

CI C0059046

101S and 79N Reactor Replacements

FIN

NON-CONFIDENTIAL

August 4, 2026



NSEB APPROVAL SHEET

Project Title: 101S and 79N Reactor Replacements

CI Number: C0059046

Date: August 4, 2026

Expenditure Profile			Type of Filing	
Year	Budget Amount	Project Estimate	☐	Capital Project Authorization
2023	857	866	☐	Unforeseen and Unbudgeted (U&U)
2024	-	801,684	☐	Planned & Advanced (P&A)
2025	1,459,205	24,754	☐	Subsequent Approval Item
2026		(94)	☐	Authorization to Overspend (ATO)
			☐	Scope Change
			☒	Final Cost (FIN)
Total	\$1,460,062	\$827,209		

COMMENTS

Approved	1,460,062
Current Submission	\$827,209
<u>Variance</u>	<u>(\$632,853)</u>

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED

David Pickles

Approved on behalf of NOVA SCOTIA ENERGY BOARD

Authorized Signatory
Dave Pickles
Chief Operating Officer

DATE
08042026

DATE

CI Number: C0059046

Title: 101S and 79N Reactor Replacements

Start Date: 2023/08
In-Service Date: 2024/12
Final Cost Date: 2026/08
Function: Transmission
Forecast Amount: \$827,209

DESCRIPTION:

This project is for the replacement of three air core shunt reactors, along with the purchase of one net new spare reactor. These reactors are being purchased to address three in-service failures, two of which occurred at substation 101S, Woodbine, and one of which occurred at substation 79N, Hopewell.

At 101S, a spare reactor has already been installed to replace one of the failed reactors at the substation. A new reactor will be procured to replace the remaining failed reactor at 101S, and a new reactor will be procured to replenish the consumed spare at that substation.

At 79N, a new reactor will be procured to replace a failed reactor in the system and a new reactor will be procured for use as a net new spare. The net new spare reactor will be available as a system spare for reactors at 79N and 103H.

Summary of Related CIs +/- 2 years:

Pursuant to Section 11.2 of the CEJC, related CIs for Transmission include “Work completed on the same asset class (Padmount transformers, Breakers, etc.) or in the same location (feeder, Transmission Line).”

- No other related projects in 2022, 2023, 2024, 2025, or 2026

Depreciation Class: Transmission Plant – Station Equipment

Retirement Information:

- Categorization of Retirement: Accounting Policy 6420 - Retirement and Disposal of Capital Assets
- Percentage of Asset Pool: 0.13%

Estimated Life of the Asset: 25 years

JUSTIFICATION:

Justification Criteria: Transmission Plant

Why do this project?

This equipment experienced in-service failures and needs to be replaced to ensure the continued reliability of the system at the 101S and 79N substations. The loss of these reactors limits the ability of the Control Centre to correct voltages on the system which is particularly important during low load conditions. The addition of a system spare reactor will improve system resiliency in the future.

Why do this project now?

This project needs to be completed now because the NS grid cannot be operated in an optimal fashion when these components are out of service. These reactors are used to absorb reactive power and reduce system voltage, and, when they are unavailable, the system operator has to take other, less desirable actions to control voltage on the bulk power system. This includes increasing reactive power flow on the Maritime Link to high levels, rescheduling or delaying outages on other reactive elements to ensure they remain in service for reactive support, and running system voltages higher than desired simply because there are no other options. At several points during the recent low load season the system operator was prepared to switch out transmission lines in order to lower system voltage because no other tools were available. The lines could be switched out, but this degrades system security and reliability, so having the reactors available for their originally designed purpose is the better alternative. Continued operation without the reactors requires the continued use of alternative tools within the system that require operating with reduced reliability and power quality.

Why do this project this way?

The failed reactor at 79N was manufactured in 1999 and has successfully operated for nearly its expected operating life, making a like-for-like replacement appropriate at this location.

The reactors at 101S have seen an increased failure rate recently, so an equivalent replacement with the addition of surge capacitors to protect the reactor from voltage spikes is proposed for this location.

Reason for Variance - FIN

The decrease of \$632,853 compared to the approved 2024 ACE Plan budget of \$1,460,062 is due to cost minimization opportunities identified during detailed design to reduce project costs while still achieving all project objectives and reliability requirements.

Most notably, engineering assessments confirmed that the existing reactor pedestals could be safely reused, eliminating the need for new pedestal fabrication and installation. The anticipated cost for each pedestal was \$57,100, so the reuse of pedestals resulted in a \$228,400 cost reduction in materials for this project.

In addition, the reactors designated for 79N are smaller in size and consequently lower in cost than the 101S reactors used for the project estimate. As a result, reactor procurement costs were significantly lower than originally estimated.

The reuse of existing infrastructure also reduced the scope of field construction activities, resulting in lower labour and administrative overhead.

These savings were partially offset by higher-than-anticipated crane and reactor relocation costs, as well as the completion of an external insulation coordination study during detailed design to support long-term reliability and reduce the likelihood of future reactor failures.

This project was deemed in service when the reactor at 79N was placed in service in December 2024. The Final Cost Date (August 2026) is listed beyond the normal six months to allow for the final project financial reconciliation to be completed. As this project was completed while systems were being restored following the cyber event, more time was required to validate and confirm NS Power's actual expenditures for this project.

Overall, the project delivered the required replacement and spare reactor capability at a significantly lower cost relative to the approved estimate.

Please refer to the variance sheet for additional detail.

C0059046 - 101S and 79N Reactor Replacements				
Account	Approved	FIN Submission	Variance	Reason for Variance
Other Income - Salvage		(398)	(398)	
Regular Labour	\$ 54,360	\$ 19,780	(34,580)	The scope of the field work required on the project was reduced when it was discovered that reactor pedestals could be reused. Consequently, labour costs were lower than estimated.
Overtime Labour		\$ 1,819	1,819	
Materials	\$ 1,171,820	\$ 691,031	(480,789)	This project assumed that four reactors and pedestals would have to be purchased. This was quoted at \$265,600 for each reactor including its pedestal based on the reactor specifications for 101S. Engineering assessments confirmed that the existing reactor pedestals could be safely reused, eliminating the need for new pedestal fabrication and installation. The anticipated cost for each pedestal was \$57,100, so the reuse of pedestals resulted in a \$228,400 cost reduction in materials for this project. In addition, it was determined that the reactors designated for 79N are smaller in size and consequently lower in cost than the 101S reactors used for the project estimate. As a result, reactor procurement costs were significantly lower than originally estimated.
Contracts	10,560	\$ 42,659	32,099	Contract costs associated with craning and moving the reactors were higher than anticipated.
Freight Postage Delivery		4,650	4,650	
Consulting		40,000	40,000	To ensure that repeat failures would not occur following the replacement of the reactors, an insulation study was completed by an external consultant as part of detailed design activities. This study was not anticipated when the project was estimated.
Meals		127	127	
Other Goods and Services	\$ 123,674	-	(123,674)	The approved value for other goods and services consists of the 10% contingency applied to this project. The contingency was not used.
Vehicle Allocated Costs	\$ 28,141	\$ 11,688.93	(16,452)	Vehicle allocated costs decreased due to overall lower labour costs for the project.
Admin Overheads	\$ 31,505	\$ 9,341.69	(22,163)	Decrease in labour costs lead to decreased admin overhead costs.
Contractor Admin Overhead	\$ 1,613	\$ 5,208.28	3,595	Increased contractor costs lead to increased contractor admin overhead costs.
AFUDC Interest	\$ 38,390	\$ 1,303	(37,087)	Lower AFUDC due to lower project costs incurred prior to the first reactor being placed in service.
Total	1,460,062	827,209	(632,853)	