

CI C0061550

**L5031 Replacements and Upgrades – Hubbards to
East Chester**

ATO

NON-CONFIDENTIAL

July 13, 2026



NSEB APPROVAL SHEET

Project Title: C0061550

CI Number: L5031 Replacements and Upgrades
– Hubbards to East Chester

Date: July 13, 2026

Expenditure Profile			Type of Filing	
Year	Budget Amount	Project Estimate	☐	Capital Project Authorization
2024	1,079,792	212,809	☐	Unforeseen and Unbudgeted (U&U)
2025	3,599,306	3,691,729	☐	Planned & Advanced (P&A)
2026	618,486	3,052,520	☐	Subsequent Approval Item
Total	5,297,584	6,957,058	☒	Authorization to Overspend (ATO)
			☐	Scope Change
			☐	Final Cost (FIN)

COMMENTS

Approved	\$5,297,584
Current Submission	\$6,957,058
ATO Request	\$1,659,474

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: C0061550**Title: L5031 Replacements and Upgrades – Hubbards to East Chester**

Start Date: 2024/08
In-Service Date: 2024/11
Final Cost Date: 2027/05
Function: Transmission
Forecast Amount: \$6,957,058

DESCRIPTION:

L5031 is a 19.75 kilometre (146 Structures) 69kV transmission line, built in 1966, that connects 87W Hubbards and 84W Robinsons Corner Substations. This project is required to replace deteriorated assets that have been identified through NS Power's transmission line inspection program. This project includes the replacement of deteriorated assets on approximately 78 structures.

The project scope includes:

- Structure and Conductor Replacements: 77 Structures
- Insulator Replacements: 1 Structure

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)."

- 2023 CI C0055696 – L5031 Replacement and Upgrade Robinson Corner Tap \$1,357,477

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

Estimated Life of the Asset: 45 years

Retirement Information:

- Categorization of Retirement: Accounting Policy 6420 - Retirement and Disposal of Capital Assets
- Percentage of Asset Pool: 0.05%

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 unplanned transmission interruptions. Failure to complete this project would compromise the reliable operation of this transmission line. Unplanned asset failures on this line, serving approximately 1,800 customers, would result in unplanned outages to these customers.

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 work is complete (forecast to be October 2024), therefore the Final Cost Date (April 2026) is listed as six months after the last portion of work is forecast to be completed (October 2025).

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 project has been determined using a combination of internal subject matter expert judgement (professional engineers) based on previous experience with these assets, and the non-binding contingency guidelines. This project has progressed from the original filing and is being filed as a Class 1 estimate; construction for this project has been approximately 40% completed, and as such the revised project estimate will require a contingency of 5 percent. In total, the outstanding scope includes replacement of approximately 50 structures and 8km of conductor. Risks intended to be covered by this contingency include any further delays due to rock breaking and any unknown construction-related issues such as difficult terrain.

Reason for Variance

This project is forecast to increase by \$1,659,474 from the approved 2024 ACE Plan budget of \$5,297,584, resulting in the current forecast of \$6,957,058. This increase is primarily due to two primary drivers.

Construction of Three Bypass Structures:

This project was submitted with the intention of using a mobile substation throughout the construction period to continue providing service to customers. Due to the mobile substation being required at other higher priority sites, three bypass line structures were constructed to continue service during the construction period. The bypass costs increased contract and materials by approximately \$1M.

Rock Breaking:

The original project estimate included \$250k for rock-breaking, however more difficult ground conditions necessitated additional rock-breaking efforts, leading to a \$300k increase in these costs.

The remaining increased costs of approximately \$350k for the project are primarily driven by contractor costs required related to the restoration of the line before removal of the mobile transformer unit and additional internal labour to help support the development of the bypass structures.

Please refer to the variance sheet for more information.

C0061550 - L5031 Replacements and Upgrades - Hubbards to East Chester - ATO				
Account	Approved	Current Submission	Variance	Reason for Variance
Other Income-Salvage	-	(1,491)	(1,491)	
Regular Labour	83,962	141,591	57,630	Additional internal NS Power hours due to field supervision, project management and substation Operations switching. Required for outage coordination and additional work for the by-pass structures. In addition, additional costs incurred to disconnect and demobilize the mobile transformer unit.
Term Labour	-	19,336	19,336	Temporary resources were utilized to assist in the project planning, outage coordination and construction execution as required. In addition, additional costs incurred to disconnect and demobilize the mobile transformer unit.
Overtime Labour	-	30,320	30,320	Some overnight and weekend outages are required to facilitate switching for isolation. Particularly required to reduce impact to commercial/large key customers.
Term Labour-Overtime	-	873	873	In addition, costs were incurred to disconnect and demobilize the mobile transformer unit due to risk identified by the grid during a period of peak load demand.
Travel Expense	-	5,981	5,981	Travel required for field supervisors not captured in original estimate.
Materials	1,002,235	1,401,979	399,744	Additional materials required to construct the three by-pass structures, accounting for more than 90% of the increase.
Contracts	3,037,040	4,324,049	1,287,009	The construction of the three by-pass structures resulted in an increase in contract costs of approximately \$600,000. In addition, increased costs of approximately \$330,000 associated with rock breaking are included. The rock/base in the Chester area is granite material, making it difficult to break the rocks, which is required to install the new wood poles. Finally, additional costs required related to restoration of the line before removal of the mobile transformer unit, which included live line work and changes in work methods.
Freight Postage Delivery	-	12,674	12,674	Utilized for material transportation.
Consulting	-	5,157	5,157	Installation of construction staking at geo-referenced locations as per design.
Application Software	-	8,777	8,777	PLS CADD software for the Transmission Line design group.
Overtime Meals	-	740	740	Overtime meals are required for employees working overtime hours, directly related to the Overtime Labour hours worked.
Personal Equipment	-	1,093	1,093	During the construction phase, Personal Protective Equipment was required by internal field lead personnel. Includes special PPE for cold winter/ice conditions.
Other Goods and Services	618,486	293,680	(324,805)	
Royalty, Easement, Appraisal	-	5,605	5,605	Permits required from TIR and DNR for access and travel through environmentally sensitive areas.
Vehicle Allocated Costs	43,527	71,756	28,229	Increased due to increase in labour costs.
Admin Overheads	48,517	97,946	49,429	Increased due to increase in labour costs.
Contractor Admin Overhead	463,817	536,981	73,164	Increased due to increase in contract costs.
AFUDC Interest	-	11	11	
Total	5,297,584	6,957,058	1,659,474	

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: L-5031 Replacements and Upgrades - Hubbards to East Ch		Started or Preliminary		Class 5	Class 4	Class 3
Maturity Level of Project Definition Deliverables		Defined or Complete		Class 2	Class 1	
General Project Data						
A. Scope						
Project Scope of Work Description	Defined (D)	P	P	D	D	D
Site Infrastructure (Access, Construction Power, Camp, etc.)	Defined (D)	NR	P	D	D	D
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	Defined (D)	NR	NR	P	P	D
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	Defined (D)	P	P	P	D	D
Integrated Project Plan	Defined (D)	NR	P	D	D	D
Project Code of Accounts	Defined (D)	NR	P	D	D	D
Project Schedule	Defined (D)	NR	P	D	D	D
Regulatory Approval & Permitting	Defined (D)	NR	P	D	D	D
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	Defined (D)	NR	P	P/D	D	D
H. Studies						
Routing Options	Defined (D)	P	P	D	D	D
Topography & Bathymetry	Defined (D)	P	P	P/D	D	D
Environmental Impact/Sustainability Assessment	Not Applicable (NA)	NR				
Environment/Existing Conditions	Defined (D)	NR	P	D	D	D
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	Complete (C)	S	P	C	C	C
Route Mapping/Survey	Complete (C)	S/P	P/C	C	C	C
Design Specifications	Complete (C)	NR	S/P	C	C	C
Instrument List	Complete (C)	NR	S/P	C	C	C
Construction Permits	Complete (C)	NR	S/P	P/C	C	C
Geometric Layout, Alignment, Profile, Cross Section	Complete (C)	NR	S/P	P/C	C	C
Land/ROW Title Negotiation	Complete (C)	NR	S/P	P/C	C	C
Civil/ Site/Structural/Architectural Discipline Drawings	Not Applicable (NA)	NR				
Crossings and Borings Designs and Drawings	Not Applicable (NA)	NR				
Demolition Plans and Drawings	Complete (C)	NR	S/P	P	C	C
Erosion Control Plan & Drawings	Not Applicable (NA)	NR				
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		10	28	30	30	30
% Defined/Complete towards Class Estimate		100%	100%	100%	100%	100%

Comments:

This project is being filed as a Class 1 estimate. The defined deliverables for this project indicate that 100% of Class 1 deliverables are completed. A contingency value of 5% was selected to account for unknown items that may/may not be discovered during the detailed engineering design process and encountered during the construction phase.

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.).