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Line 1803 Optical Ground Wire (OPGW) Installation Project

Planning Advisory Committee Meeting

December 17, 2025

Outline

- Project Summary
- Background Information
- Project Needs and Drivers
- Solution Alternatives
- Selection of Preferred Solution
- Schedule and Contact Information

Project Summary

Project Drivers
• Need for additional fiber telecommunications capacity into Western Massachusetts communications hub located adjacent to Cadwell substation in Springfield, MA

Alternatives Considered

Alternative	Description	Cost Estimate
Alternative 1	Replace approximately 5.2 miles of 72-fiber OPGW between Fairmont and Cadwell substations with new 144-fiber OPGW	$5.942 M (-10%, +10%)
Alternative 2	Install new all-dielectric self-supporting (ADSS) cable underbuilt to supplement existing OPGW from Fairmont substation to Cadwell substation	N/A (Not feasible)

Preferred Alternative

Alternative	Reason for Recommendation	Cost Estimate
Alternative 1	• Provides needed capacity and fiber diversity between the two substations • Other alternatives not feasible	$5.942 M (-10%, +10%)

Background Information

Line 1803

Key Details	
Location	**From:** Fairmont substation *Chicopee, MA* **To:** Cadwell substation *Springfield, MA*
Line Length	5.3 miles
Configuration	• Shares structures with Line 1702 for 1.7 miles between Fairmont and structure 2246B • Shares structures with Line 3196 for 2.5 miles from structure 2247 to structure 1258 • Single circuit monopole structures from 2247 to Cadwell for 1.1 miles
Operating Voltage	115 kV
Age and Upgrade History	• Reconstructed in 2013 as part of the Greater Springfield Reliability Project (GSRP) • Originally part of line 1723 prior to GSRP
Prior PAC Presentations	• N/A

Existing Structures

Material	Configuration	Number	Avg. age
Galvanized Steel	Single and double-circuit poles	44	12 years

Existing Conductor

Type	Length	Avg. age
1272 ACSS	5.3 miles	12 years

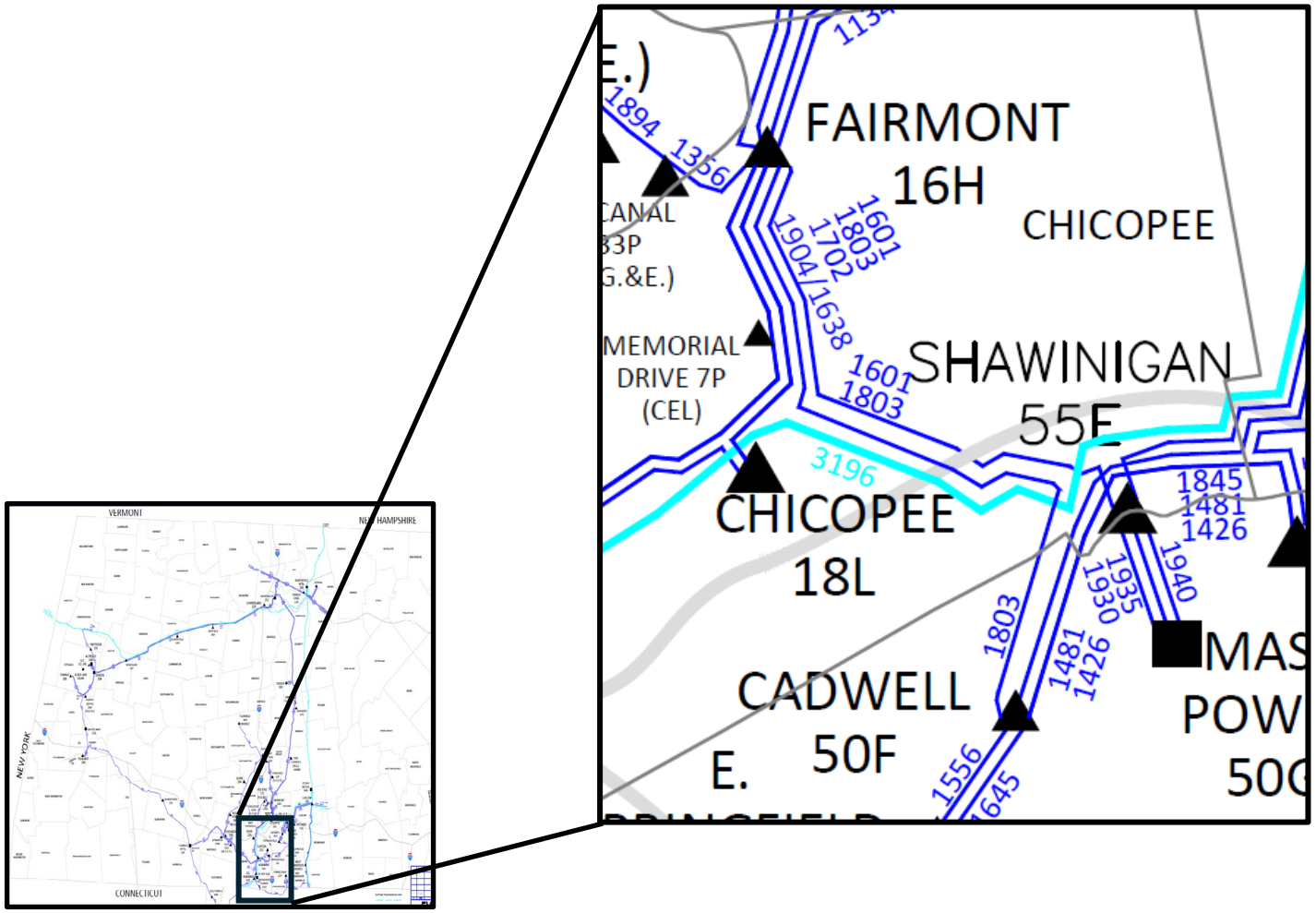
Existing Shield Wire

Type	Length	Avg. age
One run of 72-fiber OPGW between Fairmont substation and outside of Cadwell substation • 62 fibers owned by Crown Castle • 10 fibers owned by Eversource	5.2 miles	12 years
One run of combination 48- and 96-fiber OPGW (owned by Eversource) between Fairmont and Cadwell substation	5.3 miles	12 years

Line 1803 is approximately 5.3 miles long. Precise lengths of shield wire and conductor vary due to grounding and configuration of junctions and substation entry/exit points

Project Location

Western MA Map



Typical ROW Configuration

Project Needs and Drivers

Telecommunication

Telecommunication Concerns	
Primary Concerns	
Support critical communications	• Eversource's Western Massachusetts communications hub is located adjacent to Cadwell substation • Additional fiber capacity is needed into this area to support critical communications and to provide redundancy to avoid loss of communications during failures or outages
Secondary Concerns	
Future telecommunications needs	• Current and future needs in this region by providing spare fibers • Support the future replacements of end-of-life equipment at multiple locations in this area • Support future operational communications modernization efforts

Project Needs and Drivers

Other Concerns

Other Concerns	
Structures	• No needs identified at this time
Conductors	• No needs identified at this time
Insulators	• No needs identified at this time
Planning	• No needs identified at this time
Operational	• No needs identified at this time

Review of Relevant Transmission Studies

Transmission Study Status
Was this line overloaded in recent Attachment K studies (Reliability Needs Assessments, Longer-Term Transmission Studies, etc.) or other recent studies?
No
Have modifications or upgrades to this line been identified as potential solutions in any of those studies?
No

Evaluated Solution Alternatives

Alternative 1

Base Alternative	
Description	• Replace approximately 5.2 miles of existing 72-fiber OPGW with new 144-fiber OPGW from Fairmont substation to Cadwell substation
Primary needs addressed	• Yes
Secondary needs addressed	• Yes
Advanced transmission technologies to be considered	• None
Cost estimate and accuracy	**$5.942 M** (-10%, +10%) Cost is higher than normal for OPGW installation due to several factors: • Structures are double-circuit and single-circuit monopoles, which are taller than typical H-frame structures • Several junctions and highway crossings requiring more complex construction • Time-of-work limitations at Massachusetts Turnpike crossings
Longer-term transmission needs addressed	• N/A
Key standards or criteria affecting design if different than current design	• None

Evaluated Solution Alternatives

Alternative 2

Base Alternative	
Description	• Removal of the 72-fiber OPGW and install new 144-fiber ADSS from Fairmont to Cadwell substation
Primary needs addressed	• No, solution is not feasible
Secondary needs addressed	• No
Advanced transmission technologies to be considered	• None
Cost estimate and accuracy	*Alternative was not viable and no cost estimate was developed* • Additional sag from underbuilt ADSS was not acceptable for long spans at Massachusetts Turnpike interchange and mainline crossings • Would require running ADSS in parallel to 345 kV Line 3196, which shares structures with Line 1803 for approximately 2.5 miles • Long sections of ADSS should not be installed in parallel with extra-high voltage (345 kV) circuits to avoid creation of induced voltages and currents in ADSS sheathing
Longer-term transmission needs addressed	• N/A
Key standards or criteria affecting design if different than current design	• None

Comparative Analysis of Alternatives

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Comparison		
Key Criteria	**Alternative 1**	**Alternative 2**
Addresses primary need	Yes	No
Addresses secondary need	Yes	No
Cost	**$5.942 M** (-10%, +10%)	**N/A**
Constructability concerns or advantages	None	• Clearance concerns at highway crossings • Risk of induced voltages and currents due to parallel 345 kV line
Siting, environmental and regulatory issues	MA DOT time-of-work limitations	Same as Alternative 1

Conclusion

- Alternative 1 is the preferred alternative because it addresses the primary and secondary needs
- Alternative 2 was not feasible due to factors related to line configuration and highway crossings

Cost Details

- Original approved budget for project was $4.7 million with $623k (~13%) allocated to risks and contingency
- Project was placed in-service in October 2025
  - Estimated actual cost is approximately $5.9 million, pending verification of final invoices and charges
- Project cost increase was driven primarily by two factors
  - $439k increase in contractor construction costs due to unanticipated requirements from MA DOT
    - Line has four highway crossings, including two crossings of Massachusetts Turnpike interchanges in Chicopee, MA, as well as the Massachusetts Turnpike mainline itself
    - Additional time of work restrictions (12am to 4am) from Massachusetts Department of Transportation required modifications to construction plan and additional costs after project was awarded to contractor through a competitive bidding process
    - Combined with minor increases to other costs, these additional costs exhausted the risk and contingency budget for the project
  - $1,235k increase in indirect/overhead charges for NSTAR West
    - Original estimate used out-of-date indirect/overhead rate
    - Additional costs related to indirects/overheads were identified in late September 2025, just prior to completion of project

Schedule

Planned Schedule	
Start of Major Construction	August 2025
Project in Service	October 2025

Comment Submission	
Comment Deadline	January 2, 2026
ISO-NE Contact Email Address	pacmatters@iso-ne.com
Transmission Owner Contact Name	Dave Burnham
Transmission Owner Contact Email Address	PAC.Responses@eversource.com

Questions