its 2024 Load Forecast Report, NS Power increased its residential heat pump heating intensity (kWh/house) by almost 40%, as shown in Table 1. But since 2024, NS Power has significantly reversed the 2024 change. For example, the "actual" residential heating intensity assumed for 2023 appears to have dropped from 1,849 kWh/house in the 2024 report to 1,655 kWh/house in this 2026 report.

Table 1: Residential Heating Intensity for Heat Pumps (kWh/house), 2022-2026 Load Forecast Reports (historical year data highlighted)

Forecast Year	Load Forecast Report Year				
	2022	**2023**	**2024**	**2025**	**2026**
2023	1,310	1,384	*1,849*	*1,860*	*1,655*
2024	1,408	1,511	2,066	*2,081*	*1,823*
2025	1,506	1,639	2,271	2,289	*1,988*
2026	1,605	1,770	2,454	2,477	2,120
2027	1,705	1,899	2,636	2,665	2,240
2028	1,805	2,026	2,814	2,853	2,333
2029	1,905	2,140	2,973	3,022	2,427
2030	2,005	2,250	3,128	3,188	2,521
2031	2,104	2,357	3,277	3,351	2,612
2032	2,204	2,459	3,422	3,514	2,703
2033		2,552	3,554	3,667	2,792
2034			3,680	3,816	2,882
2035				3,945	2,970
2036					3,031

Q: How has NS Power revised its residential heating intensity calculation method over the past few years?

A: In 2023, NS Power first differentiated its "structural variations" adjustment to residential heating intensity for customers with heat pumps from other customers.[1] This update was made in NS Power's residential intensities workbook as part of a "structural variations" adjustment. The "structural variations" adjustment has been included in NS Power's forecast for many years, adjusting building heating and cooling intensities for trends in increasing floor space and improving building shell efficiency. For clarity, I have no concerns with applying these trends to the intensities calculations.

Furthermore, since at least 2018, NS Power's adjustment has included a manual adjustment that enhanced the trend in residential building shell efficiency as compared to the source data, which are "modelled based on the framework provided by Itron."[2] The reason for this manual adjustment is not included in the relevant workbook.

The method for differentiating heating intensity for customers with heat pumps included two steps. First, for the years 2016-2021 (historical data), the heating intensity was enhanced by an average of 2.1% per year. Then, working from the enhanced 2021 baseline, NS Power increased the heating intensity for customers with heat pumps by an average of 0.7% per year. For clarity, beginning with the NS Power's 2023 forecast, the heating intensity for customers with heat pumps for the years 2022-2033 was no longer driven by floor space or building shell efficiency data.

I have not located any evidence that explains why NS Power created this new structural variation method for customers with heat pumps. Each year's factor, as described above, is hard-coded into a formula. Nor have I located any explanation for the specific factors (which generally vary from year to year) used in this method were chosen by NS Power. Yet, as shown in Table 1 above, the net effect of the 2023 forecast method revision was not as large as the next revision.

After just one year of using this new method's adjustment factors, in 2024 NS Power explained that it revised the "heat pump heating component intensities … to account for the fact that the large unallocated variance occurred mainly in the winter months and was determined to be primarily weather dependent."[3] By "unallocated variance," NS Power was referring to the difference between forecast energy and actual energy in 2023, after adjustment for weather impacts.[4]

The large change in 2024 heating intensity was driven by two changes. First, NS Power increased the heating intensity enhancement for the years 2016-2021, resulting in an average enhancement of 2.6% per year, substantially raising the baseline heating intensity.

[1] Exhibit N-1(i), 2023 LFR Attachment 01 Residential Intensities, tab StructuralVars, column StrucVarIndHP.

[2] Exhibit N-7, Synapse RIR-6(e), M09191.

[3] Exhibit N-1, 2024 Load Forecast Report, M11689, p. 34.

[4] Exhibit N-4, NSUARB RIR-11(b), M11689.

Second, NS Power increased the heating intensity trend factor, applied to that baseline, for the years 2022-2033 from an average of 0.7% to 1.8% per year.

NS Power made small (again, unexplained) changes to these factors in 2025. Then in 2026, it appears to have reduced these factors and, thus, the enhancement in residential heating intensity for customers with heat pumps.[5]

It is difficult to describe the changes that were made in 2026 as compared to previous years. First of all, NS Power also updated its baseline year used for calibration with Natural Resources Canada data from 2015 to 2020. This update does not appear to significantly affect the forecast. But the main reason is that instead of including these factors in formulas, NS Power simply pasted values into the spreadsheet with no explanation. These two changes interact because it is unclear whether NS Power used a heating intensity enhancement, a heating intensity trend factor, or some other method.

To summarize these changes, Table 2 shows the 2030 residential heating intensity for heat pump customers, non-heat pump customers, and the ratio of the two. Before the 2024 revision, the ratio was 159% and this year's report almost returns to that value by dropping to 166%. It should be noted that the overall trend in heating intensity is increasing due to factors such as increasing floor space and comfort requirements.

Table 2: Comparison of Residential Heating Intensity for Customers With and Without Heat Pumps (kWh/house), 2022-2026 Load Forecast Reports[6]

	No Heat Pump	Heat Pump	Ratio
2022	1,357	2,005	**148%**
2023	1,414	2,250	**159%**
2024	1,594	3,128	**196%**
2025	1,500	3,188	**213%**
2026	1,520	2,521	**166%**

Q: Can you explain this in simpler terms?

A: First, looking at NS Power's various forecasts for 2033, it is evident that NS Power's heating intensity forecast in this load forecast has returned almost to the level projected in 2023. The concept that heat pumps were responsible for the "unallocated variance" identified in the 2024 report appears to have been quietly dropped by NS Power.

[5] Exhibit N-1(i), 2026 LFR Att 01 EO, tab StructuralVars, column StrucVarIndHP.

[6] Exhibit N-1(i), LFR Attachment 01 for each corresponding report, tab Intensities, columns EFurn and HPHeat.

Q: Has NS Power made any other major changes to the residential heating and cooling components of the load forecast?

A: Yes. In the 2026 report, despite a substantial increase in the forecast for new housing construction, the number of heat pumps installed in both new and existing housing decreased as compared to the 2024 and 2025 reports.

Q: What are your findings?

A: NS Power has embedded a number of unexplained and unsupported assumptions in its residential load forecast. In addition to the hard-coded factors I mentioned above, there are unexplained factors in several other worksheets in this workbook.[7] While I have not thoroughly reviewed other workbooks, I would be surprised if there are not similar gaps in documentation in those workbooks as well.

Furthermore, the source of baseline data (e.g., number of installed heat pumps) is often unexplained beyond "User Input Data." The currency of Itron-supplied "EIA" data (presumably, U.S. Energy Information Administration) is not clear.

Q: Why does this matter?

A: NS Power's hybrid heating forecast depends heavily on the data included in this workbook. Yet it is impossible to clearly understand, much less validate, NS Power's forecast. As shown above, NS Power's views on heating intensity for residential customers with heat pumps has varied wildly from 2023 to 2026.

Investment plans for generation projects and program designs to support residential hybrid heating depend on reasonable forecasts that can be validated against historical data and updated to reflect new understandings. But when the historical basis for the forecast is not clearly explained, then there is little opportunity to reflect on past methods and offer useful improvements.

Q: Did NS Power implement Synapse's recommendation to validate heating intensity assumptions?

A: No. In its decision on the 2025 Load Forecast Report, the Board endorsed NS Power's acceptance of Synapse's recommendations. Synapse recommended that NS Power, "[v]alidate heat pump displacement and intensity assumptions with AMI or other empirical data."[8]

I did not find any evidence that NS Power validated its assumptions with AMI or other empirical data. NS Power states that the heating intensity assumptions are based on "a

[7] See tabs Shares, Calibration, and HP.

[8] Board Decision, M12349, p. 5.

rigorous study of actual heat pump load in Nova Scotia" by Itron in 2022.[9] However, the load forecast does not clearly reference these data.

NS Power also explains that it "is working on techniques for using AMI data to better evaluate heating loads."[10]

Q: What is your recommendation?

A: I will discuss the hybrid heating forecast in more detail in the next section of my evidence. With respect to the data problems, I recommend that the Board direct NS Power to revise its load forecast workbooks to identify factors used in formulas in separate tables. Each set of factors should be accompanied by a source (if based on hard data) or a suitable narrative explanation as to why NS Power believes it has reasonably selected those factors.

For clarity, I agree that it can be reasonable to use manually-selected factors to adjust known baseline data to match observed outcomes. And there may be cases where neither baseline data nor observed outcome data are available. Obviously, a data-driven model is preferable when practical. Thus, where data are lacking or the model simply requires reasonable assumptions to achieve a reasonable outcome, the load forecast should include clear documentation to explain the choices that have been made. This will assist not only reviewers such as myself, but will provide for internal retention of methods and sources.

[9] Exhibit N-7, Synapse RIR-7(a)(iii).

[10] Exhibit N-7, Synapse RIR-7(a)(iv).

IV. Residential Hybrid Heating Forecast

Q: Please summarize the residential hybrid heating forecast.

A: NS Power adopted a 2036 forecast of 48 MW of peak mitigation for a residential hybrid heating program, with an energy reduction of 83 GWh.[11] NS Power explains that the 48 MW peak mitigation "comes from E3's Hybrid Peak Mitigation electrification scenario studied for the Evergreen IRP."[12]

No specific program is represented by this forecast. Instead, NS Power describes this forecast as representing a scenario in which "a portion of customers adopting heat pumps retain their non-electric backup heating systems to provide heating on the coldest days."[13] NS Power further explains that in its modeling, electric demand reductions are modeled as a "switch from electric to non-electric heating" when a trigger (e.g., temperature below -10°C) is met. NS Power tested three different triggers.

Q: Does NS Power's residential hybrid heating forecast match E3's scenario?

A: No. E3 described its scenario somewhat differently. E3 stated that, "Heat pumps are modeled such that below the balance point temperature [of -1°C] both the heat pump and supplemental device both contribute to meeting the service demand."[14] Furthermore, NS Power explained that the "energy reduction from E3's hybrid scenario is not attainable."[15]

Q: Is NS Power's residential hybrid heating forecast reasonable?

A: No. The energy-to-demand reduction ratio is far too high. NS Power forecasts that the maximum demand reduction per customer is 2.76 kW during the peak hour and, depending on choice of trigger, the energy savings per year is between 149 kWh and 527 kWh.[16]

NS Power's load forecast assumes 27,378 customers with hybrid heat pumps in 2036.[17] Using the factors above, this computes to a 76 MW demand reduction and between 4 and 14 GWh in annual energy savings.

NS Power also suggests that the energy savings per year could be 2,887 kWh per customer.[18] This is based on average per customer heat pump energy use of 7,294 kWh and

[11] Exhibit N-1, 2026 Load Forecast Report, p. 40.

[12] Exhibit N-7, Synapse RIR-8(c)(i).

[13] Exhibit N-1, 2026 Load Forecast Report, p. 37.

[14] Energy+Environmental Economics, The Economics of Electrification in Nova Scotia (October 2023), p. 46.

[15] Exhibit N-1, 2026 Load Forecast Report, p. 40.

[16] Exhibit N-2, CA RIR 1-(f)(i); Exhibit N-7, Synapse RIR-8, Attachment 1.

[17] Exhibit N-1(i), 2026 LFR Att 01 EO, tab HP, column hybrid HP (cumulative).

[18] Exhibit N-2, CA RIR 1-(f)(ii). This is based on annual energy

an estimate of 4,407 kWh used in an non-all electric household, with the difference being the 2,887 kWh.

However, it appears that NS Power has misinterpreted or mis-applied the 4,407 kWh value. This value is sourced to a 2022 Itron study, which states that

> … average heat pumps can be expected to utilize 4,400 kWh per year with a coincident peak demand of 1.5 kW. The analysis is based on approximately 120 metered homes that provide a well-diversified sample of program participants both in terms of primary or initial heating fuel source (AE and NAE) and customer size. [19]

There are two key points here. First is that this figure is aligned with a peak reduction of 1.5 kW. If the 4,407 kWh is scaled to the 2.76 kW peak reduction associated with the 7,294 kWh in NS Power's heating load shape, the result is 8,109 kWh, which suggests an energy increase. Second is that the Itron study includes both all-electric ("AE") and non-all-all-electric ("NAE") customers, so it is not even appropriate to represent this as the energy use for a hybrid heating scenario.

Q: Can NS Power's hybrid heating load forecast be represented as a model of a non-electric backup heating systems providing heating on the coldest days?

A: No. As shown in Table 3, NS Power's load forecast is not very different from Itron and NS Power's estimate of how much a heat pump operates during heating season. Standalone heat pumps provide heating that uses about 30% of the amount of energy if they had been operated at peak year-round.

NS Power's load forecast represents that hybrid heating – the non-electric fuel – replaces two-thirds of the heating load of a stand-alone heat pump.

[19] Itron, Cold Climate Heat Pump Load Study (July 2022), p. 17, as Appendix A to Exhibit N-1, OnBill Financing Final Report, M09321 (July 21, 2022).

Table 3: Comparison of per Customer Hybrid Heating Impact Estimates

	Itron Study[20]	NS Power Heat Pump Load Shape[21]	NS Power -10°C Hybrid Heating Model	Forecast of Hybrid Heating Impacts[22]
Peak Reduction	1.5 kW	2.76 kW	2.76 kW	1.75 kW
Energy Savings	4,407 kWh	7,294 kWh	527 kWh	3,032 kWh
Load Factor[23] (Savings / Peak Reduction * 8760)	34%	30%	2%	20%
Minimum Hours of Operation	2,937	2,643	191	1,729

NS Power's three "trigger" scenarios model a switch from 100% heat pump to 100% non-electric heating. As shown in Table 3, these models have a maximum operating time of 191 hours (the other two models have fewer hours) and offset no more than 2% of the theoretical maximum heating energy from a heat pump.

Also assuming a 100% switch in operation, NS Power's load forecast suggests that non-electric heating would operate 1,729 hours, or 72 days. This is not a model of a system that provides heating on the "coldest days," this models a primary heating system with the heat pump running on some of the less-cold days.

If this hodgepodge of data from different studies is not problematic enough, the status quo for backup power is currently unknown. NS Power states that it assumes that "all residential heat pump customers have a backup heat source; however, NS Power does not have information on breakdown of backup heat source by fuel type."[24] Specifically, NS Power is not able to estimate the share of the 22,130 customers identified as owning a heat pump having a heat pump with electric backup heating or a heat pump with non-electric backup heating.[25] Thus, a solid counterfactual in which hybrid heating is promoted is essentially impossible to model.

[20] Itron, Cold Climate Heat Pump Load Study (July 2022), p. 17, as Appendix A to Exhibit N-1, OnBill Financing Final Report, M09321 (July 21, 2022).

[21] Exhibit N-7, Synapse RIR-8, Attachment 1.

[22] System peak and energy savings from Exhibit N-1, 2026 Load Forecast Report, p. 40, customer count from Exhibit N-1(i), 2026 LFR Att 01 EO, tab HP, column hybrid HP (cumulative).

[23] Heating only. A heat pump also cools, which is not relevant to this comparison.

[24] Exhibit N-7, Synapse RIR-7(b).

[25] Exhibit N-7, Synapse RIR-8(b)(i).

Q: What is your recommendation to the Board?

A: The Board should immediately reject NS Power's flawed residential hybrid heating forecast as unsupported by facts or sound reasoning.

Normally, it would be reasonable for the Board to direct NS Power to submit an improved forecast next year. However, the Board should direct more immediate action for three reasons. First, this flawed forecast is at odds with the Board's directive in the 2025 Load Forecast Report proceeding. Second, NS Power has submitted this flawed analysis to the "Department of Energy-led hybrid heating working group with Net Zero Atlantic, provincial staff and other stakeholders."[26] Third, and most important, IESO Nova Scotia has *immediate* need to use a sound load forecast and to study the implications of the hybrid heating forecast.

As discussed in the prior section, I am skeptical that NS Power's modeling of heat pump end use load can be relied upon due to the use of unsupported and inconsistent manual adjustment factors throughout the calculations. But for purposes of the immediate need for a logically consistent forecast, I recommend that the Board direct the use of a forecast based on NS Power's proposed hybrid heat pump adoption rate (e.g., the 27,378 customers with hybrid heat pumps in 2036[27]) and the per customer peak demand and energy savings rate associated with the temperature below -10°C scenario in its modeling (2.76 kW peak reduction and 527 kWh annual energy savings).[28]

For clarity, I am not endorsing these figures for future use, but they provide the only immediately available data that reflect a coherent view of the future.

Furthermore, the Board should direct NS Power to expedite its use of AMI data and other external data sources to fully revisit this topic no later than in its 2027 Load Forecast, and to publish its findings on an expedited basis if possible.

[26] Exhibit N-1, 2026 Load Forecast Report, p. 37.

[27] Exhibit N-1(i), 2026 LFR Att 01 EO, tab HP, column hybrid HP (cumulative).

[28] Exhibit N-2, CA RIR 1-(f)(i); Exhibit N-7, Synapse RIR-8, Attachment 1.

V. Demand Reduction Forecasts

Q: Please summarize the demand reduction forecasts developed by NS Power.

A: NS Power forecasts demand reduction due to Direct Load Control (DLC), Time Variable Pricing (TVP) and business, non-profit and institutional (BNI) Curtailment. NS Power states that these forecasts are based on the programs as modeled in the 2022 Evergreen IRP, updated based on E1's 2026 DSM extension and proposed 2027 DSM Plan Application.[29]

Q: Is the DLC forecast reasonable and, if not, what is your recommendation?

A: No. As shown in Table 4, NS Power has consistently over-forecast actual DLC for the past four years. While the forecasts for the years 2026-2031 are reasonable, there is no evidence or program plan that will result in the demand reduction attributable to DLC programs reaching 38-39 MW beginning in 2032.

Accordingly, I recommend that the DLC forecast be reduced to 4 MW beginning in 2032 until there is a basis for a forecast increase.

[29] Exhibit N-1, 2026 Load Forecast Report, p. 37.

Table 4: Direct Load Control (DLC) Forecasts from 2021-2026 Reports (MW)

	Load Forecast Reports						Actual Demand Reduction
	2021	2022	2023	2024	2025	2026	
2021	0						0.0
2022	4	0					0.0
2023	12	4	4				0.1
2024	24	12	12	0			0.1
2025	36	24	24	4	4		0.9
2026	39	36	36	12	12	5	2.7
2027	39	39	39	24	24	4	n/a
2028	39	39	39	36	36	4	n/a
2029	39	39	39	39	39	4	n/a
2030	39	39	39	39	39	4	n/a
2031	38	39	39	39	39	4	n/a
2032		38	38	39	39	39	n/a
2033			38	39	39	38	n/a
2034				38	38	38	n/a
2035					38	38	n/a
2036						38	n/a

Q: Is the TVP forecast reasonable and, if not, what is your recommendation?

A: No. As shown in Table 5, NS Power has consistently over-forecast actual TVP impacts for the past five years. While the forecasts for the years 2026-2028 are reasonable, there is no evidence or program plan that will result in the demand reduction attributable to TVP tariffs growing by about 3 MW per year through 2036.

Furthermore, the peak reduction potential of Time-of-Use rates remains risky, with a high probability that a system peak will occur during an off-peak period. During the winter 2023-2024 period, only eight of the top ten peak hours occurred during a peak period.

Some participation growth is reasonable to assume, but given that "early adopters" have already been recruited to the program, it seems more likely that future growth will be more difficult until NS Power finds a rate design that both attracts customers and achieves meaningful results.

Accordingly, I recommend that the TVP forecast be reduced to 4 MW in 2027 with a growth rate no higher than 0.5 MW per year until there is a basis for a forecast increase.

Table 5: Time Varying Pricing (TVP) Tariff Impact Forecasts from 2021-2026 Reports (MW)

	Load Forecast Reports						Actual Demand Reduction
	2021	**2022**	**2023**	**2024**	**2025**	**2026**	
2021	0						0.0
2022	4	1					0.4
2023	12	4	4				0.5
2024	22	12	12	2			1.3
2025	32	22	22	4	4		3.6
2026	36	32	32	12	12	0	0
2027	35	36	36	22	22	3	n/a
2028	35	35	35	32	32	5	n/a
2029	34	35	35	36	36	9	n/a
2030	34	34	34	35	35	15	n/a
2031	33	34	34	35	35	21	n/a
2032		33	33	34	34	26	n/a
2033			33	34	34	30	n/a
2034				33	33	32	n/a
2035					33	33	n/a
2036						34	n/a

Q: Is the BNI curtailment program forecast reasonable and, if not, what is your recommendation?

A: No, but in this case the forecast impacts are too low. As shown in Table 6, NS Power has under-forecast actual BNI curtailment impacts. While the forecasts for the years 2026-2031 are reasonable, there is no evidence or program plan that will result in suddenly reducing these impacts beginning in 2032.

Accordingly, I recommend that the BNI curtailment program forecast be increased to 26 MW beginning in 2032. I am unaware of a basis for a forecast increase beyond that date.

Table 6: Business, Non-Profit and Industrial (BNI) Curtailment Program Forecasts from 2021-2026 Reports (MW)

	Load Forecast Reports						Actual Demand Reduction
	2021	2022	2023	2024	2025	2026	
2021	0						0.0
2022	1	0					0.0
2023	2	1	1				2.4
2024	4	2	2	0			8.0
2025	6	4	4	1	1		5.9
2026	7	6	6	2	2	12	13.0
2027	6	7	7	4	4	17	n/a
2028	6	6	6	6	6	19	n/a
2029	6	6	6	7	7	21	n/a
2030	6	6	6	6	6	23	n/a
2031	6	6	6	6	6	26	n/a
2032		6	6	6	6	6	n/a
2033			6	6	6	6	n/a
2034				6	6	6	n/a
2035					6	6	n/a
2036						6	n/a

VI. Damping of Heating and Cooling Trends

Q: What is NS Power's damping method?

A: Instead of using a historical average in heating and cooling trends, NS Power uses a trend in heating and cooling, represented as Heating Degree Day (HDD) and Cooling Degree Day (CDD). These measures estimate heating and cooling requirements based on the degree difference between the daily mean temperature and a given reference temperature.

The general warming trend in historical temperature data shows "HDD decreasing by approximately 15 HDD/year and CDD increasing by approximately 1.4 CDD/year."[30] However, rather than applying this trend directly, NS Power reduces ("damps") the trend "such that the average annual HDD is not forced to 0 and the average annual CDD does not increase indefinitely."[31]

Q: What is the effect of the damping method?

A: The damping method reduces 2036 HDD by 24 (1%) and increases 2036 CDD by 2 (2%).[32]

Q: What do you recommend?

A: Because the trend is not likely to force annual HDD to 0 or cause CDD to increase to unrealistic levels, the damping method should be removed in the 2027 load forecast. It is not supported by any evidence and does not solve a modeling problem.

Q: Does this conclude your evidence?

A: Yes.

[30] Exhibit N-1, 2026 Load Forecast Report, p. 23.

[31] Exhibit N-1, 2026 Load Forecast Report, p. 25.

[32] Exhibit N-2(i), Attachment 1 providing data for Figure 11 and correcting error.