Petition No. 1456
The Connecticut Light and Power Company d/b/a Eversource Energy
Card to Willimantic Upgrade Project
Windham and Lebanon, Connecticut
DRAFT Staff Report
September 3, 2021

Introduction

On June 11, 2021, the Connecticut Siting Council (Council) received a petition (Petition) from The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource) for a declaratory ruling pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed Card to Willimantic Upgrade Project within existing Eversource electric transmission line right-of-way (ROW) and on Eversource-owned property. The project consists of the replacement and reconductoring of electric transmission line structures along approximately 0.77 mile of the existing 115 kilovolt (kV) #1210 Line and approximately 0.91 mile[1] of the existing 115-kV #1220 Line between Willimantic Substation in Windham and Card Street Substation in Lebanon.

On June 15, 2021, the Council sent correspondence to the Towns of Windham and Lebanon (collectively, the Towns) stating that the Council has received the Petition and invited the Towns to contact the Council with any questions or comments by July 14, 2021. No comments have been received.

The Council submitted interrogatories to Eversource on July 26, 2021. Eversource submitted responses to the interrogatories on August 4, 2021, and a revised response to interrogatory no. 4 on August 5, 2021.

Pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act, an administrative agency is required to take action on a petition within 60 days of receipt, and therefore, August 13, 2021 was the deadline for action on this Petition. In response to the Coronavirus pandemic, Governor Lamont issued Executive Order No. 7, as subsequently extended, that provides for a 90-day extension of statutory and regulatory deadlines for administrative agencies. Thus, the deadline under CGS §4-176(e) is extended to November 11, 2021.

The purpose of the proposed project is to improve system reliability on the #1210 Line and the #1220 Line by replacing 13 wood pole structures and one steel lattice structure due to asset condition issues. The project would also reconfigure the #1220 Line crossing of the 69-kV #800 and #900 lines outside of Card Substation to comply with current industry standard of practice and increase clearances from the #1220 Line to the substation fence and to the ground to be in compliance with the National Electrical Safety Code (NESC).

Municipal and Abutter Notice

In February 2021, Eversource consulted with the Towns regarding the proposed project and provided a briefing on the project. In May 2021, Eversource provided written notice of the Petition filing to the Towns.

Also in February 2021, Eversource initiated outreach to property owners along the project route. All abutting property owners were notified of the project and provided information on how to obtain additional information, as well as how to submit comments to the Council. No comments have been received to date.

For the construction phase of the project, Eversource will inform adjacent property owners prior to construction as well as during construction and restoration.

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[1] 0.81 mile of the #1220 Line upgrade would be within existing Eversource ROW. An additional 0.10 mile of #1220 Line upgrade would be on Eversource-owned property that connects the southern end of the ROW to Card Substation.

Existing Project Area

The existing project area includes approximately 0.47 mile of existing Eversource ROW that is located between Card Substation and Willimantic Substation. The #1210 Line exits Card Substation to the north on single-circuit Structure No. 6502A. The #1220 Line exits Card Substation to the northwest on single-circuit Structure No. 6500 and continues on single-circuit Structure Nos. 6501 and 6502. The #1210 and #1220 Lines then converge on double-circuit Structure No. 6503 and remain co-located on double-circuit Structure Nos. 6503 through 6505. After Structure No. 6505, the two lines separate with the #1210 Line occupying single-circuit Structure Nos. 6506A, 6507A and 6507.5A and the #1220 Line occupying single-circuit Structure Nos. 6506, 6507 and 6507.5. Both lines enter Willimantic Substation and share double-circuit lattice Structure No. 6508.

Willimantic Substation, Card Substation and Structure Nos. 6500 through 6504 and 6508 are all located on Eversource property. All other existing structures are located within the Eversource ROW. The width of the existing ROW from Willimantic Substation south to a point immediately north of Structure No. 6504 ranges from approximately 160 to 162 feet.

Proposed Project

The project consists of conductor, shield wire and structure replacements along portions of the #1210 Line and the #1220 Line. The structure replacements are necessary due to asset condition issues and NESC compliance. The existing wood pole structure asset condition issues include, but are not limited to, rotten and split pole tops; woodpecker damage; cracks; decay; insect damage; and weathered and broken hardware. The steel lattice structure to be replaced has rust and a spalling concrete foundation.

The design of some of the replacement structures on the #1220 Line would change from the current horizonal H-frame configuration to a vertical monopole configuration to reduce reliability risks because the #1220 Line currently crosses under the 69-kV #800 and #900 Lines shortly after exiting Card Substation. The new configuration would meet the current industry standard of practice for higher voltage lines to cross over lower voltage lines. The proposed reconfiguration would also improve the clearances between the #1220 Line and the Card Substation fence and also the ground; this would allow for normal full-temperature operation of the line which is currently de-rated to meet the vertical clearance requirements of the NESC. The project is identified in the March 1, 2021 Eversource Ten-Year Forecast of Electric Loads and Resources.

The project entails the following:

a) Replace 1 double-circuit steel lattice structure within Willimantic Substation with two weathering steel monopole structures. The proposed monopoles would be constructed in a vertical configuration adjacent to the existing lattice structure within the existing Willimantic Substation yard;
b) Replace 13 H-frame wood pole structures with 10 H-frame weathering steel pole structures and 3 weathering steel monopole structures. The single and double-circuit configuration of the existing H-frame structures would remain the same with the replacement structures;
c) Replace the existing 556 and 795 aluminum conductor steel reinforced (ACSR) conductors along the #1220 Line for approximately 0.10 mile from the #1220 Line Card Substation terminal structure to Structure No. 6502. The proposed replacement conductor is 795 aluminum conductor steel supported (ACSS);
d) Replace the existing Alumoweld overhead static wire with optical ground wire (OPGW) on all #1210 Line structures between Card and Willimantic Substations;
e) Replace the existing Alumoweld static wire with OPGW on #1220 Line structures from Structure No. 6502 to Willimantic Substation;
f) Replace new 19#10 Alumoweld static wire along the #1220 Line for approximately 0.10 mile from the #1220 Line Card Substation terminal structure to Structure No. 6502;
g) Install new dielectric self-supporting (ADSS) cable underground from the terminal structures to the control enclosure located inside both the Willimantic and Card Substations;

h) Install new hardware, insulators, lightning arrestors and counterpoise; and
i) Improve and/or install access road and work pads to support the project.

The heights of the existing structures range from 47.5 to 80 feet above ground level (agl). The proposed replacement structures would range in height from 61 to 100 feet agl.

The total estimated cost of the project is approximately $6.44M. The project does not include installation or modification of Pool Transmission Facilities (PTFs)[2]. Thus, the entire cost would be allocated to Eversource customers.

Project Construction and Work Procedures

Eversource would utilize 23 New Park Avenue, Franklin for a staging/laydown area. The staging area is approximately 3.2 acres and would be used for storage of construction materials, equipment, tools and supplies. Office trailers and storage containers may also be located at the staging area, as well as parking for construction vehicles and construction crews' personal vehicles. Appropriate erosion and sedimentation (E&S) controls would be installed and maintained until completion of construction in accordance with Project permitting and Eversource Best Management Practices (BMPs).

Eversource would utilize existing access roads to the extent possible. However, some new access roads would be required. Construction matting would be utilized to install temporary access roads through wetland areas to reach certain structure locations.

Existing access roads may require improvement, e.g. grading, trimming adjacent vegetation, and widening and/or reinforcement. Access road widening would be performed as necessary to provide a maximum travel surface of about 16 feet wide (or greater at turning or passing locations) for construction equipment.

Construction areas would be isolated by establishing E&S controls in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* and Eversource BMPs. Typical E&S control measures include, but are not limited to, straw blankets, hay bales, silt fencing, gravel anti-tracking pads, soil and slope protection, water bars, check dams, berms, swales, plunge pools, and sediment basins. A project-specific Stormwater Pollution Control Plan (SWPCP) would be developed for registration under a DEEP Stormwater Permit.

At each transmission line structure location, a work pad would be constructed to stage material for final on-site assembly and/or removal of structures, to pull conductors and to provide a safe, level work base for construction equipment. Work pads for the project would typically be 100 feet by 100 feet, but they may be larger in some areas due to terrain, spacing between existing and proposed structures and in areas where machinery is necessary for pulling conductors though an angled structure. Most work pads would be graveled, though some would use temporary matting to protect sensitive areas such as wetlands.

The proposed structures would have either drilled (caisson) foundations or direct embed foundations. Foundation installation work would require the use of equipment such as drill rigs, pneumatic hammers, augers, dump trucks, concrete trucks, grapple trucks, and light duty trucks. If groundwater is encountered, pumping (vacuum) trucks or other equipment would be utilized. The water would then be discharged in accordance with local, state and federal requirements.

[2] Per page 22 of the 2019 ISO-NE Regional System Plan, PTFs are facilities rated 69-kV or above owned by the participating transmission owners over which ISO-NE has operating authority in accordance with the terms set forth in the Transmission Operating Agreements.

New structure sections, components and hardware would be delivered by flatbed truck to the structure locations for assembly by crane and bucket trucks. After assembly, the area around the direct embed foundations would be backfilled with processed gravel.

New conductors and OPGW would be installed after the structures are installed. The required equipment would include cable reels, pulling and tensioning rigs, and bucket trucks.

The removal of the existing conductor and static wire would take place during the active installation of the new conductor and OPGW because the existing conductor and static wire would be used as pulling lines, if possible. Conductor dead-ending and splicing would be accomplished with pressed hardware. The existing structures would be removed after the new conductor, static wire and OPGW are installed.

After the new structures are installed, the rebuilt line is energized, and the existing structures are removed, ROW restoration activities would commence. Restoration work would include the removal of construction debris, signage, flagging, temporary fencing, and construction mats/pull pads/work pads. Affected areas would be re-graded as practical and stabilized via revegetation or other measures before removing temporary E&S controls. ROW restoration would be performed in accordance with Eversource BMPs and in consultation with affected property owners.

Upon completion of the project, access roads and work pads located in uplands would be left in place to facilitate future transmission line maintenance. If a property owner requests their removal, Eversource would work with such property owner regarding mitigation options, including removal.

Construction-related traffic would utilize public roads in the project area to access the ROW. However, generally, project-related traffic would be expected to be temporary and highly localized in the vicinity of ROW access points and at the staging area. Due to the phasing of construction work, project-related traffic is not expected to significantly affect transportation patterns or levels of service on public roads. Notwithstanding, Eversource or its contractor would work with the Towns and the Connecticut Department of Transportation, as appropriate, to develop and implement traffic management procedures as necessary.

Construction is expected begin in the fall of 2021. Normal work hours would be Monday through Saturday from 7:00 a.m. to 7:00 p.m. Sunday work hours or evening work (i.e. after 7:00 p.m.) may be necessary due to delays caused by unforeseen circumstances, inclement weather and/or outage constraints; in the event that this is necessary, Eversource would provide notice to the Council and the Town(s).

Environmental Considerations

Tree clearing for the project would be performed near existing Structure Nos. 6507.5, 6507.5A, 6507, 6507A, 6506, and 6506A. This would result in an estimated total permanent conversion of 0.22 acre of forest habitat to scrub-shrub or herbaceous habitat areas, and approximately 0.04 acre at Structure Nos. 6507A and 6507 would be permanently converted to gravel to accommodate a work pad. Given the overall limited extent of forest conversion to shrubland or emergent vegetation, this is not expected to result in a significant adverse impact to forested habitat. Furthermore, additional shrubland and early successional habitat along the ROW or access roads would be beneficial for many species of wildlife due to declining shrubland habitat in New England.

A total of 6 wetland areas and 3 watercourses are located along the ROW. No transmission structures would be located within these areas. The total temporary impacts to these resource areas due to the use of temporary matting would be approximately 0.41 acre. See table below.

Wetland/Watercourse ID	200-Scale Petition Mapping Sheet No.	Wetland/Watercourse Effects (± square feet)		
		Temporary (Matting)	Permanent (Structures)	Secondary (Selective Tree Removal)
W01	03	2,004	0	0
W02	03	4,851	0	0
W03	03	10,902	0	0
W04/S01	02	0		
W05/S02 (Willimantic River)	02	0	0	0
W06/S02 (Willimantic River)	02	0	0	0
	Total	17,757 (0.41 acre)		

All temporary matting would be removed upon project completion. Restoration of the wetlands after mat removal is not expected to be necessary. The only potential restoration measures would be removing debris caused during construction mat removal such as pieces of wood that have fallen off the mats or minor correction of unintended drag marks by using hand shovels.

The project area wetlands were inspected for potential vernal pool habitat in October 2020. No vernal pools were confirmed with the project area wetlands[3].

The project ROW extends across a 100-year Federal Emergency Management Agency-designated flood zone. Structure Nos. 6507.5 and 6507.5A are proposed to be located within the 100-year flood zone. Structure Nos. 6508 and 6508A are located within the 500-year flood zone. Since these structures would replace existing structures already within the same floodplain, no impacts to the floodplain are expected.

There are no DEEP-designated Aquifer Protection Areas within or proximate to the Project ROW. The Project is not located within a public water supply watershed. No public supply reservoirs or public water supply wells are located within the Project area. Additionally, no private water supply wells were observed within the Project area during field investigation activities. To be protective of water quality, Eversource would require its contractors to employ best practices for the proper storage, secondary containment, and handling of diesel fuel, motor oil, grease, and other lubricants. Construction activities would conform to Eversource BMPs; a SWPCP; and a Spill Prevention and Control Plan.

In February 2021, Eversource submitted a Natural Diversity Database (NDDB) review request to DEEP for the proposed structure replacement activities within the buffered NDDB habitat area. In March 2021, Eversource received a response from DEEP NDDB that identified one state-listed species known to occur within or proximate to the project area. Eversource would implement species-specific protection and mitigation measures to avoid impacts to this state-listed species and its habitat during project construction.

The northern long-eared bat (NLEB), a federally-listed Threatened Species and state-listed Endangered species, has a range that includes the State of Connecticut. However, there no known roost trees within 150 feet of the project area, and the nearest NLEB hibernaculum is located in the Town of East Granby, approximately 30 miles from the project area.

[3] There is one confirmed vernal pool along an access road west of Card Substation, but it was mapped during a previous delineation for a different project.

The nearest publicly-accessible recreational resource is the Air Line State Park Trail (ALSPT). ALSPT is an approximately 22-mile long trail between East Hampton and Windham. ALSPT crosses the transmission line ROW near Structure Nos. 6507.5 and 6507.5A. Eversource would coordinate with DEEP park personnel to develop and implement measures to maintain public safety during construction and avoid or minimize short-term impacts to users of this recreational resource.

A Phase 1A Cultural Resources Assessment (Phase 1A Assessment) was conducted, and it identified two National Register of Historic Places (NRHP) districts, one NRHP property and one archaeological site within 500 feet of the proposed work areas. The two NRHP districts are Prospect Historic District and Main Street Historic District in Willimantic. The individual NRHP property is Willimantic Freight House & Office in Willimantic. The archeological site is located within Eversource ROW in Lebanon. These four cultural resources would not be impacted by the project.

Six of the proposed work pad locations and four access road locations were identified to have moderate to high potential for archaeological sensitivity. These ten locations were evaluated via a pedestrian survey. Subsequently, eight of these locations were reclassified as no/low sensitivity areas, and two were further evaluated using shovel pit testing. Based on the shovel test pit results, no further archaeological investigation is necessary.

There would be no permanent changes to existing ROW sounds levels after completion of the Project. Noise associated with construction activities is exempt from DEEP Noise Control Regulations. Notwithstanding, any construction-related noise would be short-term and localized in the vicinity of work sites.

The Project ROW does not cross a locally or state designated scenic roadway.

The project would result in some changes to the visual character of the transmission line, but the changes are not expected to be significant. 11 of the 14 replacement structures would increase in height by 15 feet or less relative to the heights of the existing structures that they would replace, and the replacement structures would be located as close as possible to the existing structure locations. One of the 14 replacement structures would be an existing 80-foot tall lattice structure within Willimantic Substation that would be replaced with two 85-foot single-circuit monopoles. The replacement monopoles are not expected to significantly affect the visual character of the substation, and the height increases would be limited to approximately 5 feet.

Two of the 14 replacement structures (i.e. Structure Nos. 6500 and 6501) would be 90 feet and 100 feet agl and thus significantly higher than the 42.5 foot and 39 foot structures that they would replace; however, these replacement structures would not be as tall as other existing structures located outside of Card Substation. Additionally, the visual impacts of the replacement structures would be further mitigated by utilizing weathering steel to provide a comparable appearance to the existing H-frame wood structures. Thus, the project would not result in a substantial change to the existing visual character of the line in this area.

Electric and Magnetic Fields

Electric fields (EF) are produced whenever voltage is applied to electrical conductors and equipment. Electric fields are typically measured in units of kilovolts/meter (kV/m). As the weight of scientific evidence indicates that exposure to electric fields, beyond levels traditionally established for safety, does not cause adverse health effects, and as safety concerns for electric fields are sufficiently addressed by adherence to the NESC, as amended, health concerns regarding Electric and Magnetic Fields (EMF) focus on MF rather than EF. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has established a guideline of 4.2 kV/m.

The Project route contains an existing transmission line that emits magnetic fields (MF). In the United States, no state or federal exposure standards for 60-Hertz MF based on demonstrated health effects have been established, nor are there any such standards established worldwide. However, the ICNIRP has established a level of 2,000 milliGauss (mG), based on extrapolation from scientific experimentation, and the International Committee on Electromagnetic Safety (ICES) has calculated a guideline of 9,040 mG for exposure to workers and the general public, and recognized in the Council's *Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut.*

Eversource reviewed EMF levels associated with the Project. Pre- and post-construction EMF levels (based on average annual loads for MF) are presented in the table below.

Distance from Proposed Transmission Line (feet)	Magnetic Fields (mG)		Electric Fields (kV/m)	
	Existing	Proposed	Existing	Proposed
-300	0.5	0.5	0.0	0.0
-275	0.5	0.5	0.0	0.0
-250	0.5	0.5	0.0	0.0
-225	0.6	0.6	0.0	0.0
-200	0.7	0.6	0.0	0.0
-175	0.7	0.7	0.0	0.0
-150	0.8	0.8	0.0	0.1
-125	1.0	0.9	0.1	0.1
-100	1.2	1.1	0.1	0.2
-75	1.6	1.8	0.3	0.4
-50	4.0	4.9	0.8	0.9
-25	11.8	13.2	0.5	0.5
0	15.6	16.3	1.4	1.5
25	12.0	13.4	0.5	0.5
50	4.2	5.0	0.8	0.9
75	1.7	1.8	0.3	0.4
100	1.2	1.1	0.1	0.2
125	1.0	0.9	0.1	0.1
150	0.8	0.8	0.0	0.1
175	0.7	0.7	0.0	0.0
200	0.7	0.6	0.0	0.0
225	0.6	0.6	0.0	0.0
250	0.5	0.5	0.0	0.0
275	0.5	0.5	0.0	0.0
300	0.5	0.4	0.0	0.0

All EF and MF values would be below the ICNIRP exposure guidelines of 4.2 kV/m and 2,000 mG, respectively.

Aviation Safety

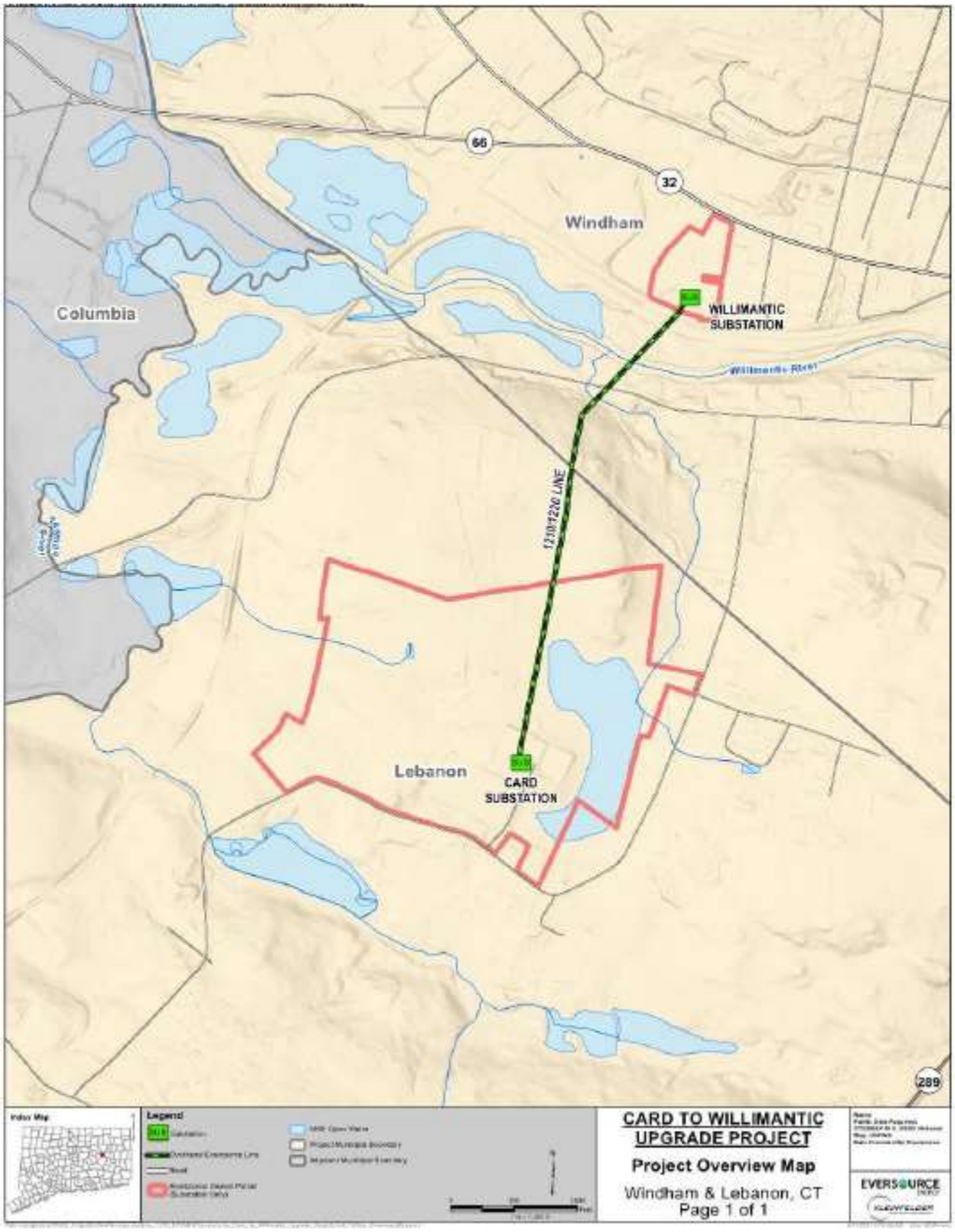
Notice to the Federal Aviation Administration (FAA) was required for proposed replacement Structure Nos. 6500, 6501, 6502, 6502A, 6503, 6504, 6505, 6506, 6506A, 6507, and 6507A. Thus, Eversource filed FAA requests for obstruction evaluation for these structures, and FAA determined that no marking and/or lighting would be required for any of these proposed replacement structures.

Staff Recommendation

If approved, staff recommends the following condition:

1. Approval of any project changes be delegated to Council staff.

Project Location



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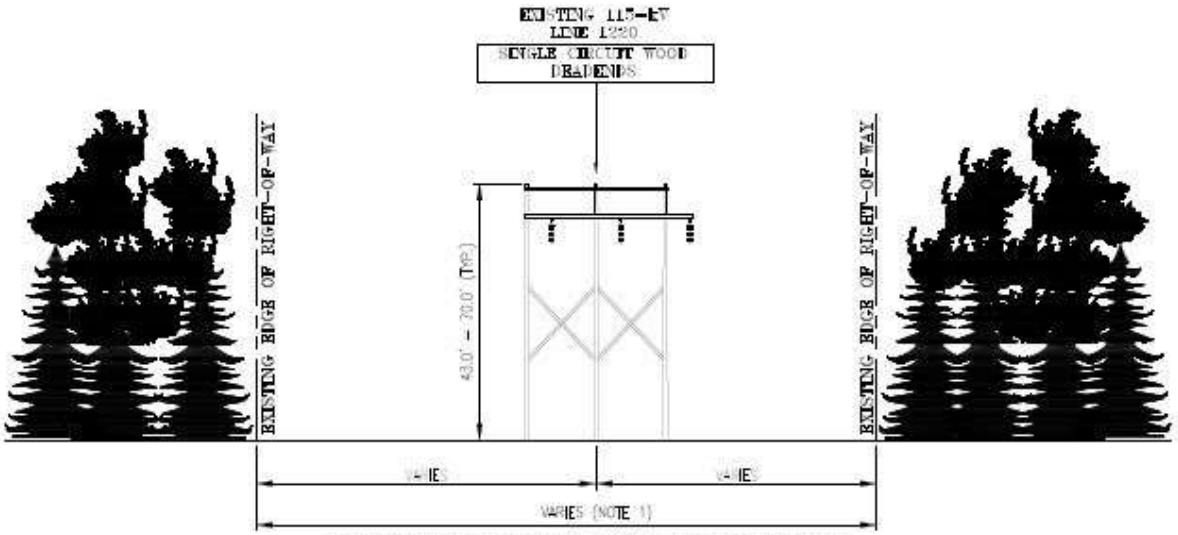
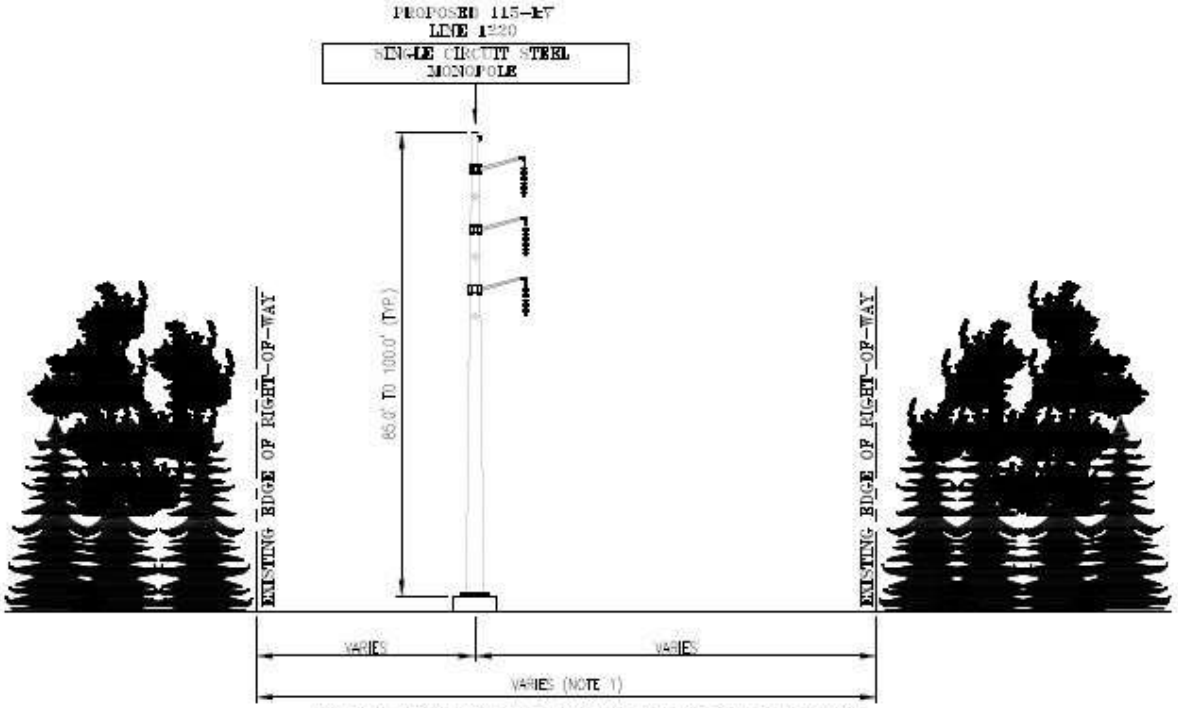


EXISTING R.O.W. CONFIGURATION
SINGLE CIRCUIT WOOD DEADENDS
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWN OF LEBANON, CONNECTICUT
0.1 MILES BETWEEN CARD S/S - STR. #6502



PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL MONOPOLES
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWN OF LEBANON, CONNECTICUT
0.1 MILES BETWEEN CARD S/S - STR. #6502

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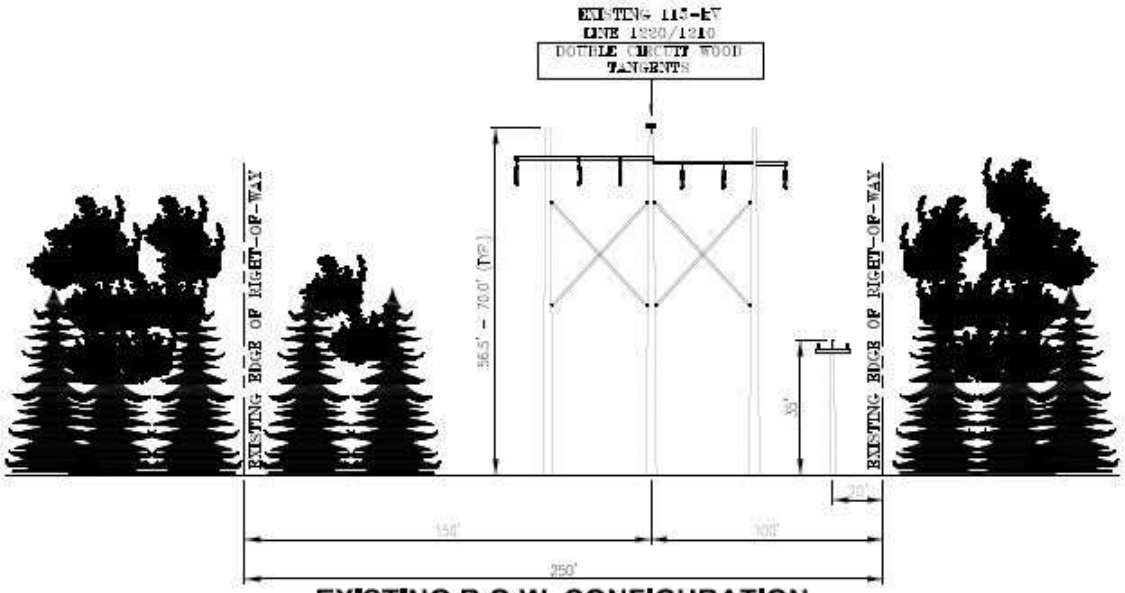
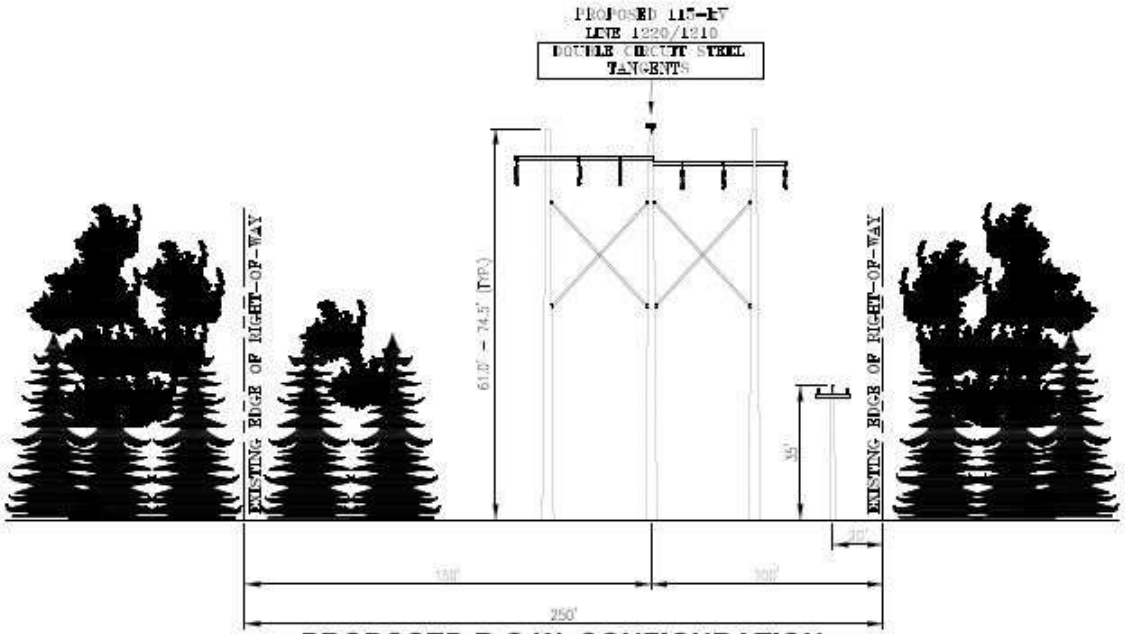


EXISTING R.O.W. CONFIGURATION
DOUBLE CIRCUIT WOOD TANGENTS
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWNS OF LEBANON & WINDHAM, CONNECTICUT
0.46 MILES BETWEEN STR. #6503 - STR. #6507



PROPOSED R.O.W. CONFIGURATION
DOUBLE CIRCUIT STEEL TANGENTS
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWNS OF LEBANON & WINDHAM, CONNECTICUT
0.46 MILES BETWEEN STR. #6503 - STR. #6507

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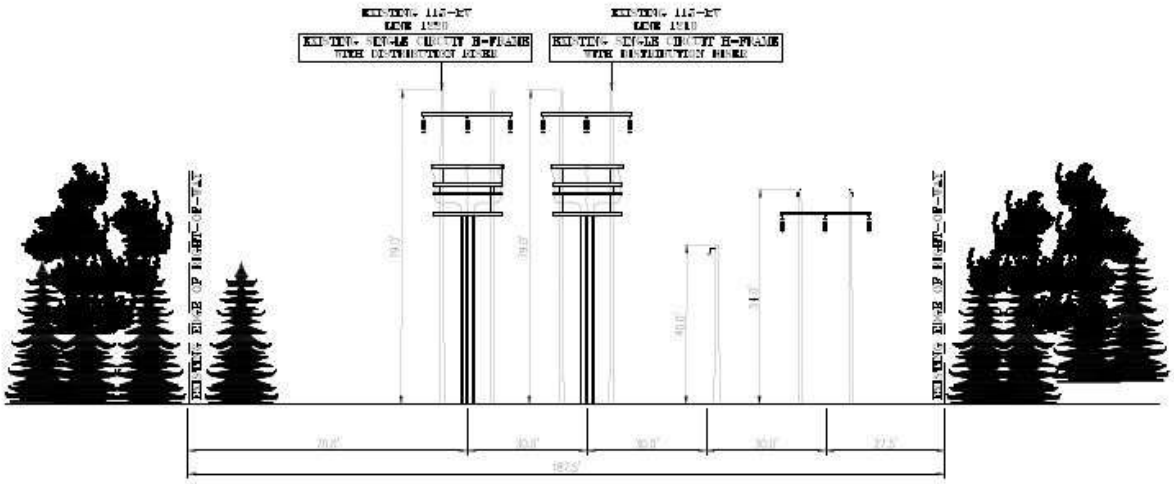
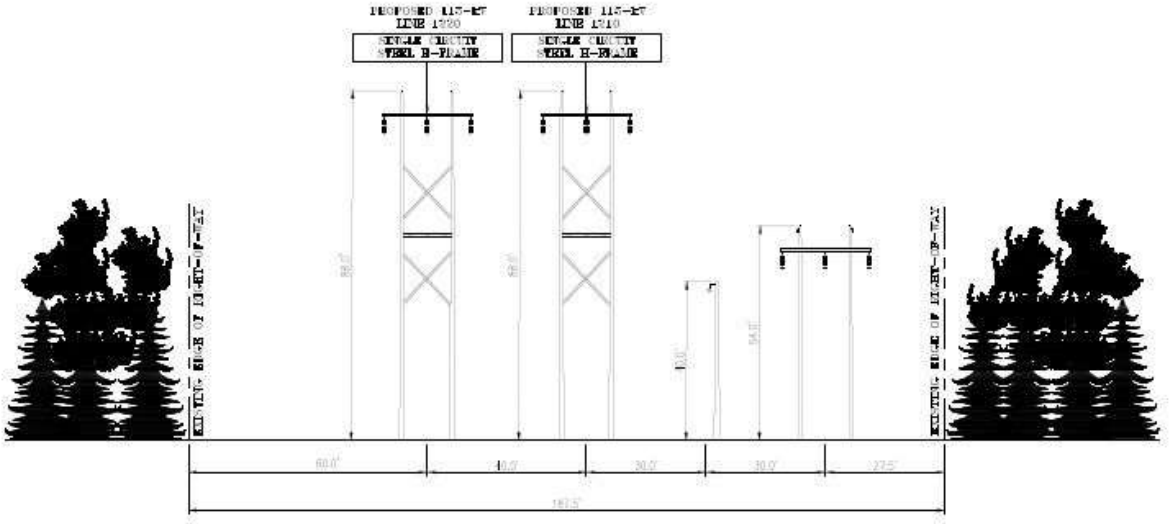


EXISTING R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL TANGENTS WITH DISTRIBUTION UNDERBUILD
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWN OF WINDHAM, CONNECTICUT
STR. #6507.5 & STR. 6507.5A



PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL TANGENTS WITH DISTRIBUTION UNDERBUILD
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWN OF WINDHAM, CONNECTICUT
STR. 6507.5 TO STR. 6507.5A

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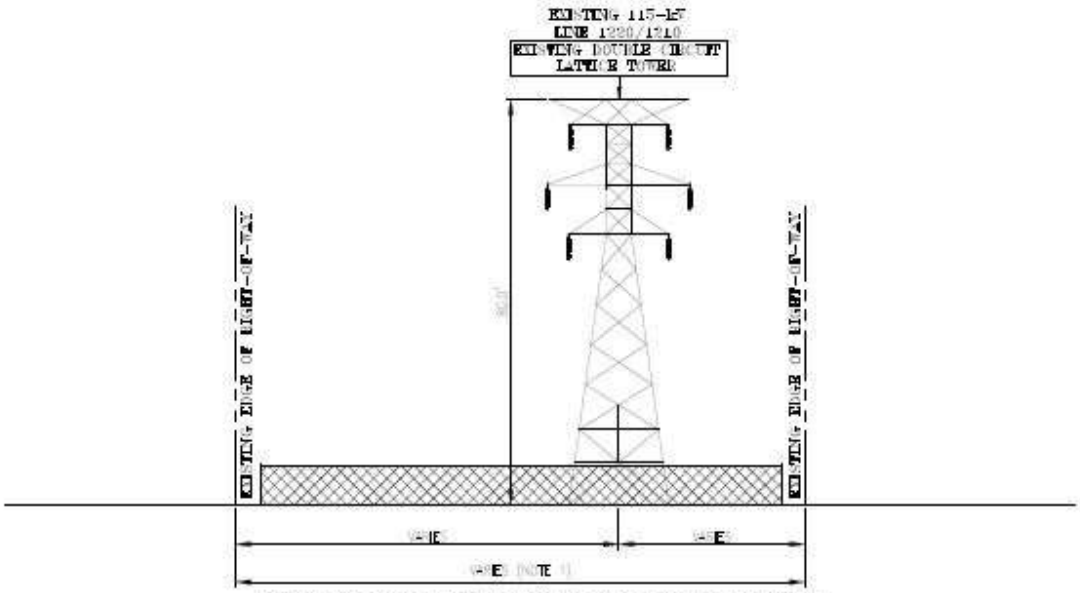
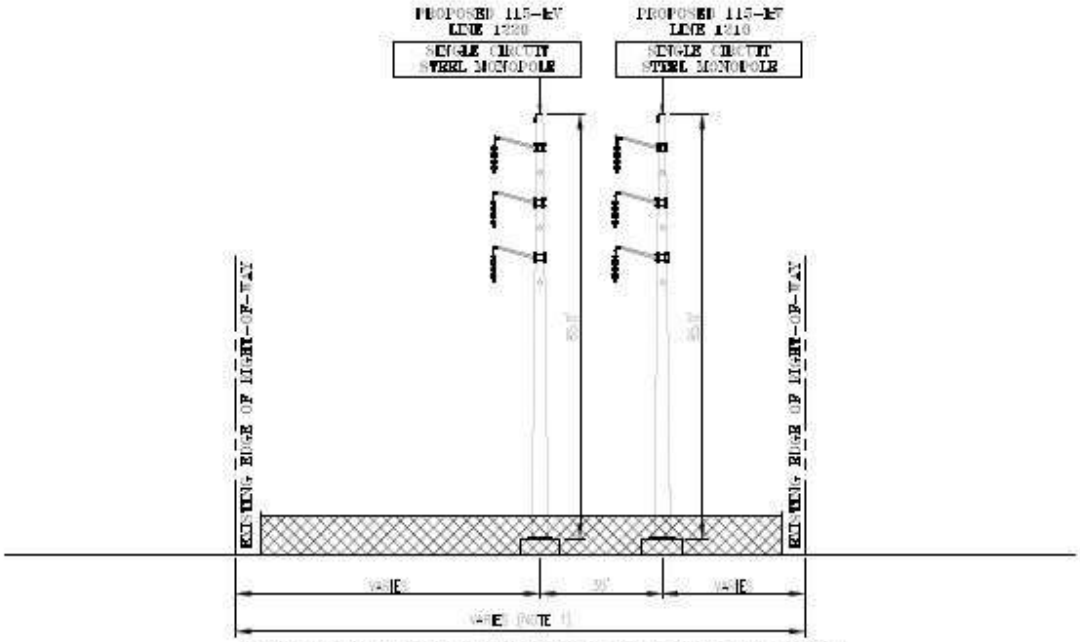


EXISTING SUBSTATION CONFIGURATION
DOUBLE CIRCUIT LATTICE TOWER
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWN OF WINDHAM, CONNECTICUT
STR. #6508



PROPOSED SUBSTATION CONFIGURATION
SINGLE CIRCUIT STEEL MONOPOLES
LOOKING TOWARD WILLIMANTIC SUBSTATION,
TOWN OF WINDHAM, CONNECTICUT
STR. 6508 & 6508A