

C0053696

Energy Control Centre Wind Integration Project

NON-CONFIDENTIAL

December 1, 2025



NSEB APPROVAL SHEET

Project Title: ECC Wind Integration Project

CI Number: C0053696

Date: December 1, 2025

Expenditure Profile			Type of Filing	
Year	Budget Amount	Project Estimate	☒	Capital Project Authorization
			☐	Unforeseen and Unbudgeted (U&U)
			☐	Planned & Advanced (P&A)
			☒	Subsequent Approval Item
2025	135,662	900,806	☐	Authorization to Overspend (ATO)
2026	621,696	3,527,529	☐	Scope Change
			☐	Final Cost (FIN)
Total	\$757,358	\$4,428,335		

COMMENTS

This project was originally included in the 2025 ACE Plan as a project less than \$1,000,000.

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED



Approved on behalf of NOVA SCOTIA ENERGY BOARD

Authorized Signatory
Dave Pickles
Chief Operating Officer

DATE
November 27, 2025

DATE

CI Number: C0053696**Title: Energy Control Centre Wind Integration Project**

Start Date: 2025/09
In-Service Date: 2026/06
Final Cost Date: 2027/01
Function: General Plant
Forecast Amount: \$4,428,335

DESCRIPTION:

This project will design, develop, and implement two new interrelated software solutions in the Energy Control Centre (ECC) to (1) automate the process for tracking independent power producer (IPP) generation, and validate and reconcile transactions for renewable generation producer compensation; and (2) automate wind curtailment prioritization, notification processes and dispatch activities, as well as enhancing reporting capabilities. This project will also enable Automatic Generator Controls (AGC) within the NS Power SCADA platform for enhanced dispatch and control capabilities between NS Power and IPPs. The project will also develop and/or enhance processes and procedures for the management and documentation of transactions between NS Power and IPPs, necessary to facilitate the new technology solutions and SCADA enhancements. This end-to-end approach to managing renewable generation dispatch will improve efficiency and transparency of operations as multiple new generators are interconnected to the Nova Scotia grid.

The current manual operating, reporting, and transactional procedures for the management of legacy wind generation in Nova Scotia are sufficient for smaller capacities of generation with limited control features. The anticipated growth in the renewable generation with enhanced control capabilities, however, requires a more robust and automated system to ensure that planned and executed dispatch scenarios align with Power Purchase Agreement (PPA) terms and are reported on with accuracy and transparency. Advances in wind generation technology in recent years means newly interconnected turbines are equipped with AGC allowing more dynamic control and the ability to support grid stability. Most legacy windfarms do not have the use of AGC functionality, and PPA terms may vary between producers. The solutions in this Project will capture these nuances and varying capabilities and apply them to dispatch planning, subsequent recording of dispatch data, and automating settlements with each Independent Power Producer.

The solution will ensure System Operators have the tools needed to:

- manage wind generation in an equitable and transparent fashion,
- leverage new wind control capabilities for system stability, and
- automate the back-office solution needed for effective settlement and reconciliation activities.

The solutions will be designed to integrate the anticipated new renewable generation projects in development and planned in Nova Scotia and be scalable to support the management of additional generation as needed.

Summary of Related CIs +/- 2 years

Pursuant to Section 11.2 of the CEJC, related CIs for General Plant include “work completed on the same asset (application, building, etc.).”

- No other projects in 2023, 2024, 2025, 2026 & 2027

Depreciation Class: General Plant – Office Furniture & Equipment - Computer Software
 General Plant – Communication Equipment - SCADA Equipment

Estimated Life of the Asset: 10 years

JUSTIFICATION:

Justification Criteria: Information Technology Application and Hardware System

Sub Criteria: Customer Experience

Why do this project?

NS Power is anticipating the installation of at least 1,000 MW of procured new wind generation on the system by 2030. This aligns with NS Power's 10 Year System Outlook, which includes the Provincial Clean Power Plan, and is needed to meet Provincial and Federal renewable energy legislation. These additions will bring the province to levels of wind penetration currently unprecedented in North America. This will consequently require changes to the ECC Operations technologies that manage and monitor energy dispatch from a much higher number of independent power producers, and to leverage available wind control in support of system stability in accordance with applicable power purchasing conditions.

All wind generation (legacy or new) must be dispatched efficiently and in a fair and equitable manner in line with the terms of each PPA. The presence of AGC now enables dynamic and granular dispatch controls for new IPPs and consequently allows wind generators to provide ancillary services for which compensation can be defined within PPAs. For example, a wind farm on AGC can have its actual output regulated up or down in response to Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS) commands to provide generation capacity reserve as required.

Legacy wind generators are not equipped with AGC capability and therefore can be curtailed only in pre-set increments under different compensation terms. The solution proposed within this Project will provide System Operators with needed planning and data solutions to adhere to PPA terms, the actual wind farm output, capacity and AGC service provision data in real-time, and automations for back-office processing of these data sets to accommodate a higher volume of reconciliation and settlement transactions. The increase in market participants on the Nova Scotia Bulk Electric System now requires this granularity and enhanced reporting capabilities.

Why do this project now?

New AGC-capable wind farms now have PPAs in place and are nearing completion of interconnection procedures. As reported in the 2025 10-Year System Outlook report Section 3.2, the additions of hundreds of MW are expected to interconnect each year through 2030 and beyond to meet decarbonization and renewable energy targets. As such, there is an immediate need for this Project to have improved wind management efficiency and transparency in place as these renewable energy resources come online.

Additionally, Natural Resources Canada's Electricity Predevelopment Program committed \$2.2 million in funding support for this project.

Why do this project this way?

The kind of wind management functionality needed to serve this increased integration of IPPs does not currently exist within NS Power, and no commercially available off-the-shelf tools for this purpose could be sourced by the Company. Because Nova Scotia is in such a unique situation with respect to the integration of very large amounts of wind and renewables, within a short time horizon, that off-the-self solutions cannot be procured and compared, therefore NS Power is leveraging vendor support to design, develop, and implement an appropriate in-house solution.

These solutions are designed to be scalable, flexible to wind control and PPA variations, meet the business requirements of the NSPSO for wind generation management, and adhere to software development methodologies and cyber security standards within NS Power.

Contingency Statement

Contingency for this project has been determined using a combination of internal subject matter expertise (Project Managers, Engineers and System Operators) experience gained from similar software development/implementation work, and in conjunction with the non-binding contingency guidelines. Consistent with the maturity matrix, this project is being filed as a Class 1 estimate with a contingency of 10 percent. Contingency is intended to account for risks associated with the potential for unforeseen issues related to complex integration between newly developed technology and legacy systems.

Reason for Variance

The 2025 ACE Plan estimate of \$757,358 was a high-level estimate completed before detailed investigation into possible solutions concluded; and, as IPP wind generation is not new, it was assumed an off-the-shelf solution could be sourced. The increase of \$3,670,977 reflects the shift from deploying an off-the-shelf solution to engaging expertise for the design, development and deployment of a customized solution that meets NS Power's unique need to integrate such high wind volume with advanced control capabilities.

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.

Project Cost Estimate Input Checklist and Maturity Matrix						
Wind Integration	Required fields:	Estimate Classification				
Project Name: ECC Wind Integration Project	Started or Preliminary	Class 5	Class 4	Class 3	Class 2	Class 1
Maturity Level of Project Definition Deliverables	Defined or Complete	0% to 2%	1% to 15%	10% to 40%	30% to 75%	65% to 100%
General Project Data						
A. Scope						
Project Scope of Work Description	Defined (D)	P	P	D	D	D
B. Capacity						
Not Applicable						
C. Project Location						
Energy Control Centre (ECC); Distribution Control Centre (DCC); Back Up Control Centre (BCC)	Defined (D)	P	P	D	D	D
D. Requirements						
Codes and/or Standards	Defined (D)	NR	P	D	D	D
Legislative Requirements	Defined (D)	NR	P	D	D	D
E. Technology Selection						
Design/Technology	Defined (D)	NR	P	D	D	D
F. Strategy						
Internal/External Resourcing	Defined (D)	NR	P	D	D	D
Solution Contracting / RFP	Defined (D)	NR	P	D	D	D
G. Planning						
Cross Team Planning (i.e., ECC/Power Generation/Corporate Security/IT Security etc.)	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
Energy Control Centre (Project Sponsor) approval to proceed	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)	Defined (D)	NR	P	D	D	D
Start-up & Commissioning Plan	Defined (D)	NR	P	P/D	D	D
Technical Solution Planning						
Hardware	Complete (C)	P	P	C	C	C
Software	Complete (C)	P	P	C	C	C
Security Assessment	Complete (C)	NR	P	C	C	C
Solution Integration	Complete (C)	NR	P	C	C	C
Information Systems / Telecommunication Drawings	Complete (C)	NR	P	C	C	C
Total Responses	Total # Deliverables for this Project	5	22	22	22	22
Percentage	% Defined/Complete towards Class Estimate	100%	100%	100%	100%	100%

Comments:

This project is being submitted as a Class 1 estimate. The defined deliverables of this project indicate that 100% of the Class 1 deliverables have been defined/completed towards the Class Estimate. A contingency value of 10% was selected to account for risks associated with the potential for unforeseen issues related to complex integration between newly developed technology and legacy systems.

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.