

NOVA SCOTIA UTILITY AND REVIEW BOARD

IN THE MATTER OF THE *PUBLIC UTILITIES ACT*
- and -

IN THE MATTER OF an application by **NOVA SCOTIA POWER INCORPORATED** for approval of capital costs of three 50 MW, four-hour battery facilities, including AFUDC, for CI C0045132 - Battery Energy Storage System (BESS) Project, with a net customer capital cost of approximately \$243 million

BEFORE: Richard J. Melanson, LL.B., Panel Chair
Steven M. Murphy, MBA, P.Eng., Member
Jennifer L. Nicholson, CPA, CA, Member

APPLICANT: **NOVA SCOTIA POWER INCORPORATED**
Mary Ellen Greenough
Director, Legal and Regulatory (Eastern Clean Energy Initiative)

Blake Williams
Senior Director, Regulatory

INTERVENORS: **CONSUMER ADVOCATE**
David J. Roberts, Counsel
Michael Murphy, Counsel

SMALL BUSINESS ADVOCATE
E.A. Nelson Blackburn, K.C.
Melissa P. MacAdam, Counsel

EASTWARD ENERGY
Allison Coffin
Director, Regulatory & Government Relations

EFFICIENCYONE
James R. Gogan, Counsel

ENERGY STORAGE CANADA
Justin Rangooni
Executive Director

INDUSTRIAL GROUP

Nancy G. Rubin, K.C.
Brienne Rudderham, Counsel

**NOVA SCOTIA DEPARTMENT OF NATURAL
RESOURCES AND RENEWABLES (NRR)**

Daniel Boyle, Counsel

PORT HAWKESBURY PAPER LP (PHP)

James MacDuff, Counsel
Alexandra Gosse, Counsel

BOARD COUNSEL: William L. Mahody, K.C.

FINAL SUBMISSIONS: May 27, 2024

DECISION DATE: June 13, 2024

DECISION: The Application is approved with directives about reporting.

I INTRODUCTION

[1] In response to recent Provincial legislation requiring specified grid-scale batteries for energy storage, NS Power applied to the Board for approval of a proposed Battery Energy Storage System (BESS) Project. The BESS Project will consist of three sites, each hosting sufficient capacity to deliver 50 MW to interconnection points with the NS Power grid.

[2] The total forecasted cost of this project is \$354 million, including contingency and Allowance of Funds Used During Construction (AFUDC). The federal government has committed to providing \$115.6 million in funding for the BESS Project. NS Power, therefore, seeks approval for the projected net cost to ratepayers in the amount of \$237.7 million.

[3] The Board finds that the BESS Project is required to meet the applicable legislation. The cost of the project is justified, and the Board finds it is reasonable. The Board approves the BESS Project in the amount of \$237.7 million, subject to certain reporting directives set out in paragraph [42] of this decision.

II BACKGROUND

[4] On March 22, 2023, the Government of Nova Scotia introduced Bill 264 to amend the *Electricity Act*, S.N.S. 2004, c. 25. Bill 264 added s. 4D(9) to the *Electricity Act*, which allows the Governor in Council to prescribe an energy storage project. The Province enacted regulations under s. 4D of the *Electricity Act* directing NS Power to install three 50 MW four-hour-duration lithium-ion grid-scale batteries with an electric storage rating of 200 MWh each at three sites in Nova Scotia.

[5] NS Power seeks Board approval to engineer, procure, construct, commission, and place into service the BESS Project. Additionally, NS Power seeks approval of AFUDC, and approval of a 5% annual depreciation rate for the battery and inverter components, until the company's next depreciation study.

[6] NS Power held two pre-filing conferences with Board Counsel and stakeholders. Synapse Energy Economics Inc. (Synapse) was engaged as Board Counsel Consultant to provide evidence in this matter. Notices of Intervention were filed by the Consumer Advocate (CA), Small Business Advocate (SBA), Industrial Group (IG), Energy Storage Canada (ESC), Efficiency One (EOne), Eastward Energy (EE), the Department of Natural Resources and Renewables (NRR), and Port Hawkesbury Paper LP (PHP).

[7] Information Requests were filed on February 22 and April 11, 2024, to which NS Power submitted its responses on March 14 and May 3, 2024. Synapse and John Athas of Daymark Energy Advisors, on behalf of the SBA, filed evidence on April 4, 2024, and NS Power submitted its Reply Evidence on May 9, 2024. The CA and the SBA filed Closing Submissions on May 23, 2024, with NS Power filing its Reply to the Closing Submissions on May 27, 2024.

[8] The BESS Project is expected to support the energy transition and provide grid stability when wind and solar resources are not dispatchable and to support energy dispatch during peaks. NS Power anticipates putting two BESS Project sites into service

in 2025 and the third in 2026. Each of the three facilities will provide 50 MW of storage capacity and include the following components:

- Batteries with storage of 200 MWh at the start of operation and balance of system components.
- A power conversion system (PCS) with enough power capacity to deliver 50 MW of alternating current at the point of interconnection with the grid.
- An energy management system (EMS) to dispatch the electricity and to manage operations of the BESS Project.
- Connection to the 138 kV transmission system and full integration with the Energy Control Centre (ECC) and establishing provisions to access the BESS facilities.

[9] The BESS Project sites will be located in the Town of Bridgewater, Spider Lake in the Halifax Regional Municipality (HRM), and White Rock Road in Kings County. The full BESS Project entails configuration, preparation, and interconnection of each site to the 138 kV transmission system, purchase and installation of equipment, and full integration with NS Power's Energy Control Centre (ECC).

[10] The BESS Project will provide firm dispatchable capacity for four hours to meet peak system demand. The BESS Project will allow NS Power to store low-cost energy and energy generated off-peak and use that energy during higher cost on-peak periods. The BESS Project will be charged during periods of high wind and low load which improves the value of renewable resources that are intermittent. Voltage can be supported to meet local system needs and respond to disruptions in other areas of the grid. The System Operator will be afforded the ability to balance system generation and load, keeping the system frequency within the limits prescribed by the ECC. The BESS

Project will be able to provide power to the grid in response to sudden changes in load and unplanned generation outages.

[11] Synapse noted that other attributes of the BESS Project reflect a combined multi-functional grid support capability that can quickly respond to normal and contingency events in support of core frequency, voltage and load following requirements in both automated and manually dispatched modes. Although the BESS Project cannot fully displace older assets, Synapse considers this makes the BESS Project valuable for supporting reliability and effective at displacing carbon intensive and more expensive resources.

[12] In response to Synapse IR-4, NS Power stated that the BESS Project provides grid-forming capability that the North American Electric Reliability Corporation recommends implementing to reduce potential reliability risks.

[13] This project is designed for a 20-year life. Synapse considers the gross cost of the BESS Project is comparable to US National Renewable Energy Laboratory Annual Technology Baseline projections for utility scale battery storage projects of four-hour duration and regards the net costs of the BESS Project as reasonable.

III COMMUNITY ENGAGEMENT

[14] Early in the project NS Power held meetings with the Town of Bridgewater, the Municipality of the County of Kings, and HRM to explain the project, its functions and discuss locations. Meetings were held and presentations were made to HRM's Environment and Sustainability Standing Committee and other stakeholders and community interest groups. Letters were sent to local Members of Parliament and fire

departments. Residents who live within one kilometre of each site received notices by mail. Letters of support from each jurisdiction were submitted in Appendix E of the application.

IV PROCUREMENT

[15] NS Power will use a project management structure and methodology used for large capital projects to guide the development and implementation of the BESS Project. This will include: the decision gate process; internal project governance hierarchy; cost and schedule risk assessment; and independent third-party review of project controls.

[16] To develop the BESS Project Request for Proposals, NS Power engaged DNV Energy Systems Canada Inc. to prepare technical specifications for an engineering, procurement, and construction (EPC) contract and perform a market review to identify utility-scale battery suppliers for the RFP process and assist in the review of the technical aspects of bids. The procurement used a protocol for the evaluation of bids against pre-defined criteria to select the bids that met technical compliance, experience, strategy, risk allocation and cost requirements.

[17] In the fall of 2022, the BESS Project procurement was placed on hold but later re-initiated in February 2023. NS Power requested updated proposals from bidders. A contract standard was developed for negotiations with the shortlisted suppliers. References were called and site visits were performed.

[18] Lithium carbonate forms a significant component of the EPC contract price and NS Power is not able to hedge the price for this commodity. Suppliers were not able

to provide price certainty beyond a short-time period that would accommodate the Board's review of the project. As such, NS Power used an offer of Limited Notice to Proceed (LNTP) contract to secure a firm contract price for the EPC contractor. NS Power noted that the selected vendor offered the best combination of technical compliance, experience, strategy, risk allocation and costs. Additionally, the general contractor has the construction experience needed to perform the civil work of the EPC. The contractor is required to conduct and pass acceptance tests, to provide assurance that each BESS system meets guaranteed capacity levels before completion and must provide a multi-year warranty.

[19] Synapse stated that the LNTP contract will provide assurance to ratepayers through fixed cost pricing for much of the project. The LNTP contract also secures manufacturing resources and will help to maintain the project's schedule. The Board finds that the procurement process followed by NS Power for the BESS Project is reasonable. The Board supports NS Power's use of the LNTP contract and concludes this will help to provide price stability and secure the vendor's manufacturing capacity.

[20] Mr. Athas' evidence, however, suggests that future energy resource procurement should include the Build Own Transfer (BOT) and Power Purchase Agreement (PPA) procurement approaches that were not explored as potential procurement alternatives in this application. Mr. Athas said the BOT uses a competitive solicitation approach where suppliers bid a fixed price to complete the design, siting, construction and commissioning, that would then be owned and operated by NS Power. Specifications like location, generation and storage capacity would be in the competitive

RFP issued by NS Power or the Province of NS. Mr. Athas considered that a BOT can reduce risk of the costs and delays.

[21] In NS Power's Reply Evidence, the Company explained that the cost and risk allocation afforded by its procurement approach are cited in Mr. Athas' review of the BOT approach. Additionally, NS Power stated that PPA vendors do not assume usage variability risks for their resources, rather it is typical to encounter capacity commitments which places those variability risks on the power purchaser. Further, several of the derisking features noted by Mr. Athas are present in the LNTP contract, such as the secure pricing of a key resource and a firm contract price for the engineering, procurement and construction of the BESS. Nevertheless, the Board agrees that for projects where the location and capacity of the BESS are not prescribed by legislation, alternative procurement strategies should be considered to reduce project risks to the greatest extent possible.

[22] Separate from the BESS Project procurement, NS Power ordered three 60 MVA main transformers to address long-lead supply chain constraints and allow the BESS Project to adhere to its scheduled integration. These were purchased through a competitive procurement. The Board finds this reasonable.

V CAPITAL COSTS

[23] NS Power provided the following high-level project costing breakdown in Figure 2 of its application:

Expense Type	Cost
Regular Labour	\$9,575,228
Project Non-Labour Costs	\$5,491,452
Materials	\$220,021,441

Contracts	\$48,801,142
Consulting	\$5,143,823
Legal and Strategic Procurement Support	\$2,088,550
Land Purchase	\$670,170
Freight	\$22,667,051
Contingency	\$26,195,509
Allowance for Funds Used During Construction	\$13,365,727
BESS Gross Project Total	\$354,020,093
NRCAN Smart Renewables & Electrification Pathways Grant Funding	(\$111,175,859)
BESS Project Net Total	\$242,844,234

[24] Contingency represents 7.4% of the gross project cost (9.3% of net project cost). NS Power noted that the contingency amount was determined using its Non-Binding Contingency Guidelines through a Monte Carlo analysis which accounted for the base costs and the project risks and cost associated with those risks. The contingency amount calculated used a 75% probability (P75 cost risk confidence) that NS Power will be able to deliver this project within budget, in keeping with the Association for the Advancement of Cost Engineering (AACE) Estimate Class and accuracy range.

[25] While the Board has concerns about the amount of contingency being inadequate, the LNTP contract appears to provide a strong de-risking mechanism. The Board is therefore prepared to approve the contingency amount in the circumstances of this matter.

VI FINANCING

[26] NS Power secured financing from the Government of Canada in the form of a grant from Natural Resources Canada's Smart Renewables and Electrification

Pathways (SREP) Program for up to \$130 million. The SREP funding is equal to 1/3 of the project's capital expenses to a maximum of \$130 million. This funding reduces the net project cost to approximately \$243 million. A letter confirming the funding was supplied in Appendix D of the application.

[27] NS Power also secured low-cost project debt financing from the Canadian Infrastructure Bank (CIB), at a rate indexed to Government of Canada Bonds, which reduces the debt financing costs. As part of the debt financing with CIB and the CIB Indigenous Equity Initiative, the Wskijnu'k Mtmot'atquow Agency Limited made a project equity investment, by purchasing preferred shares of NS Power in advance of this application.

[28] NS Power also intends to take advantage of the Clean Technology Investment Tax Credit, Bill C-59. This credit will be applicable to costs for investments like the BESS Project. After it is enacted, NS Power estimates that it will be eligible for a 30% tax credit (\$70 million) which reduces the project revenue requirement.

[29] NS Power provided an update for the funding of the BESS Project in its Reply Evidence. The Company advised that it executed three agreements in March 2024 for the SREP program grant funding (one for each BESS Project site), securing funding for approximately 33% of eligible project costs. NS Power stated that the three SREP contracts totaled approximately \$109.5 million, which, as noted above, was estimated to be approximately \$111.2 million at the time of the application. NS Power explained this reduction by saying that it took the opportunity to participate in an additional funding program through Natural Resources Canada (NRCan). NRCan has an Electricity Predevelopment Program (EPP) which provides 100% funding of eligible costs related to

predevelopment, or preconstruction. It was determined that approximately \$8.1 million in BESS Project costs met the criteria for the EPP funding, and these costs were moved out of the SREP funding scope, thereby reducing the SREP amount.

[30] NS Power advised that securing this additional funding led to a revised NRCan funding amount of approximately \$116.6 million with the EPP and SREP combined, thereby reducing the forecast net customer capital cost from approximately \$243 million to \$237.7 million.

VII DEPRECIATION

[31] NS Power does not currently have a Board-approved asset class and associated depreciation rate for grid scale batteries and inverter assets. As such, the application seeks approval of an interim depreciation rate of 5% for these assets and asks that this rate be utilized until NS Power's next depreciation study proceeding. NS Power stated that the annual depreciation rate is needed to recover the costs over the 20-year life expectancy of the project assets.

[32] Both Synapse and Mr. Athas commented on the depreciation rate in their evidence. Synapse recommended the Board approve the interim use of 5% as the depreciation rate for the BESS Project components and agreed that it should be updated upon completion of a full depreciation study. Mr. Athas provided very brief comments on the subject, noting that some evidence, based on end-use, does not support an expected life of 20 years for some BESS projects.

[33] The Board shares Mr. Athas' concerns. These concerns can only be addressed in a full depreciation study. The Board believes that the direction given in its

2022 General Rate Application (GRA) decision (Matter M10431) to have NS Power prepare a depreciation study in advance of the next GRA will address this issue. The Board finds the 5% depreciation rate to be reasonable on an interim basis and agrees that addressing it in the next depreciation study is appropriate.

VIII REPORTING

[34] Although NS Power did not specify project reporting requirements in its initial application, this was an area of focus in both Synapse's and Mr. Athas' evidence. Mr. Athas expressed concerns that the EPC contractor has some ability to delay the installation of these projects and that there are increased costs associated with this risk. He stated that for NS Power to make sure the installation date is met, there could be direct impacts to the project costs, which may result in NS Power filing for a future ATO.

[35] Mr. Athas recommended that NS Power report to the Board and Intervenors in a timely manner, "if and when the EPC contractor has exercised any option it has to withdraw from the contract prior to completion or installation due to market conditions that still pose some risk to the capital costs presented." NS Power responded to Mr. Athas' recommendation, stating that in the unlikely circumstance of withdrawal of the BESS Project Vendor, NS Power will undertake to inform the Board. In its Closing Submission, the SBA commented on NS Power's response to Mr. Athas' concerns. First, the SBA expressed difficulty with NS Power's characterization of this event as unlikely, given the Company's admission that lithium batteries constitute a significant portion of the material costs, which themselves make up approximately 60% of total costs. Second, the SBA

also stated that should vendor withdrawal occur, NS Power should be required to report the event to the Board within five business days.

[36] In its Reply to the Closing Submissions, NS Power acknowledged its responsibility to manage its commercial relationships prudently and keep the Board well-informed of any developments that might materially affect these relationships in a timely fashion. However, NS Power contested the SBA's suggestion to mandate a specific timeline for such notifications, noting that setting a precise schedule, especially in the context of commercial dealings that have not been extensively examined or discussed, would be inappropriate and unnecessary.

[37] Synapse recommended that NS Power provide close monitoring of, and regular reporting on, outcomes on the ongoing LNTP contract implementation, final costs, and external funding assurance for the project. Additionally, Synapse commented that the “successful integration of increasing levels of renewable energy assets in Nova Scotia will depend on optimal operation of the BESS Project assets in coordination with the other generation assets in Nova Scotia.” As such, Synapse recommended that NS Power report on the ongoing implementation of all aspects of the project development, including assurances that optimum operational control and communication between the ECC and the project locations has been instituted.

[38] NS Power responded to these comments in its Reply Evidence, stating that one of the requirements in the *Prescribed Energy-Storage Projects Regulations (Regulations)* is preparing and filing an annual report with both the Board and the Minister. NS Power stated that this report is required every year up to and including 2030, and will provide information on each battery installation, including details about the services

provided. NS Power asserted that this required report would address Synapse's reporting recommendations, along with a proposal to:

- advise the Board once the final EPC contract is executed; and
- submit a report to the Board detailing final costs and external funding received one year following the commercial operation date of the third BESS Project installation.

[39] The SBA proposed in its Closing Submission that NS Power should be obligated to establish a timeline for updating the Board on the progress of the projects sometime between the current date and the estimated commercial operations dates in 2025 and 2026. In NS Power's Reply to the Closing Submissions, the company agreed to notify the Board in the event of a significant commercial operation date delay. The Board concurs that it would be beneficial for an update on costing and funding details in advance of the report that NS Power proposed to submit one year following the commercial operation date of the final BESS Project installation. Therefore, the Board directs NS Power to submit an interim report by September 30, 2025. This report should include a high-level summary of the actual costs incurred relative to the initial estimates, the projected completion dates for the three BESS Project sites, external funding updates, along with any other information NS Power deems relevant. Additionally, the Board accepts NS Power's suggestion of notifying the Board if there is a significant delay in the commercial operation dates. The Board finds that a delay exceeding three months from the operation date specified in the original application would be significant. The Board also accepts NS Power's suggestion that it will advise the Board when the final EPC contract has been executed.

[40] In its Reply to the Closing Submissions, NS Power stated that a five-business day deadline to advise the Board of an unlikely withdrawal by the EPC contractor would be neither appropriate nor necessary. However, the Board does not view imposing a deadline on this reporting, if that should occur, to be an undue imposition on NS Power. The Board directs NS Power to advise the Board within five business days if the EPC contractor withdraws from its contract. The Board views NS Power's annual reporting required under the *Regulations*, along with its above proposals, to sufficiently cover all other reporting concerns associated about this application.

IX CONCLUSION

[41] The Board approves NS Power's application for the BESS Project in the total amount of approximately \$237.7 million, as it is required to comply with the *Electricity Act* and align with Government environmental policies and targets. This investment is also consistent with NS Power's resource planning. The project costs were reviewed by Synapse and deemed to be reasonable. Synapse noted that the LNTP structure provides assurance to ratepayers through the benefit of fixed cost pricing for the main project component. Synapse also compared the gross project costs with a baseline for the US National Renewable Energy Laboratory, finding it comparable, and stated that the impact of federal funding dramatically reduced the costs borne directly by ratepayers. Based on the evidence presented, the Board finds the project cost to be reasonable.

[42] The Board directs the following:


1. NS Power is to advise the Board when the final EPC contract with the BESS Project vendor has been executed.
2. NS Power is to provide an interim report by September 30, 2025, that includes a high-level summary of the actual project costs incurred relative to the initial estimates, the projected completion dates for the three BESS Project sites, external funding updates, along with any other information NS Power deems relevant.
3. NS Power is to advise the Board if there is a delay in the commercial operation dates of any of the BESS Project locations that exceeds three months from the operation date specified in the original application.
4. NS Power is to advise the Board if the EPC contractor withdraws from the contract prior to completion within five business days of receiving this communication.

[43] An Order will issue accordingly.


DATED at Halifax, Nova Scotia, this 13th day of June, 2024.



Richard J. Melanson, LL.B.



Steven M. Murphy, MBA, P.Eng.



Jennifer L. Nicholson, CPA, CA