DRAFT

Petition No. 1576
The Connecticut Light and Power Company d/b/a Eversource Energy
Middletown Substation to Oxbow Junction Upgrade Project
Middletown and Haddam

Staff Report
August 25, 2023

Introduction

On May 24, 2023, the Connecticut Siting Council (Council) received a petition from The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource) for a declaratory ruling pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k, for the Middletown Substation to Oxbow Junction Upgrade Project (Petition or Project) within existing Eversource electric transmission line right-of-way (ROW) in the Town of Haddam and the City of Middletown (municipalities).

The Project consists of the replacement of electric transmission line structures and the replacement of shield wire with optical ground wire (OPGW) on the 115-kV 1620 Line along approximately 5.5 miles of existing ROW between Middletown Substation in Middletown and Oxbow Junction in Haddam, and related electric transmission line and substation improvements.

On May 19, 2023, in compliance with Regulations of Connecticut State Agencies (RCSA) §16-50j-40, Eversource provided notice of the proposed Project to the municipalities and abutting property owners.

On May 30, 2023, the Council sent correspondence to the municipalities stating that the Council has received the Petition and invited the municipalities to contact the Council with any questions or comments by June 23, 2023. No comments were received from any of the municipalities.

Under RCSA §16-50j-40, neither Eversource nor the Council is required to provide notice to the state agencies listed in CGS §16-50j(g) when a petition for a declaratory ruling for modifications to an ***existing facility*** is submitted to the Council. On June 29, 2023, the Council on Environmental Quality submitted comments on the Project.[1]

Under CGS §16-50x, the Council retains exclusive jurisdiction over the existing electric transmission line and substation facility sites. Under RCSA §16-50j-2a(29), "site" means a contiguous parcel of property with specified boundaries, including, but not limited to, the leased area, right-of-way, access and easements on which a facility and associated equipment is located, shall be located or is proposed to be located. The Council cannot delegate its statutory authority to any other entity and it is not required to abide by comments from state agencies.[2]

The Council submitted interrogatories to Eversource on June 29, 2023. Eversource submitted responses to the interrogatories on July 19, 2023.

---

[1] https://portal.ct.gov/-/media/CSC/3_Petitions-medialibrary/Petitions_MediaLibrary/MediaPetitionNos1501-1600/PE1576/ProceduralCorrespondence/PE1576-SACRCDPI_CEQ-a.pdf

[2] *Corcoran v. Connecticut Siting Council*, 284 Conn. 455 (2007)

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. On July 20, 2023 pursuant to CGS §4-176(e), the Council voted to set the date by which to render a decision on the Petition as no later than November 20, 2023, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

Notice and Community Outreach

Eversource initiated outreach to the municipalities in February 2023. None of the municipalities commented on the Project.

Eversource initiated outreach to property owners along the Project route in January and February 2023. 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. During the construction phase of the Project, Eversource would maintain contact with the municipalities and abutting property owners to inform them of construction activities. None of the abutting property owners commented on the Project.

Existing Facility Site

The existing facility site includes approximately 5.5 miles of Eversource ROW, partially on Eversource owned property, through rural residential, state forest, agricultural and undeveloped land. It also crosses State Route 9, a divided four-lane highway. Approximately 0.4 miles of the ROW is between Middletown Substation and Middletown Junction, approximately 3.1 miles of the ROW is between Middletown Substation and Chestnut Junction and 2.0 miles of the ROW is between Chestnut Junction and Oxbow Junction.

The ROW was established in 1958. The approximate 3.1-mile segment of the ROW between Middletown Junction and Chestnut Junction is occupied by the 115-kV 1050 line.

Eversource's easements for the existing ROW grant Eversource rights to enter and travel upon and transport materials over and across the right of way and to erect, construct, repair, maintain, replace, relocate, inspect, operate and remove upon, infrastructure related to the conduction of electricity. The easements also grant rights to trim, cut, and remove vegetation within the ROW.

The Project ROW is approximately 185 feet to 400 feet wide. It is maintained over its entire width.[3] No expansion of the ROW is proposed.

Telecommunications antennas are collocated on Structure 14027. Equipment would be relocated to the replacement structure by the telecommunications carrier.

Vegetation management was last performed in the Project ROW in October 2021.

Project Development

The purpose of the proposed Project is to improve system reliability on the 1620 Line by replacing electric transmission line structures that are deteriorated as well as obsolete copper shield wire and to meet National Electrical Safety Code (NESC) standards.

Prior to submitting this Petition, Eversource performed limited work on the subject transmission line segment in Sub-Petition No. 1293-HM-01 in the municipalities, approved by the Council on December 10, 2018 to

[3] According to the Federal Energy Regulatory Commission, "full right-of-way" means the portion of land for which a utility has documented legal rights to build and maintain transmission facilities. Managing a narrower maintained right-of-way, rather than the full right-of-way, is a relatively common industry practice, though not a best practice.

replace 41 structures on the 1620 Line, among others. Once the Project is complete, a total of 13 structures would remain on the 1620 Line that were not replaced as part of the Project or Sub-Petition No. 1293-HM-01.

The Project is identified in the 2023 Eversource Forecast of Loads and Resources Report and in the June 2023 Independent System Operator New England, Inc. (ISO-NE) Regional System Plan Asset Condition List.[4] There are no generation facilities listed on the ISO-NE interconnection queue associated with the proposed Project.

Cost

The total estimated cost of the Project is approximately $7.32M. The entire Project cost would be eligible for regional cost allocation as it is associated with Pool Transmission Facilities.[5] Pending a final determination from ISO-NE, total costs are expected to be allocated[6] as follows:

Eversource Connecticut ratepayers[7]	19.2%	($1.41M)
Other Connecticut ratepayers[8]	6.0%	($0.44M)
Other New England ratepayers[9]	74.8%	($5.47M)
Cost Total	100%	($7.32M)

Proposed Project

The Project is proposed to address identified asset condition deficiencies by replacement of deteriorated structures that are approaching the end of their service life, and structures that cannot structurally support the new OPGW. It includes the replacement of six wood structures and with six weathering steel structures.

The Project requires taller structures to meet NESC standards, including, but not limited to, conductor clearance requirements. The NESC is the authoritative code for ensuring the continued practical safeguarding of persons and utility facilities during the installation, operation and maintenance of electric power and communications utility systems, including substations, overhead lines and underground lines.

NESC clearance requirements for conductor sway due to wind (blowout) are based on established horizontal clearance requirements during specific wind events to buildings (9.1 feet of clearance to the ROW edge for 115-kV conductors). Transmission lines are designed with the assumption that a building could be erected at any location along the ROW edge. To provide a buffer for construction tolerance, Eversource typically designs transmission corridors to have 11 feet of clearance to the ROW edge during specific wind events.[10]

NESC clearance requirements for conductor uplift and insulator swing were factored into the transmission line design. Conductor uplift is a condition where wire on a structure pulls up on the hardware instead of hanging down vertically. It typically occurs in spans where structures are located at different ground levels or have different heights. The amount of insulator swing on a transmission line depends on conductor tension, temperature, wind velocity, insulator weight, ratio of weight span to wind span, and line angle. These issues can be mitigated by taller structures in certain locations to increase the load tension of the insulators and the span weight load of the conductors.

---

[4] Entry #378.
[5] ISO-NE defines Pool Transmission Facilities as 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.
[6] These allocations are estimates based on 2022 actual loads.
[7] Electrical service customers of Eversource and located within Connecticut.
[8] Electrical service customers located within Connecticut but outside of Eversource's service territory.
[9] Electrical service customers located within New England but outside of Connecticut.
[10] Petition 1527, response to Council interrogatory 19

1620 Line - Oxbow Junction to Middletown Substation

The 1620 Line is a 115-kV line supported by a mix of wood and weathering steel structures installed in 1958. The 1620 Line consists of 556 "Dove" Aluminum Conductor Steel Reinforced (ACSR) and 3/8-inch copperweld type static wire.

Project work consists of the following:

a) Replace five three-pole wood angle structures with five three-pole weathering steel angle structures;
b) Replace one wood H-frame structure with two single-circuit weathering steel monopoles;
c) Replace copperweld shield wire with OPGW; and,
d) Install four poles to support all dielectric self-supporting cable (ADSS).

Project Construction

Eversource would establish a temporary equipment staging area at 2175 South Main Street in Middletown. The Project staging area is currently being utilized by Eversource as a staging area for general maintenance-related work on the transmission system.

Eversource would utilize existing ROW access roads to the extent possible during construction. Existing access roads would be improved, as necessary. Multiple access roads are required so that equipment can access various construction zones along the ROW without relying on one point of access for long ROW segments. Construction matting would be utilized to install temporary access roads to protect sensitive areas (e.g. wetlands, lawn, meadow) to reach certain structure locations.

Eversource would obtain a Department of Transportation Encroachment Permit to pull OPGW over Route 9. Eversource would obtain an encroachment permit from Genessee and Wyoming Railroad to pull OPGW over the railroad in Middletown.

Construction areas would be isolated by establishing erosion and sedimentation (E&S) controls in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* and Eversource's April 2022 Best Management Practices Manual for Massachusetts and Connecticut (BMPs).[11] 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. The Stormwater Permit requires the designing qualified professional to conduct the SWPCP Implementation Inspection that confirms compliance with the Stormwater Permit and the initial implementation of all SWPCP control measures for the initial phase of construction. The SWPCP also requires a qualified inspector to inspect the work areas at least once per week and within 24-hours after a rain event that meets certain permit criteria.

The Project is eligible for certification through the U.S. Army Corps of Engineers (USACE)/DEEP Self-Verification Notification process in regard to wetland impact. The self-verification notification forms would be submitted to the USACE - New England District and DEEP prior to the start of Project construction, as required by the SWPCP.

[11] 2022 Eversource Best Management Practices MA_CT

At each transmission line structure location, a work pad would be constructed, if necessary, 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 pad dimensions would vary based on site specific conditions such as terrain, proximity to the existing and replacement structures, and the type of construction activities. Where practical, Eversource would combine work pads if structure replacement work is in close proximity to another structure replacement.

Work pads for the Project would typically be 100 feet by 100 feet for a single structure but could be larger in areas where work pads are combined for multiple structure replacement or where topographic conditions require a larger area. Existing gravel areas along the ROW would be used to pull OPGW. In areas where gravel is not present, temporary matting would be used to establish the pull pad. Additional pull pads specific to OPGW would not be necessary. Temporary work pads would be used in sensitive areas such as wetlands, habitat areas, lawns and agricultural land.

The proposed structures would be supported by concrete foundations or direct-embed foundations depending on location. 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 trucks or other equipment would be utilized. The water would then be discharged in accordance with local, state and federal requirements. New structure sections, components and hardware would be delivered by flatbed truck to the structure locations for assembly by crane and bucket trucks.

After the new structures are installed, existing conductor to remain would be transferred from the old structures to the new structures. Conductor and OPGW work would be conducted using pulling and tensioning rigs, reel trailers, cranes and side booms.

The existing structures would be removed after the conductors/OPGW are installed. The wood poles would be removed and properly disposed at an off-site location. None of the wood pole structures to be replaced occur in wetlands.

After the new structures/conductors/OPGW are installed 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 and work pads that are designated for removal or mitigation. 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 discuss mitigation options with the landowner. Access roads and work pads located within improved areas (such as lawns) would typically be removed and the impacted area restored.

Except for concrete trucks, no construction equipment or vehicle washing would be allowed in the ROW. In accordance with Eversource's BMPs, concrete truck wash-out would occur only in upland areas of the ROW (a minimum of 50 feet from wetlands) to avoid or minimize the potential for impacts to water resources. All wash-out areas would include measures to control and contain wash-water and collect the cement wash-off for off-site disposal.

Project-related traffic would be expected to be temporary and highly localized in the vicinity of ROW access points along public roads 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. Construction warning signs along public roads would be installed near work sites and flaggers or police personnel would be used to direct traffic, if necessary.

Environmental Effects and Mitigation Measures

Work would occur within a maintained ROW and no tree clearing is required. Tree trimming, minor vegetation removal and/or mowing within the managed transmission line ROW corridor may be required to improve work site access, and to develop and/or restore off-ROW access roads and to meet NESC and Eversource conductor clearance standards. Vegetation in the work areas would be cut to an above ground height of 6-8 inches to limit soil disturbance.

Vegetation removal/tree trimming would be accomplished using mechanical methods using flat-bed trucks, brush hogs or other types of mowing equipment, skidders, forwarders, bucket trucks for canopy trimming, and chippers. Vegetation removal activities would be performed in accordance with Eversource BMPs.

A total of 63 wetland areas, 20 watercourses, and 5 waterbodies occur along the ROW or in adjacent off-ROW areas. No permanent effects to wetlands would occur.

Temporary wetland impacts related to construction matting for work pads and/or temporary access within three wetlands and across one watercourse would total approximately 7,863 square feet (0.18-acre). Construction activities within wetlands and across watercourses would be conducted in accordance with Eversource's BMPs.

Three vernal pools (VP) were identified in the Project ROW. No VPs would be directly affected by the Project. Temporary matting is proposed within the vernal pool envelopes (within 100 feet of the VP edge) of two VPs for one access road and one work pad.

The DEEP-approved SWPCP would contain details regarding the E&S control measures that would be implemented to protect wetlands and vernal pools. E&S controls would also be inspected weekly by a qualified inspector, as required by the SWPCP. The Project would comply with the SWPCP, USACE self-verification procedures, and Eversource's BMPs. An Environmental Monitor will conduct weekly inspections of resource areas for the duration of Project construction. In addition, a qualified individual would be on-site to monitor environmental resource protections recommended by the DEEP Natural Diversity Database (NDDB) Determination letter.

Invasive species mitigation measures would be conducted in accordance with Eversource's BMPs. Measures include the cleaning of temporary mats to prevent the introduction of invasive species into wetlands, the cleaning of vehicles, equipment, materials, gear, footwear or clothing of all visible soil and plant material on site known to contain invasives or as near as practical to the invasive area, prior to leaving the Project site.

None of the structure replacements are within a 100-year Federal Emergency Management Agency-designated flood zone.

A portion of the ROW is within a Public Water Supply Watershed in Middletown but no replacement work would occur within the watershed boundary. None of the structure replacements are within a designated Aquifer Protection Area.

To protect subsurface water quality, Eversource would conduct work in accordance with its BMPs which include provisions for the proper storage, secondary containment, and handling of diesel fuel, motor oil, grease and other lubricants.

A DEEP NDDB Determination letter was issued for the Project on February 27, 2023. Eversource would implement DEEP recommended species-specific protection measures during construction, which include, but are not limited to, providing contractor training, time of year best management practices, monitoring, and installation of exclusionary fencing.

Eversource also consulted with the U.S. Fish & Wildlife Service's (USFWS) Information, Planning and Consultation (IPaC) service regarding federally-listed species that may be present within the Project area. The IPaC report identified the northern long-eared bat (NLEB), a federally-listed and state-listed Endangered Species, as occurring in the area. According to the DEEP NLEB database, there are no known NLEB maternity roost trees within 150 feet of the Project area, and no known NLEB hibernaculum is located within the municipalities. Notwithstanding, Eversource would perform additional consultation with USFWS as part of its federal regulatory permitting process and would employ NLEB protective measures recommended by USFWS.

One structure in Middletown was identified as having a potential osprey nest. Eversource would conduct replacement work on this structure in the off-season to avoid nesting impacts.

A Phase 1A Cultural Resources Assessment (Phase 1A) determined that no properties listed, or eligible for listing, on the National Register of Historic Places are located within 500 feet of the Project ROW. One structure work area possessed a potential for moderate to high archaeological sensitivity. Subsequent field evaluations of this area found no evidence of archaeological significance and no further action was recommended.

The State Historic Preservation Office issued a letter dated March 28, 2023 that confirmed no historic properties would be affected by the Project and further concluded that no additional archaeological investigation is warranted.

A portion of the Project ROW traverses Cockaponset State Forest and is crossed by the Mattabesett Trail, a blue-blazed hiking trail maintained by the Connecticut Forest and Parks Association (CFPA). Eversource would coordinate activities with the DEEP and the CFPA regarding necessary temporary trail relocations and implement safety measures, such as notification, signage, barriers to alert trail users of construction.

Disturbed areas would be stabilized using temporary E&S controls such as straw mulch, compost filters, and biodegradable erosion control blankets until final stabilization has been achieved. Seed mixes would be applied in uplands to revegetate disturbed areas. In accordance with Eversource's BMPs, different seed mixes would be used depending on the terrain and soil type of the disturbed areas and may consist of grasses and pollinator habitat.

In accordance with the SWPCP, monthly inspections would be conducted to monitor stabilization measures. A qualified inspector or a qualified professional engineer would inspect the areas and confirm compliance with the post-construction stormwater management requirements.

The Project would require increasing the height of the replacement structures to meet NESC clearance requirements within the existing ROW. The heights of the six existing structures to be replaced range from approximately 47.5 feet to 56.5 feet. Five of the new structures will have a height increase of 4.5 feet, and the remaining structure would have a height increase of 9.5 feet (Structure 14027).[12]

Due to the increase in structure heights to comply with NESC clearance criteria, there would be indirect visual impacts to the surrounding area. The weathering steel replacement structures would be similar in appearance to the existing wood structures.

[12] Structure 14027 hosts a telecommunications carrier. The carrier would submit a filing to the Council for relocation of its telecommunication facility onto the new structure.

Public Safety

There would be no permanent changes to existing ROW sound 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.

There are no existing structures with Federal Aviation Administration marking/lighting. Lighting/marking of any of the replacement structure is not required.

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.*

The Project will not alter the configuration of the conductors and thus, as a result, electric and magnetic fields would change only slightly directly underneath the replacement structures.

Construction Schedule

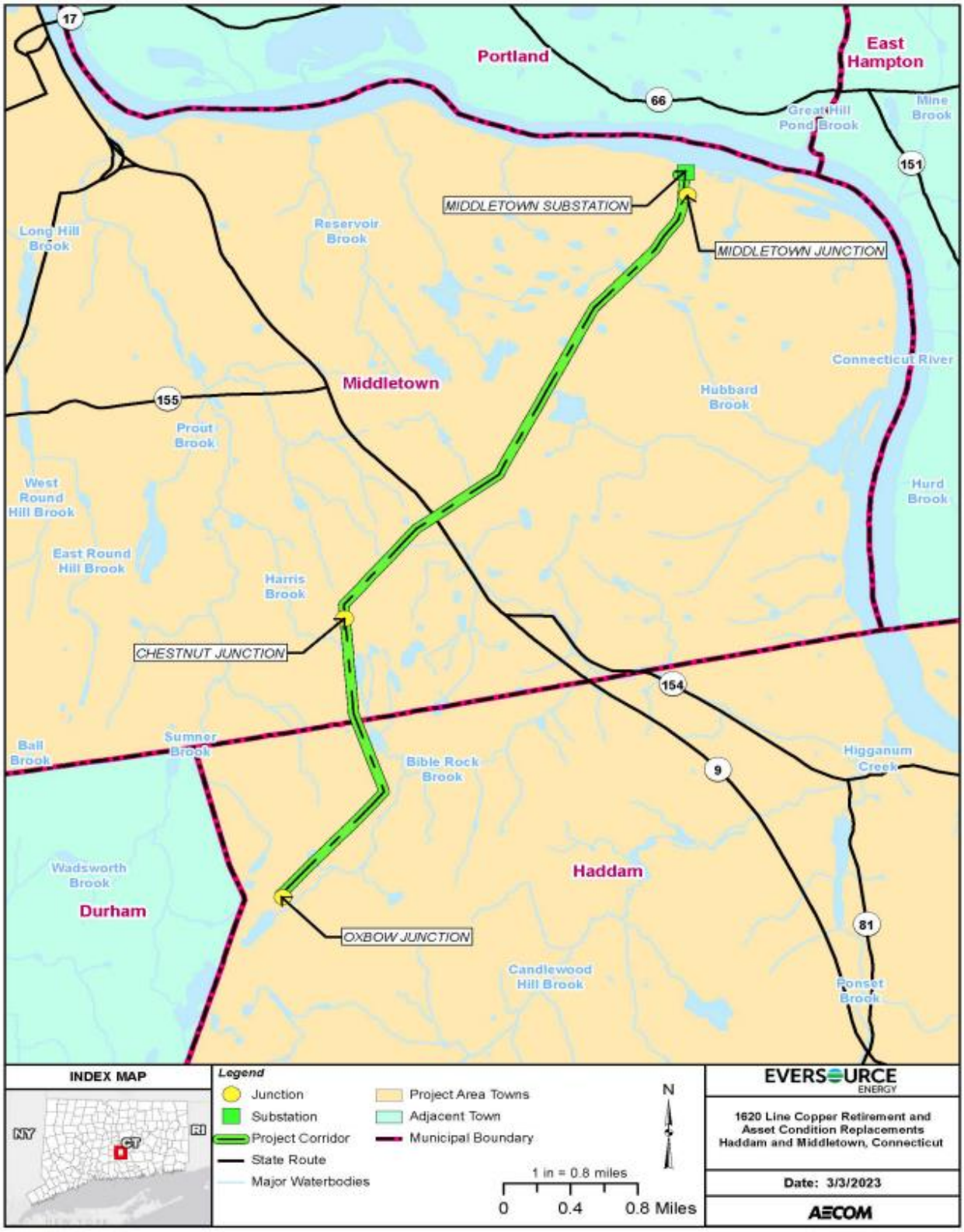
Construction is expected to begin in the fourth quarter of 2023 with an anticipated completion by the end of the second quarter 2024. Normal work hours would be Monday through Saturday from 7:00 a.m. to 7:00 p.m. Sunday work hours or evening work (i.e. after 7:00 p.m.) may be necessary due to unforeseen circumstances, delays caused by inclement weather and/or outage constraints.

Conclusion

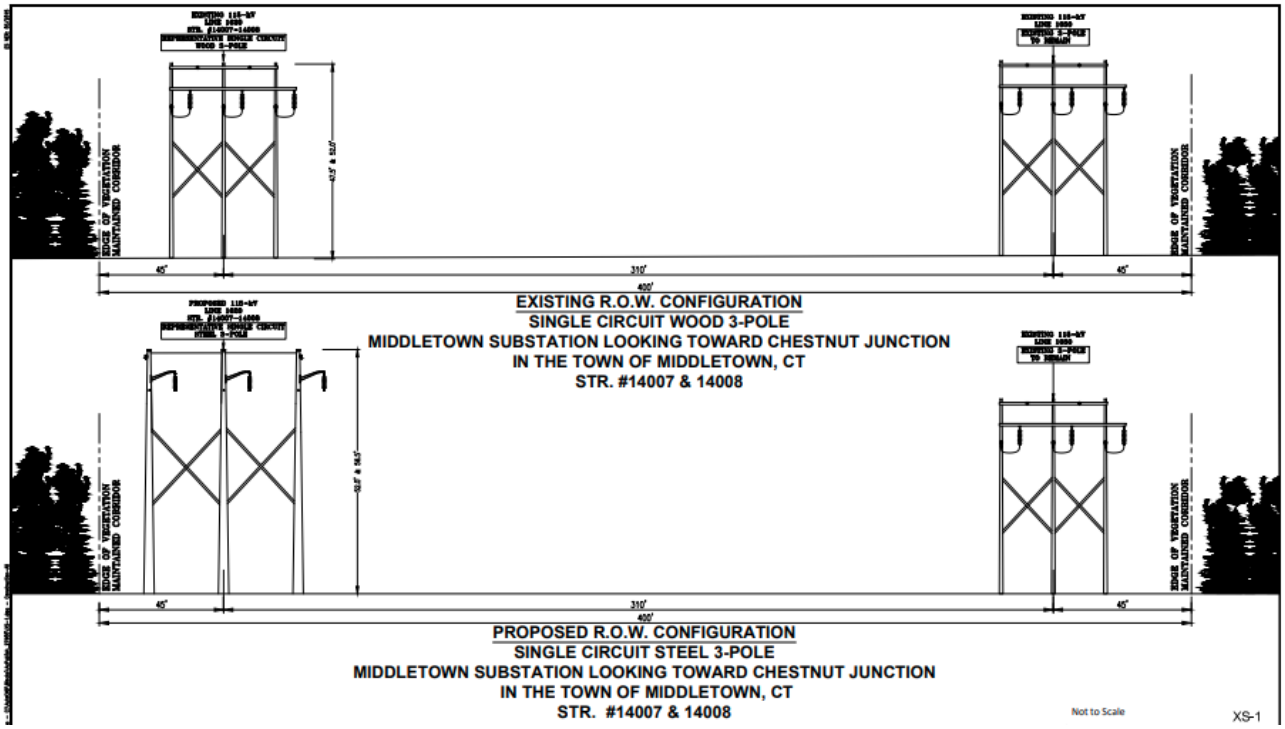
If approved, staff recommends the following conditions:

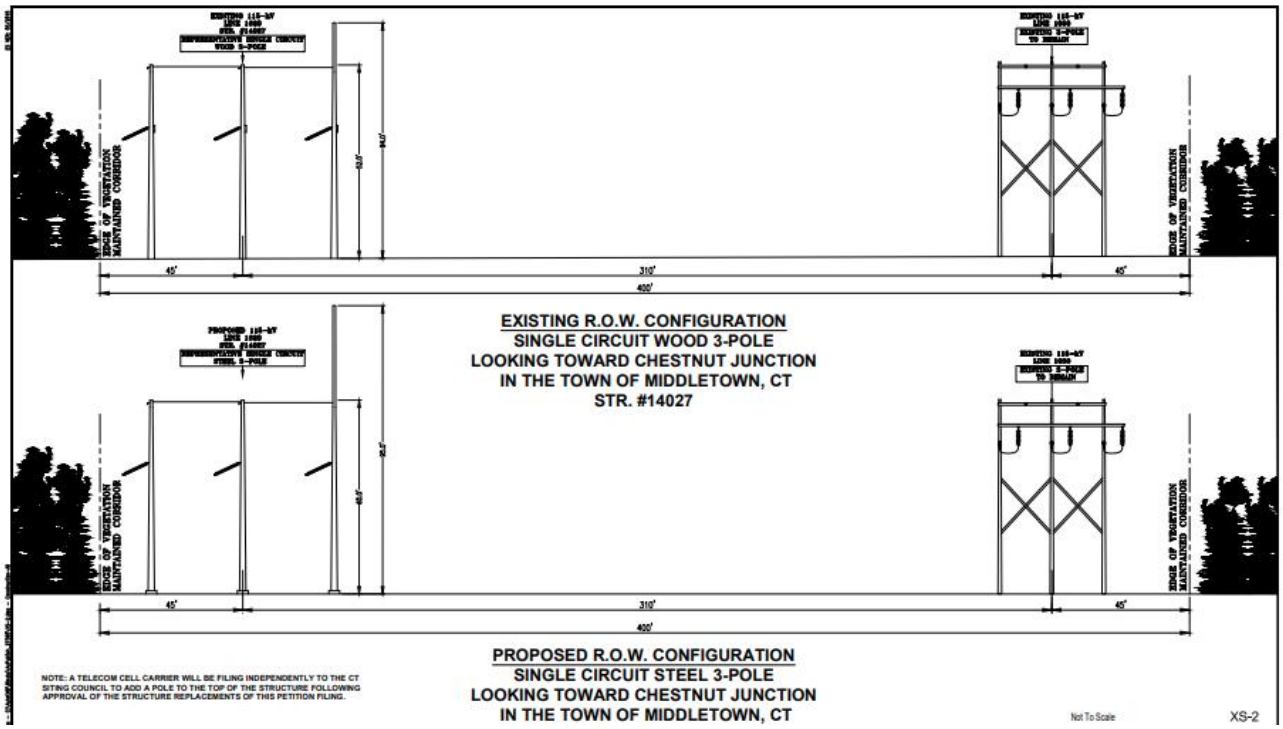
1. Approval of any project changes be delegated to Council staff;
2. Submit a copy of the DEEP Stormwater Permit prior to commencement of construction;
3. Submit a copy of the DEEP NDDB determination letter prior to commencement of construction; and
4. Incorporate pollinator habitat in the restoration of disturbed areas consistent with CGS §16-50hh, where feasible.

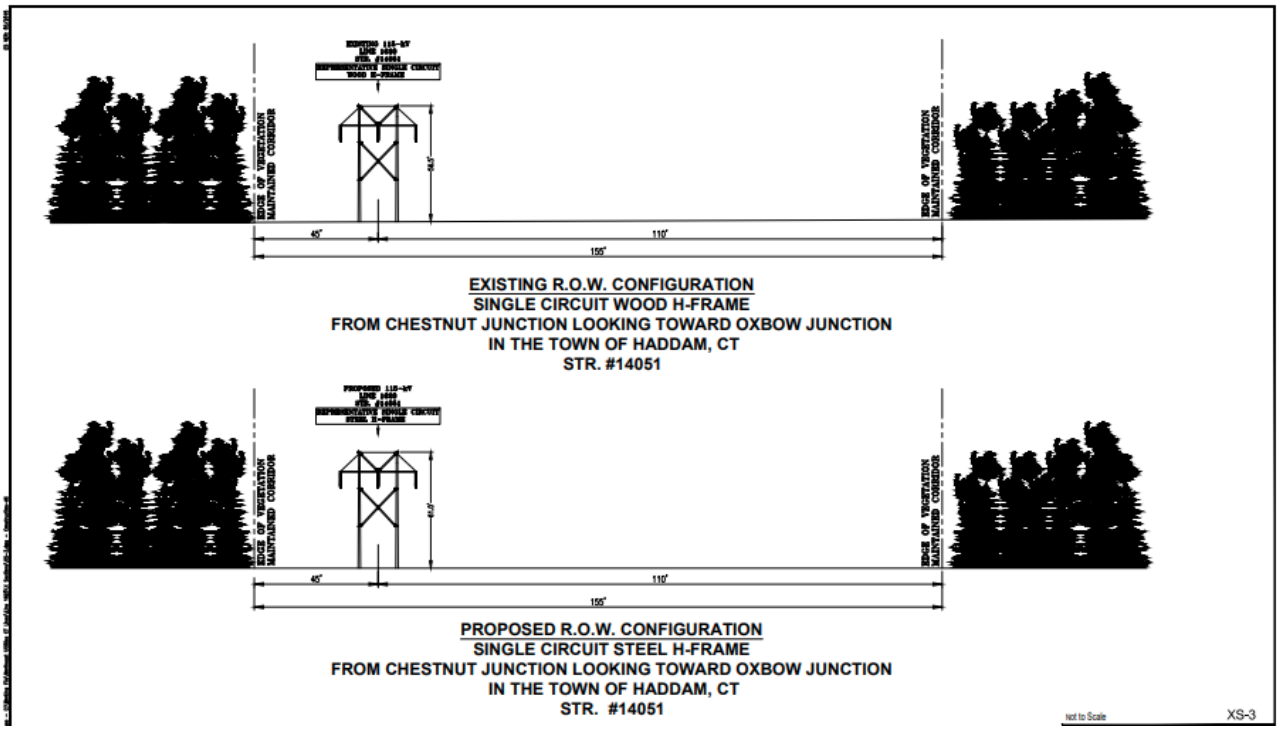
Project Location



Project ROW Profiles



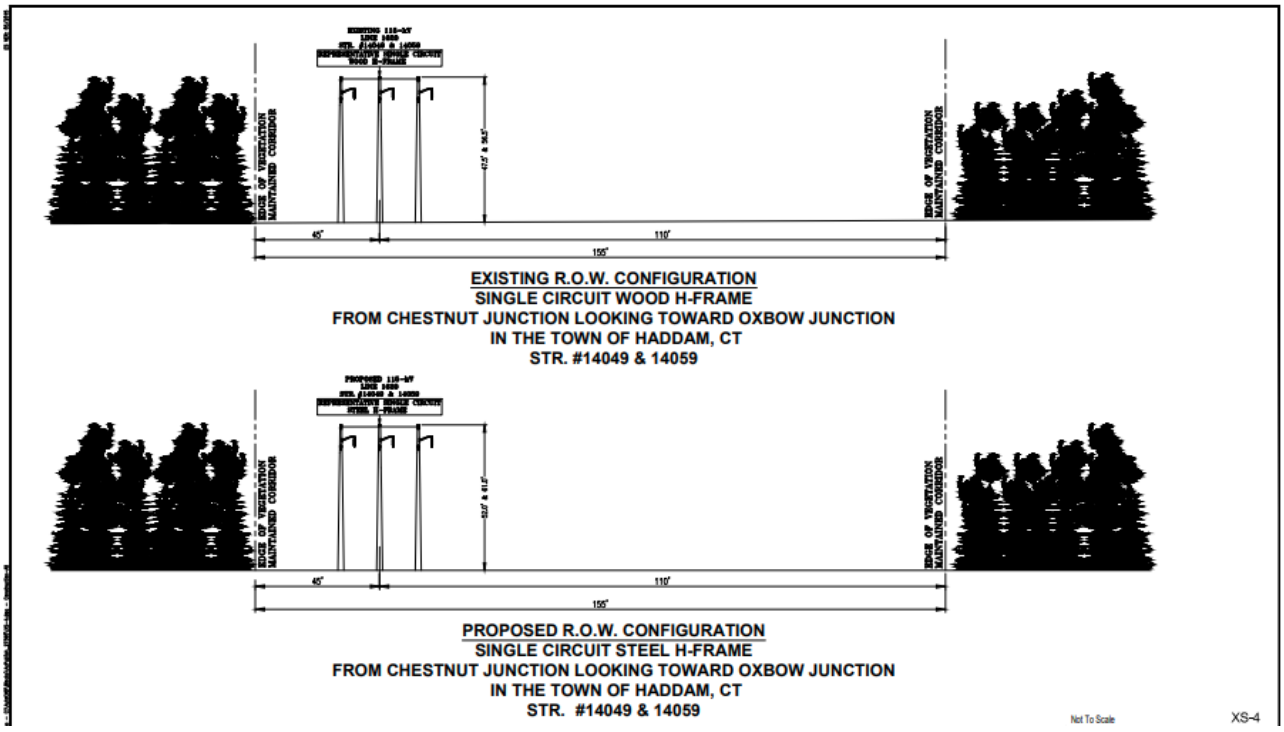




EXISTING R.O.W. CONFIGURATION
SINGLE CIRCUIT WOOD H-FRAME
FROM CHESTNUT JUNCTION LOOKING TOWARD OXBOW JUNCTION
IN THE TOWN OF HADDAM, CT
STR. #14051

PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL H-FRAME
FROM CHESTNUT JUNCTION LOOKING TOWARD OXBOW JUNCTION
IN THE TOWN OF HADDAM, CT
STR. #14051

Not to Scale XS-3



EXISTING R.O.W. CONFIGURATION
SINGLE CIRCUIT WOOD H-FRAME
FROM CHESTNUT JUNCTION LOOKING TOWARD OXBOW JUNCTION
IN THE TOWN OF HADDAM, CT
STR. #14049 & 14059

PROPOSED R.O.W. CONFIGURATION
SINGLE CIRCUIT STEEL H-FRAME
FROM CHESTNUT JUNCTION LOOKING TOWARD OXBOW JUNCTION
IN THE TOWN OF HADDAM, CT
STR. #14049 & 14059

Not To Scale XS-4