Comments on Nova Scotia Power's 2025 Integrated Resource Plan Action Plan and Roadmap Update

Matter M12247

Prepared for Board Counsel of the Nova Scotia Energy Board

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AUTHORS

Bob Fagan
Sabine Chavin
Shelley Kwok

Synapse Energy Economics, Inc.

485 Massachusetts Avenue, Suite 3
Cambridge, Massachusetts 02139

617.661.3248 | www.synapse-energy.com

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1. SUMMARY OF FINDINGS

The Nova Scotia Energy Board ("NSEB") engaged Synapse Energy Economics ("Synapse") to review Nova Scotia Power Inc.'s ("NS Power" or "NSPI") 2025 Integrated Resource Plan (IRP) Action Plan Update. The following comments outline Synapse's assessment of the Action Plan Update. We provide a summary of our findings below and discuss them in detail in the body of the report.

Misalignment of new combustion turbine additions between the IRP and other planning documents

The Action Plan Update continues to reference 600 MW of new combustion turbine (CT) resource by 2029/2030.[1] Synapse identifies the discrepancy between the amount of projected new CT additions seen in the current Evergreen IRP, and that seen in other planning documents, including the 2025, 2024, and 2023 10-Year System Outlooks and the December 2023 and December 2024 *Path to 2030* reports.

The recent 10-Year System Outlook and Path to 2030 documents present a projection to procure 600 megawatts (MW) of new CT capacity by 2029–2030, which deviates from the 450 MW of new CTs in the Evergreen IRP resource plan for scenario CE1-E1-R2 (the preferred plan) in 2030. While other higher-peak-load scenarios (for non-Atlantic Loop resource strategies) in the Evergreen IRP study support higher levels of CT resources than the 450 MW in the preferred plan, lower-peak-load scenarios support less than 450 MW. Also, contrary to NS Power's statements, the Nova Scotia Clean Power Plan does not directly support 600 MW of new CT deployment by 2029/2030. NS Power has not yet rigorously analyzed, with modeling, the numerous drivers affecting a determination of the required level of new CT resource by 2030. To make such a determination, those drivers - six of which we describe in these comments - all require updating in a new Evergreen IRP.

Nova Scotia should conduct an updated Evergreen IRP as soon as possible

Given that NSPI has not conducted new modeling in the IRP matter since the 2022/2023 Evergreen IRP study,[2] it will be important not to delay the process of conducting the next IRP with updated core assumptions. Currently, Nova Scotia is in the process of transitioning IRP responsibilities from NSPI to a newly created entity called the Nova Scotia Independent Energy System Operator ("NSIESO" or "IESO") per the provisions of Bill 404.[3] This bill requires that the IESO commence its first IRP exercise within one

[1] As seen in Figure 20: NS Power 10-Year Load and Resources Outlook, at page 46 of the 2025 10-Year System Outlook report.

[2] See NSPI Responses to Synapse Information Requests, Response IR-1.

[3] Bill No. 404. An Act to Reform the Law Respecting Energy and Electricity. Available at: https://nslegislature.ca/sites/default/files/legc/PDFs/annual%20statutes/2024%20Spring/c002.pdf

year of that section of the Bill coming into force. It is crucial to support the formation of NSIESO's capabilities to conduct a new Evergreen IRP as soon as possible.

Furthermore, it is imperative for NSPI and other entities to complete the studies that they are working on in an expeditious manner so the results can be used by the NSIESO as inputs to the next IRP. The six driving factors we identify that require updating and will affect resource determinations for 2030 include, in addition to the two studies noted here (ELCC and Net Zero Atlantic's hybrid peak assessment): the load forecast, the relative cost of new firm capacity resources, the existence of more battery energy storage resources online or planned for 2030 (compared to the preferred plan of the 2023 Evergreen IRP), and the ability of obtaining additional firm import capacity through New Brunswick by the 2029/2030 period.

The Reliability Tie provides resource adequacy insurance in addition to reliability benefits

While it is reasonable that NS Power did not directly incorporate the modeling results used in the Reliability Tie application (M12217) into the IRP Update,[4] it would have been helpful if NS Power introduced this modeling exercise more explicitly in the Action Plan Update, especially since NS Power provided results from the NS-NB Reliability Intertie model in its discovery responses rather than providing results from the Evergreen IRP model.[5]

Synapse also provided Evidence on behalf of NSEB Board Counsel in the Reliability Tie Matter (M12217). We noted in our Evidence that we see those results as useful for a comparison of "with" and "without" Reliability Tie cases, but not sufficiently updated to support NS Power's assertion of the level of new CTs required by 2030 (600 MW of new CTs was the result in the "with tie" case).[6] The modeling was not a comprehensive IRP modeling update since it did not capture the current load forecast; effective load-carrying capability (ELCC) effects; and, critically, the cost and relative cost trends for all resources (market costs for CTs are likely much higher now with the extent of demand for them due to data center issues throughout North America). Also, the primary Reliability Tie cases (with and without the Reliability Tie) both excluded the ability of the Tie to allow for an incremental firm import of 100 MW, which ultimately affects the 2030 resource need for new CTs in Nova Scotia.

Evaluate alternatives to the Mersey hydro system in the next IRP

Synapse notes that NSPI did not provide any updates on sustaining capital investments for Mersey in this Action Plan Update. It remains unclear whether NS Power's plan to begin major capital investments in the early 2030s is economically prudent, compared to other resource options. We recommend

[4] See NSPI Responses to Synapse Information Requests, Response IR-1.

[5] For example, see NSPI Responses to Natural Forces Information Requests, IR-1.

[6] See Synapse Comments Reliability Tie as filed in M12217 on July 18, 2025. We note that in the sensitivity case allowing for 100 MW of firm imports from New Brunswick, the level of new CTs in 2030 was 500 MW, 100 MW lower than the base case with the Reliability Tie.

conducting scenarios with and without the redevelopment of Mersey in the next IRP to closely review Mersey's economics.

2. BACKGROUND

On April 30, 2025, NSPI filed its 2025 Evergreen IRP Action Plan and Roadmap Update. In this update, NSPI provided an update on electricity planning environment changes, an update on the Action Plan and Roadmap items to date, and a description of planned work for the remainder of 2025 (including studies on hybrid heating electrification and ELCC).

The Action Plan Update directly included reference to NSPI's Path to 2030 (2024 update) document that was filed with the 2025 ACE Plan.[7] This document contained updates relating to the creation of the NSIESO, the reliability tie, electrification strategy, fast-acting generation capacity, wind procurement strategy, wind integration studies, offshore wind, thermal plant conversions, battery storage, and demand response.[8] NS Power states that the resource additions and retirements (coal plants only) in the Path to 2030 document form the basis for resource pathway contained in NS Power's Action Plan Update, and NS Power also states that the 2025 10-Year System Outlook Report reflects the current resource plan for new CTs.[9]

The 2025 Action Plan Update is NS Power's fourth annual update since the release of the original IRP in 2020. Per NSPI's responses to information requests, NSPI did not conduct any new capacity expansion or dispatch modeling as part of the update and relied on modeling that was completed for the 2023 Evergreen IRP.[10] NS Power also relied on updates to resource trajectories following each load forecast update (in 2023, 2024, and 2025) following the 2022 load forecast which was used in the Evergreen IRP. Those resource trajectory updates are contained in the annual 10-Year System Outlook Reports and also in the two Path to 2030 documents submitted by NS Power.

2023 Evergreen IRP

In 2019 and 2020, NSPI conducted an extensive IRP process, the first since 2014.[11] Its 2020 IRP was submitted in November of 2020. Through the IRP process, NS Power identified Action Plan and Road Map items to advance its long-term electricity strategy. One component of the roadmap was the

[7] NS Power, 2025 ACE Plan Appendix H, December 9, 2024.

[8] NS Power 2025 Action Plan Update, slide 6.

[9] See NSPI Response IR-3 (a) to Synapse Information Requests.

[10] See NSPI Response IR-1 to Synapse Information Requests.

[11] NS Power filed its 2014 IRP on October 15, 2024.

Evergreen IRP process, which enables NS Power to make updates to the Action Plan and Roadmap as the planning environment changes.

The 2022/2023 Evergreen IRP process was triggered due to changes in environmental policy, load, and resource assumptions that had occurred since the 2020 IRP. In August 2023 NS Power submitted its Evergreen IRP, which reflected a comprehensive modeling update of the 2020 IRP. NSPI determined that it should prioritize execution of the following five Action Plan items:[12]

1. **Regional Integration Strategy**: NSPI stated that it would continue to develop the Reliability Tie with a target in-service date of 2028.[13] In addition, NS Power committed to continue working with neighboring jurisdictions regarding opportunities for improved regional integration, specifically considering firm import options.

2. **Electrification:** NSPI stated that it would publish its Electrification Strategy report in 2023, continue to collect detailed data on electrification demand, and incorporate analysis of electrification impacts into its transmission and distribution system planning process.[14]

3. **Thermal Retirement Plan:** NSPI stated that it would progress its Thermal Plant Retirement, Redevelopment and Replacement plan, which included the following steps:

    a. Proceed with retiring Trenton 5 on the 2027/2028 timeline from the Evergreen IRP modeling. Minimize utilization of other thermal resources to reduce sustaining capital investment. Continue to develop coal retirement plan for remaining units.

    b. Conduct depreciation study of thermal plants and file prior to next General Rate Application.

    c. Initiate development of new fast-acting generation, including 300 MW by 2027. Most of NS Power's "no Atlantic Loop" scenarios indicated a total of 450 MW of new CT generation by 2030, including its preferred plan (CE1-E1-R2). Hybrid peak mitigation plans included lower amounts of CTs (300–320 MW), while three scenarios included higher amounts by 2030 (600 MW, 650 MW, and one accelerated electrification scenario with 900 MW).

    d. Develop procurement plan for incremental renewable energy resources, targeting approximately 1000 MW by 2030.

[12] NS Power 2023 Evergreen IRP, August 8, 2023, page 14.

[13] The Reliability Tie is a proposed second 345 kV AC transmission line between Nova Scotia and New Brunswick. Its Application is underway before the NSEB in Matter M12217.

[14] The Electrification Report was published in October, 2023 and is available at https://www.ethree.com/wp-content/uploads/2023/12/E3_NS-Power_Electrification-Report.pdf.

e. Continue fuel conversion projects, including converting one unit from coal to gas by 2028 and target converting three units from coal to heavy fuel oil by 2029.

f. Target at least 100 MW of 4-hour battery storage in service by 2030. Continue to explore potential benefits of additional energy storage beyond this target.

g. Assess the need for synchronous conductor support to support new renewable energy integration. Progress development of 100–200 MVA of synchronous condensers by 2030.

4. **Demand Response:** NSPI stated that it would continue to progress its demand response pilot program, targeting 75 MW of capacity by 2025, and that it would further assess the value of hybrid peak building electrification options.

5. **Avoided Costs of Demand-Side Management (DSM):** NSPI stated that it would update the avoided costs of DSM, targeting completion before the end of 2023.

NSPI also identified 11 Roadmap items that it would monitor for changes. These included monitoring wind integration requirements, resource costs (new and existing), fuel costs, federal policy changes, load growth, opportunities for firm imports, and hydrogen tariff impacts.

Synapse submitted comments on NSPI's 2023 Evergreen IRP.[15] Synapse's comments discussed the following key items:

- **Atlantic Loop not included in the Preferred Plan:** Synapse stated that CE1-E1-R2 was the preferred plan, affirmed by NS Power in its 2023 10-Year System Outlook report from June of 2023. Synapse suggested (at the time) re-running Atlantic Loop scenarios if capital cost assumptions and import and export cost assumptions could be affirmed.

- **Reliability Tie and Regional Integration:** Synapse recommended the development of the Reliability Tie as a high priority item.

- **Solar and Wind Resource Selection:** Synapse supported NSPI's development of a solar and wind procurement strategy and continuing to work on identifying opportunities to reduce curtailment.

- **Battery Storage Resource Selection and Capacity Accreditation:** Synapse recommended accelerating battery storage deployment beyond NSPI's target of 100 MW by 2030. Synapse also noted that the capacity accreditation values used did not capture diversity effects that exist between batteries and other clean energy resources, leading to battery accreditation values being too low. Synapse recommended updating the capacity accreditation study prior to the next IRP.

[15] See Synapse Comments on Nova Scotia Power Updated Action Plan and Roadmap as filed in M11307 in August 2023.

- **New Fast-Acting Capacity and Existing Plant Retirements/Conversions:** Synapse noted that there was signification variation in the need for new CTs or reciprocating engines across different scenarios. Synapse recommended ongoing study under the hybrid peak mitigation scenario and other No Atlantic Loop scenarios, as well as an updated IRP analysis of battery storage additions prior to significant commitments to reach the levels of CT additions (450 MW) that are modeled by 2029 in the IRP's CE1-E1-R2 scenario.

- **Electrification Strategy:** Synapse supported NSPI's plan for an electrification study and continued data collection.

- **Imports and Exports:** Synapse supported NSPI's plans to continue to review curtailment issues and recommended that NSPI make more detailed information on the modeled temporal patterns of import and export energy flows available. Synapse also recommended that the next IRP clearly describe the extent to which exports are allowed under different scenarios. We also recommended that NSPI include scenarios that explore higher levels of battery additions as a mechanism to reduce curtailment.

- **Hydrogen as a Fuel or Hydrogen Production as Additional Load:** NSPI's 2023 IRP modeling selected only 50 MW of hydrogen-fueled CTs, very late in the modeling horizon (2047) and only in the scenario with higher-cost renewable energy and battery storage resources. Synapse noted that this indicates that hydrogen was not cost-competitive with renewable energy and battery storage resources.

3. 2025 ACTION PLAN UPDATE

NSPI recently filed an update to its 2023 Evergreen IRP Action Plan.[16] This is the fourth annual Action Plan Update. It contains information on changes to the electricity planning environment, as well as status updates on the Action Plan and Roadmap items.

NSPI did not update any production cost or capacity expansion modeling to inform any part of the Action Plan Update, nor did it use the results associated with modeling in the Reliability Intertie case (M12217).[17] The Action Plan Update did not use the most recent (i.e., 2025) load forecast, DSM, or load management assumptions. Critically, it does reference the updated 10-Year System Outlook from 2025 and the Path to 2030 reports (both the original from December 2023 and the update from December 2024).[18] The resource plans in those reports reflect changes made by NS Power (in 2023) based on its assertion that the effect of updates to the load forecast in 2023 and 2024 lead to more CTs. However, it

[16] NS Power, Integrated Resource Plan Action Plan Update, 2025. M12247. April 30, 2025.

[17] NS Power response to Synapse IR-1 (a), (c), and (d).

[18] Ibid.

did not examine or explain how it determined that the "slightly modified" resource plan should reflect more CTs, rather than any other path for increasing firm resources to meet an increased need.[19]

The Action Plan Update directly relies upon the Path to 2030 report (2024 update) for the resource plan associated with the update.[20] NS Power did not directly compare the resource plan associated with this Action Plan update, as contained in the Path to 2030 report (2024 update), to that of the 2023 IRP.[21] NS Power asserts that the Nova Scotia Clean Power Plan (CPP) indicates up to 600 MW of fast-acting generation by 2030, and that such amounts of fast-acting generation are in alignment with the 2025 10-Year System Outlook Report and builds on the 2023 Evergreen IRP Action Plan.[22]

3.1. Changes to Electricity Planning Environment

One of the key changes to the electricity planning environment since the 2023 Evergreen IRP process is that the federal government finalized the Clean Electricity Regulations (CER). The CER development process began in March 2022, with draft regulations published in August 2023 and final regulations published in December 2024.[23] The CER requires that 80 percent of 2030 sales be supplied by renewable resources. It also sets an annual generator-specific emissions limit, though it allows for designated units to combine their allowable emissions through a pooling mechanism. The CER also allows operators to purchase up to a certain quantity of offsets. Planned thermal units (i.e. units which meet certain timeline criteria, including having started construction by 2027 and being commissioned by 2035) are exempt from the annual emissions limit requirements.

NSPI included a proxy emissions limit in its 2023 Evergreen IRP modeling and therefore stated that its 2023 Evergreen IRP resource plans are compliant with the CER, and that the final CER terms do not require changes to resource plans in the Evergreen IRP. NSPI states that it anticipates incremental system costs associated with meeting the CER's targets compared to current policy but does not quantify or elaborate on this.[24]

[19] 2023 10-Year System Outlook, page 44, "Since the CE1-E1-R2 Evergreen IRP scenario is based on the 2022 Load Forecast, the firm capacity additions have been slightly modified to account for additional firm peak requirements reflected in the 2023 Load Forecast. This requirement is met by an increase in new fast-acting combustion turbine capacity in the latter part of the 10-year horizon (please refer to Figure 19)".

[20] NS Power response to Synapse IR-3 (a).

[21] NS Power response to Synapse IR-3 (b). The question asked NS Power to compare the 2025 Action Plan Update resource plan with that of the 2023 Evergreen IRP resource plan, but the response indicated that this update (2025 Action Plan Update) was aligned with the resource plan in the Path to 2030 – 2024 update.

[22] NS Power response to Synapse IR-3 (d).

[23] NS Power Action Plan Update, page 8.

[24] NS Power Action Plan Update, page 16.

3.2. Progress Updates on Action Plan Items for 2024/2025 to Date

- **Regional Integration Strategy:** NSPI filed the Reliability Tie application with NSEB on April 9, 2025, seeking to build the Reliability Tie identified in its 2023 Evergreen Action Plan. NSPI states that it will continue to monitor opportunities for near-term firm imports over existing and planned transmission connections.
- **Electrification:** More accurate information, including supervisory control and data acquisition (SCADA) and advanced metering infrastructure (AMI) data is being used to improve transmission and distribution system studies and better understand electrification impacts. NS Power reports on the Evergreen IRP Roadmap Item 6, Electrification and Load Growth, but does not explicitly note that the peak load forecast from the 2025 10-Year System Outlook Report contains a materially lower peak load trajectory than that of the 2023 10-Year System Outlook Report. For example, the 2025 report lists a 2030/2031 firm winter peak load of 2,332 MW (136 MW lower than the 2,468 MW value in the 2023 report).
- **Thermal Retirement Plan:**
    - The GRA (General Rate Application) Settlement Agreement submitted to the UARB in 2023 recommended a Decarbonization Deferral Account (DDA) to recover undepreciated thermal asset values and unrecovered decommissioning costs. NSPI is still planning on completing a depreciation study in advance of the next GRA to determine depreciation rates and recovery strategies.
    - The provincial Green Choice Program (GCP), managed by an independent Procurement Administrator, acquires renewable generation to serve participating NS Power customers with 100 percent renewable energy. The Procurement Administrator announced selection of 625 MW of wind capacity in January 2025.
- **Demand Response:** With support from the Province of Nova Scotia, Net Zero Atlantic is working on studying the costs and benefits of the hybrid peak approach modeled in the 2023 Evergreen IRP. NSPI has participated in meetings with Net Zero Atlantic and provincial staff. A report is expected during the first quarter of 2026.

3.3. Progress Updates on Roadmap Items for 2024/2025 to Date

- **Existing thermal unit cost updates:** NSPI has updated cost profiles for sustaining capital investment for its existing thermal units. These will be incorporated in future IRP modeling.
- **Hydrogen:** NSPI is engaged with prospective hydrogen developers to assess the impact of future hydrogen production development on the power system and to assess future opportunities to use hydrogen as a fuel. NSPI is currently developing a hydrogen tariff for hydrogen producers.
- **Geothermal:** NSPI spoke with companies operating in the emerging geothermal technology space to better understand the potential for geothermal development in Nova Scotia. Regarding future modeling of geothermal, NSPI notes that (1) more temperature and seismic data would be needed for further assessment; (2) costs for

geothermal development in future IRP work would need to reflect developing technology costs, and the significant bore hole depth needed; and (3) geothermal is not yet commercialized, and future modeling should reflect that it likely wouldn't be available until at least 2030.

- **Small modular reactors (SMR):** There have been two SMR policy updates. In 2024, the Province of Nova Scotia passed legislation allowing for SMRs to be built in the Province. The federal government has also released an SMR Action Plan, which aims to enable SMRs development in Canada. NSPI will continue to monitor costs for SMR development but determined these changes do not trigger a need for an IRP update.

- **Hydrogen-enabled CTs:** NSPI's resource planning team has been gathering updated assumptions on hydrogen blending capabilities and costs. NSPI used this updated data in the Reliability Tie analysis but concluded that the updated information does not trigger an IRP update.

3.4. Related Matters and Plans

Outside of the IRP matter, NSPI has presented forward-looking resource and generation plans in other places, including the Path to 2030 Update, its recent Reliability Intertie Application, and the 2023, 2024, and 2025 10-Year System Outlooks. These and other notable documents and ongoing efforts are listed below in Table 1. Other than the Evergreen IRP work in 2022/2023, and an abbreviated modeling effort in the Reliability Tie case, none of the changes to resource plans reflected in the documents resulted from any form of resource planning modeling.

Table 1. Related Documents and Efforts

Release Date	Document	Description
June 30, 2023	2023 10-Year System Outlook	Based on 4/30/23 load forecast update and the Evergreen IRP modeling results
August 8, 2023	2023 IRP	Based on modeling conducted over 2022/2023, using 2022 load forecast
October 2023	Electrification Report	E3 Analysis of electrification impacts in Nova Scotia
October 2023	IBR Integration Report	Large Scale Integration of Inverter-Based Resources [IBR] in Nova Scotia Manitoba Hydro and Nova Scotia Power
December 22, 2023	Path to 2030	Based on 2023 10-Year System Outlook update
June 30, 2024	2024 10-Year System Outlook	Based on 4/30/24 load forecast update
December 9, 2024	Path to 2030 – 2024 update	Based on 2024 10-Year System Outlook update
April 10, 2025	Reliability Intertie Application	Based on new PLEXOS modeling that updated the 2023 Evergreen IRP modeling
July 14, 2025	2025 10-Year System Outlook	Based on 4/30/25 load forecast update

July 31, 2025	ELCC Study Revised Scope of Work Memorandum	Updated scope of work from the original 2/6/25 memo and comments from seven stakeholder groups.

4. DISCUSSION

After reviewing NS Power's 2025 Action Plan Update and related planning documents, Synapse examines the following key issue areas, discussed below:

1. Misalignment of new CT additions between the IRP and other planning documents,
2. The need for an updated evergreen IRP as soon as possible,
3. The importance of the Reliability Tie to provide resource adequacy and reliability benefits, and
4. The need to evaluate alternatives to the Mersey Hydro System in the next IRP.

4.1. No justification for 600 MW of new CTs by 2030

Synapse finds that NS Power seems to minimize its own IRP modeling implications in the Evergreen IRP case when it comes to near-term projected CT builds. Namely, NSPI presents new CT additions of 600 MW by 2029–2030 in the 2025, 2024, and 2023 10-Year System Outlooks and in the June 2023 and June 2024 *Path to 2030* reports. This deviates from the 450 MW of new CTs in the Evergreen IRP resource plan for scenario CE1-E1-R2 (the preferred plan) in 2030. NS Power has not fully documented the basis for continuing to assume an increase in new CTs by 2029–2030 relative to the most recent Evergreen IRP findings, other than noting in 2023 that "firm capacity additions have been slightly modified to account for additional firm peak requirements reflected in the 2023 Load Forecast."[25] NS Power also does not consider adjusting *downward* the 450 MW finding from the Evergreen IRP modeling due to other factors besides the load forecast changes.

While NS Power cites the CPP in support of this projection,[26] the CPP affirms just the first 300 MW of new fast-acting CT resources before 2030 but only references the potential for additional new CTs in 2030 and later years.[27] NS Power also does not seem to give any weight to the two major studies underway at this time (ELCC study and the Net Zero Atlantic study), nor does it acknowledge the impact of other drivers, such as the load forecast, the potentially increased ability to obtain firm import capacity

[25] 2030 10-Year System Outlook, page 44.

[26] 2025 10-Year System Outlook, pages 45-46, "The capacity additions and retirements are in alignment with the CE1-E1-R2 Evergreen IRP scenario and the Province of Nova Scotia's 2030 Clean Power Plan."

[27] CPP at slides 10, 19, 21, 23.

from New Brunswick, the current relative costs for new resources, and potentially planned near-term, increases in battery energy storage capacity.

While NS Power stated in 2023 that it would "continue to monitor potential deficits or apparent surpluses as forecasts continue to evolve and will adjust decisions accordingly,"[28] it does not appear that NS Power has done so. The 2025 10-Year System Outlook report shows a 25 percent reserve margin in 2029/2030, which is an increase relative to the 20 percent reserve margin presented in the 2023 report. This reserve margin reflects a 119 MW firm capacity surplus above requirements in 2029/2030. It includes the increases in battery energy storage projects beyond the 140 MW seen in 2030 in scenario C1-E1-R2[29], and it does not account for potential changes to the ELCC parameters.

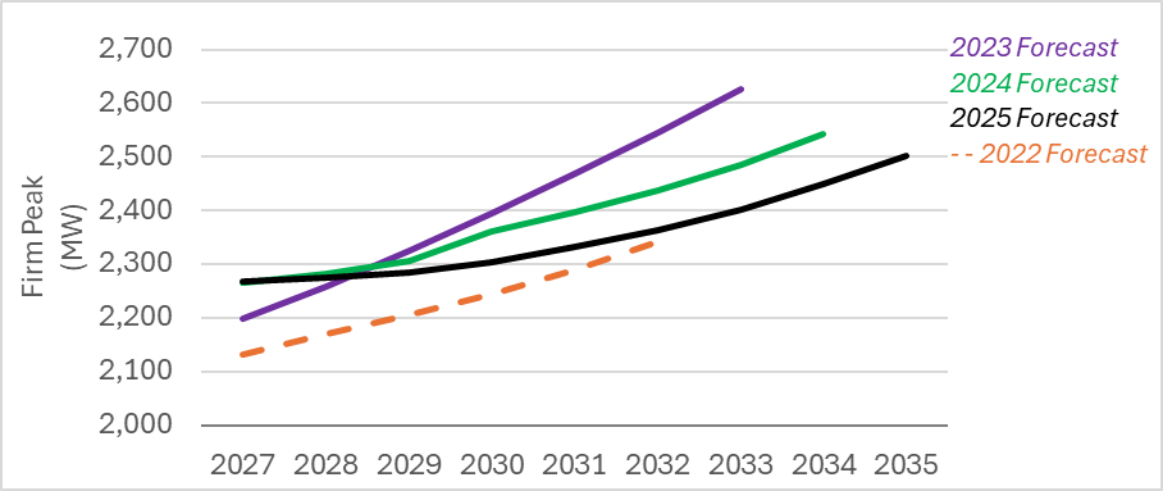
The surplus amount nonetheless still excludes the potential outcomes of the Net Zero Atlantic study, which could lead to a lowering of the peak load forecast (and an increase of the surplus seen in the 2025 report). The effect of increased levels of battery storage, an ELCC parameter change, and a peak load mitigation under the hybrid scenario under consideration in the Net Zero Atlantic study could affect the need for new firm capacity resources by 2030. The 10-Year System Outlook report does not provide discussion on the effects these factors could have on an updated modeling assessment of 2030 resource need and resource type determination.

More recent load forecasts completed in 2024 and 2025 both show declining firm peak loads in the late 2020s and early 2030s relative to the 2023 load forecast (see Figures 1 and 2). This reverses the "increased load" trend noted in NS Power's 2023 10-Year System Outlook Report, which appears to be NS Power's driving factor for increasing the level of new CTs by 2030 in its resource need projection.

[28] 2023 10-Year System Outlook, page 45.

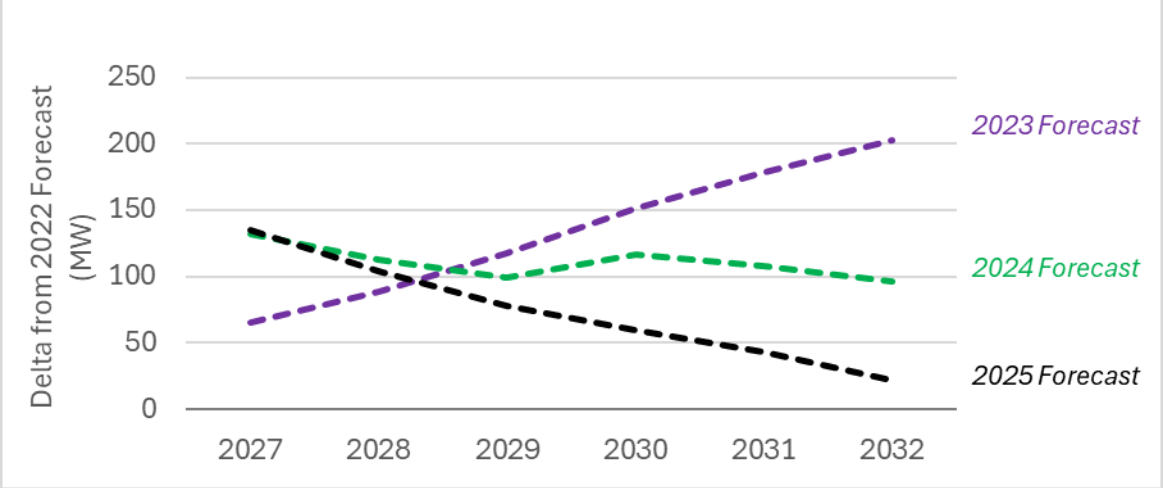
[29] The 2025 10-Year System Outlook report includes 85 MW of firm capacity increase from 250 MW of incremental battery energy storage, online in 2027/2028 and 2029/2030. In total, the plan has 400 MW (nameplate 4-hour duration) battery storage, more than twice as much as seen in scenario CE1-E1-R2 through most years of the planning horizon.

Figure 1. NSPI load forecasts



Source: NS Power Load Forecasts, 2022-2025, Synapse graph.

Figure 2. Load forecast deltas from Evergreen IRP (2022 load forecast basis)



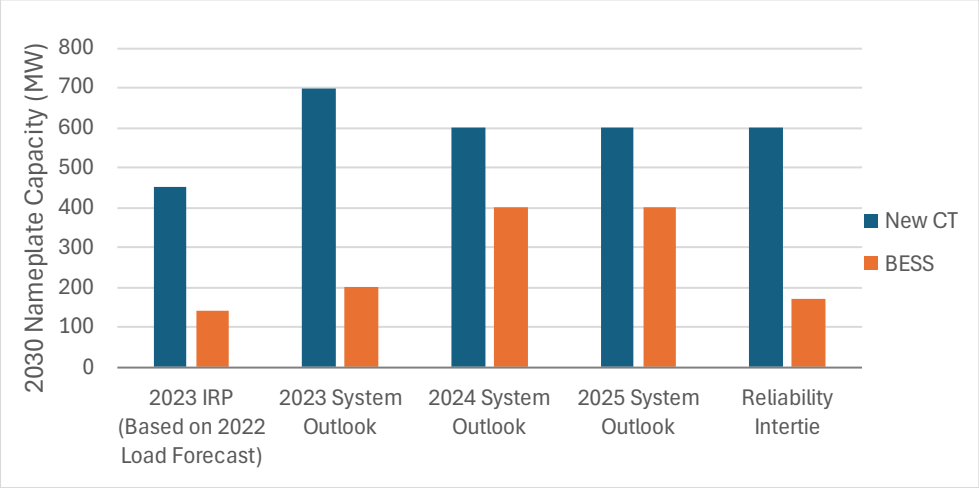
Source: NS Power Load Forecasts, 2022-2025, Synapse computation and graph.

The figures above illustrate the pattern of load forecast changes between 2022 and 2025, and how the difference in firm peak load for the 2029 through 2032 period has declined with each subsequent forecast. The current (2025) forecast is now aligned with the 2022 forecast for the early years of the 2030s, and the capacity deficits for the 2029/2030 period seen in the 2023 10-Year System Outlook have been reduced.

However, as seen in Figure 3 below, new CT capacity in 2030 has remained the same since the 2023 10-Year System Outlook report, and has not been adjusted to consider the updated load forecast and other factors, such as new battery storage installations and a forthcoming ELCC update, or any potential

impacts associated with possible new import capacity from New Brunswick, or the fundamentals associated with the relative cost of new CT resources and battery energy storage systems. Over the past few years, there has been increasing pressure to provide more CT capacity in North America to address data center load increases. This effect has the potential to significantly, if not dramatically, increase the relative cost of CT resources compared to firm capacity from sources such as battery energy storage systems and demand response capabilities.

Figure 3. New CT and BESS capacity in IRP 10-Year system outlooks, and Reliability Intertie Modeling



Source: NS Power Evergreen IRP model results, Reliability Tie model results, and 2023, 2024, and 2025 10-Year System Outlook reports. Synapse graph.

Table 2 illustrates that the increase in new CT capacity by 2030 has increased as a share of firm peak load relative to the original Evergreen IRP findings for the preferred plan. While a material increase (since the Evergreen IRP) in a single-year metric such as this percentage is not determinative of excess new CT capacity (as updated modeling is required), it does illustrate that NS Power's use of the 600 MW new CT level in 2030 as a benchmark does not necessarily reflect an optimal economic resource addition finding to meet the needs of 2030.

Table 2. New CT Capacity as Percent of Firm Peak Load in IRP, 10-Year System Outlook reports and Reliability Intertie modeling

2030 Nameplate Capacity	New CT Capacity as Percent of Firm Peak
2023 IRP	20%
2023 System Outlook	29%
2024 System Outlook	25%
2025 System Outlook	26%
Reliability Intertie	25%

Source: Synapse computation based on NS Power Evergreen IRP model results, Reliability Tie model results, and 2023, 2024, and 2025 10-Year System Outlook reports.

Ultimately, we find it concerning that NS Power has presented an alternative resource plan in the 10-Year System Outlook reports and the Path to 2030 reports that deviates from the most recent IRP, without modeling support for such an alternative plan.

We recognize that resource needs will change as load forecasts change, and that investment decisions for new CTs (and alternative non-fossil firm capacity resources) will rarely exhibit perfect timing for meeting such needs, and that focusing on a single-year metric is a potentially overly narrow perspective. However, at this time there is a need for a refined and more analytically rigorous approach to assess whether new CT investment by 2030 beyond the first 300 MW of fast-acting generation is required.

4.2. A new Evergreen IRP – as soon as possible

Given the uncertainty around projected firm capacity resource needs by and beyond 2030, a new Evergreen IRP is necessary to appropriately include all the factors that will impact such an estimation.

Currently, Nova Scotia is in the process of transitioning IRP responsibilities from NSPI to the newly created IESO per the provisions of Bill 404.[30] This bill requires that the IESO commence its first IRP exercise within one year of that section of the Bill coming into force. Until the IESO's first IRP is complete, the bill directs the IESO to operate on the basis of the results of the most recent update to the IRP filed by NSPI.[31] For this reason, it is important that NSPI's IRP Update is clear and robust such that it provides a solid framework for the IESO to follow until it develops its own IRP.

It is important that IESO finalize a new IRP with sufficient time to make resource decisions about CT, wind, and battery storage builds in advance of 2030. To that end, NSPI and other stakeholders should continue to make progress on the studies referenced in the Action Plan Update, such as the ELCC study (not yet started) and Net Zero Atlantic study on the hybrid peak approach (expected in Q1 2026). The outcomes of these studies could have a substantial impact on the optimal resource mix that NSPI and/or IESO should use as a guiding framework and should be incorporated in the next Evergreen IRP study. The Net Zero Atlantic study will inform the validity of scenarios that reflect lower peak load increases from electrification, and the ELCC study results will provide critical updates to the firm capacity accreditation necessary for new resources.

The new Evergreen IRP should update all core assumptions (especially resource costs and load projections including alternative peak mitigation scenarios). For example, it will be important to reflect any observed CT/RICE (reciprocating engine) cost increases from the latest NS Power assessment that accounts for data center market-driven increases. This will refine the estimates currently seen in the 2025 10-Year System Outlook report and the most recent Path to 2030 report.

[30] Bill No. 404. An Act to Reform the Law Respecting Energy and Electricity. Available at: https://nslegislature.ca/sites/default/files/legc/PDFs/annual%20statutes/2024%20Spring/c002.pdf.
[31] Bill 404, Schedule B.

The next IRP should also consider regional coordination scenarios as contained in Synapse's Reliability Tie Matter Evidence.[32] This should likely include allowance for at least 100 MW of firm import capacity from New Brunswick for 2029 or 2030.[33]

4.3. Reliability Tie

Completion of the Reliability Tie goes a long way towards ensuring Nova Scotia can reliably comply with 2030 coal retirements without necessarily going above 300 MW of new CTs by that year. New Brunswick is completing other internal transmission work that NS Power acknowledges would allow for a 100 MW firm import[34] if necessary. That 100 MW insurance, along with additional new battery energy storage systems, ELCC parameter updates, and any hybrid peak mitigation effects (and any other new demand response efforts associated with mitigating peak increase from new electrification load) supports a more limited amount of new CTs by 2030 at this time. Also, as mentioned above, the actual winter 2030 reserve margin in the 2025 10-Year System Outlook report (using NS Power's existing ELCC values and the 2025 load forecast) is at 25 percent, which is higher than the 20 percent reserve margin seen for that same year in the 2023 10-Year System Outlook Report. This suggests there is not a need for more CTs in 2030 beyond the current IRP level of 450 MW, as the 25 percent level represents 119 MW of firm capacity beyond that needed to meet resource adequacy (including reserve) requirements.

4.4. Mersey

Roadmap Item 2 is Sustaining Capital. In the section of the Action Plan Update pertaining to this item, NSPI provides updates on thermal resources and does not provide any updates on sustaining capital investments at the Mersey Hydro System, although we note this information is available in the 2025 ACE Plan application. Mersey provides 42 MW of nameplate capacity, roughly 35 MW of firm capacity, and 220 GWh per year of renewable energy.[35] In the next IRP, it will be important to study whether alternatives such as wind and battery storage systems are able to provide this level of capacity and renewable energy at lower cost.[36]

[32] See Synapse Comments Reliability Tie as filed in M12217 on July 18, 2025.

[33] See NSPI Responses to NSEB Information Request IR-4. We further note that in the original 2020 IRP modeling results, the preferred plan included an increment of firm import capacity from New Brunswick. While that does not reflect the economics of such an import in 2029 or 2030, it does illustrate that the value of capacity from a new import from New Brunswick at that time was greater (i.e., the costs were lower) than an increment of capacity from Nova Scotia.

[34] NS Power, response to NSEB IR-4.

[35] NS Power, 2025 10-Year System Outlook, page 14.

[36] In the 2025 ACE Application, Appendix G indicates Mersey redevelopment costs in the next decade at roughly $1.2 billion (nominal), or $562 million NPV.

5. RECOMMENDATIONS

Synapse remains concerned that NSPI has stated in various documents that it expects to have 600 MW of CT capacity by 2030 but has not shown this as an outcome of the IRP or the IRP updates. Enough has changed since NSPI conducted thorough modeling in 2023 that it would be prudent to undertake a more robust analysis soon to evaluate the optimal path forward for Nova Scotia. The following recommendations are aimed to guide the next IRP iteration.

1. After establishment of the IESO, we recommend a rapid ramp-up of the capability to conduct a new Evergreen IRP. This modeling is necessary to synthesize new information that will be available from the ELCC update and the Net Zero Atlantic study, and to update resource planning assumptions including capacity costs and the most recently available load forecast. The previous IRP modeling efforts associated with the Evergreen IRP submitted in August of 2023 commenced in 2019, and thus an update to outdated assumptions is critically needed. The IESO should strive to complete a new Evergreen IRP modeling exercise by late 2026 or early-to-mid 2027 to provide sufficient time to consider procurement for any required resources beyond those procurements currently underway. If necessary, given potentially lengthy availability timelines for new resources, this process should allow for a faster initial modeling effort to better gauge 2030 resource needs.

2. When conducting updated modeling for the next Evergreen IRP exercise, modelers must include updated assumptions for all considered resource options. Modelers must establish cost and availability timelines for new fossil-fueled generation (CT or reciprocating engines), wind resources, and battery energy storage systems based on the most recently available and accurate information. The scenarios to consider should include those containing improved regional coordination with New Brunswick Power, representing not only the availability of firm imports from New Brunswick but also the potential for regional unit commitment and joint dispatch procedures to best utilize the increased transfer capacity afforded by the new Reliability Tie. Load forecast and DSM assumptions must recognize the outcomes from the Net Zero Atlantic study and most recent EfficiencyOne activities to gauge the impact of planned DSM and electrification on both firm peak load and the ability to manage such peak load increases. The results of the ELCC study update should be used to inform capacity accreditation values for all resources.

3. We recommend deliberative and stakeholder-informed examination by the IESO for any new fast-acting generation and battery energy storage resources, in combination with considering the current path for new renewable wind and solar PV resources required to meet renewable generation requirements in Nova Scotia. Notwithstanding NS Power's pronouncements on a need for 600 MW of new CTs by 2030, the IESO must carefully evaluate the economics of different firm capacity alternatives and not rush to determine the extent to which new fossil-fueled resources might be required. While the flexibility afforded new fossil resources under the CER is valuable, that does not mean a hurried approach to locking in increases in new CT capacity beyond the first 300 MW (by 2027) is appropriate.

4. In the next IRP assessment, the IESO must include scenarios that exclude Mersey rehabilitation and avoid the capital investment that would be required for such upgrading. All scenarios that include Mersey (with capital upgrades) must fully incorporate the current cost estimates for its rehabilitation. This will enable a direct comparison of the costs (net present value of revenue requirements) of resource plans with and without Mersey.