

CI C0052654

L5541 Water Crossing Upgrades

ATO

NON-CONFIDENTIAL

July 13, 2026



NSEB APPROVAL SHEET

Project Title: L5541 Water Crossing Upgrades

CI Number: C0052654

Date: July 13, 2026

Expenditure Profile			Type of Filing	
Year	Budget Amount	Project Estimate	☐	Capital Project Authorization
2023	922,426		☐	Unforeseen and Unbudgeted (U&U)
2024	124,648		☐	Planned & Advanced (P&A)
2025			☐	Subsequent Approval Item
2026		1,729,085	☒	Authorization to Overspend (ATO)
2027		536,210	☐	Scope Change
			☐	Final Cost (FIN)
Total	\$1,047,074	\$2,265,295		

COMMENTS

Approved	1,047,074
Current Submission	2,265,295
ATO Request	\$ (1,218,221)

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED



Authorized Signatory
Dave Pickles
Chief Operating Officer

DATE
July 10, 2026

Approved on behalf of NOVA SCOTIA ENERGY BOARD

DATE

CI Number: C0052654**Title: L5541 Water Crossing Upgrades**

Start Date: 2026/06
In-Service Date: 2026/06
Final Cost Date: 2027/10
Function: Transmission
Forecast Amount: \$2,265,295

DESCRIPTION:

L5541 is a 15.3 kilometre (118 structures) 69kV transmission line, built in 1988, that connects 50W Milton to 4W Lower Great Brook to the 3W Big Falls substations. This project is required to replace deteriorated assets that have been identified through NS Power's transmission line inspection program at two water crossings near Deep Brook. This project will target replacement of deteriorated assets on 7 structures.

The project scope includes:

- Structure Replacements: 7 Structures

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 CIs in 2021, 2022, 2023, 2024 or 2025

Retirement Information:

- Categorization of Retirement: Accounting Policy 6420 - Retirement and Disposal of Capital Assets
- Percentage of Asset Pool: 0.2%

Depreciation Class: Transmission Plant – Towers and Fixtures

Estimated Life of the Asset: 45 years

JUSTIFICATION:

Justification Criteria: Transmission Plant

Why do this project?

The NS Power transmission line inspection program identified deteriorated assets on this line that require replacement to mitigate the risk of transmission interruptions. Failure to complete this project would compromise the reliable operation of this line. Unplanned asset failures on this line would decrease system redundancy.

Why do this project now?

This work has been prioritized based on the condition of the transmission line assets as determined through NS Power's transmission line inspection program results, as well as the criticality of the line to the overall system operation. This project is required to support the reliable operation of the transmission line.

This project is deemed in-service when the first portion of the work is complete (forecast to be June 2026), therefore the Final Cost Date (October 2026) is listed as six months after the final work is forecast to be completed (April 2026).

Why do this project this way?

Replacing the existing deteriorated assets is the only technically feasible option to accomplish the intended scope of this project.

Contingency Statement - ATO

Contingency for this ATO submission has been determined using a combination of internal subject matter expert judgment (professional engineers and field personnel) based on previous line replacement and upgrade experience and the non-binding contingency guidelines. Consistent with the maturity matrix, this project is being filed as a Class 3 estimate with a contingency of 15 percent. Risks intended to be covered by this contingency are overtime work that may be required to complete the project if the outage window is shortened, unforeseen contract cost increases, or unforeseen costs related to accessing structures. The structures being worked on lie at two water crossings: Str.6-12 & Str. 20-21. Engineering initiated in 2021 and was completed in 2024; however, construction has yet to start.

Reason for Variance

The increase of \$1,218,221 from the 2023 ACE Plan approved amount is due to higher costs of steel monopoles and foundations than originally budgeted in 2023.

Updated engineering for the crossing design identified significantly higher foundation and steel tower costs than originally budgeted, with contractor estimates of \$1,293,667 for foundations and \$404,000 for steel towers, compared to \$100,000 for both in the original budget. NS Power did not have historical experience working with these types of foundations, and with the benefit of hindsight, should have waited until final engineering design and costing was complete prior to submitting the project for approval. While these estimates exceeded the initial assumptions included in the project budget, they more accurately reflect the requirements of the final design.

NS Power was able to minimize these cost increases by coordinating with the Mersey Wind Interconnection Project, which required an interconnection on transmission line L-6554. By completing this project in conjunction with the interconnection work, NS Power was able to implement a shared double-circuit crossing for L-6554 and L-5541 (structures 008–011) instead of constructing two separate single-circuit crossings with independent monopoles and foundations. Through this approach, costs were effectively shared between the two projects, resulting in \$646,833 for foundations (compared to \$1,293,667) and \$202,000 (compared to \$404,000) for steel towers being borne by NS Power, for a total of \$848,833.

C0052654 - L5541 Water Crossing Upgrades - ATO				
Account	Approved	Current Submission	Variance	Reason for Variance
Regular Labour	7,053	94,405	87,352	Increase in labour to include additional site supervision internal engineering, switching resources and project management due to the civil work (rock breaking and foundation construction) being more extensive than originally anticipated. Additional engineering labour was also required to change from a single circuit (L5541) crossing to a double circuit (L5541/L6554) crossing.
Materials	390,000	344,839	(45,161)	Original estimate included steel monopole foundation construction cost which should have been under contracts. In addition, the estimated costs for steel towers were underestimates in the original budget and have increased.
Contracts	433,930	1,390,730	956,800	Original estimates for foundations, rock breaking and matting were underestimated as NS Power hadn't had historical experience with these types of foundations. Contract pricing was received for foundations and are higher than the original estimate.
Other Goods and Services	124,649	208,609	83,961	Increase in contingency based on the increase in the contract costs. Risk remaining still include unforeseen contract costs increases during construction or unforeseen costs related to accessing structures as the structures worked on lie at water crossings.
Vehicle Allocated Costs	2,920	30,378	27,458	Increase is due to increased Regular Labour
Admin Overheads	5,806	50,961	45,155	Increase is due to increased Regular Labour
Contractor Admin Overhead	82,716	145,373	62,657	Increase is due to increased Contract costs
Total	1,047,074	2,265,295	1,218,221	

Capital Project Detailed Estimate

Location: Transmission

CI# : C0052654

Title: L5541 Water Crossing Upgrades

Execution Year: 2026-2027

Description	Unit	Quantity	Unit Estimate	Total Estimate	Cost Support Reference	Completed Similar Projects (FP#s)
Regular Labour						
T&D Labour - Site Supervision	PD	22	\$ 461	\$ 9,925		
Design - Engineering	PD	138	\$ 452	\$ 62,583		
Design - Planning	PD	15	\$ 452	\$ 6,897		
T&D Labour - System Maintenance	PD	34	\$ 444	\$ 15,000		
			Sub-Total	\$ 94,405		
Materials						
Wood Poles	Lot	1	\$ 100,333	\$ 100,333		
Insulators	Lot	1	\$ 5,933	\$ 5,933		
O/H Conductor	Lot	1	\$ 36,573	\$ 36,573		
Steel Towers	Lot	1	\$ 202,000	\$ 202,000		
			Sub-Total	\$ 344,839		
Contracts						
Wood Poles	Lot	1	\$ 134,200	\$ 134,200		
Insulators	Lot	1	\$ 15,489	\$ 15,489		
O/H Conductor	Lot	1	\$ 250,864	\$ 250,864		
Steel Towers	Lot	1	\$ 990,177	\$ 990,177		
			Sub-Total	\$ 1,390,730		
Other Goods & Services						
Contingency	%	15%	\$ 1,390,730	\$ 208,609		
				\$ -		
			Sub-Total	\$ 208,609		
Vehicle Overhead						
Vehicle Labour AO	lot	1	\$ 30,378	\$ 30,378		
			Sub-Total	\$ 30,378		
Administrative Overhead						
Labour AO			\$ 50,961	\$ 50,961		
Contractor AO			\$ 145,373	\$ 145,373		
			Sub-Total	\$ 196,334		
SUB-TOTAL (no AO, AFUDC)				\$ 2,038,583		
TOTAL (AO, AFUDC included)				\$ 2,265,295		
Original Cost						
				\$ 252,059		

Note 1: The labour figures noted above are an average of salaries across a variety of jobs within similar classifications including fringe, and are used solely for budgeting purposes.

Note 2: Small differences in totals are attributable to rounding.



Instructions: Select option in Column B.
Columns C through G will auto-populate.

Document No: XXX-XX-XXXX-XXXX

Project Cost Estimate Input Checklist and Maturity Matrix						
Transmission Line Infrastructure	Required fields:	Estimate Classification				
Project Name: L5541 Water Crossing Upgrades	Started or Preliminary	Class 5	Class 4	Class 3	Class 2	Class 1
Maturity Level of Project Definition Deliverables	Defined or Complete					
General Project Data						
A. Scope						
Project Scope of Work Description	Defined (D)	P	P	D	D	D
Site Infrastructure (Access, Construction Power, Camp, etc.)	Preliminary (P)	NR	P			
B. Capacity						
Voltage (kV) and Circuits	Defined (D)	P	P	D	D	D
C. Project Location						
Not Applicable						
D. Requirements						
Codes and/or Standards	Defined (D)	NR	P	D	D	D
Environmental Monitoring	Preliminary (P)	NR	NR	P	P	
E. Technology Selection						
Not Applicable						
F. Strategy						
Right-of-Way (ROW)	Defined (D)	P	P	D	D	D
Contracting/Sourcing	Defined (D)	NR	P	D	D	D
Escalation	Not Applicable (NA)	NR				
G. Planning						
System/Grid Planning (including substation and interconnect locations)	Defined (D)	P	P	D	D	D
Logistics Plan	Preliminary (P)	P	P	P		
Integrated Project Plan	Preliminary (P)	NR	P			
Project Code of Accounts	Defined (D)	NR	P	D	D	D
Project Schedule	Defined (D)	NR	P	D	D	D
Regulatory Approval & Permitting	Preliminary (P)	NR	P			
Risk Register	Defined (D)	NR	P	D	D	D
Stakeholder Consultation/Engagement/Management Plan	Defined (D)	NR	P	D	D	D
Work Breakdown Structure (WBS)	Not Applicable (NA)	NR				
Start-up & Commissioning Plan	Not Applicable (NA)	NR				
H. Studies						
Routing Options	Defined (D)	P	P	D	D	D
Topography & Bathymetry	Not Applicable (NA)					
Environmental Impact/Sustainability Assessment	Preliminary (P)	NR	P			
Environment/Existing Conditions	Preliminary (P)	NR	P			
Meteorology and/or Oceanographic/Subsea	Not Applicable (NA)	NR				
Soils & Hydrology	Not Applicable (NA)	NR				
Technical Deliverables (Specifications and/or Drawings)						
Conductor, Insulator, Grounding, Joint Design (including protection for buried or subsea)	Complete (C)	S	P	C	C	C
Foundation/Structure (Tower) Design	Not Applicable (NA)					
Route Mapping/Survey	Complete (C)	S/P	P/C	C	C	C
Design Specifications	Complete (C)	NR	S/P	C	C	C
Instrument List	Not Applicable (NA)	NR				
Construction Permits	Preliminary (P)	NR	S/P	P/C		
Geometric Layout, Alignment, Profile, Cross Section	Complete (C)	NR	S/P	P/C	C	C
Land/ROW Title Negotiation	Not Applicable (NA)	NR				
Civil/ Site/Structural/Architectural Discipline Drawings	Complete (C)	NR	S/P	P	C	C
Crossings and Borings Designs and Drawings	Not Applicable (NA)	NR				
Demolition Plans and Drawings	Not Applicable (NA)	NR				
Erosion Control Plan & Drawings	Preliminary (P)	NR	S/P	P		
Foundation/Structure (Tower) Discipline Drawings	Not Applicable (NA)	NR				
Tower/Structure Location/Spotting	Complete (C)	NR	S/P	P	C	C
Instrument Datasheets	Not Applicable (NA)	NR	NR/S			
Electrical Discipline Drawings	Complete (C)	NR	NR	S/P	P/C	C
Instrumentation/Control System Discipline Drawings	Not Applicable (NA)	NR	NR			
Total # Deliverables for this Project		8	25	22	19	18
% Defined/Complete towards Class Estimate		100%	100%	81%	70%	67%

Comments:

This project is being filed as a Class 3 estimate. The defined deliverables for this project indicate that 81% of Class 3 deliverables are completed. A contingency value of 15% was selected to account for specific risks such as additional overtime work that may be required to complete the project if the outage window is shortened, unforeseen contract cost increases, or unforeseen costs related to accessing structures. The structures being worked on lie at two water crossings: Str. 6-12 & Str. 20-21. Construction has yet to start.

Legend:

The maturity level is an approximation of the completion status of the deliverable. The completion is indicated by the following descriptors:

General Project Data:

- **Not Required (NR):** May not be required for all estimates of the specified class, but specific project estimates may require at least preliminary development.
- **Preliminary (P):** Project definition has begun and progressed to at least an intermediate level of completion. Review and approvals for its current status has occurred.
- **Defined (D):** Project definition is advanced, and reviews have been conducted. Development may be near completion with the exception of final approvals.

Technical Deliverables:

- **Not Required (NR):** Deliverable may not be required for all estimates of the specified class, but specific project estimates may require at least preliminary development.
- **Started (S):** Work on the deliverable has begun. Development is typically limited to sketches, rough outlines, or similar levels of early completion.
- **Preliminary (P):** Work on the deliverable is advanced. Interim, cross-functional reviews have usually been conducted. Development may be near completion except for final reviews and approvals.
- **Complete (C):** The deliverable has been reviewed and approved as appropriate.

Inclusions:

For the purposes of this document, the term *power transmission line infrastructure industries* is assumed to include greenfield or brownfield sites for overhead, buried and submarine transmission of electrical power in the infrastructure industries. High voltage is typically >100kV but may be less (e.g., 33 or 66kv) if long distance with light electrical loads. This excludes power supply and distribution scope within a process plant, mining facility, building complex or other facility site. It also excludes power generation facilities and substations. The defining deliverables of those excluded project scopes are covered in other RPs (e.g., 18R-97 for process plants [2]).

Power transmission is considered an element of the infrastructure industry. The Construction Industry Institute has provided a good definition of infrastructure in its Project Definition Rating Index for Infrastructure Projects as follows [3]:

“A capital project that provides transportation, transmission, distribution, collection or other capabilities supporting commerce or interaction of goods, services, or people. Infrastructure projects generally impact multiple jurisdictions, stakeholder groups and/or a wide area. They are characterized as projects with a primary purpose that is integral to the effective operation of a system. These collective capabilities provide a service that is made up of nodes and vectors into a grid or system.”

Using this definition, power transmission lines are a vector or linear scope element that connects substation or other facility nodes at its terminations. The substation nodes may be part of or associated with a generation, consuming or interconnection facility. As such, transmission projects are often executed as part of a program that also involves node project scope or facility operational changes (or at least considerations for integrated system commissioning and startup). As the definition states, a distinguishing feature of these projects is that they often traverse wide areas, cross country or subsea, which puts an emphasis on the definition of routing, land ownership and conditions, and establishing right-of-way (ROW). Associated scope definition challenges include defining stakeholder, permitting and regulatory requirements. Buried and submarine installations increase the focus on the protection philosophy and strategies affecting cable selection, armoring and joint considerations. While many distinguish power transmission (higher voltage, long distances) from power distribution (short distance, lower voltage connections to retail customers), the principles of estimating these elements are similar; i.e., the RP applies to both.

The main physical power transmission line scope elements are conductors and their support structures if installed overhead. Main installation elements include land clearing if over land (including forestry if applicable), foundation and structure erection and conductor stringing if overhead, or trenching, laying and horizontal boring if subsurface or subsea. Special scope elements are involved with crossings of water, road, rail and so on and at terminations. Because conductor (e.g., aluminum) and structure (e.g., steel) material costs are usually a significant cost element, these project estimates are particularly sensitive to escalation uncertainty. In general, the more developed the route, the more complex the installation will be. In urban areas, visual appeal and concern for safety and health can be major issues. Installation in remote location and/or difficult or environmentally sensitive terrain creates its own challenges. Subsea installation adds the need for bathymetry¹ and metocean² studies and specialized installation equipment and vessels. Before any installation work can begin in an area, stakeholder consultation must be advanced (sometimes requiring agreements with local populations with rights), and appropriate land and ROW must be acquired which creates unique scheduling as well as cost challenges.

For the purpose of estimate classification then, the main scope definition deliverables are associated with defining the power requirements (i.e., kV), the conductors and structure, and the routing. Conductors can vary widely in content (copper, aluminum, etc.) and insulation. Overhead structures may be wood, concrete, composite or steel in various configurations with various foundation designs including pilings, concrete and so on. The route's land or subsea characteristics and the nature of developments drive the need for special design features and execution strategies. Operability and maintainability considerations may also affect ROW and access design. Brownfield and revamp projects add their own concerns for interface with existing elements, crowded working conditions, etc. For each scope definition decision, stakeholder requirements need to be considered.

Power substation projects are usually associated with transmission projects. However, substations being equipment-centric and located on a facility site have physical and defining characteristics similar to process plant projects (e.g., reliance on one-line diagrams, plot plans, etc.).