

June 26, 2026

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Dear Ms. Myatt:

M12550 – To obtain a cost reasonableness review of Nova Scotia Power Inc. – CI C0051815 – \$5,959,515 – RTU Replacements Program – Phase 6, as outlined in Section 2.1 of the 2025 Annual Capital Expenditure Plan decision (M12012)

1. Introduction

An RTU refers to a Remote Terminal Unit, a microprocessor-controlled field device that collects data from field equipment and sends or receives information to and from a central control system (SCADA) for process control. Nova Scotia Power Inc. (NS Power) included CI C0051815 – RTU Replacements Program – Phase 6 as part of the 2025 Annual Capital Expenditure Plan (ACE) Plan at an estimated cost of \$5,959,515, covering the replacement of 14 RTUs. At the beginning of Phase 6, there were 74 RTUs requiring replacement, nine less than at the beginning of Phase 5.

The RTU replacement work in Phase 1 involved the replacement of eight units, with total labour hours of 3,880 – an average of 485 hours per unit. In Phase 6, the average estimated labour requirement increased to 2,500 hours to replace a single RTU. When comparing these phases, this represents more than a five-fold increase in the labour hours required to replace a single RTU.

In the 2025 ACE Plan proceeding, NS Power tried to justify the increase in estimated labour hours for Phase 6, compared to Phase 1, as being a direct result of evolving infrastructure complexity, changes in compliance requirements, accessibility challenges, enhanced technological scope and testing procedures, and workforce constraints. In Undertaking U-8, the utility was asked to provide further justification about why the cost for Phase 6 was significantly higher than in prior years. NS Power was also asked to address and explain why each of the issues identified above required additional labour hours compared to prior years, and to identify the specific number of additional hours attributable to each issue.

In the view of the Nova Scotia Energy Board (Board), NS Power's explanation in responding to Undertaking U-8 did not provide sufficient detail of the elements the utility said generated more estimated labour hours than previous phases. As a result, the Board did not accept NS Power's justification and did not approve Phase 6 of the RTU Replacements Program. In the

2025 ACE Plan decision, the Board stated that it intended to engage an expert to review the scope of the project and provide an opinion on the reasonableness of the estimated project costs.

The Board initiated its review on November 19, 2025. Protech Engineering Inc., acting as a subcontractor to Midgard Consulting Inc. (Midgard), was retained as Board Counsel Consultant. Midgard was asked to prepare Information Requests (IRs) to NS Power, prepare a report, and respond to any IRs from NS Power and any 2025 ACE Plan intervenors.

Midgard filed its report February 18, 2026. The Consumer Advocate (CA), the Small Business Advocate (SBA) and the Industrial Group (IG) submitted IRs to Midgard and responses were filed on March 25, 2026. NS Power submitted its rebuttal evidence on April 10, 2026. Written closing submissions were filed by the CA and SBA and on April 24, 2026. NS Power filed its reply submissions on May 8, 2026.

2. Evidence

The Board has summarized some of the material evidence:

Letter from NS Power – December 9, 2025:

- In a letter dated December 9, 2025, NS Power noted that it completed some work on Phase 6 of the RTU Replacements Program (CI C0051815). Consequently, NS Power had reviewed and updated its detailed cost estimate to better reflect its recent experience, resulting in an overall decrease of approximately \$900,000.

Midgard Evidence – Exhibit N-3:

- Compared to Phase 5, the Phase 6 material costs per RTU increased by only 10.2%. Regular Labour costs per RTU increased by 36.8%, suggesting either greater technical scope or reduced workforce efficiency. Overtime Labour rose by approximately 228%, indicating a materially higher reliance on premium hours relative to historical norms (p. 18).
- Table 4 provides classification of the sites based on input/outputs.

Complexity Tier	Definition (I/O Points)	Number of Sites	Description
Low	< 100	7	Standard replacement sites with lower signal density
Medium	100 – 200	4	Sites with moderate integration requirements, including the benchmark site
High	> 200	3	Complex hubs with high signal density, significant control automation, and extensive testing scope

Source: Exhibit N-2(C), NSPI Response to I-1, Attachment 1. "RTU External Connections"
Signal counts shown for Phase 6 sites were derived from manual review of available project documentation ("RTU External Connections"). Figures should be interpreted as indicative of relative I/O density and complexity bands rather than audit-grade counts.

- The project's execution is driven by asset criticality and risk mitigation, rather than complexity or learning-curve opportunities. The schedule lacks the low-to-high complexity sequencing required to facilitate crew efficiency, and the absence of historical productivity metrics prevents verification of claimed process improvements (p. 14).
- An approximate \$900,000 budget reduction following just two completed Phase 6 sites suggests that initial estimates either did not rely on available historical efficiency



data, or the historical data was not relevant, or the initial estimates were augmented or escalated excessively (p. 20).

- The assessment of the project's labour requirements was developed from a constrained but representative evidence base. For 3 of 14 sites (91V – Fourth Lake Hydro, 55 74N – Springhill, 56 and 2V – Avon #2 17 Hydro57), complete Issued for Construction packages were available, including schematics, wiring diagrams, terminal layouts, and Request for Work (RFW) forms. For the remaining eleven sites, External Connection Sheets and System Operating Diagrams (SOD) provided signal scope and connectivity information (p. 29).
- Table 14 presents the variances between NS Power's filed labour estimate and what Midgard believes to be an appropriate allocation by resource category. Midgard's labour allocation totals 1,291 hours per RTU, representing a 33% reduction relative to NS Power's filed estimate (p. 29).
- While NS Power identified valid complexity drivers, the specific magnitude of labour increases remains unsubstantiated. A 33% variance exists between NS Power's filed estimate and an independent allocation derived from Phase 6 technical documents. This variance is driven by unresolved disputes regarding installation duration and the absence of task-level traceability. Midgard recommends a 30% reduction in labour hours to reflect reasonable productivity levels supported by technical documentation (p. 32).
- Competitive tendering for major equipment and master service agreements for civil works confirmed market rates. Material cost variances relative to early phases are justified by quantified functional increases and verifiable macroeconomic inflation (p. 34).

NS Power Rebuttal Evidence – Exhibit N-7:

- NS Power's capital investment decisions are grounded in asset management principles, as outlined in Section 6.2 of the Board-approved Capital Expenditure Justification Criteria (CEJC). This framework prioritizes projects based on factors such as asset condition, criticality, and risk mitigation, ensuring investments are aligned with the delivery of safe, reliable, and cost-effective service to customers (p. 5).
- It is important to consider the variability across sites; no two locations are identical, with some sites being relatively simple, and others being more complex, with potential disparity between requirements for preparation/planning work, making it challenging to consider productivity on a site-by-site basis (p. 6).
- NS Power acknowledges that the absence of material lost during the cyber incident resulted in difficulty evidencing the company's baseline data and resulting project efficiency gains. However, as demonstrated by NS Power's response to Midgard IR-2, estimating for these projects has been relatively accurate, resulting in the majority of prior projects not requiring usage of contingency (p. 8).
- NS Power's amended cost estimate filed in December 2025 clearly demonstrates adaptive and responsive cost management. It reflects actual execution experience from the first two completed sites in this phase and shows prudent and transparent evolution from initial estimates (p. 8).



- Utilizing internal labour includes benefits not captured in contractor rates, such as improved predictability of time required, reduced clarification questions from field crews, better alignment of work activities with the appropriate specialized roles required for RTU replacement projects, and improved troubleshooting support for reactive maintenance once RTUs are in service (p. 9).
- The labour cost variances between Phase 6 and Phase 1 are driven by expanded technical scope and increased site complexity, not by a simple reduction in workforce efficiency. Phase 6 RTUs incorporate expanded functionality and increased integration with SCADA, protection and control devices, Intelligent Electronic Devices, and other substation equipment, and there are now over four times the number of input/output RTU interconnections.
- While the cyber incident has limited the availability of some historical baseline information, NS Power did not rely solely on older program records in developing Phase 6. NS Power stated that historical actuals from the most recent RTU Replacement project, Phase 5, were used in developing the original Phase 6 estimate, and that recent experience and actuals from completed RTU replacements under Phase 6 were used in developing the revised estimate. This reflects the use of available historical and current project information to inform and refine the estimate, notwithstanding the limitations in the older historical record (p. 11).
- Midgard's independent allocation based on RFW documentation seems to contradict its own finding that there are valid complexity drivers, ignores NS Power's subject matter expertise as outlined in Midgard IR-6, and assumes the RFW documentation captures all labour effort required to complete the project, which is inaccurate (p. 14).
- NS Power disagrees with Midgard's assertion that initial project cost estimates were higher than required. Rather, the amended cost estimate with project management labour costs shifting to a shared resource model reflects expected project progression and demonstrates active and prudent cost control, management, and cost minimization to reduce costs for customers. This is consistent with NS Power's approach across all projects in its capital program (p. 15).
- Midgard acknowledges the limitations in their analysis, and that their signal count work is indicative and may include counting errors. NS Power's professional opinion, while also based on assumptions and judgments, has the benefit of costs incurred to date and deep internal subject matter expertise regarding the company's specific sites, systems and assets. Respectfully, differing opinions do not represent imprudence (p. 16).
- The 30% reduction as recommended by Midgard is not technically supportable, and Midgard's analysis underestimates installation duration, does not account for site-specific complexity, misallocates travel time, and underestimates engineering and project management requirements; it does not reflect inefficiency or imprudence in NS Power's estimate (p. 17).
- A reduction as recommended by Midgard is likely to result in an increased risk of equipment failure (as the labour budget may not allow for appropriate execution of all anticipated required tasks, resulting in potential for reduced quality assurance, and compressed commissioning/testing), associated safety implications, and an understated labour budget (p. 18).



3. Submissions

The SBA did not object to NS Power proceeding with Phase 6 of the RTU Replacements Program, based on NS Power's evidence about their criticality to ensure reliable service. However, the SBA asked that NS Power be required to report on lessons learned and on whether any revision to the CEJC or Project Development Model are needed because of this review.

The SBA supported Midgard's recommendation about a reduction in the amount approved for the project. The CA acknowledged NS Power's evidence about the Midgard report not having considered certain activities which NS Power says drive significant work hours. As these were not quantified, the CA submits that a reduction in the approval amount in the range suggested by Midgard is supportable. The CA discussed the need for a balance between the CEJC framework and criticality scores with the need to maximize cost savings through appropriate sequencing of work.

NS Power's submission emphasized the points raised in its evidence. In addition, the submissions attempted to quantify what the utility described as material omissions in the Midgard evidence about the required work.

4. Analysis and Findings

The main issue in this proceeding relates to the labour costs for the RTU Phase 6 Replacement Program. There was no debate about the need to replace obsolete RTUs. Materials, construction costs, and any other tasks procured through a competitive process are not the issue. The overall cost involved is significant when viewed broadly. At the start of Phase 6, there were 74 RTUs requiring replacement. By the end of this phase, 14 of the 74 RTUs will have been replaced. Assuming the remaining phases have a complexity like Phase 6, the total estimated cost to replace all 74 RTUs could be approximately \$27 million based on the revised estimates.

A review of the RTU replacement program shows that Phase 1, initiated in 2010, identified 129 RTUs in service, with plans to replace 10 units. By Phase 5 (2018), the ACE plan noted that approximately 83 RTUs had been deemed obsolete by their manufacturers. The 2025 ACE plan further indicated that 74 RTUs still required replacement. NS Power has good experience with RTU replacement work. Although the specific complexity of the RTUs cannot be fully assessed due to the cybersecurity incident limiting access to detailed data, the available documentation shows that the utility has a good understanding of the existing infrastructure.

Attachment 1 provided in response to NSEB IR-14 outlines the reasons for the cost variance between the 2025 ACE Plan estimate and the revised amount outlined in NS Power's December 2025 letter. The following are several factors that contributed to the significant decrease in cost. While some categories experienced cost increases, only the decreases are listed below.



Item	Variance (Current – Original)	Variance Explanation
SM Electrician	\$(232,620)	For current estimate reduced quantity of SM Electrician days due to duplication in original estimate and a minor reduction in expected reduction in days required based on RTUs completed to date.
PM	\$(111,800)	Current estimate has decrease in Project Manager (PM) days estimate as the PM was determined not to be needed on a full-time basis and has the capability to manage additional work outside of this project.
RTU Technician	\$(189,830)	For current estimate reduced quantity of RTU Technician hours due to a duplication in original estimate, partially offset by an increased quantity of PDs expected based on RTUs completed to date.
Electrical Engineering Technologist	\$(174,600)	For current estimate reduced the expected days required for external engineering technologist due to some work being completed by internal engineering resources.

NS Power originally said the decrease in various labour costs as noted above was based on the completion of RTU replacements on two sites, which led to the total project cost revisions. The Board notes a significant portion of the reductions are due to duplicated work and a change in resource allocation. In the Board's view, existing drawings should have provided NS Power with a good understanding of the scope, complexity, and workload associated with replacing each of the 14 RTUs in this phase. Given that this is the sixth phase of these RTU replacement projects, it is reasonable to assume that the scope requirements are generally well understood. NS Power should have evaluated each location individually based on its specific conditions and the tasks required.

NS Power stated that it does not generally file task-level labour mapping to discrete deliverables as part of its standard capital project documentation, and Midgard's recommendation about providing this type of information would therefore require a level of project-specific detail beyond what is typically provided for other capital projects. NS Power said this type of analysis is completed internally and various data points are generally collected and tracked. NS Power said it will continue to build this information out for prior phases but does not intend to submit it with project documentation for approval. The Board understands from these comments that the utility has information to build task-level data for a specific project.

NS Power also noted that technical documents may inform the expected field scope, but installation duration is also influenced by outage availability, sequencing of civil, electrical, testing and commissioning activities, crew complement, and site-specific field conditions that are not captured solely by reference to technical drawings or site packages. The Board agrees but adds that these tasks should be identified as first steps in project planning and the associated risk register would capture any variations in the planning along with the mitigation plan and the cost impact. The Phase 6 RTU Replacement Program's risk register



does not show probability of occurrence, tracking, and impact on schedule and cost. The risk register also does not note past learnings that might reduce the probability of occurrences.

The Board has concerns about how NS Power approached the capital cost submission in this matter. NS Power is responsible for providing sufficient evidence that the proposed costs are reasonable. NS Power knew the cost per RTU unit was significantly higher than past phases. NS Power knew that the main cost driver was internal labour. As detailed in its evidence, NS Power may have had reasons, based on its experience with these types of projects, not to pursue a competitive RFP to test the market for external sources to do the work. However, in the absence of a competitive process for the major cost component of the work, and with the significant change in the cost of labour per unit, NS Power should have anticipated additional scrutiny, regardless of what is typically filed in capital work applications. When more data was requested, the response to Undertaking U-8 was not sufficient. NS Power maintained its position that the cost estimates were reasonable.

The fact that NS Power found substantial labour cost reductions based on two RTU replacements and advised the Board of this development approximately three weeks after this review was started, does not alleviate the Board's concerns. This is especially the case because of the significant reductions due to duplication in the original estimates. The evidence provided by NS Power in this proceeding still does not convince the Board, on a balance of probabilities, that the current cost estimates for which NS Power seeks approval are justified. The Board finds Midgard's approach to cost reduction, where there are data gaps and unsupported costs, is reasonable in the circumstances. That said, the Board agrees with NS Power that a full 30% reduction in labour costs, as recommended by Midgard, is not warranted. Midgard itself warned about certain limitations to its approach.

NS Power's reply submissions attempted to quantify certain activities related to electrician and engineering work omitted from the Midgard analysis. NS Power stated:

NS Power acknowledges that this does not account for the full 33% variance as described by Midgard; however, it represents a significant portion (approximately 18% of the 1,939 total estimated labour hours per RTU as shown in IR-6(b)) of the identified variance. NS Power focused its efforts on identifying and quantifying the most significant tasks missing from Midgard's analysis, compared to a full investigation of all variances.

The Board is satisfied that an adjustment to Midgard's original 33% variance calculation is warranted to account for the listed work, plus any less significant tasks that may have been omitted, given the data Midgard had to work with. Therefore, the Board will reduce the labour hours of work set out in NS Power's December 19, 2025, letter by 13% further, rather than the 30% recommended by Midgard. Reducing labour hours by 13% would also lower the related administrative costs. Therefore, the Board directs NS Power to resubmit the capital approval form CI C0051815 within two weeks of the issuance of this letter so the Board can provide its approval for the project.

The Board will comment on another aspect related to approved costs. The issue is succinctly addressed in the CA's closing submissions:

NS Power suggests that such a reduction would apparently have severe negative consequences, including "an increased risk of equipment failure (as the labour budget may not allow for appropriate execution of all anticipated required tasks, resulting in potential for reduced quality assurance, and compressed commissioning/testing), associated safety implications, and an understated labour budget."



NS Power's position in this regard would appear to suggest that if the budget were decreased, NS Power would be forced to complete a substandard job in order to ensure the project remained within budget. Respectfully, such an approach would not comply with good utility practices.

Regardless of the established budget, NS Power would be expected to complete the project in a safe and timely manner. To the extent this resulted in the project being completed under-budget, or without the need to apply a contingency, "only the factual funds expended to place the asset in service are incurred under the project." Further, to the extent this resulted in cost overruns, NS Power would have the ability to file an ATO, a fact which NS Power acknowledges in its Rebuttal.

To the extent that NS Power nevertheless holds the view that any reduction in the budget would permit the company to take unreasonable risks in completing the project, the Consumer Advocate states that the Board may wish to remind NS Power of its obligations.

[CA Closing submission, p.7]

The Board agrees with the foregoing analysis of NS Power's obligations and the mechanisms to address cost overruns, if any, and to address safety concerns. NS Power should govern itself accordingly.

Finally, the Board recognizes that, for the most part, NS Power has completed previous RTU phases within the approved budgets. It is not NS Power's past performance related to RTUs that raised concerns in this application. Rather, it was the lack of support for the increasing hours of labour.

5. Project Execution, Risk and Efficiency

As noted above, in response to Midgard's comment about efficiency gains through the execution schedule, NS Power stated that the framework it uses prioritizes projects based on factors such as asset condition, criticality, and risk mitigation, ensuring that investments align with the delivery of safe, reliable, and cost-effective service to customers.

The utility currently operates many substations without RTUs. For primary fault clearing, the substation protection system, which operates independently from the RTU, is the more critical layer. The RTU's documented role is real-time supervision and control through SCADA. A substation can remain fully protected even if the RTU fails, while the protection Intelligent Electronic Devices continue to perform all local protection functions. Therefore, the loss of an RTU results in a loss of visibility, not an immediate loss of fault-clearing capability.

The Board does not minimize the importance of the visibility afforded by the RTUs nor the criticality analysis embedded in the CEJC. However, the Board believes consideration should also be given to promoting overall project efficiency. Without providing any specific direction at this time, when another RTU Replacement phase is submitted for approval, NS Power should provide information on how overall project efficiency is being addressed.

Midgard suggested a heightened level of detail when submitting RTU projects. The level of detail involved in submissions is not necessarily a function of past practice but often is about the type of work being done, and the extent to which costs are generated in a competitive process, or that internal costs can be measured against such a process. The Board will not specifically direct what additional information must be included in a capital application. NS Power, however, remains responsible to justify the costs for which it seeks approval.



6. Conclusion

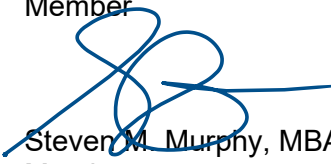
After reviewing the evidence and submissions in this matter, the Board has determined that a 13% reduction in labour hours for the revised project cost is warranted. The Board directs NS Power to resubmit the capital approval form CI C0051815 within two weeks of the issuance of this letter so the Board can provide its approval for the project.

NS Power should assess ways to improve overall efficiency for the various phases of the RTU Replacements project.

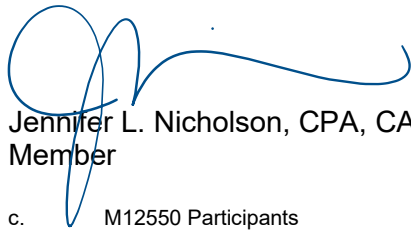
Yours very truly,



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c. M12550 Participants

