

CI C0080108

L5532 Replacements and Upgrades Phase 1

NON-CONFIDENTIAL

April 9, 2026



NSEB APPROVAL SHEET

Project Title: L-5532 Replacements and Upgrades Phase 1

CI Number: C0080108

Date: April 9, 2026

Expenditure Profile			Type of Filing	
Year	Budget Amount	Project Estimate	☐	Capital Project Authorization
2026	908,755	1,547,574	☐	Unforeseen and Unbudgeted (U&U)
2027	1,581,777	1,501,779	☐	Planned & Advanced (P&A)
2028		406,120	☒	Subsequent Approval Item
Total	\$2,490,532	\$3,455,473	☐	Authorization to Overspend (ATO)
			☐	Scope Change
			☐	Final Cost (FIN)

COMMENTS

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED



Authorized Signatory
Dave Pickles
Chief Operating Officer

DATE

April 8, 2026

Approved on behalf of NOVA SCOTIA ENERGY BOARD

DATE

CI Number: C0080108**Title: L-5532 Replacements and Upgrades Phase 1**

Start Date: 2026/05
In-Service Date: 2026/05
Final Cost Date: 2028/03
Function: Transmission
Forecast Amount: \$3,455,473

DESCRIPTION:

L-5532 is a 95.9 kilometer (1,128 structures) 69 kV transmission line, built in 1955, that connects the 13V Gulch Hydro, 14V Ridge Hydro, 75V South Milford, 76V Maitland, 7W Harmony, 57W Caledonia, 91W Middlefield, and 3W Big Falls substations. This project is required to replace deteriorated assets that have been identified through NS Power's transmission line inspection program such as wood poles, crossarms, anchors, guying components, insulators, and associated hardware. This project represents the first phase of a planned multi-year refurbishment program for L-5532, with future phases addressing additional deteriorated structures and components identified through ongoing inspection and LiDAR analysis. This project includes the replacement of deteriorated assets on 75 structures.

The project includes:

- Structure Replacements: 72
- Other Deteriorated Asset Replacements: 3

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)"

- 2028 CI TBD – L-5532 Replacements and Upgrades Phase 2 \$TBD

Depreciation Class: Transmission Plant – Overhead Conductors and Devices
 Transmission Plant – Poles and Fixtures

Retirement Information:

- Categorization of Retirement: Accounting Policy 6420 - Retirement and Disposal of Capital Assets
- Percentage of Asset Pool: 0.06%

Estimated Life of the Asset: 45 years

JUSTIFICATION:

Justification Criteria: Transmission Plant

Why do this project?

The NS Power transmission line inspection program including LIDAR data 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 transmission line potentially resulting in interruptions to 2,915 customers and would decrease the transmission system's redundancy.

Why do this project now?

This work has been prioritized based on the assessed 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 work also aligns with NS Power's 2024 and 2025 Performance Standards results for Feeders 91W-411 and 57W-402. These are both problem feeders that are both impacted by L-5532 and this is the second year that 91W-411 has been a CKAIID problem feeder. The majority of the outage causes on these feeders have been due to Transmission and Loss of Supply, and this project will help improve reliability performance and customer experience.

This project is deemed in-service when the first portion of work (replacement of the first deteriorated asset) is forecast to be completed (May 2026); therefore, the Final Cost Date (March 2028) is listed as six months after the last portion of work (when all the deteriorated assets are replaced) is forecast to be completed (August 2027).

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. New structures and components will be built to NS Powers's latest transmission design standards, improving reliability and resilience to extreme weather compared to the original 1950s-era construction.

Contingency Statement

Contingency is determined by 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 additional overtime work that may be required to complete the project if the outage window is shortened, unforeseen material or contract cost increases, or unforeseen costs related to accessing structures in wet or remote locations.

Reason for Variance

The increase of \$964,941 from the 2026 ACE Plan subsequent submittal estimate of \$2,490,532 is due to the increase in anticipated work following engineering analysis of the LiDAR data.

Capital Project Detailed Estimate

Location: Steam										
CI# : C0080108										
Title: L5532 Replacements and Upgrades Phase 1										
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	47	\$ 461	\$ 21,835		
Design - Engineering					PD	205	\$ 452	\$ 92,884		
Design - Planning					PD	19	\$ 452	\$ 8,464		
T&D Labour - System Maintenance					PD	23	\$ 444	\$ 10,000		
							Sub-Total	\$ 133,183		
OT Labour										
T&D Labour - Site Supervision					PD	5	\$ 922	\$ 4,500		
T&D Labour - System Maintenance					PD	3	\$ 888	\$ 2,500		
							Sub-Total	\$ 7,000		
Materials										
Wood Poles					Lot	1	\$ 396,668	\$ 396,668		
O/H Conductor					Lot	1	\$ 26,530	\$ 26,530		
							Sub-Total	\$ 423,199		
Contracts										
Wood Poles					Lot	1	\$ 872,345	\$ 872,345		
O/H Conductor					Lot	1	\$ 1,191,739	\$ 1,191,739		
Survey and Maping					Lot	1	\$ 80,000	\$ 80,000		
							Sub-Total	\$ 2,144,084		
Other Goods & Services										
Contingency					%	15%	\$ 2,707,466	\$ 406,120		
							Sub-Total	\$ 406,120		
Vehicle Overhead										
Vehicle Labour AO								\$ 43,982		
							Sub-Total	\$ 43,982		
Administrative Overhead										
Labour AO								\$ 73,784		
Contractor AO								\$ 224,121		
							Sub-Total	\$ 297,905		
SUB-TOTAL (no AO, AFUDC)								\$ 3,113,585		
TOTAL (AO, AFUDC included)								\$ 3,455,473		
Original Cost										
								\$ 262,865		

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.

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: L5532 Replacements and Upgrades Phase 1		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		Preliminary (P)	NR	P				
Regulatory Approval & Permitting		Preliminary (P)	NR	P				
Risk Register		Preliminary (P)	NR	P				
Stakeholder Consultation/Engagement/Management Plan		Preliminary (P)	NR	P				
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		Preliminary (P)	S/P	P/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		Preliminary (P)	NR	S/P	P/C			
Land/ROW Title Negotiation		Not Applicable (NA)	NR					
Civil/ Site/Structural/Architectural Discipline Drawings		Preliminary (P)	NR	S/P	P			
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		Preliminary (P)	NR	NR	S/P	P/C		
Instrumentation/Control System Discipline Drawings		Not Applicable (NA)	NR	NR				
Total # Deliverables for this Project								
		8	25	18	13	11		
% Defined/Complete towards Class Estimate								
		100%	100%	67%	48%	41%		

Comments:

This project is being filed as a Class 3 estimate. The defined deliverables for this project indicate that 67% 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 within the available outage window, unforeseen material or contract cost increases, or unforeseen costs related to accessing structures in wet or remote locations.

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 bathymetry² and metocean³ 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.).