ISO-NE PAC MEETING

09/18/2024

302 345 kV Line Asset Condition Refurbishment

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

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Outline

- Purpose
  - Discuss the asset condition needs driving the refurbishment of the 345 kV 302 line and alternatives to address the identified issues
- Background
- Geographic Location
- Project Needs
- Solution Alternatives
- Questions

Background

- The 345 kV 302 Line from Carpenter Hill No. 435 substation to Millbury 3 substation was energized in 1968.
- 15.9 miles in length. Originates at Carpenter Hill substation in Charlton, MA and terminates at Millbury 3 substation in Millbury, MA
- Contains 194 structures. 191 Wood Pole, 3 Steel Pole
- Existing conductor: bundled 900 AAC “Cockscomb” from 1968. 2050 Transmission Study did not identify a need for higher capacity on the line.
- Existing shieldwire: 7 No.9 Alumoweld from 1968
- In 2006, a refurbishment project was completed on the line which replaced 36 wood structures in kind due to asset condition and replaced 134 wood crossarms with steel
- The driver for this project is asset condition
- 302 (15.9 miles): 100% PTF

Geographic Location

Project Needs

Asset Condition

The asset condition information is derived from the following sources:

- Engineering Ground Line Inspection – 2023
- Aerial Comprehensive Inspection – 2019
- Cyclical inspections

Asset issues found include:

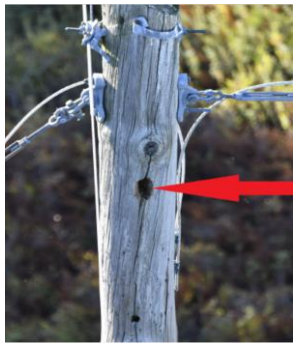
- Woodpecker damage
- Pole top deterioration
- Flashed/damaged insulators have also been observed
- Structure Bonding on 3-pole suspension pull-off structure - Original zinc bonding strips breaking down creating grounding/bonding issues. History of pole fires due to breakdown in these zinc bonding strips
- Structures identified for replacement are original vintage structures from 1968. Project aims to replace the high priority structures and opportunity structures were evaluated but no candidates were identified for replacement.

Structures Replaced for Deteriorated Condition			
Pole Type	Rating	Description	Quantity
Wood	2	Priority Reject	19
Total Replacements			**19**

Wood Ratings:

1. Immediate Replacement
2: Priority Reject,
3: Reject,
4: Serviceable

Project Needs – Points of Concern: Woodpecker



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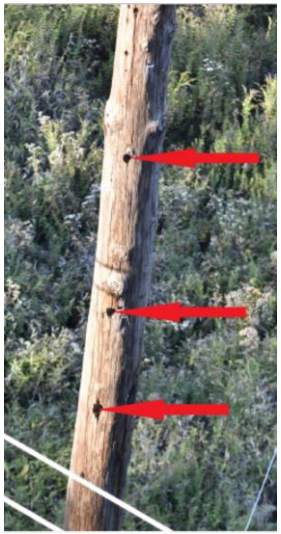

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Project Needs – Points of Concern: Pole Top Deterioration

Str 316

Str 321

Str 408

Str 389

Project Needs– Points of Concern: Insulators

Str 206

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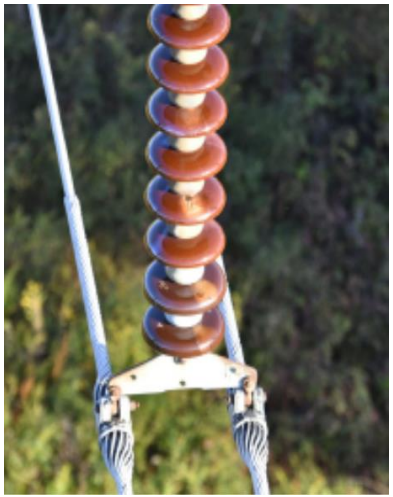

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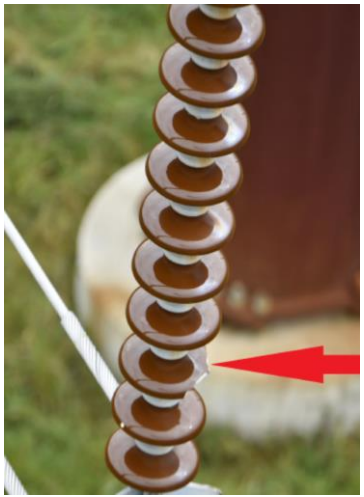

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Solution Alternatives

Base Alternative: Targeted Structure Replacement (Preferred)

- Replace 19 wooden pole structures with engineered H-frame steel pole structures
- Replace damaged/flashed insulators at three (3) structures
- Perform minor maintenance activities (e.g. tightening loose bolts/nuts/cotter pins) at ten (10) structures

Total Project Cost: $19.36M (+50/-25%), 100% PTF
Estimated construction start date: Q1 2025
Estimated in-service date: Q2 2025

Option 2: Wood Structure Replacement

- Replace all 191 wood pole structures with engineered steel pole structures

Total Project Cost: $180M (+200/-50%), 100% PTF

Solution Alternatives

Option 3: Full Rebuild with OPGW and reconductoring

- Replace all 191 wood pole structures with engineered steel pole structures
- Replace all 3 steel structures with engineered steel pole structures
- Reconductor 15.9 miles of 2-900 AAC conductor with 2-1590 ACSS conductor
- Replace shieldwires with two (2) OPGW

Total Project Costs: $240M (+200/-50%), 100% PTF

Questions

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Please submit any written comments or feedback by October 02, 2024

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