

Line 381/379 Optical Ground Wire Upgrade

Planning Advisory Committee Meeting

January 19th, 2023

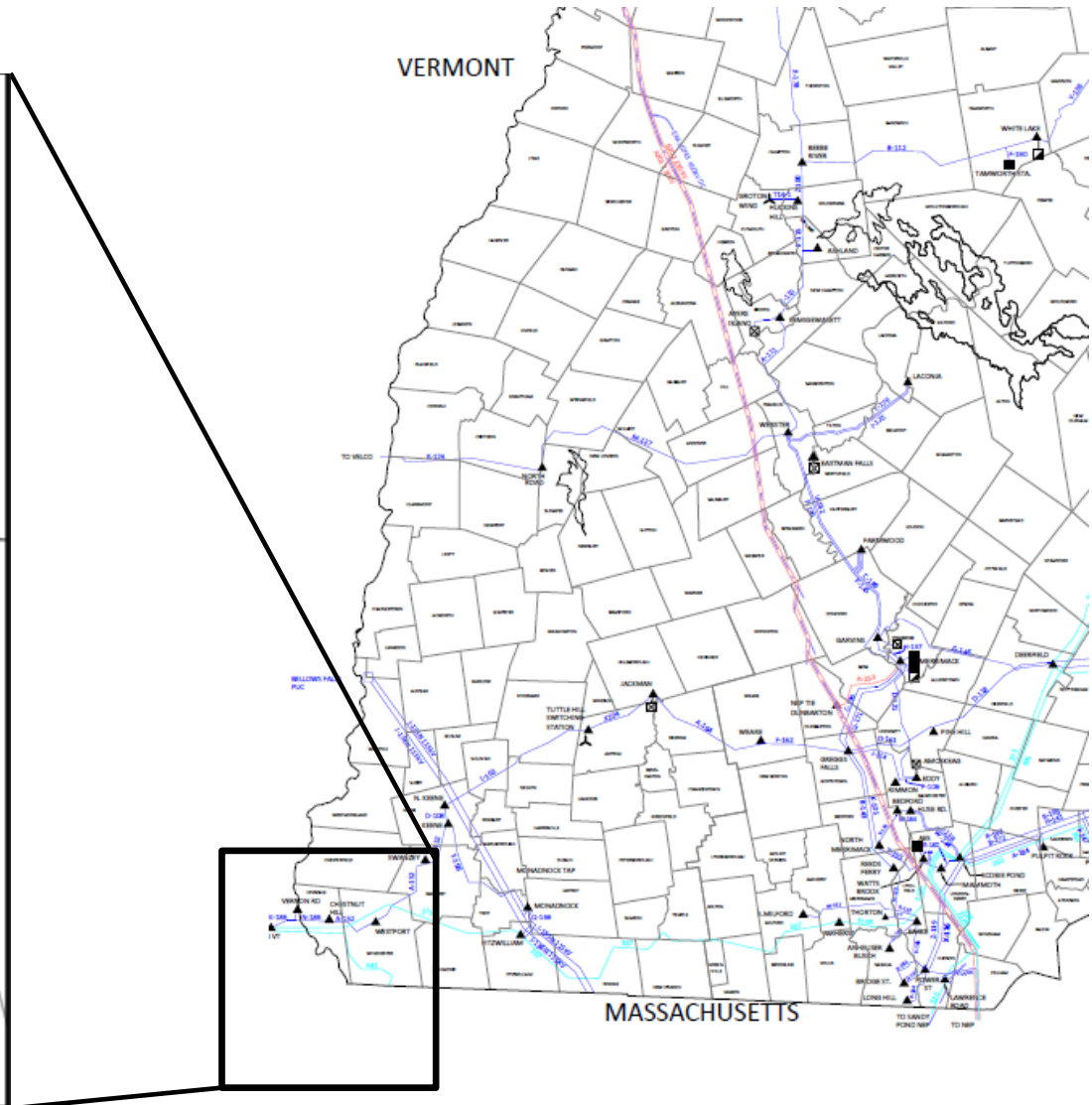
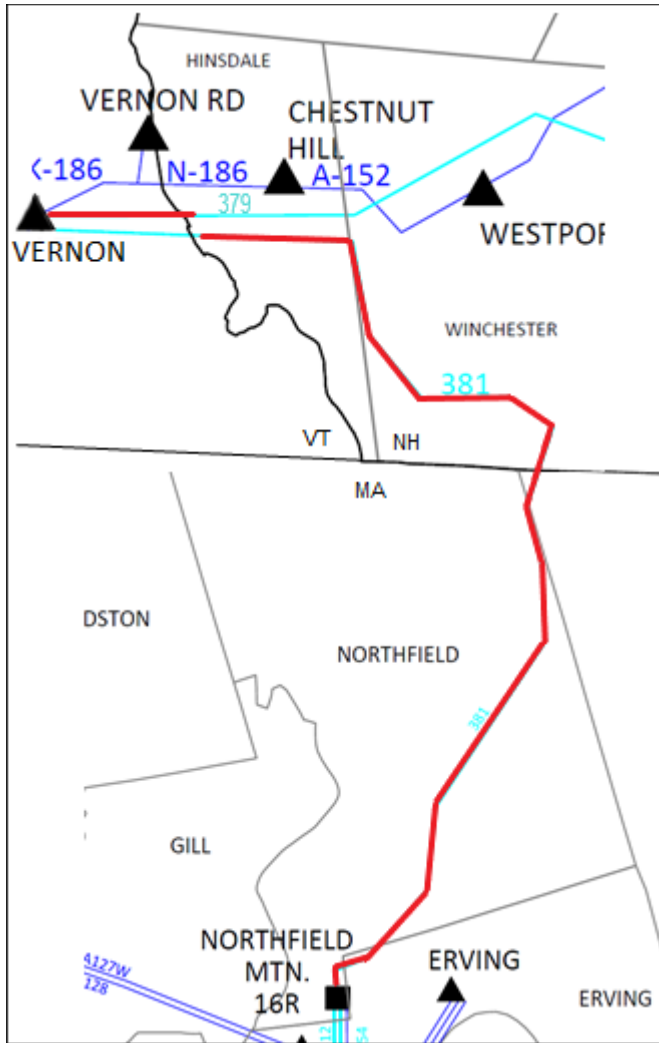
Agenda

- Project Background
- Project Location
- Project Drivers
- New Hampshire Border Fiber Routes
- Project Scope & Summary

Project Background

- 345 kV 381 Line (Massachusetts portion):
 - Spans 9.3 miles from Northfield Mountain substation in MA to the New Hampshire Border
 - 81 steel structures supporting 2-954 ACSR conductor and shield wire (mix of 7/8 Alumoweld and OPGW-72 (Optical Ground Wire))
- 345 kV 381 Line (New Hampshire portion):
 - Spans 10.71 miles from Vernon substation (VELCO) in VT to the Massachusetts border
 - 96 steel structures supporting 2-850.8 ACSR 45/7 conductor and shield wire (mix of 7/8 Alumoweld and OPGW-72)
- 345 kV 379 line:
 - Spans 20.32 miles from Vernon substation (VELCO) in VT to the Fitzwilliam substation in NH
 - 173 structures supporting 2-850.8 ACSR 45/7 conductor and 7/8 Alumoweld shield wire
 - Only 1.1 miles are included within the scope of this project to accommodate the Connecticut River Crossing

Project Location



*Red indicates scope of presentation

Project Drivers

- OPGW installation expands a private Eversource OPGW / Synchronous Optical Networking (SONET) loop
 - Provides a controlled, alternate fiber communication path supporting the long-term buildout of the fiber optic network
 - Greatly reduces the reliance on leased services for protection, SCADA, and Phasor Measurement Units (PMU) and Dynamic Disturbance Recorders (DDR) installations (ISO-NE OP-22)
 - A private network is segregated from third-party telecom services, improving the overall reliability and security of communications paths
- Creates a new fiber route between Eversource and VELCO
 - New communications route on Lines 381/379 from Vernon substation (VELCO) in VT to Northfield Mountain substation (Eversource) in MA
 - Provides redundant communication path in corridor between Eversource and VELCO
 - Fiber path on separate structures from existing path in the event of emergency or scheduled outages
 - VELCO will install ADSS from final Line 379 structure into Vernon Substation 4

Project Drivers

- Critical Infrastructure Protection: Fiber provides the necessary bandwidth for physical security monitoring and triaging of alarms for BES Cyber Systems at medium and low impact substations
- The DOE and EPRI recommend fiber as a means to strengthen the security and resilience of critical communication infrastructure to protect against the consequences of electromagnetic pulse attacks
- Fiber optic cable is a non-propagating media for electric and magnetic fields and therefore is considered generally immune to the effects of geomagnetic disturbances

Scope & Summary

- Line 381
 - Replace 20.01 miles of existing shield wire with 20.01 miles of OPGW between Northfield Mountain Substation and Tower 1 in Hinsdale, NH
 - Install ADSS and supporting terminal work to tie into Northfield Mountain and Chestnut Hill Substations
- Line 379
 - Replace 1.1 miles of existing shield wire with 1.1 miles of OPGW between Tower 592 and Tower 594 outside of Vernon, VT
 - Includes Connecticut River Crossing
 - VELCO to install ADSS from Tower 594 into Vernon Substation
- Total Estimated Cost: **\$8.24M** (-25 / +50%)
- Project in-service date: Q3 2023

Questions

