



Submission on Nova Scotia Power Inc.'s Updates to its Ruth Falls Main Dam Refurbishment Authorization to Overspend Application

NSEB Matter M11927

SUBMITTED BY

Midgard Consulting Inc.

DATE

July 17, 2025



Midgard, established in 2009, provides consulting services across the electrical power and utility sector. Midgard's principals and staff have direct experience in project development, design, contract procurement, finance, construction, and operations. This combined experience has translated into mandates in project due diligence, lender's technical advisor, loan guarantee assessments, and Independent Engineer roles in Canada, the United States, and internationally. Midgard has worked for developers, utilities, government agencies, and both project lenders and equity providers.

Midgard's team has extensive experience modelling fuel sources, creating energy yield estimates, reviewing contracts, reviewing pro-formas, and assessing project risks from a construction, operations, and financial perspective.

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PERMIT TO PRACTICE

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REPORT SIGN-OFF

Reviewed By:


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July 17, 2025

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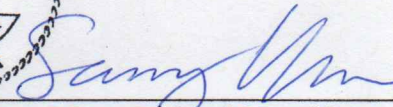


Sam Mason, P.Eng., Midgard Consulting Inc.July 17/2025
Date**NOTE: ORIGINAL HARD COPY IS SIGNED, SEALED, AND RETAINED ON FILE BY MIDGARD**

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1 INTRODUCTION

Midgard Consulting Inc. (“**Midgard**”) has been retained by Counsel for the Nova Scotia Energy Board (“**NSEB**”) to carry out a review of Nova Scotia Power Inc.’s (“**NS Power**”) “*CI 50518 - HYD Ruth Falls Main Dam Refurbishment Authorization To Overspend*” Application (referred to in this report as “**the ATO Application**”), NSEB Matter M11927. NS Power, a wholly owned subsidiary of Emera Incorporated, is a vertically integrated electric utility regulated by the NSEB.

As part of its work on this matter Midgard has previously produced an evidence report¹, which includes additional context on the proceeding and its full analysis of and conclusions on the original proceeding materials.

On June 18, 2025 the NSEB issued a decision on this matter, in which it concluded that the proceeding would be held in abeyance pending NS Power’s receipt of a Fisheries Act Authorization (“**FAA**”).

On July 4, 2025 NS Power informed the NSEB by letter that it had received its FAA on June 17, 2025, and requested that the NSEB approve the ATO on an expedited timeframe.

NSEB Counsel has requested that Midgard review and analyze the additional information provided by NS Power. Based on that review, Midgard has organized this report as follows:

- Review of the Fisheries Act Authorization
- Review of the updated cost estimate
- Review of the Project schedule
- Review of the updated economic analysis, including decommissioning alternative

¹ M11927, Exhibit N-9

2 FISHERIES ACT AUTHORIZATION

2.1 Updated Information

In its July 4 letter to the NSEB², NS Power states that it received the Fisheries Act Authorization (“**FAA**”) from Fisheries and Oceans Canada (“**DFO**”) on June 17, 2025. The FAA is attached to NS Power’s letter as Appendix A.

The FAA includes a comprehensive list of the conditions to which NS Power is subject. Some of the most notable of these are:

- In-stream access road and bridge construction downstream of the Ruth Falls dam must take place between July 1 and July 21, 2025.
- Drawdown of the Ruth Falls headpond and in-stream works upstream of the Ruth Falls dam must take place between July 21, 2025 and April 1, 2026.
- Sediment control measures are specified, including measured turbidity limits.
- Monitoring requirements are specified, including future study requirements and dates.
- 27,601 m² of offsetting fish habitat are to be created in Dort’s Brook and Sutherland’s Brook. Documentation and monitoring details of the offsetting plan are given.

2.2 Midgard Analysis

Midgard has reviewed the FAA provided by NS Power and finds it to be consistent with its expectations and experience.

Of particular note is that the amount of offsetting fish habitat is now established, at 27,601 m². This was an area of uncertainty for the Project, as NS Power had not yet finalized this figure with DFO at the time of the ATO Application. Contingency had been provided in NS Power’s budget for up to 40,000 m² of habitat. The implications of this on the cost estimate of the Project are discussed in Section 3.

Midgard also notes that the FAA strictly limits the windows in which NS Power may carry out its work, in particular that headpond drawdown may only take place between July 21, 2025 and April 1, 2026. Midgard agrees with NS Power’s statements in its letter that this timeframe is now a critical factor for Project success – this is discussed further in Section 4.

Overall Midgard finds that the FAA is within expectations, and that its issuance by DFO removes a significant area of risk to the Project.

² M11927, Exhibit N-13

3 PROJECT COST ESTIMATE

3.1 Updated Information

- 1 NS Power states that as a result of receiving the FAA it has updated its cost estimate for the Project, which
- 2 has resulted in a cost reduction of \$606,392.

3.2 Midgard Analysis

- 3 Review of NS Power's submissions as part of the ATO and its recent letter shows that Project costs have been
- 4 adjusted on only two line items:

Line Item	ATO Application	Updated	Difference
Offsetting (West River Project)	\$547,142	\$440,750	-\$106,392
Offsetting contingency	\$500,000	\$0	-\$500,000
Total Difference:			-\$606,392

- 5 NS Power has not provided additional detail on these cost adjustments. Previously NS Power had provided
- 6 the following explanation of its cost estimates for offsetting projects:

7 *“NS Power estimated that approximately 20,000 m² could be expected as a sufficient offsetting*
8 *amount based on the total size of area exposed as a result of the drawdown. NS Power used an*
9 *average offsetting cost of \$25/m² based on costs of other projects executed to date. Another*
10 *\$500,000 was added as a contingency to account for possible increases in the amount of offsetting*
11 *required for the Project through DFO's regulatory review and Crown consultation. The additional*
12 *\$500,000 in contingency could increase the total amount of offsetting to 40,000 m² or more, as the*
13 *cost per m² of offset decreases due to efficiencies gained in offset execution as more area is added.”³*

14 Given that the final offsetting amount is 27,601 m², an amount greater than NS Power's originally estimated
15 20,000 m², it is not clear why cost of the “Offsetting (West River Project)” has now decreased. This implies a
16 lower cost per square metre than NS Power had previously estimated.

17 NS Power's “Offsetting contingency” line item was meant to account for offsetting amounts up to 40,000 m²,
18 therefore it is reasonable that some or all of this line item should be removed as part of this update.

19 Overall Midgard concludes that it is reasonable that the Project cost estimate has decreased as part of this
20 update, however the reasons for the exact amount of the decrease are unclear. In its reply scheduled for
21 July 21 NS Power could provide additional detail on how it is now estimating the cost of its offsetting project
22 to provide greater insight into the amount of this decrease.

³ M11927, Exhibit N-4, Response to IG IRs, RIR 5(a)

4 PROJECT SCHEDULE

4.1 Updated Information

As discussed in Section 2, the Project's FAA sets strict limits on the construction window for the Project. In particular, NS Power may only decrease the headpond level from July 21, 2025 through March 31, 2026. NS Power explains in its letter that this timeframe is now critical to Project success:

"Due to the extent of the work scope, the fact that the work is largely within the watercourse, and the inability to shorten the construction schedule in order to meet the timelines as set forth in the FAA, the work must start by July 21, 2025 and all in-stream construction work must be completed and the water levels returned to the normal operating range by March 31, 2026. Any delay beyond that date would jeopardize the Company's ability to complete the work within the authorized window and may require the Company to defer construction to a subsequent year.

...

If deferred, it is anticipated that the project will see cost escalations related to construction deferrals and the potential for escalating regulatory requirements. NS Power estimates that the overall project cost will escalate by approximately 10 percent. Deferring construction would also require the Company to seek an amendment to its FAA, which is valid until March 31, 2026. In accordance with the Fisheries Act, regulatory timelines for requests for Amendment to existing FAA's are the same as standard applications and are subject to the same conditions..."⁴

4.2 Midgard Analysis

NS Power presents a concerning picture of the schedule status of the Project, in that it now has just over eight months (many of which are winter months) to complete all of the in-stream works for the Project, and failure to meet that deadline could result in significant cost increases and the requirement to re-engage in the same regulatory timelines and conditions as its original FAA application. Midgard notes that the regulatory process currently established for this proceeding is likely to extend beyond July 21, as that date is currently established as the deadline for NS Power's responses.

Midgard agrees with NS Power's assessment that the Project's schedule is now the critical factor for successful execution. The chances of Project success for NS Power within the FAA conditions are maximized the sooner that NS Power can proceed with its construction activities. Thus an extended regulatory review process at this stage would increase the risk of the Project missing its construction window. Conversely, an

⁴ M11927, Exhibit N-13, NS Power Update Letter, pg. 3 of 3

1 expedited review process introduces the possibility that the NSEB does not explore all areas of inquiry that it
2 deems important.

3 However, NS Power's letter appears to be implying that the process for an FAA amendment would be as
4 onerous as the process to receive the original authorization has been. While Midgard has not been party to
5 the discussions between NS Power and DFO (other than through the materials provided in this proceeding),
6 based on its experience with such matters Midgard would expect that the overall effort for an amendment
7 would not be as significant as the original process has been. All items requiring negotiation between the two
8 parties (e.g., offsetting amounts, reporting and monitoring requirements, etc.) have now been established,
9 and the construction windows are likely based on seasonal requirements for fish passage and/or spawning
10 (which are consistent year to year). While there would undoubtedly be effort involved with seeking an FAA
11 amendment, Midgard's expectation would be that with proper planning an FAA amendment to continue
12 construction in the same window in the 2026-27 period could be achieved at a significantly lower effort and
13 cost than the original FAA process.

14 More broadly, the schedule risks highlighted by NS Power in its letter (i.e., schedule slippage causing deferral
15 into future years, which would inflate Project costs and require an additional FAA process) will still exist even
16 if the NSEB provides expedited approval of the ATO Application. NS Power's ability to meet its desired
17 schedule will be subject to forces and conditions outside of its control (e.g., weather, contractor and supplier
18 performance, unforeseen issues with site conditions, etc.) which may also delay construction beyond March
19 31, 2026. In that case, the consequences highlighted by NS Power in its letter may still come to pass despite
20 an expedited approval. Midgard concludes that the NS Power's ability to meet the established FAA execution
21 schedule will remain the key risk factor for the Project, regardless of if/when NSEB approval is provided.

22 Finally, in its letter NS Power has only made reference one of the two construction windows established by
23 the FAA – there is no discussion of the July 1 to July 21 window for “in-water installation of access roads
24 downstream of the Ruth Falls dam and the temporary bridge construction below the Ruth Falls Dam in the
25 East River, Sheet Harbour”. Therefore it is unclear whether or not NS Power has begun this construction and
26 will meet this condition of the FAA. In its scheduled July 21 reply NS Power could provide an update on the
27 status of this work and of the associated FAA condition.

5 ECONOMIC ANALYSIS AND DECOMMISSIONING ALTERNATIVE

5.1 Updated Information

In its June 18 decision, the NSEB requested that NS Power refile its application with a net present value (“NPV”) analysis that compares the preferred refurbishment option to a decommissioning option. Its letter, NS Power provide the results of this analysis, which confirmed that its preferred refurbishment option has an NPV that is approximately \$50.4 M greater than the decommissioning alternative:

	Alternative	After Tax WACC	PV of Revenue Requirement	PV of EVA / NPV	Rank (based on PV of RR)	IRR	Disc Pay
A	Dam Refurbishment	5.81%	-21,926,086	12,516,533	1	12.36%	10.2 years
B	Partial Decommissioning	5.81%	49,632,167	-37,924,730	2	#NUM!	0.0 years
	0	NA	NA	NA	NA	#NUM!	0.0 years
	0	NA	NA	NA	NA	#NUM!	0.0 years

5.2 Midgard Analysis

5.2.1 Cost of Decommissioning Alternative

In the provided economic analysis, the capital cost requirement of the Partial Decommissioning alternative is given as \$74.4 M. This is spent over a period of 2025 through 2035, with the bulk of costs occurring in 2029-2031. Midgard assumes that the cost estimate provided is for the decommissioning of only the Ruth Falls portions of the Sheet Harbour system, though this is not stated explicitly.

NS Power has not provided any information on the basis of estimate, the scope of work being estimated, or the level of accuracy of the estimate. Midgard would expect this information to be provided as part of such a comparison in a regulatory environment.

NS Power’s estimation of decommissioning costs is a long-standing issue that has been before the NSEB several times, and which Midgard has addressed in numerous previous proceedings. In its 2018 Hydro Asset Study, NS Power retained Hatch to carry out decommissioning cost estimates for its entire hydroelectric system. In that report, the cost for decommissioning the entire Sheet Harbour hydroelectric system was estimated at \$55.46 M. Escalated from 2018 to 2025⁵ this becomes approximately \$68.2 M.

The Ruth Falls facility includes one of six dams and one of two powerhouses in the Sheet Harbour system. Furthermore, the reservoir created by the Ruth Falls dam is relatively modest in size compared to the other six in the system, larger only than that of Malay Falls. Therefore, it is notable and concerning that over the course of seven years, the estimated decommissioning cost for Ruth Falls alone (representing a fraction of the Sheet Harbour system) is now greater than the previously estimated cost of decommissioning the entire

⁵ Using CPI data from Statistics Canada (All Items, Not Seasonally Adjusted, Nova Scotia, Jan 2018-Jan 2025)

Sheet Harbour system, even accounting for inflation. This is suggestive of a much broader issue with the potential for dam decommissioning in Nova Scotia.

5.2.2 Economic Analysis Results

Using NS Power's inputs, the economic analysis model concludes that the refurbishment alternative is preferable to the decommissioning alternative by a significant margin (\$50.4 M of NPV). Midgard's review of the model suggests that the result is reasonable given the inputs.

However, the results of the model are sensitive to two inputs in particular:

- The cost of the decommissioning alternative (discussed above)
- The cost of replacement energy required if the project is decommissioned

The economic analysis results provided show that NS power assigns a value of \$176.9 M (nominal) to the energy produced by Ruth Falls through 2064, representing \$2.6 M in 2027 and escalating to \$6.5 M in 2064. This is a significant factor in the result of the economic analysis.

In order to better understand the sensitivity of the economic analysis to these inputs, Midgard conducted a brief sensitivity analysis using NS Power's provided model. To do this Midgard adjusted the decommissioning alternative capital costs and the costs of replacement energy as follows:

Replacement Energy Cost Adjustment	Decommissioning Alternative Capital Cost Adjustment	Resulting NPV Advantage of Replacement Alternative
No Change (Baseline)		\$50.4 M
-50%	No Change	\$30.6 M
No Change	-75%	\$22.0 M
-50%	-75%	\$2.2M

The decreases modelled here both represent extreme scenarios for each parameter. Nevertheless, the results of the analysis show that even if these two extreme changes to the inputs occur in conjunction, both of which serve to improve the prospects of the decommissioning alternative, the refurbishment alternative is still preferable by over \$2 M of NPV.

While this analysis was necessarily rudimentary due to the timeframe available for this review, the results nevertheless suggest that the outcome of NS Power's economic analysis is relatively stable, absent a circumstance of extreme departures from the estimates of both replacement energy costs and decommissioning capital costs.

6 CONCLUSIONS

Based on its review, Midgard has arrived at the following overall conclusions:

- The issuance of an FAA to the Project removes a significant area of risk and has reduced the estimated cost to complete.
- The timelines imposed by the FAA represent a risk area for the Project going forward. This risk is lessened if NS Power is able to start construction as soon as possible to July 21, but will remain to some extent regardless of start date.
 - Failure to meet the FAA timeline would result in increased costs due to escalation, and additional permitting costs to receive an FAA amendment.
- The conclusion of the economic analysis (i.e., that refurbishment is preferable) appears to be robust even as key inputs (decommissioning cost, replacement energy cost) are stress tested.
 - However, NS Power's decommissioning cost estimate is significant compared to its previous estimate from the 2018 Hydro Asset Study, even accounting for inflation. NS Power has not provided supporting information for the decommissioning cost estimate.



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