

CI C0068659

TRE5 -IP-LP Turbine Refurbishment

ATO

NON-CONFIDENTIAL

July 13, 2026



NSEB APPROVAL SHEET

Project Title: TRE5 - IP-LP Turbine Refurbishment

CI Number: C0068659

Date: July 13, 2026

Expenditure Profile			Type of Filing	
Year	Budget Amount	Project Estimate	☐	Capital Project Authorization
2025	1,175,875	3,471,649	☐	Unforeseen and Unbudgeted (U&U)
2026	106,795	(508,489)	☐	Planned & Advanced (P&A)
			☐	Subsequent Approval Item
			☒	Authorization to Overspend (ATO)
			☐	Scope Change
			☐	Final Cost (FIN)
Total	\$1,282,670	\$2,963,160		

COMMENTS

Approved	\$1,282,670
Current Submission	\$2,963,160
ATO Request	\$1,680,490

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED



Approved on behalf of NOVA SCOTIA ENERGY BOARD

Authorized Signatory
Dave Pickles
Chief Operating Officer

DATE
July 10, 2026

DATE

CI Number: C0068659**Title: TRE5 - IP-LP Turbine Refurbishment**

Start Date: 2025/03
In-Service Date: 2025/09
Final Cost Date: 2026/12
Function: Steam
Forecast Amount: \$2,963,160

DESCRIPTION:

This project includes inspection, refurbishment or replacement of components within the Intermediate and Low Pressure (IPLP) and the Dual Flow Low Pressure (DFLP) turbine on Unit 5. A partial dismantle of the IPLP and the DFLP is required to inspect for the presence or extent of any cracking of the turbine sections.

The Trenton Unit 5 turbine consists of a High Pressure turbine (HP), a combined IPLP turbine, and DFLP turbine which convert the energy from the high pressure/high temperature steam received from the Unit 5 boiler to mechanical energy which rotates the Unit 5 generator, resulting in the production of electrical energy. The IP turbine section is subjected to high temperature and pressure service conditions and is affected over time by solid particle erosion and creep damage. The latter stages of the IPLP and DFLP turbines are subject to higher stresses and concentrations of residual contaminants that can result in Stress Corrosion Cracking.

The Board provided the following Directive in its Decision pertaining to the Decarbonization Deferral Account (DDA) (M11220):

NS Power must provide specific notice to all participants in this proceeding upon filing any future capital work order applications involving assets that are forecasted to be included in the DDA and to confirm this was done in its applications to the Board.

In accordance with the Board's directive, NS Power provided notice of this investment to participants in the DDA proceeding on December 9, 2024.

Summary of Related CIs +/- 2 years:

Pursuant to Section 11.2 of the CEJC, related CIs for Steam projects includes "work completed on the same asset (turbine, boiler, etc.) and on the same unit (Lingan Unit #3, for example)."

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

Depreciation Class: Steam Production Plant - Trenton 5

Retirement Information:

- Categorization of Retirement: Accounting Policy 6420 - Retirement and Disposal of Capital Assets
- Percentage of Asset Pool: 1.20%

Estimated Life of the Asset: 32 Years

JUSTIFICATION:

Justification Criteria: Thermal

Sub Criteria: Equipment Refurbishment/Replacement

Why do this project?

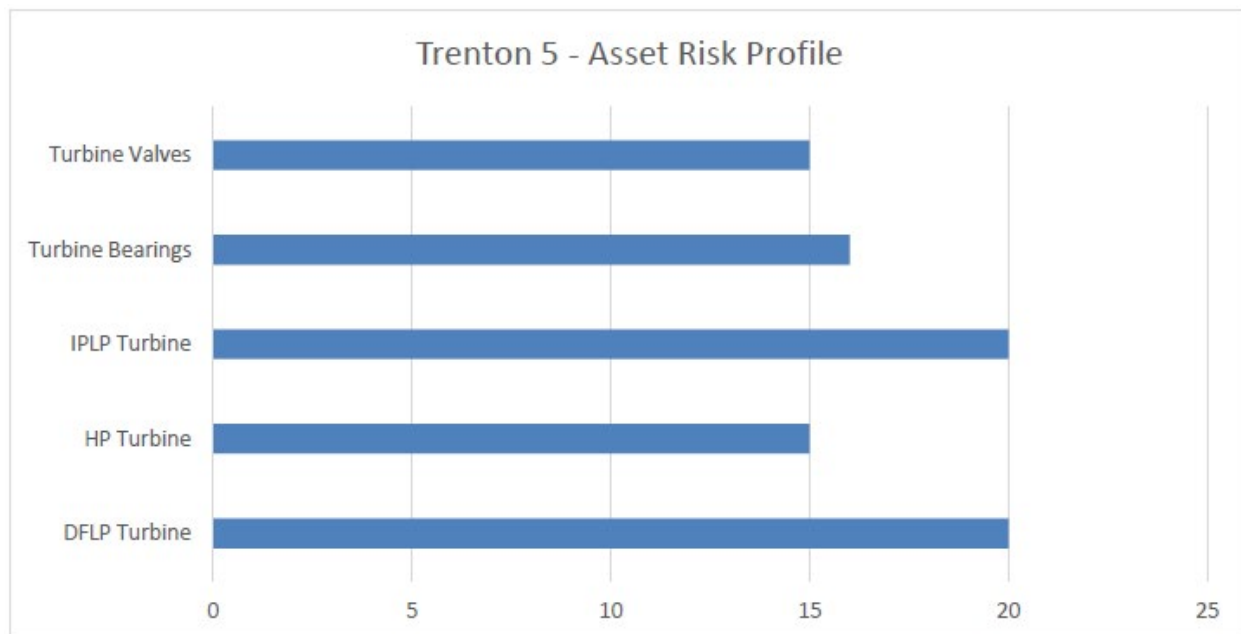
Unit 5 at Trenton has exceeded its maintenance strategy interval of 50,000 Hours and has accumulated 55,000 hours since the last maintenance outage in 2012. Due to the potential for cracking in the IPLP and the DFLP turbine rotating components, these turbine sections must be removed from service, inspected, and refurbished or replaced as required. This will also identify operational reliability concerns and provide for continued safe and reliable operation of Unit 5 Turbine.

Why do this project now?

Unit 5 at Trenton has reached an inspection interval since the last maintenance outage in 2012. To ensure reliable and safe operation of Unit 5 Turbine it is recommended to complete this project during the 2025 calendar year. Consistent with future unit utilization that was shown in the 10-Year System Outlook, Trenton 5 will be required to provide reliable generating capacity further into the future than previously forecast, in order to meet increasing peak customer load requirements. NS Power has successfully deferred this project over the last number of years, but the asset condition and updated future unit utilization requires this work to be completed in 2025.

Completing this project in a planned manner, assessing current conditions, and mitigating against the risks of unplanned failure is the preferred approach to completing this work.

Steam turbine overhauls are scheduled based on accumulated operating hours and cycles and by known conditions within each unit. Below is a risk profile of Trenton 5 steam turbine Low Pressure (LP) and Intermediate Pressure (IP) Turbine components that show risks associated within each. The risk profile shows that while the machine is due for inspection, there are also components that require refurbishment or replacement in the LP & IP sections to reduce operational risk.



Why do this project this way?

Completing an inspection of the IPLP and DFLP turbine sections is a cost-effective method and will allow for NS Power to determine and address high consequence risks that are present and identify and address reliability or safety risks. An alternative would be to complete a typical overhaul which undertakes a more extensive work scope which could lead to components being replaced / refurbished that are not required to operate the unit through its retirement date.

Reason for Variance - ATO

The increase of \$1,680,490 over the approved 2025 ACE Plan budget of \$1,282,670 is due to additional condition-based work identified only after disassembly.

The original project estimate was developed with the support of NS Power's vendor, Siemens. As is the case with all major turbine refurbishments, the estimate was developed prior to equipment disassembly and formal inspection work occurred and was informed by evaluations of unit hours and cycles. It also considered the anticipated wear and damage based on Siemens' and NS Power's past turbine experience. Though the estimated volume of component failures, refurbishments, and replacements were conservative and informed by unit monitoring, they ultimately did not reflect

the full extent of the required refurbishments and replacements required once the IPLP Turbine was fully disassembled and assessed.

The IP section of the turbine required further inspection and refurbishment due to additional defects identified during disassembly. As a result, removal and grit blasting of the IP spindle was required to facilitate refurbishment of the damaged sections leading to an incremental spend of approximately \$450K.

Additional unexpected defects were found on the impulse row shroud band retaining rivets. The condition of the rivets holding the shroud bands in position had deteriorated to a point where possible liberation of the shroud band could have occurred during operation. Further refurbishment was required to reduce the risk of the shroud band liberation due to the rivet condition leading to additional spend of approximately \$450K. Additionally, increased scaffolding and insulation were required resulting in approximately an additional \$200k.

Further inspection on the bearing components identified an unanticipated babbit material defect on the #1 bearing, the severity of the damage rendered the bearing unfit to return to service. The bearing required a complete recasting/machining of the babbit material to fully eliminate the defect leading to an additional spend of approximately \$175K.

Due to the unforeseen additional work required, a low-speed balance operation was also required on the IP spindle following the refurbishment to mitigate the risk of a rotor imbalance during start up operations leading to an additional \$80K in unplanned spend.

The incremental damage identified during the outage, although higher than anticipated, was still consistent with normal wear expected for a turbine of this age and operating profile.

Please refer to the variance sheet for more details.

This project was deemed in-service when the turbine was refurbished (September 2025). The Final Cost Date (December 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.

Additionally, as noted above, as this capital work order pertains to an asset forecast to be included in the DDA, NS Power provided notice to participants in the DDA proceeding on July 13, 2026.

C0068659 - TRE5 - IP-LP Turbine Refurbishment				
Account	Approved	Current Submission	Variance	Reason for Variance
Regular Labour	42,946	92,949	50,003	Increased engineering and maintenance trade requirements due to additional required work on the IP section of the turbine and increased utility trade support required for staging.
Overtime Labour	-	33,547	33,547	
Term Labour	-	7,280	7,280	
Term Labour - Overtime	-	1,698	1,698	
Office Supplies	-	60	60	
Travel	-	147	147	
Materials	325,000	259,081	(65,919)	Decreased costs due to anticipated spare parts estimated for the project were not required.
Contracts	700,000	2,199,051	1,499,051	The cost for the extra work was largely driven by: • Unplanned Turbine Blade Repairs - \$450k • Unplanned Shroud Band Retaining Rivet Repairs - \$450k • Unplanned Babbit and Bearing Repairs - \$175k • Increased scaffold and insulation requirements vs plan - \$200k • Low speed balance test - \$80k
Freight Postage Delivery	-	13,075	13,075	
Lubricants	-	67	67	
Meals	-	2,141	2,141	
Personal Equipment	-	162	162	Additional meal costs attributable to unplanned on site support and schedule extensions identified during overhaul execution
Other Goods and Services	106,795	-	(106,795)	
Admin Overheads	16,125	43,930	27,805	Increased labour costs lead to increased admin overhead costs.
Contractor Admin Overhead	86,667	283,798	197,131	Increased contractor costs lead to increased contractor admin overhead costs.
AFUDC Interest	5,138	26,174	21,036	Increased contracts and labour costs lead to increased AFUDC Interest costs.
Total	1,282,670	2,963,160	1,680,490	