

ISO-NE PAC MEETING

10/23/2024

Nashua St #25 – Substation Asset Condition Refurbishment

nationalgrid



Outline

- Purpose
 - Discuss the asset condition needs at the Nashua St #25 substation
 - Discuss the proposed solution alternative to address the regulatory and identified asset condition needs
- Background
- Transmission One-Line
- Aerial View
- Project Needs
- Solution Alternative
- Background on NPCC Dir 1 Asset Condition List Approach
- Questions

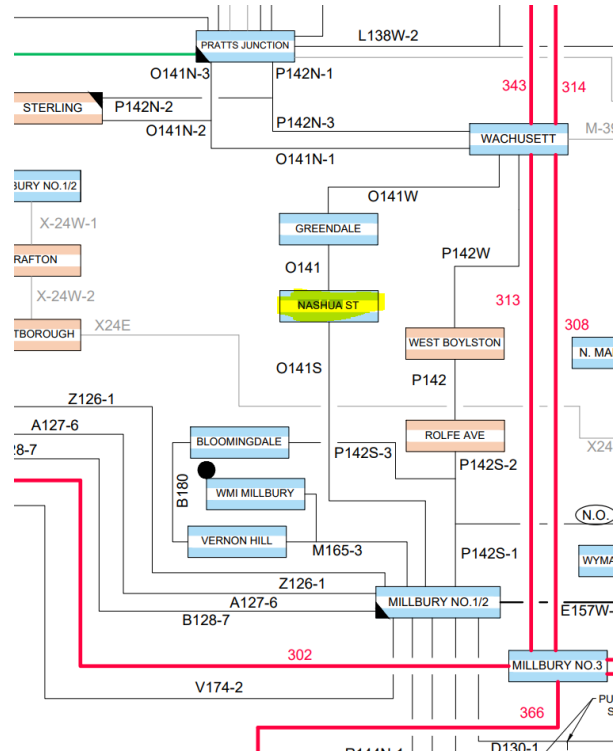
This document has been reviewed and does not contain Critical Energy/Electric Infrastructure Information (CEII).

Background

- Nashua St is a 115/13.8 kV substation located in Worcester, MA, and was built in 1967. The site is supplied by two 115 kV transmission lines (O-141 and O-141S) and has one in-line Gas Circuit Breaker #141.
- The driver for this project are asset condition, and NPCC Directory 1 implementation plan.

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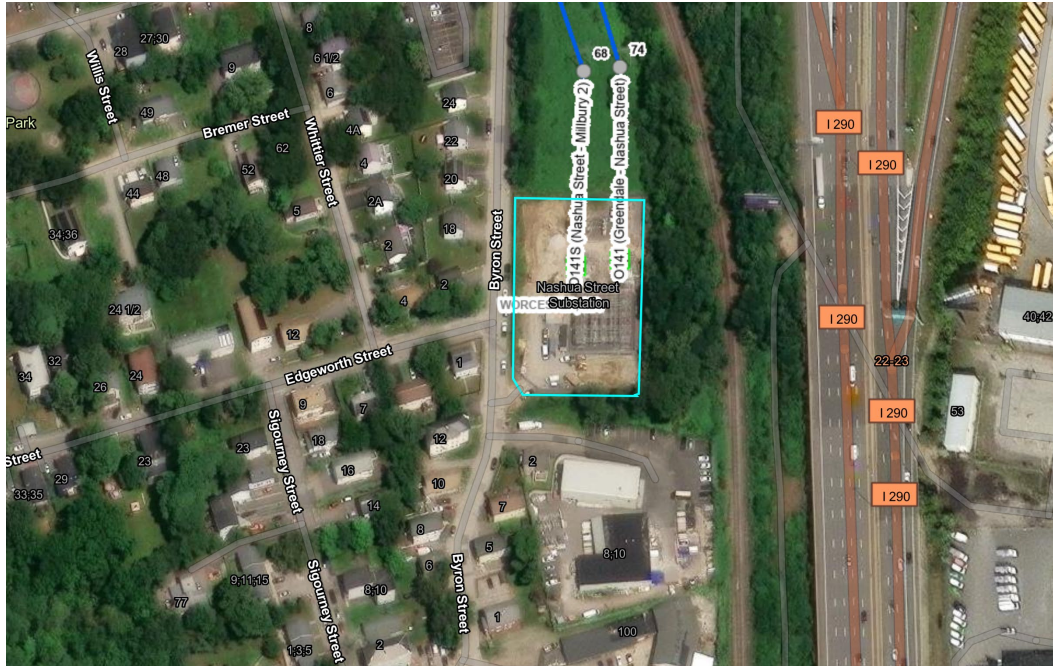
Transmission One-Line



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Aerial View



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Project Needs

Asset issues found include:

- 115 kV Gas Circuit Breaker #141 Manufactured in 1988
 - prone to Sulfur Hexafluoride (SF6) gas leaks and pneumatic system failures
- Standby Generator manufactured in 2004
 - propane-powered generator, has experienced multiple operational issues in the recent past

Regulatory Requirement:

- NPCC Directory 1 Implementation plan to install dual high speed protection systems on all BPS elements:
 - Install a dual high speed protection schemes on the 115 kV O-141S line
 - There is insufficient space in the existing control enclosures for the required equipment

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Project Needs – Points of Concern: Circuit Breaker



115 kV Gas Circuit Breaker #141

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Project Needs – Points of Concern: Backup Generator



Standby Generator

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Solution Alternative

Base Alternative: Replace 115 kV Assets (preferred)

- Install 115 kV CCVT with CCVT/Wave Trap combination on O-141S line
- Build a new control house with modern protection and control systems including the new IEC61850 communication standard (50% Non-PTF)
- Replace 115 kV Gas Circuit Breaker #141, Standby Generator (50% Non-PTF), and 4 wood pole masts
- Install online monitoring for transmission assets:
 - Transformers No. 1 & No. 2 (Non-PTF)
 - New Circuit Breaker
 - Station Battery (50% Non-PTF)
 - Standby Generator (50% Non-PTF)
- Project Cost \$9.18M (+/- 10%)
 - \$5.51M PTF
 - \$3.67M Non-PTF
- In-service date: December 31, 2024

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Background on NPCC Dir 1 Asset Condition List Approach

- After May 2021, National Grid decided to bundle NPCC Dir 1 Asset Condition List (ACL) entries with active Asset Condition Refurbishment (ACR) projects whenever possible.
- ACR projects exceeding \$5M in total cost were presented to PAC. If there were no active associated ACR projects and the Dir 1 work exceeded \$5M, those projects were also presented to PAC (e.g., Stafford St.).
- Regarding Nashua St, ACR work was not presented to PAC as the project PTF cost was estimated to be under \$5M and only recently we identified that the PTF costs would exceed \$5M.
- ACL # 95, NPCC Directory #1 Protection Modifications – Phase 4, will be repurposed to Nashua St. #25 Asset Condition Refurbishment, which will appear on the March 2025 ACL update.

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Questions

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Please submit any written comments or feedback by November 06, 2024

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