MUNICIPAL CONSULTATION FILING

for the

FAIRFIELD TO CONGRESS RAILROAD TRANSMISSION LINE 115-kV REBUILD PROJECT

Town of Fairfield and City of Bridgeport
Fairfield County, Connecticut

VOLUME 1: DESCRIPTION OF PROPOSED PROJECT

October 2022

Submitted to:

Chief Elected Officials of the Municipalities of Fairfield, Bridgeport, and Westport

Prepared By:

THE UNITED ILLUMINATING COMPANY

Provided in accordance with the pre-application process (Connecticut General Statutes Section 16-50l(e)) for filing an Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for an Electric Transmission Facility. Provided to the Town of Westport because the western portion of the proposed Project in Fairfield is within 2,500 feet of the Westport-Fairfield boundary.

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FAIRFIELD TO CONGRESS RAILROAD TRANSMISSION LINE 115-kV REBUILD PROJECT

TOWN OF FAIRFIELD AND CITY OF BRIDGEPORT

EXECUTIVE SUMMARY

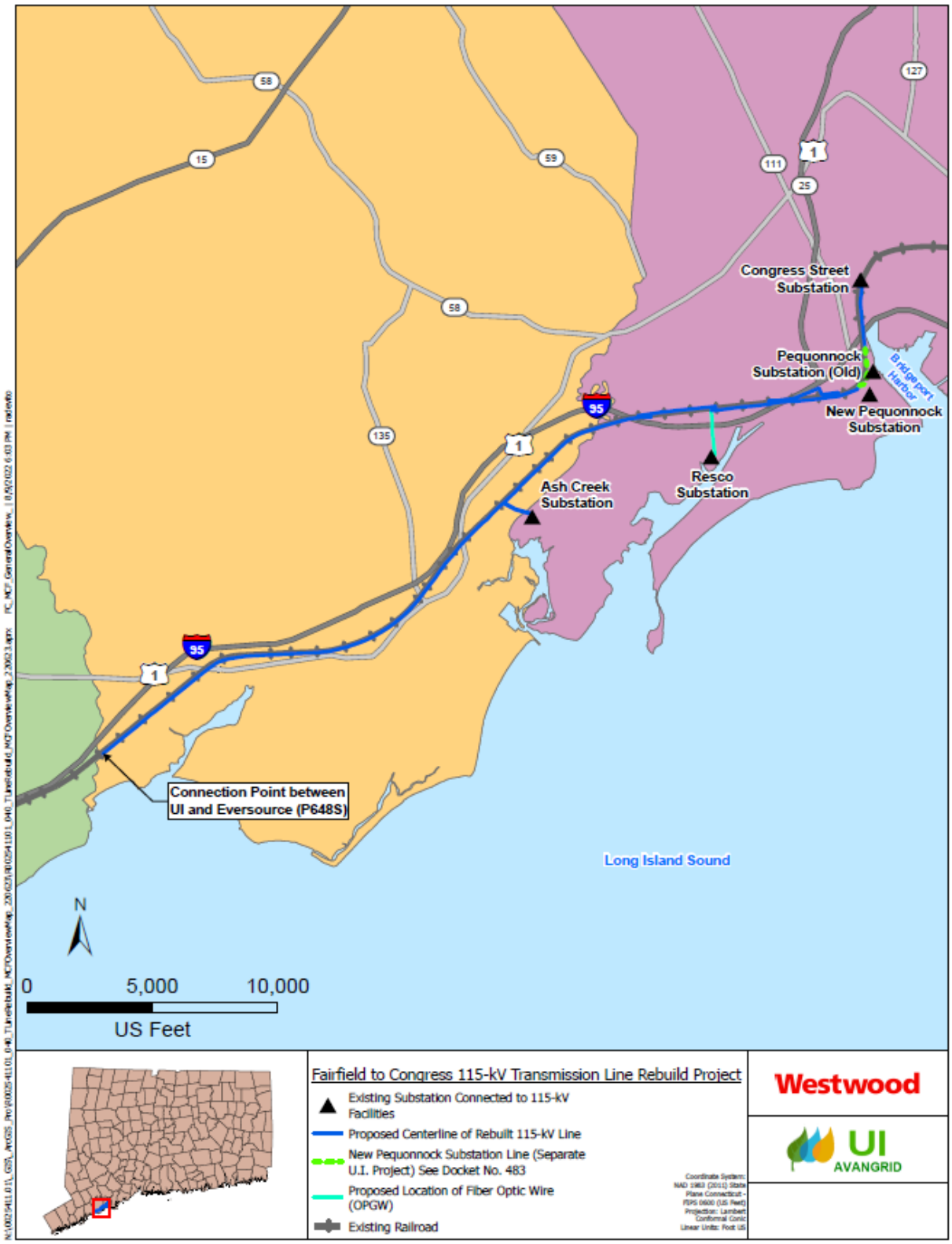
Proposed Project: To maintain the reliability and improve the resiliency of the bulk electric transmission grid in Fairfield County and in the New England region, The United Illuminating Company (UI or the Company) proposes to rebuild its existing single-circuit 115-kilovolt (kV) overhead transmission lines that are currently situated on UI-owned infrastructure (referred to as "bonnets") on top of railroad catenary structures that span the Metro-North Railroad (MNR) tracks in the Town of Fairfield and City of Bridgeport, Fairfield County, Connecticut. The Connecticut Department of Transportation (CT DOT) owns the corridor within which the MNR tracks are aligned, as well as the railroad catenary structures, which support not only the UI bonnets and 115-kV lines, but also MNR signal, feeder, and communication lines critical to the operation of the trains. CT DOT has an agreement with UI regarding the co-location of the 115-kV lines within its property.

Referred to as the **Fairfield to Congress Railroad Transmission Line 115-kV Rebuild Project (Project)**, UI proposes to remove the existing 115-kV lines and bonnets that are presently located on 157 CT DOT-owned railroad catenary structures and rebuild the transmission lines on new double- or single-circuit self-supporting steel monopoles, aligned generally parallel to the MNR tracks and, where possible within or near the CT DOT-owned railroad corridor. The Project will extend approximately 7.3 miles from catenary structure B648S,[1] which is located just east of Sasco Creek in the Southport area of Fairfield, [2] to UI's Congress Street Substation, adjacent to the western bank of the Pequonnock River in Bridgeport. The Project also will rebuild two 115-kV lines along a 0.23-mile UI right-of-way (ROW) that extends from the CT DOT corridor to UI's Ash Creek Substation and will connect the rebuilt 115-kV lines to UI's Ash Creek, Resco, Pequonnock, and Congress Street substations, all in Bridgeport (refer to Figure 1).

[1] The CT DOT catenary structures are numbered, with numbers increasing west-to-east. For the purposes of this Project, UI uses the catenary structure number (i.e., 648) and adds a "B" to indicate UI facilities on a bonnet and the "S" designation to denote that the UI infrastructure located on the southern catenary support column. B648S is the western-most catenary structure on which UI facilities are presently located.

[2] Sasco Creek is the boundary between the towns of Fairfield and Westport. No Project construction will be within Westport. In the vicinity of the Fairfield-Westport boundary, UI's 115-kV lines connect to The Connecticut Light and Power Company dba Eversource Energy's (Eversource's) 115-kV transmission lines, which continue west along the CT DOT corridor.

Figure 1: Project Area



History of UI Transmission Lines within the CT DOT Corridor: Along the CT DOT railroad corridor from catenary structure B648S east to Congress Street Substation, UI's existing single-circuit 115-kV lines are aligned on CT DOT property, both north and south of the MNR tracks. The existing 115-kV transmission lines are supported either on bonnets on top of the railroad catenary structures or on independent monopoles, lattice steel towers, or other structures. The catenary structures, which are owned by CT DOT and operated by MNR, were originally built between 1912 and 1914 to support signal and feeder wires for the electric operation of the trains. UI owns the bonnets, which support the 115-kV line conductors, shield wires, insulators, and hardware) and are located on top of the railroad catenary structures.

In the mid-1960s, UI added bonnets and 115-kV infrastructure on top of the CT DOT southern catenary support structures between catenary structure B648S and Congress Street Substation. In 1991, to support a new 115-kV transmission line between Pequonnock Substation and Eversource's Ely Avenue Substation in the City of Norwalk (referred to as the Pequonnock-Ely Project), UI added bonnets and transmission line infrastructure to some of the northern catenary structures and installed monopoles north of the MNR tracks between catenary structures 648 and 737 in Bridgeport.

In the Project area, only two UI 115-kV lines are aligned on the catenary structures or parallel the railroad tracks in any one location. However, UI identifies the transmission lines by six different circuit numbers to designate the line locations in relation to substation connections. Table 1 identifies the 115-kV lines in the Project area, by circuit number, existing configuration (e.g., on independent monopoles or on bonnets/catenary structures), and substation connections. As this table illustrates, in Fairfield and western Bridgeport, UI's 1130 Line is already located on monopoles aligned along the north side of the CT DOT corridor. UI does not propose modifications to this portion of the 1130 Line; therefore, Project activities in Fairfield and western Bridgeport will be situated on the south side of the CT DOT corridor.

Table 1: Existing UI 115-kV Lines, by Substation Segment and Typical Existing Configuration

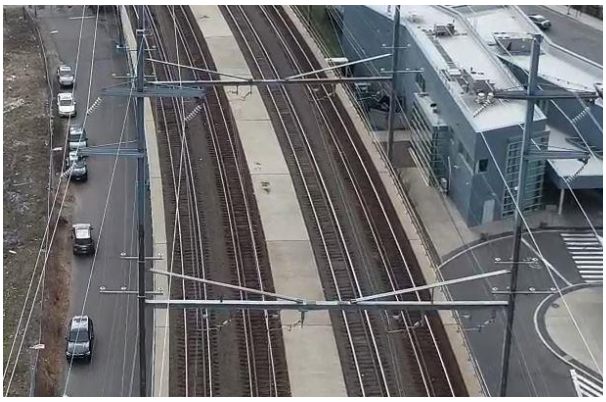
Substation	Circuit # Designation/Location in Relation to MNR Tracks	
	115-kV Line: North of Railroad Tracks	115-kV Line: On Southern Catenary Support Columns
Structure B648 – Ash Creek Substation	1130 (Independent monopoles)	1430**
Ash Creek Substation – Resco Tap (Ash Creek to Catenary Structure 737)	1130 (Independent monopoles)	91001-2**
Ash Creek Substation – Resco Tap (Catenary Structure 737 to Resco Tap)	1130 (On northern catenary support columns)	91001-2
Resco Tap – Pequonnock Substation	1130 (On northern catenary support columns)	91001-1
Pequonnock Substation – Congress Street Substation	8809A (On northern catenary support columns)	8909B

**The 1430 and 91001-2 lines diverge from the CT DOT corridor to connect to Ash Creek Substation along the UI's 0.23-mile ROW. In this area, the 1430 and 91001-2 lines are supported, in a double-circuit configuration, on three lattice steel towers.

Figures 2 and 3 provide representative photographs of the configuration of the 115-kV lines in Fairfield (with the 1130 Line on independent monopoles north of the MNR tracks) and in Bridgeport (with UI 115-kV lines supported on both the north and south catenary support columns).

Figure 2: View of UI Infrastructure on Southern Catenary Structure and 1130 Line Monopole North of MNR Tracks (Fairfield)

Figure 3: View of UI Infrastructure on North and South Catenary Structure Support Columns (Bridgeport)



The total width of the CT DOT-owned property along the railroad corridor varies, typically ranging from approximately 85 to 150 feet. Exceptions are where CT DOT owns property adjacent to railroad stations and in the vicinity of Railroad Avenue in Bridgeport, where the MNR tracks are elevated and the width of the CT DOT corridor generally coincides with the elevated track area. Four railroad stations (Southport, Fairfield Center, Fairfield Metro, and Bridgeport) are located along the CT DOT corridor in the Project area.

The heights of the existing UI 115-kV lines which are situated the catenary structures are typically approximately 60 to 80 feet above ground (including the catenary support column, bonnets, and 115-kV wires). The 1130 Line monopoles between catenary structures B648 and B737, which were installed as part of the Pequonnock-Ely Project, range in height from 80-120 feet above ground.

Need for the Project: The Project will replace legacy electric system equipment and will upgrade the 115-kV lines to current national and Company design standards. In addition, the Project will separate the railroad and transmission line facilities, thereby allowing both UI and MNR to operate and maintain critical electric and mass transit (railroad) infrastructure independently. Further, the Project is part of UI's overall infrastructure investment program,

which is targeted to meet the growing consumer demand for electricity, including clean energy generated by sources such as solar and wind power, in the Company's service territory. The Project also is the final part of UI's long-term plan for relocating its electric transmission facilities from the railroad catenary structures in its Fairfield and New Haven counties service territory.

Proposed Project: The Project will involve the following components:

- ***Remove the 115-kV lines from the railroad catenary support structures and rebuild the lines on independent, galvanized steel monopoles, in either single- or double-circuit configurations, and including new conductors and OPGW***. For approximately 5.4 miles from catenary structure B648S in Fairfield east to catenary structure B737 in Bridgeport, the existing 1430 Line will be removed from the southern catenary support structures and rebuilt on single-circuit monopoles located on the south side of the MNR tracks. For the remainder of the Project east of catenary structure B737 to Congress Street Substation, the 115-kV lines will be removed from both the north and south catenary columns and rebuilt, primarily on double-circuit monopoles, located either north or south of the railroad tracks, depending on availability of space to accommodate the new structures. In one area, the rebuilt lines will be placed on single-circuit Pmonopoles, located on either side of the railroad tracks. The proposed new structures pin Fairfield extend from P648S to P728S and the proposed structures in Bridgeport include structures P730S to P783N.

- ***Interconnect the rebuilt 115-kV lines to UI's existing Ash Creek and Congress Street substations.*** UI will perform minor modifications within the substation boundaries as needed to support the rebuilt line connections and will install single-circuit or double-circuit monopoles as needed to maintain the existing 115-kV connections to the substations. This work will include removing the 115-kV facilities (three existing double-circuit lattice steel towers, conductors) along the UI ROW to Ash Creek Substation and rebuilding each of the two 115-kV lines on three new single-circuit monopoles.

- ***Interconnect the rebuilt lines to the Resco Tap, located adjacent to the CT DOT corridor, and replace the tap line shield wire with OPGW.*** Minor modifications will be required to support the new OPGW and to install underground fiber connections to the Resco Substation, which is located approximately 0.3 mile south of the CT DOT corridor.

- ***Decommission and remove UI's existing 115-kV facilities from the railroad catenary structures.*** Depending on the outcome of further consultations with CT DOT/MNR, the bonnets on some of the catenary support structures may remain for MNR's use. Likewise, the existing UI shield wire may be lowered onto the catenary structures to provide protection from lightning in locations where MNR does not have its own shield wire. In such cases, the ownership of the bonnets and shield wire is expected to be transferred to CT DOT.

A total of 103 new monopoles will be installed. The above-ground heights of the new 115-kV monopoles will generally range from approximately 100 feet to 135 feet above ground. However, taller structures (195 feet) will be required between the Pequonnock Substation and the Congress Street Substation to span both the I-95 overpass and portions of the west bank of the Pequonnock River.

To the extent practical, UI attempted to align the proposed 115-kV monopoles within the CT DOT corridor. However, due to the narrow width of the CT DOT property, in certain locations, UI will have to acquire new permanent easement from private property owners and from the Town of Fairfield and City of Bridgeport. Along the 0.23-mile UI ROW to Ash Creek Substation, UI also proposes to acquire additional permanent easement for the reconfigured 115-kV lines.

For example, of the 103 proposed new transmission line structures, 72 are single-circuit monopoles, to be located from new Structure 648S east to near Fairfield Avenue (Structure 737) in Bridgeport. All but two of these 72 monopoles will be situated south of and parallel to the MNR tracks; 53 of the 72 monopoles will be on CT DOT property. East of Structure 737, 31 new monopoles (21 double-circuit and 10 single-circuit) will be installed. However, because the railroad tracks in this area are elevated, all 31 monopoles must be located outside of the CT DOT corridor.

Based on UI's current Project plans (which reflect the results of engineering and field studies conducted to date), to accommodate the rebuilt 115-kV monopoles, UI proposes to acquire approximately 19.1 acres of permanent easements (4.25 acres north and 14.85 acres south of the CT DOT corridor) from private or public property owners. In addition, UI proposes to acquire approximately 0.15 acre of new permanent easement across other private properties. These permanent easements will be needed to access Project construction sites and to provide ingress/egress for the long-term operation and maintenance of the rebuilt 115-kV lines.

Construction Activities: UI will construct, operate, and maintain the rebuilt 115-kV lines in full compliance with the latest revisions of standards of the National Electrical Safety Code, the Institute of Electrical and Electronic Engineers (IEEE), and the American National Standards Institute (ANSI); good utility practice; and UI's technical specifications, final engineering plans, and the conditions of regulatory and siting approvals obtained for the Project. In addition, the Project will be constructed in accordance with the terms of UI's agreement with CT DOT. That agreement specifies certain non-standard construction methods and schedules, including the performance of certain Project tasks to avoid or minimize conflicts with rail operations.

Based on current plans, UI anticipates that the Project will be constructed in four segments, with the 115-kV lines along each segment rebuilt and placed into service prior to the initiation – in most cases - of extensive work on the transmission lines in the next segment. Taking into consideration transmission system outage limitations, UI's proposed sequence for construction is:

- Segment 1: Ash Creek Substation to UI existing Structure TP735S.

- Segment 2: UI existing Structure TP735S to Pequonnock Substation.
- Segment 3: Existing catenary structure B648S to Ash Creek Substation.
- Segment 4: Pequonnock Substation to Congress Street Substation.

Along each segment, the construction of the rebuilt 115-kV lines will proceed in a linear fashion and will include separate work crews to perform vegetation removal, access roads/work pad installation, structure foundation work, structure/conductor/OPGW installation, and site restoration. Separate crews also will perform activities required to remove the existing UI infrastructure from the catenary structures, as well as to remove the existing lattice steel towers from the UI ROW that extends to Ash Creek Substation. Table 2 summarizes the general sequence of Project construction activities along each segment (the actual sequence of construction work may vary).

Temporary access roads will be required to reach each new monopole site, as well as to reach the catenary structures from which the existing UI infrastructure will be removed. Work pads also will be required to stage construction activities at each site. In addition, vegetation removal, including trees, will be required in certain locations.

UI will require its Project construction contractors to perform all work in accordance with the conditions of Federal and State regulatory approvals. For example, because the Project is under the jurisdiction of the Connecticut Siting Council (CSC, Council), after the Project is approved by the CSC, UI will prepare and submit to the Council a Development and Management Plan, which will include detailed construction plans and protocols.

Table 2: General Project Construction Sequence

STEP 1: TYPICAL PRE-CONSTRUCTION ACTIVITIES (ALL SEGMENTS)
• Survey and stake construction work areas, including edge of CT DOT property and UI easement (where different) and proposed structure locations
• Confirm and re-flag environmental resource areas (e.g., wetland and watercourse boundaries) or other sensitive areas to be avoided
• Mark vegetation clearing limits
• Locate and mark utilities
STEP 2: TYPICAL CONSTRUCTION ACTIVITIES (ALL SEGMENTS)
• Establish laydown/material staging areas / contractor yard(s) to support the construction effort
• Establish temporary erosion and sedimentation controls as needed
• Remove or mow vegetation, where necessary
• Install temporary matting in wetlands as needed; install temporary bridges to traverse small watercourses
• Establish or upgrade access roads to new monopole sites
• Create a level work pad at each monopole site, as well as at conductor pulling sites and if necessary, at guard structure sites
• Install new structure foundations and assemble/erect new structures
STEP 3: TYPICAL CONSTRUCTION ACTIVITIES: PEQUONNOCK SUBSTATION TO CONGRESS STREET SEGMENT
• Remove the existing 115-kV line facilities from the south/east side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets). Some of this work may be staged from a barge positioned near the CT DOT corridor in the Pequonnock River. Any existing monopoles that are no longer required on the south/east side of the railroad tracks will also be removed.
• Install conductors, and OPGW
• Install rebuilt 115-kV line connections to UI substations
• Place the rebuilt 115-kV lines in service
• Remove the existing 115-kV line facilities from the north/west side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets). Any existing monopoles and lattice towers that are no longer required on the north/west side of the railroad tracks will also be removed. This activity will include establishing temporary work pads at the locations of the facilities to be removed. Existing access roads and city streets will be used.
STEP 3: TYPICAL CONSTRUCTION ACTIVITIES: EVERSOURCE STRUCTURE B648S TO ASH CREEK SUBSTATION SEGMENT AND THE ASH CREEK SUBSTATION TO UI STRUCTURE TP735S SEGMENT
• Remove the existing 115-kV line facilities from the south side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets). Any existing w-flange structures that are no longer required on the south side of the railroad tracks will also be removed.
• Install conductors, shield wire, and OPGW
• Remove existing lattice towers that currently support the existing 115-kV line connection UI's Ash Creek Substation
• Install rebuilt 115-kV line connections to UI's Ash Creek Substation
• Place the rebuilt 115-kV lines in service (by segment)
STEP 3: TYPICAL CONSTRUCTION ACTIVITIES: STRUCTURE TP735S TO PEQUONNOCK SUBSTATION SEGMENT
• Install all new conductors and OPGW that can be installed with the existing 115-kV line facilities in place.
• Remove the existing 115-kV line facilities from the south side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets).
• Install remaining conductors and OPGW in order to place the southern circuit (Line 91001) in service.
• Remove the existing 115-kV line facilities from the north side catenary structures (i.e., existing OPGW, conductors, hardware, steel bonnets). All temporary steel poles installed as part of the Pequonnock Substation Rebuild Project will also be removed.
• Install remaining conductors and OPGW in order to place the northern circuit (Line 1130) in service.
STEP 4: TYPICAL CONSTRUCTION ACTIVITIES (ALL SEGMENTS)
• Remove temporary construction access and work pads along with associated matting and bridges
• Perform final clean-up and restore/stabilize areas affected by construction (e.g., by seeding as needed).
• Maintain erosion and sedimentation controls until areas affected by construction are stabilized.

Overall Project Schedule and Work Hours: UI anticipates that the rebuilt 115-kV lines will be in service by the end of June 2028. At that time, the existing 115-kV facilities are expected to have been removed from the catenary structures; however, final restoration (e.g., site stabilization, reseeding, landscaping as appropriate) is likely to extend beyond the Project in-service date.

Project construction work hours will be determined based on consultations with CT DOT / MNR, taking into full consideration the necessary transmission line and railroad outages. Standard construction hours, for work that will not require railroad or transmission line outages, will be 7 AM to 7 PM, Monday through Saturday. However, UI anticipates that nighttime construction shifts will be required for work that will require railroad track outages (e.g., activities directly adjacent to the railroad tracks or on the catenary structures to remove the existing 115-kV facilities) and potentially in areas where construction will require temporary work in roads that could involve short-term road closures/detours and utilization of parking spaces. Further, for some critical Project activities (e.g., those that must be completed during scheduled transmission line or railroad outages), work will be required 24 hours a day, on any day of the week.

Environmental Setting, Impacts, and Mitigation: The Project borders well -developed suburban and urban areas, extending for approximately 4.9 miles in Fairfield and 2.7 miles in Bridgeport. In addition to the CT DOT railroad corridor, which has long been established for linear transportation and utility use, the Project area is characterized by lands zoned and used for various residential, recreational, commercial, and industrial purposes. In general, developed urban downtown and commercial/industrial areas predominate near the railroad corridor in Bridgeport and eastern Fairfield, with more residential, open space/recreational, and retail/commercial uses near the western portion of the railroad corridor in the remainder of Fairfield.

In Fairfield, the CT DOT corridor extends through the Southport section of the town and serves as the northern boundary of the town's central business district, which extends along U.S. Route 1 (Boston Post Road). In Bridgeport, the CT DOT corridor extends across four identified neighborhood districts: Black Rock, West Side/West End, South End, and Downtown.

To identify existing environmental, land use, and cultural resources in the Project area, UI conducted research and commissioned environmental field studies. Information was compiled regarding ecological resources (geology, soils, groundwater, inland and tidal wetlands and watercourses, floodplains, vegetation and wildlife, fisheries, federal and state listed species), land uses (including recreational and community facilities), cultural resources, coastal resources, visual resources, transportation, noise, and air quality. In addition, UI representatives consulted with various Federal and State environmental regulatory agencies. UI used the resulting baseline environmental information during the Project planning process to avoid or minimize environmental impacts to the extent practical.

Overall, the Project will have a long-term positive effect by continuing the established co-location of the 115-kV transmission lines along or near the CT DOT railroad corridor and by

improving the reliability of the electric grid, upgrading the 115-kV lines to current electrical industry standards and designing the new monopoles to address resiliency challenges associated with climate change. The construction of the Project will result in primarily short-term impacts, which will be localized to the vicinity of construction sites. Potential impacts during construction will include temporary disturbance to subsurface and surficial (soil) materials, as well as to certain inland and tidal wetlands and watercourses; temporary increases in noise and air emissions associated with construction activities (e.g., drilling for structure foundations) and the operation of construction equipment/vehicles; traffic congestion due to construction activities; and potential inconvenience to railroad operations when rail outages are required. .

The Project will result in long-term impacts stemming from UI's acquisition of approximately 19.25 acres of new easement, as well as the maintenance of the easement consistent with the safe and reliable operation of the overhead transmission lines. Project construction will result in the removal of approximately 6.5 acres of trees, of which about 5.5 acres will be within UI's new permanent easement and thus will be managed in low-growth species, consistent with the operation of overhead transmission lines. After Project construction, trees would be allowed to re-establish on the remaining 1-acre area outside of the permanent easement.

Based on UI's current plans, the Project will have only minor and highly localized impacts on water resources. For example, no new monopoles will be located in either wetlands or watercourses. Project construction will have temporary impacts to an intertidal area in Ash Creek (for access as required to remove an existing lattice steel tower from a small island in the creek near Ash Creek Substation) and an additional 0.1 acre impact associated with the installation of a temporary access road across one freshwater stream along the CT DOT corridor. In addition, one permanent access road will be required along the edge of one wetland, resulting in an estimated 0.04 acre of fill. No temporary access roads will be required in wetlands; however, a total of 0.07 acre of wetlands will be affected by four temporary work pads.

However, 30 new monopoles will be located in 100-year floodplains and an additional seven monopoles will be installed in 500-year floodplains. However, the effect of the monopoles on flood storage capacity in these floodplains will be negligible. In addition, two permanent access roads to a total of six new monopoles also will be located within 100 or 500-year floodplains; these permanent access roads are required for UI operation and maintenance purposes. However, UI proposes to install all the permanent access roads at grade, thereby avoiding any impacts to floodplain storage capacity.

The Project also will result in minor long-term alteration to the viewscape in the immediate vicinity of the CT DOT corridor. The proposed new monopoles will be taller than then existing UI facilities and thus will potentially be more visible from certain locations near the railroad corridor. In some areas, residences are located in close proximity to the railroad corridor, most of which have at least partial views of the existing railroad and electrical infrastructure. In some locations where direct lines of sight exist at close distances, the new poles may become more prominent features within the viewscape. Further, six historic districts and portions of their contributing elements are located within 500 feet of the Project. Due to their proximity

to the existing railroad and electrical corridor, the rebuilt monopoles will have a visual effect on these resources. In addition, 15 individually listed historic properties within 500 feet of the Project area that will also have their viewsheds altered as a result of construction.

To avoid or mitigate potential Project impacts, UI will adhere to the conditions or permits and approvals from Federal and State regulatory agencies, including the CSC, the Connecticut Department of Energy and Environmental Protection (CT DEEP), U.S. Army Corps of Engineers (USACE), the U.S. Fish and Wildlife Service, and the Connecticut State Historic Preservation Office. Accordingly, UI will prepare Project-specific plans for stormwater management and control; the protection of state and federally listed species (as applicable); and the management of materials (e.g., excess spoil) generated during construction. UI also has been coordinating with and will continue to consult with the CT DOT and MNR to plan the Project to minimize impacts to railroad operations.

Additional measures to avoid or minimize environmental effects may be identified as part of the ongoing engineering design and constructability reviews and consultations with the municipalities and/or regulatory agencies, as well as during the process of submitting applications to and obtaining approvals for the Project from regulatory agencies such as the CSC, CT DEEP, and USACE.

Electric and Magnetic Fields: UI commissioned a study to measure the electric and magnetic fields (EMF) associated with the existing 115-kV lines and to model the anticipated EMF levels from the rebuilt 115-kV facilities. EMF calculations were performed using methods that are accepted within the scientific and engineering community and that have been found to match well with measured values. The results of these studies indicate that the *maximum* EMF levels decrease as a result of the Project. However, the relocation of the transmission lines off of the catenary structures/bonnets to monopoles farther from (and in some cases outside) the CT DOT corridor means that the maximum EMF levels will generally shift away from the CT DOT corridor and hence lead to some increase in EMF levels in locations outside the CT DOT corridor.

However, all calculated EMF levels associated with the Project will be a small fraction of those recommended for the general public by international health-based standards. The Project design that UI proposes reconfigures the transmission lines to minimize magnetic fields and applies siting and design features that are consistent with the CSC's EMF Best Management Practices.

Alternatives: The proposed Project was selected as a result of a process whereby various alternatives were identified and assessed. UI first evaluated the portions of the railroad catenary structures supporting existing 115-kV lines and then identified and analyzed a range of alternatives, including No Action, line rebuild options both on and independent of the existing railroad catenary/bonnet structures, underground cable systems, and 115-kV overhead configuration options.

After determining that the proposed Project, involving single- and double-circuit monopoles along or the near the CT DOT was the preferred alternative, UI performed more detailed

engineering analyses to further refine the Project design, taking into consideration the placement and configuration of the new monopoles. During this process, UI identified and evaluated options for spacing and aligning the proposed monopoles, assessing in particular the required interconnections of the rebuilt lines to UI's existing substations, and the avoidance or minimization of impacts to environmentally or socially sensitive resources (such as inland and tidal wetlands and watercourse crossings, train stations, and other land uses). As part of the more detailed design process, UI also consulted with State, Fairfield, Bridgeport government officials, investigated environmental resources in the Project area, and performed real estate analyses to verify property boundaries between the CT DOT railroad corridor and adjacent public/private landowners.

Based on the results of the alternatives evaluation process, UI determined that the proposed Project would best meet the Company's objectives for providing a cost-effective solution for maintaining the reliability and resiliency of the transmission grid, while avoiding or minimizing impacts to environmental resources, cultural resources, and land use in the densely-developed southern Fairfield and Bridgeport areas.

Estimated Project Costs and Facility Service Life: The estimated capital cost for the siting, design, and construction of the Project is approximately $210 million. The Project transmission facilities are expected to have, at a minimum, a service life of approximately 40 years.

Purpose of this Municipal Consultation Filing (MCF): In the first quarter of 2023, UI plans to submit to the Connecticut Siting Council (CSC, Council) the Project's *Application for a Certificate of Environmental Compatibility and Public Need* (Application). At least 60 days prior to the submission of such an application, the Council requires applicants to provide project information, in the form of a MCF, to the potentially affected municipalities.

This MCF is a mechanism for informing municipal representatives about the proposed Project, for providing information about the Project planning, and for soliciting comments about the Project. Accordingly, UI is providing this MCF, for review and comment, to representatives of the municipalities of Fairfield and Bridgeport, as well as Westport[3]

The MCF reflects the results of the engineering design, environmental analyses, and agency consultations that UI has completed thus far for the Project. Accordingly, the MCF includes engineering information regarding UI's proposed Project plans, as well as background research regarding environmental, cultural, and visual resources and EMF. The MCF also includes a map volume that contains aerial-based maps of the proposed Project route and nearby environmental and other resources, as well as engineering drawings (cross-sections) of both the existing location of the UI facilities on the railroad catenary structures and the proposed location of the rebuilt 115-kV lines.

The MCF process extends for 60 days, during which time UI will arrange to meet with municipal personnel to obtain input regarding the Project. UI's Project Application to the CSC,

[3] Although the Project will not involve work in Westport, UI is providing the MCF to Town of Westport officials, pursuant to CSC requirements, because the town boundary with Fairfield is within 2,500 feet of the western portion of the Project area.

which will follow a similar format to this MCF, will incorporate responses to comments received during the MCF process.

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1. PROJECT OVERVIEW AND NEED

1.1 PROJECT BACKGROUND, LOCATION, AND PURPOSE

1.1.1 Project Overview and Need

To maintain the reliability and improve the resiliency of the bulk electric transmission grid in Fairfield County, in the State of Connecticut, and in the New England region, The United Illuminating Company (UI or the Company) proposes to rebuild its existing single-circuit 115-kilovolt (kV) overhead transmission lines that are currently situated on UI-owned infrastructure (referred to as "bonnets") on top of railroad catenary structures that span the Metro-North Railroad (MNR) tracks in the Town of Fairfield and City of Bridgeport, Fairfield County, Connecticut.

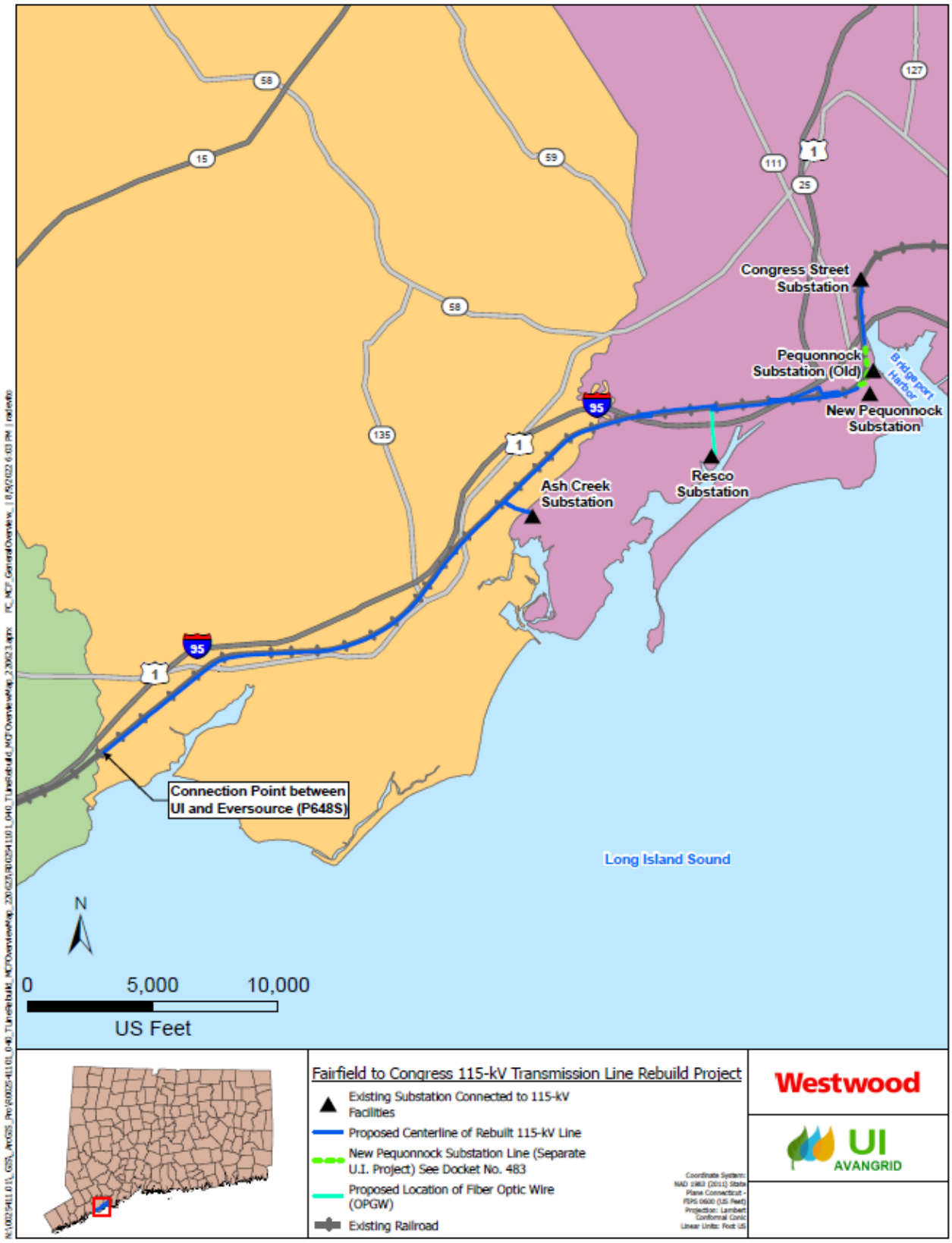
The Connecticut Department of Transportation (CT DOT) owns the corridor within which the MNR tracks are aligned, as well as the railroad catenary structures, which support not only the UI bonnets and 115-kV lines, but also MNR signal, feeder, and communication lines critical to the operation of the trains. The UI transmission line infrastructure on top of the railroad catenary structures is approximately 60 years old, whereas the railroad catenary structures that support the UI infrastructure are more than 100 years old.

Referred to as the **Fairfield to Congress Railroad Transmission Line 115-kV Rebuild Project (Project)**, UI's proposed 115-kV line improvements will remove the existing 115-kV lines and UI infrastructure that are presently located on the CT DOT-owned railroad catenary structure support columns and rebuild the transmission lines on new double- or single-circuit self-supporting steel monopoles, aligned generally parallel to the MNR tracks and within the CT DOT-owned corridor, where possible. The Project will extend from catenary structure B648S, which is located along the CT DOT corridor just east of Sasco Creek in the southwestern portion of Fairfield (Southport area),[4] to UI's Congress Street Substation, which is situated adjacent to the western bank of the Pequonnock River in Bridgeport. The Project

[4] Sasco Creek is the boundary between the towns of Fairfield and Westport. No Project construction will be within Westport. In the vicinity of the Fairfield-Westport boundary, UI's 115-kV lines connect to The Connecticut Light and Power Company dba Eversource Energy's (Eversource's) 115-kV transmission lines, which continue west along the CT DOT corridor.

also will rebuild two 115-kV lines along a 0.23-mile UI right-of-way (ROW) extending from the CT DOT corridor to UI's Ash Creek Substation (refer to Figure 1-1).

Figure 1-1: General Project Location



Overall, the Project will upgrade the 115-kV lines to current national and Company design standards, replacing legacy electric system equipment, and will separate the railroad and transmission line facilities, thereby allowing both UI and MNR to operate and maintain critical electric and mass transit (railroad) infrastructure independently. In contrast, because the existing 115-kV lines are co-located on the railroad catenary structures, any operation and maintenance work requires extensive coordination to maintain a safe work environment; to avoid or minimize railroad or electric transmission line outages; and to limit impacts to rail operations.

Moreover, the Project is part of UI's overall infrastructure investment program, which is targeted to meet the growing consumer demand for electricity, including clean energy generated by sources such as solar and wind power, in the Company's service territory. The Project also is the final part of UI's long-term plan for relocating its electric transmission facilities from the railroad catenary structures in its Fairfield and New Haven counties service territory.[5]

1.1.2 Project Location and Summary of Existing Facilities

Along and in the vicinity of the CT DOT railroad corridor from catenary structure B648S in Fairfield east to Congress Street Substation (referred to herein as "the Project area"), UI's existing single-circuit 115-kV lines are aligned both north and south of the MNR tracks, either on bonnets on top of the railroad catenary structures or on independent monopoles, lattice steel towers, or other structures. The 115-kV circuits connect to four existing UI substations (Ash Creek, Resco, Pequonnock, and Congress Street), all in Bridgeport.

Together, the Ash Creek, Pequonnock, and Congress Street substations provide electric power to 63,800 UI customers. Resco Substation connects to the UI 115-kV system via a line tap (the Resco Tap) at existing Structure RT5, which is adjacent to Howard Avenue. The tap line

[5] To date, UI has removed its 115-kV lines from the railroad catenary structures along approximately 6 miles of the CT DOT corridor in the City of Bridgeport, Town of Stratford, and City of Milford. In New Haven County, UI plans to remove and rebuild the remaining 115-kV lines from the catenary support columns along 9.5 miles of the railroad corridor between Milvon Substation (Milford) and West River Substation (City of New Haven). In February 2022, UI submitted an application to the Connecticut Siting Council (CSC) for this project (CSC Docket No. 508). The CSC approved the project in August 2022.

delivers electricity to the transmission grid from the WIN Waste Innovation Bridgeport[6] waste-to-energy plant.

In the Project area, only two UI 115-kV lines are aligned on the railroad catenary structures or parallel the railroad tracks in any one location. However, UI identifies the transmission lines that extend between catenary structure B648S and Congress Street Substation by six different circuit numbers to designate the line locations in relation to substation connections. Table 1-1 identifies the 115-kV lines in the Project area, by circuit number, existing configuration (e.g., on independent monopoles or on bonnets/catenary structures), and substation connections.

Table 1-1: Existing UI 115-kV Lines, by Substation Segment and Typical Existing Configuration

Substation	Circuit # Designation/Location in Relation to MNR Tracks	
	115-kV Line: North of Railroad Tracks	**115-kV Line: South of Railroad Tracks**
Structure B648 – Ash Creek Substation	1130 (Independent monopoles)	1430* (On southern catenary support columns)
Ash Creek Substation – ResTap (Ash Creek to Catenary Structure 737)	1130 (Independent monopoles; *115-facilities previously removed from northern catenary support columns*)	91001-2* (On southern catenary support columns)
Ash Creek Substation –Resco Tap (Catenary Structure 737 to Resco Tap)	1130 (On northern catenary support columns)	91001-2 (On southern catenary support columns)
Resco Tap – Pequonnock Substation	1130 (On northern catenary support columns)	91001-1 (On southern catenary support columns)
Pequonnock Substation – Congress Street Substation	8809A (On northern catenary support columns)	8909B (On southern catenary support columns)

Existing portion of the 1130 Line (supported on independent monopoles) will not be affected by the Project.
*The 1430 and 91001-2 lines diverge from the CT DOT corridor to connect to Ash Creek Substation along the UI's 0.23-mile ROW. In this area, the 1430 and 91001-2 lines are supported, in a double-circuit configuration, on three lattice steel towers.

[6] Formerly, Wheelabrator Technologies, Inc.

The Project 115-kV line upgrades along the CT DOT corridor will commence at catenary structure B648S,[7] where UI's existing 1430 Line is supported on a bonnet located on top of the southern railroad catenary column.[8] The 1430 Line is located on the southern MNR catenary support columns from catenary structure B648S east to Ash Creek Substation.

Along this segment of the CT DOT corridor, including the entire length in Fairfield and extending to catenary structure B737 in Bridgeport, UI's 1130 Line is supported on monopoles located north of and parallel to the MNR tracks; no existing UI infrastructure is co-located on the northern catenary support columns. The 1130 Line was installed in the early 1990s; the Project does not involve any work on the 1130 Line west of existing structure TP735N, which is located at the Interstate 95 (I-95) crossing east of Ash Creek in Bridgeport.

Near Ardmore and Kenard streets in eastern Fairfield, the 1430 Line diverges southeast from the CT DOT corridor, extending for approximately 0.23 mile along the existing UI ROW across Ash Creek and terminating at Ash Creek Substation. Within this UI ROW, the 1430 Line is supported on three lattice steel towers in a double-circuit configuration with the 91001-2 Line, which extends north from Ash Creek Substation and then east along the CT DOT corridor to Resco Tap.

Along the CT DOT corridor, the 91001-2 Line is supported primarily on bonnets located on the southern railroad catenary columns. However, at the I-95 crossing just east of Ash Creek in Bridgeport, the line is supported on monopoles (Structures TP734S, TP735S). East of this I-95 crossing, the existing 1130 Line and the 91001-2 Line are located on bonnets on top of the northern and southern railroad catenary structures, respectively. Similarly, along the remainder of the CT DOT railroad corridor east to Congress Street Substation, UI's existing 115-kV lines are typically situated on both the north and south railroad catenary support columns; exceptions are monopoles at the second I-95 crossing east of Black Rock Harbor and

[7] In this and other Project documents, a structure numbered with a "B" refers to the number of an existing bonnet/catenary support column. The "S" at the end of the number refers to the southern catenary support column. A structure designated with a "P" refers to a new pole for the rebuilt 115-kV lines. "N" or "S" in a structure designation refer to the location of the structure north or south of the railroad tracks. "TP" refers to an existing structure to be reused (pole to remain).

[8] UI's existing 1430 Line (supported on catenary structure B648S) connects to Eversource's portion of the 1430 Line, which is supported on catenary structure B647, located west of Sasco Creek in Westport. The Project does not involve any work on the Eversource portion of the 1430 Line.

a double-circuit lattice steel tower located above the MNR tracks at the Bridgeport Transportation Center.

The length of the CT DOT railroad corridor between catenary structure B648S and Congress Street Substation is approximately 7.6 miles. However, UI is in the process of rebuilding its existing Pequonnock Substation, which is located adjacent to Bridgeport Harbor south of the CT DOT railroad corridor and Ferry Access Road. For the Pequonnock Substation Rebuild Project,[9] UI is developing a new substation at 1 Kiefer Street (approximately 0.15 mile west of the existing substation) and, to connect the new substation to the transmission grid, is rebuilding the existing 115-kV lines along approximately 0.3 mile of the CT DOT corridor in the vicinity of the old and new substations. Thus, in total, this Project will involve rebuilding UI's 115-kV lines along approximately 7.3 miles of the CT DOT corridor, as well as along the 0.23-mile connection to Ash Creek Substation.

1.1.3 Project Background

Historical Overview: UI Transmission Facilities and the Railroad Corridor

CT DOT owns the linear corridor within which four MNR tracks are located. Four train stations are located along the railroad corridor in the Project area: Southport, Fairfield Center, and Fairfield Metro stations in Fairfield and the Bridgeport Train Station in Bridgeport. The Bridgeport Train Station is a shared MNR/Amtrak facility.

UI's existing 115-kV transmission lines between catenary structure B648S and Congress Street Substation are located within the CT DOT railroad corridor, predominantly on top of support columns on either side of the catenary structures that span the rail lines. However, portions of the 115-kV lines are supported on monopoles, including the segment of the 1130 Line in Fairfield and western Bridgeport from Structure TP648N to Structure TP736N (north side of the railroad corridor), as well as at the Mill Hill Road overpass and the Fairfield Metro Station in Fairfield and the I-95 overpasses in Bridgeport. These monopoles also are situated within CT DOT property.

[9] UI's Pequonnock Substation Rebuild Project is described in CSC Docket No. 483.

The railroad catenary structures, which are owned by CT DOT and operated by MNR, were originally built between 1912 and 1914 to support MNR signal and feeder wires (2/0 and 4/0 copper wires) for the electric operation of the trains. The catenary structures consist of lattice posts with a truss spanning over the railroad. Under a lease agreement between UI and CT DOT / MNR[10], UI can construct and operate 115-kV lines within the railroad corridor. Accordingly, the catenary structures also include UI-owned columns, referred to as bonnets, on top of the lattice posts. The bonnets support UI's 115-kV conductors, shield wires, insulators, and insulator hardware.

In the mid-1960s, UI added bonnets and 115-kV infrastructure on top of the CT DOT southern catenary support structures between catenary structure B648S and Congress Street Substation. In 1991, to support a new 115-kV transmission line between Pequonnock Substation and Eversource's Ely Avenue Substation in the City of Norwalk (referred to as the Pequonnock-Ely Project), similar bonnet/pole extensions were added to some of the northern catenary structures, while monopoles were installed within the railroad corridor between catenary structure B648 in Fairfield and catenary structure B737 in Bridgeport.

A total of 157 catenary structures are located along the CT DOT corridor in the Project area. The following summarizes the catenary structures and 115-kV line circuit miles, by location between substations or interconnection points:

Location	Structure B648-Ash Creek Substation	Ash Creek Substation-Resco Tap	Resco Tap–Pequonnock Substation (Str. P766DC)	Pequonnock Substation (Str. P774S)-Congress Street Substation	Total
115-kV Circuit Miles	3.96	1.69 (Single Circuit) 1.04 (Double Circuit)	2.38 (Double Circuit)	1.04 (Double Circuit)	**10.11**
# of Catenary Structures	87	36	24	10	**157**

[10] UI's lease agreement for the ROW is with CT DOT, whereas its maintenance agreement is with MNR.

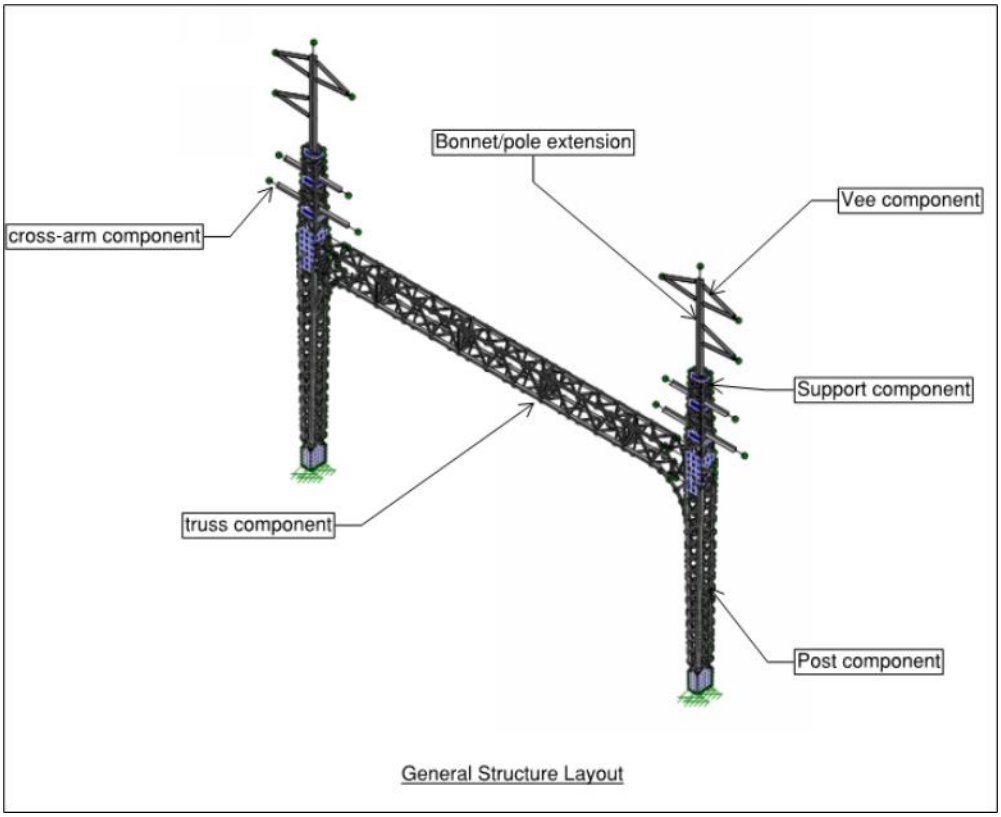
Figure 1-2 provides representative schematics of the catenary structures and the existing bonnets with the 115-kV lines positioned on top of both catenary support columns. The figure illustrates the two typical arrangements of the 115-kV lines on top of the catenary supports in the Project area. Figure 1-3 provides a representative photograph of the existing alignment of the UI 115-kV lines in Fairfield (i.e., the 1430 Line on top of the southern railroad catenary structure and 1130 Line on monopoles on the north side of the MNR tracks), while Figure 1-4 illustrates the alignment of the UI lines on both the south and north railroad catenary structures in Bridgeport.

CT DOT Railroad Corridor Characteristics

Between catenary structure B648 and Congress Street Substation, the CT DOT corridor varies in width, but generally ranges from approximately 85 to 150 feet, excluding the portion of the corridor adjacent to Railroad Avenue in Bridgeport and CT DOT-owned railroad station parking areas.

The existing UI 115-kV facilities that are overbuilt on the catenary structures are typically approximately 60 to 80 feet above ground (i.e., including the catenary support column, bonnets, and wires). The 1130 Line monopoles between catenary structures B648 and B737, which were installed as part of the Pequonnock-Ely Project, range in height from 80-120 feet above ground.

Figure 1-2: Schematic of Typical Railroad Catenary Structure with UI Components on both Catenary Supports



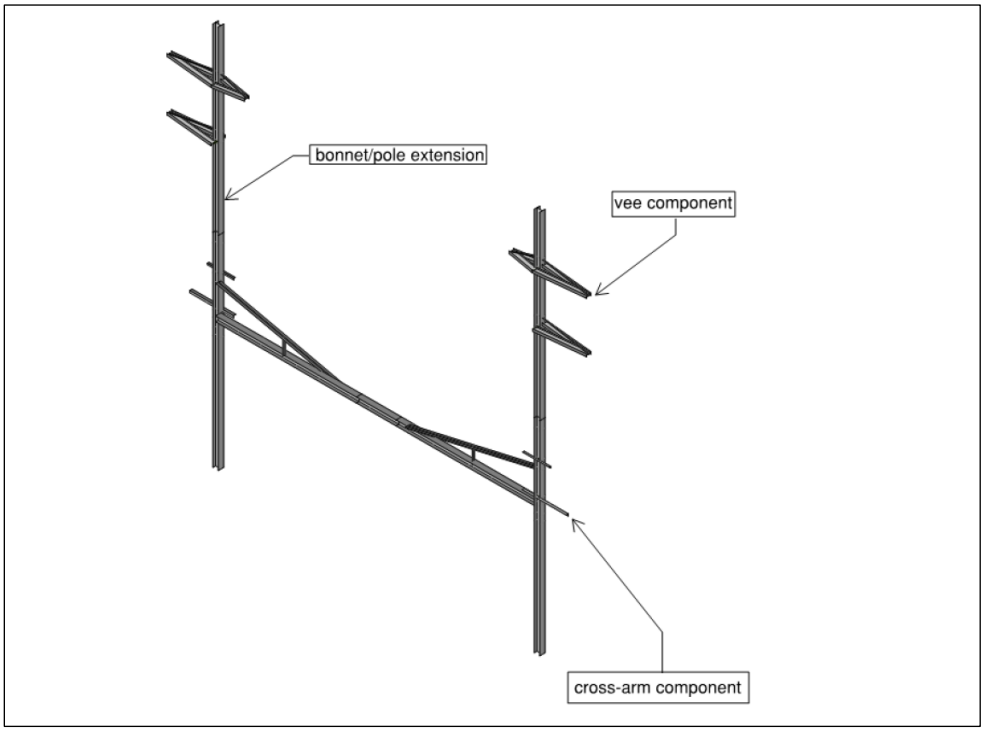


Figure 1-3: Representative UI Bonnets on Southern Railroad Catenary Structure and Line 1130 on Monopoles on North Side of Railroad Tracks (Town of Fairfield; View to the West)

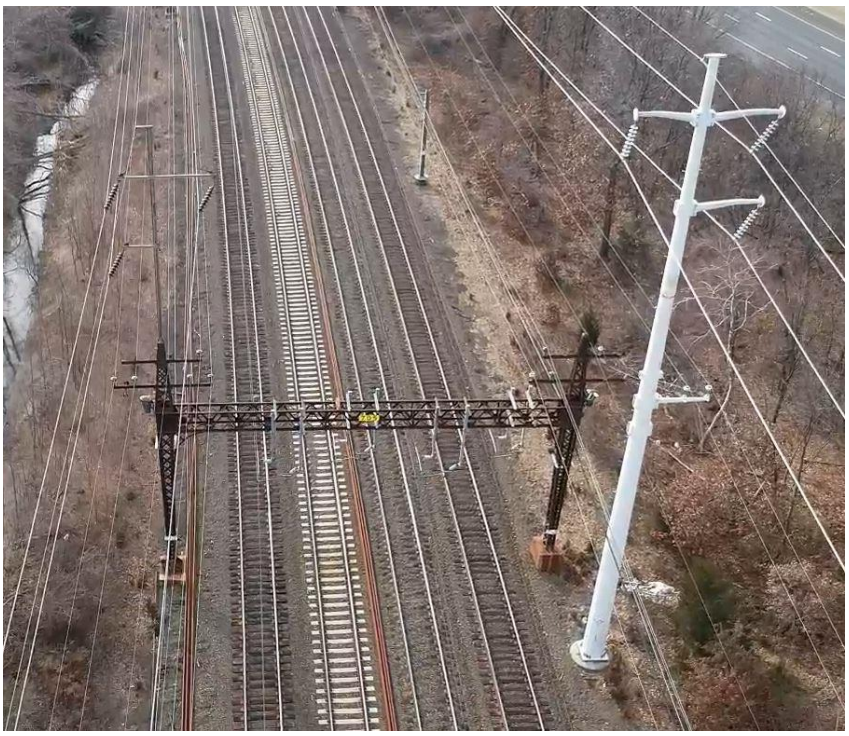
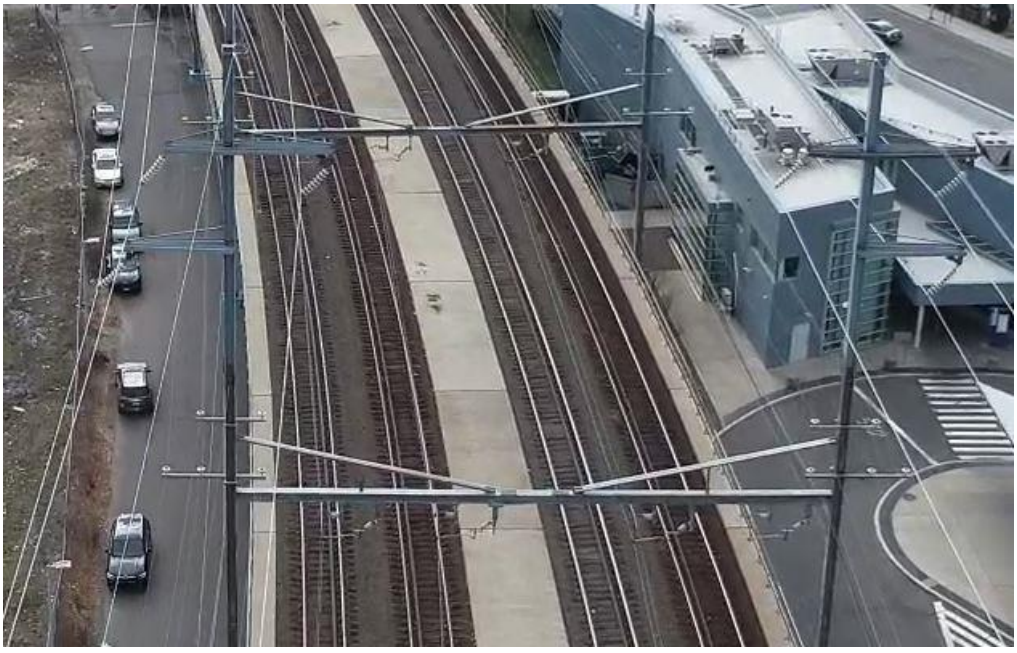


Figure 1-4: Representative Railroad Catenary Structures and UI 115-kV Lines near Congress Street Substation (City of Bridgeport; View to the East)



Rationale for the Project

In 2018, UI initiated engineering analyses of the 115-kV lines between catenary structure B648S and Congress Street Substation. The purpose of these analyses, which included field observations of the catenary support structures, was to evaluate the asset condition of the portions of the existing catenary structures that support the 115-kV lines, given the as-built railroad mechanical loadings, as well as the age of both the UI infrastructure (e.g., bonnets) and the steel catenary support system.

The analyses found that the existing structural support system for the UI transmission lines exhibits various physical limitations (e.g., age-related deterioration, corrosion). UI then identified and evaluated alternative solutions for upgrading the lines, ultimately determining that, to maintain the reliability of the bulk transmission grid, the 115-kV lines must be relocated off the bonnets on the catenary structures and rebuilt using new galvanized steel monopoles, conductor, and optical ground wire (OPGW).[11]

Specifically, UI concluded that the 115-kV lines must be rebuilt to meet current National Electrical Safety Codes (NESC) and UI standards, which include the ability to withstand extreme weather conditions (e.g., hurricane Category 3 wind loads). After the 2018 evaluations established the need for the Project, UI commissioned additional, more extensive analyses to refine the design and the location of the rebuilt 115-kV lines. These studies resulted in the identification of the proposed Project. UI is presently conducting additional engineering and environmental analyses to refine the proposed Project.

[11] OPGW is a dual-functioning cable that provides shielding for lightning protection on overhead transmission lines and also contains optical fibers that are used for telecommunication purposes. OPGW, which is placed above the electrical conductors, can be used in lieu of traditional static/shield/earth wires.

1.2 SUMMARY OF PROPOSED PROJECT FACILITIES AND EASEMENT REQUIREMENTS

1.2.1 Project Facilities

The principal Project components are summarized as follows (details are included in Section 2):

- ***Remove the 115-kV lines from the railroad catenary support structures and rebuild the lines on independent, galvanized steel monopoles, in either single- or double-circuit configurations, and including new conductors and OPGW***. For approximately 5.4 miles from catenary structure B648S in Fairfield east to catenary structure B737 in Bridgeport, the existing 1430 Line will be removed from the southern catenary support structures and rebuilt on single-circuit monopoles located on the south side of the MNR tracks. For the remainder of the Project east of catenary structure B737 to Congress Street Substation, the 115-kV lines will be removed from both the north and south catenary columns and rebuilt, primarily on double-circuit monopoles, located either north or south of the railroad tracks, depending on availability of space to accommodate the new structures. In one area, the rebuilt lines will be placed on single-circuit monopoles, located on either side of the railroad tracks. The proposed new structures in Fairfield extend from P648S to P728S and the proposed structures in Bridgeport include structures P730S to P783N.

- ***Interconnect the rebuilt 115-kV lines to UI's existing Ash Creek and Congress Street substations.*** UI will perform minor modifications within the substation boundaries as needed to support the rebuilt line connections and will install single-circuit or double-circuit monopoles as needed to maintain the existing 115-kV connections to the substations. This work will include removing the 115-kV facilities (existing lattice steel towers, conductors) along the UI ROW to Ash Creek Substation and rebuilding each of the two 115-kV lines on new single-circuit monopoles.

- ***Interconnect the rebuilt lines to the Resco Tap, located adjacent to the CT DOT corridor, and replace the tap line shield wire with OPGW.*** Minor modifications will be required to support the new OPGW and to install underground fiber connections to the Resco Substation.

- ***Decommission and remove UI's existing 115-kV facilities from the railroad catenary structures.*** Depending on the outcome of further consultations with CT DOT/MNR, the bonnets on some of the catenary support structures may remain for MNR's use. Likewise, the existing UI shield wire may be lowered onto the catenary structures to provide protection from lightning in locations where MNR does not have its own shield wire. In such cases, the ownership of the bonnets and shield wire is expected to be transferred to CT DOT.

A total of 103 new monopoles will be installed. The new structure heights will generally range from approximately 100 feet to 135 feet above ground. However, taller structures (195 feet) will be required between the Pequonnock Substation and the Congress Street Substation to span both the I-95 overpass and portions of the west bank of the Pequonnock River.

1.2.2 Easement Requirements

Along the railroad corridor, UI proposes to locate the new monopoles on CT DOT property to the extent practical. However, because of constraints such as the width of the CT DOT corridor, terrain, and existing land uses, UI cannot install and operate the rebuilt lines entirely within CT DOT property while maintaining appropriate clearance distances between the 115-kV conductors. UI also proposes to expand portions of the existing ROW between the railroad corridor and Ash Creek Substation. As a result, UI proposes to acquire an estimated 19.25 acres of new permanent easements[12] from the owners of properties adjacent to or near the CT DOT railroad corridor and adjacent to the UI ROW extending to Ash Creek Substation.

Of the estimated 19.25 acres of proposed new permanent easement:

- Approximately 19.1 acres consist of new areas required to accommodate the new 115-kV structures, wire, blowout, and vegetation management in accordance with mandated electric clearance standards and UI's design criteria.[13]
- Approximately 0.15 acre are required across other private properties to reach Project construction sites and to provide permanent access for the operation and maintenance of the rebuilt 115-kV.

Approximately 10 acres of temporary construction easements also will be required. Section 2 provides additional information about UI's proposed permanent and temporary easements for the Project.

1.3 ORGANIZATION AND PURPOSE OF THE MCF

The proposed Project is subject to the jurisdiction of the Connecticut Siting Council (Council or CSC) and other State and Federal regulatory agencies. In the first quarter of 2023, UI plans to submit to the Council the Project's *Application for a Certificate of Environmental Compatibility and Public Need* (*Application*). Prior to the submission of such an application,

[12] UI's standard permanent easements, as anticipated to be required for this Project, pertain to the transmission line structures, wire clearances, access, vegetation management, limitations on structures that can be placed on the easement (e.g., buildings, pools,), and protection from excavation, all as needed for UI's installation, maintenance, operation, and repair of the utility infrastructure.

[13] The width of the required permanent easement is pursuant to UI standards for transmission vegetation management.

the Council requires applicants to provide available project information, in the form of a Municipal Consultation Filing (MCF), to the potentially affected municipalities.

The MCF is an important mechanism for informing municipal representatives about a proposed project and for soliciting comments about the project. The comments received during the MCF process then can be addressed in the project's application to the Council.

This MCF. which reflects the results of the engineering design, environmental analyses, and agency consultations that UI has completed thus far for the Project, is being provided to the municipal representatives of Fairfield, Bridgeport, and Westport. [14] Using the data that UI has developed to date concerning the Project, the MCF is formatted to include the same types of information that will be presented in the Project's CSC Application. Accordingly, the MCF is organized in two volumes. This Volume 1:

- Describes the need for the proposed Project, as well as the general locations and characteristics of both the existing and proposed rebuilt 115-kV transmission lines (Section 1);
- Provides technical specifications for the proposed rebuilt transmission lines, including structure types and heights, conductor and OPGW specifications and substation connections, and permanent easement requirements (Section 2);
- Describes Project construction and operation/maintenance information, including land requirements, as well as methods for installing the new monopoles and conductors, modifying certain related existing 115-kV facilities along the CT DOT corridor, and removing the existing 115-kV facilities from the railroad catenary structures (Section 3);
- Identifies the proposed Project schedule and anticipated construction work hours (Section 4);
- Describes existing environmental resources in the Project area, including inland and tidal wetlands/watercourses, vegetation, wildlife, and fisheries, land uses, coastal resources, recreational and community facilities, cultural resources, visual resources, transportation infrastructure, and air and noise quality (Section 5);

[14] Although the Project will not involve work in Westport, UI is providing the MCF to Town of Westport officials, pursuant to CSC requirements, because the town boundary with Fairfield is within 2,500 feet of the western portion of the Project area.

- Discusses the Project's potential environmental impacts and reviews measures designed to avoid or mitigate such environmental effects during both the construction and operation / maintenance of the 115-kV facilities (Section 6);

- Provides data concerning electric and magnetic fields (EMF) associated with the existing and proposed 115-kV facilities (Section 7);

- Reviews the permits and approvals required for the Project, UI's consultations with Federal, State, and local agencies completed to date, and the status of public outreach efforts (Section 8);

- Discusses the alternatives analyses that led to the selection of the proposed Project as the preferred solution for maintaining and enhancing the reliability and resiliency of the 115-kV facilities (Section 9); and

- Provides acronyms and a glossary of terms used in this MCF (Section 10).

Appendices include supporting information used in the preparation of this MCF, including copies of agency correspondence (Appendix A) and environmental resource and other technical reports (Appendices B-D).

Volume 2 provides detailed 11x17-inch Project maps, plans, and drawings, including:

- A Project location map and key index to the mapping.

- Aerial-based maps, at a scale of both 1"=400' and 1"=100', which illustrate the locations of the existing and proposed 115-kV facilities, the railroad catenary structures from which UI's existing 115-kV facilities will be removed, the CT DOT property boundaries, areas of proposed tree clearing, and existing land uses and environmental features in the Project vicinity.

- Cross-sections that provide typical representations of the proposed 115-kV monopoles and other Project modifications in relation to the CT DOT corridor, MNR railroad tracks, UI ROW to Ash Creek Substation, and adjacent properties (e.g., depictions of additional UI permanent easement widths).

- Plan and profile drawings of the proposed 115-kV line alignment.

2. TECHNICAL SPECIFICATIONS FOR THE PROJECT

The technical Project specifications contained in this section include information concerning:

- UI's proposed 115-kV transmission line rebuild facilities, by municipality, including new double-circuit and single-circuit monopoles, as well as termination and connection points;
- Land requirements, including proposed permanent and temporary easements;
- Transmission line structure design, appearance, and heights;
- Conductor and OPGW sizes and specifications;
- Design voltages and capacities;
- The UI substations to which the rebuilt lines will connect, including proposed modifications within the substations (as required); and
- Estimated capital (construction) cost and service life for the Project.

2.1 PROPOSED 115-KV TRANSMISSION LINE REBUILD FACILITIES

2.1.1 Transmission Lines

UI proposes to remove all its existing 115-kV transmission lines and infrastructure (e.g., bonnets) from the railroad catenary support columns and to rebuild the lines on independent single- or double-circuit monopoles, to be located parallel to and mostly within the CT DOT-owned railroad corridor. Along UI's ROW leading to Ash Creek Substation, UI proposes to remove the existing double-circuit lattice steel towers and rebuild the 115-kV lines on single-circuit monopoles. In total, 103 new single- or double-circuit monopoles will be installed.

Of the 103 new monopoles, 62 single-circuit monopoles will be located along the CT DOT corridor in Fairfield; the remaining 37 new monopoles (22 double-circuit and 15 single-circuit) will be located in Bridgeport. Along the 0.23-mile UI ROW to Ash Creek Substation, two new single-circuit monopoles will be located in Fairfield and two will be located in Bridgeport.[15]

[15] One additional monopole (Structure P714WS-3) will be installed within Ash Creek Substation to support OPGW.

The primary Project components are illustrated schematically on Figure 2-1 (refer also to the Volume 2 maps) and are summarized in Table 2-1.

Figure 2-1: Proposed Configuration/Location of Rebuilt 115-kV Lines, by Segment.

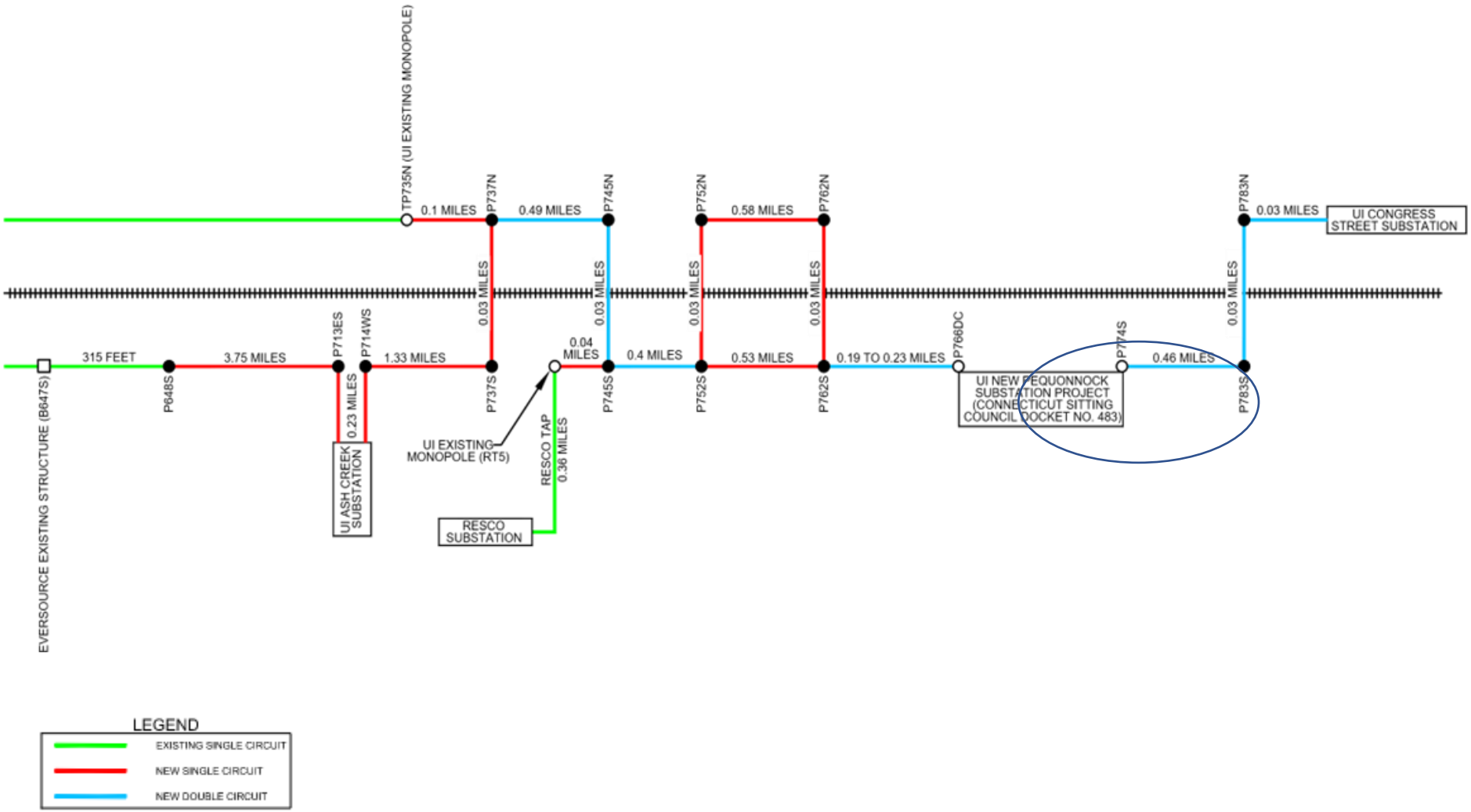


Table 2-1 Summary of Proposed Project Facilities, including Existing 115-kV Infrastructure to be Removed or Modified

Municipality	Length of Route Segment (Approx. Miles)	Proposed Facilities		Existing 115-kV Infrastructure to be Removed/Modified				
		No. New Monopoles/No. of Circuits	Structure Type	Bonnets to be Removed from Catenary Support Structures (No.)	Monopoles to be Removed (No.)	Monopoles to Remain (No.)	Lattice Towers to be Removed (No.)[c]	W-Flange Structures to be Removed
Structure P648S to Structure P713ES (Line 1430)	3.73	51 Single-circuit	13 Deadends 35 Tangent 6 Tangent with MNR underbuild (signal or signal and feeder wires attached to new monopoles)	86	-	2		1
Structures P713ES/P714WS to Ash Creek Substation (Lines 1430 and 91001-2)	0.23	6 (3 single-circuit for 1430 and 3 single-circuit for 91001-2)	6 Deadends	-	-	-	3 (AC1, AC2, AC3)	-
Structure P714WS to Structure P737N (Line 91001-2)	1.36	13 Single-circuit	8 Deadend 4 Tangent 4 Tangent with MNR under build (signal or signal and feeder wires attached to new monopoles)	26	-	4		-
Structure TP735N to Structure P737N (Line 1130)	0.10	1 Single-circuit	1 Tangent	-	-	1*	-	-
Structure P737N to Resco Tap (P745S) (Lines 1130 & 91001-2)	0.52	9 Double-circuit	3 Deadend 4 Tangent 2 Hybrid Deadend/Suspension	19	-	-	-	-
Resco Tap (P745S) to Pequonnock Substation (P766DC) (Lines 1130 &91001-1)	1.26 for Line 1130; 1.12 for Line 91001-2	19 (9 Double-circuit and 10 Single-circuit)	***Double-circuit***: 4 Deadend (One with UI Distribution Underbuilds, 1 Tangent with UI Distribution Underbuilds 4 Hybrid Deadend/Suspension (One with UI Distribution Underbuilds)	42	3**	4	-	-

Municipality	Length of Route Segment (Approx. Miles)	Proposed Facilities		Existing 115-kV Infrastructure to be Removed/Modified				
		No. New Monopoles/No. of Circuits	Structure Type	Bonnets to be Removed from Catenary Support Structures (No.)	Monopoles to be Removed (No.)	Monopoles to Remain (No.)	Lattice Towers to be Removed (No.)[c]	W-Flange Structures to be Removed
			Single-circuit: 7 Deadend (One with UI Distribution Underbuild), 3 Tangent					
Pequonnock Substation (P774S) to Congress Substation (Lines 8809A & 8909B)	0.52	4 Double-circuit	4 Deadend	18	3^	-	1	-
TOTAL	**10.11 Circuit Miles**	**103**		**191**	**6**	**11**	**4**	**1**

Notes: (refer to the Volume 2 maps for specific structure locations)

*Conductor, hardware, and OPGW will be removed. Bottom section of monopole remains to support MNR feeder/signal wires and aerial groundwire. The locations where UI's existing115-kV lines are not positioned on the railroad catenary structures are:

- Two monopoles on either side of Mill Hill Road in Fairfield (85-90 feet tall); these poles will remain and will be reused for the Project.
- One structure comprised of three steel W-Flanges near the Fairfield Train Station (80 feet tall); this structure will be removed as part of the Project.
- Three lattice towers between the CT DOT corridor and Ash Creek Substation (85-100 feet tall); all will be removed as part of the Project.
- Two monopoles near the Fairfield Metro Train Station (105-110 feet tall); these structures will be rotated 180° and reused for the Project.
- Two monopoles on either side of each I-95 crossing (Structures TP734S, TP735S,TP753S, TP754N, TP755S, and TP756N - 125-150 feet tall); these structures will be reused for the Project.
- Two monopoles on the south side of I-95 (Structures TP775S and TP775N - 125 feet tall); these structures will be removed as part of the Project.
- One 215-foot-tall lattice tower, located north of I-95 and east of Water Street in Bridgeport, which will be removed as part of the Project.

**Temporary poles will be installed as part of UI's Pequonnock Substation Rebuild Project. These poles will be removed as part of this Project.

^ Two existing poles will be removed, and one of the Pequonnock Substation Rebuild Project temporary poles will be removed as part of this Project.

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Table 2-1 summarizes the primary Project components, which are described below:

1. ***Structure B648 to Structure B737 – approximately 5.4 miles – Remove 115-kV Facilities from Southern Catenary Structures and Connect to Ash Creek Substation***: Along this segment, which includes the entire length of the Project in Fairfield,[16] Project activities will be required along the south side of the CT DOT corridor, where UI's existing 1430 Line and associated infrastructure are aligned on the railroad catenary structures. UI does not propose to rebuild the existing 1130 Line, located on monopoles aligned to the north of the MNR tracks.[17]

   The 1430 Line (4 miles) will be removed from the existing bonnets on the southern catenary support columns and rebuilt on new single-circuit monopoles, located south of the railroad tracks, extending to the interconnection with UI's ROW that connects to Ash Creek Substation.

   At Structure P713ES, the 1430 Line will diverge from the CT DOT corridor, extending along UI's ROW for approximately 0.23 mile to the southeast, spanning Ash Creek,[18] to terminate at Ash Creek Substation, which is located directly south of the creek in Bridgeport.

   Between the CT DOT corridor and Ash Creek Substation, UI's 91001-2 Line, which extends from the Ash Creek Substation northwest to the CT DOT corridor, is co-located with the 1430 Line on three lattice steel towers. Along this 0.23-mile segment of the 1430 and 91001-2 lines, the three existing double circuit lattice towers will be removed. Each lattice tower will be replaced with two single-circuit steel monopoles, with one set of monopoles supporting the 1430 Line and the other the 91001-2 Line.

   From the intersection with the CT DOT corridor north of Ash Creek Substation to Structure B737 (approximately 1.4 miles), the 91001-2 Line will be removed from the catenary structures and rebuilt on new single-circuit monopoles, all on the south side of the railroad tracks.

2. ***Structure B737 to Congress Street Substation – approximately 2.7 miles:*** Along this segment of the CT DOT corridor, UI's 115-kV lines are presently supported on both the north and south catenary columns. These lines will be removed from the bonnets and rebuilt primarily on new on double-circuit monopoles, located on either the north or south side of the railroad tracks, depending on location and based on availability of space to accommodate the new structures. There is a small section where the rebuilt lines will be placed on single-circuit monopoles, one line located north of the tracks and the second line located south of the tracks. The rebuilt line configuration, as currently planned is:

[16] The Fairfield-Bridgeport boundary line (at Ash Creek) is between structures P728S and P730S.
[17] UI may have to perform some work on the north side of the MNR tracks to remove guys wires that are connected to the UI 115-kV facilities on the southern catenary support structures and that span the railroad tracks.
[18] Ash Creek forms the border between Fairfield and Bridgeport.

- ✓ **B737 to Resco Tap.** At P737S, the rebuilt 91001-2 Line will extend north, spanning the railroad tracks. From P737N[19] (near Fairfield Avenue in Bridgeport) to P745N (near Howard Avenue in Bridgeport), the 1130 and 91001-2 lines will be rebuilt on double-circuit monopoles to be located on the north side of the tracks, mostly within private property. This alignment is necessary due to the elevated nature of the railroad tracks and the location of a roadway directly north of the elevated tracks. At P745N-P745S, both 115-kV lines will extend to the south, spanning the railroad tracks. Structure P745S will provide a three-way tap to connect to Resco Substation.

  UI's existing overhead 115-kV tie-line to Resco Substation extends south along Howard Avenue and includes five structures. As part of the Project, the existing shield wire on the Resco Tap line will be removed and replaced with OPGW. No structures on the tap line will be replaced.

- ✓ **Resco Tap to Near New Pequonnock Substation (P766DC).** From the Resco Tap to Structure P752S, the 91001-1 Line and 1130 Line will continue east, in a double-circuit configuration, on the south side of the railroad tracks. In this area, the rebuilt lines will be located adjacent to Railroad Avenue, outside the CT DOT railroad corridor.

  At P752S, the 1130 Line will extend north across the railroad tracks in a single-circuit configuration, crossing I-95 and then paralleling the interstate for three spans before turning south adjacent to Myrtle Avenue and then turning east to continue along the north side Railroad Avenue for one span prior to crossing back across the railroad tracks at Structure P762N. In this area, the 91001-1 Line will continue along the south side of the railroad corridor in a single-circuit configuration.

  At P762S, both 115-kV lines will converge and continue east, in a double circuit configuration, along with south side of Railroad Avenue, interconnecting with the 115-kV line segment being rebuilt as part of UI's new Pequonnock Substation Rebuild Project (Structures P765BS and 766DC).

- ✓ **North of New Pequonnock Substation to Congress Street Substation.** In this area, the 8809A and 8909B Lines are located on bonnets on top of both the north and south catenary structures, respectively, except near Bridgeport Train Station, where the 115-kV lines are supported on a tall lattice tower that straddles the tracks.

  Along this portion of the CT DOT corridor, all 115-kV facilities will be removed from the catenary structures and lattice tower. The 115-kV lines will be rebuilt on double circuit monopoles primarily located on the east side of the railroad corridor. Approaching Congress Street Substation, which is located on the west side the CT

[19] A new structure, P736NN will be installed along the 1130 Line directly west of P737N; this structure will replace the existing monopole, TP736N, as it cannot support the new alignment that is required to correctly align the 1130 line to a double-circuit configuration starting at P737N.

DOT corridor, the two 115-kV lines will cross the tracks, entering the substation in a double circuit configuration.

From catenary structure B648S to Fairfield Avenue (east of catenary structure 737) in Bridgeport, the new monopoles will be offset from the catenary structures based on the railroad corridor width and CT DOT / MNR and NESC clearance requirements. This offset will vary based on location, but typically is expected to be 20 feet. The centerline of the new single-circuit monopoles will range from approximately 18 to 28 feet from the edge of either the CT DOT corridor, where space is available within the corridor, or from the edge of any new UI permanent easement.

Where the CT DOT corridor is not sufficiently wide to accommodate the new monopoles and maintain the required 25-foot-horizontal clearance between the new 115-kV conductors and adjacent objects and vegetation, UI proposes to acquire permanent easements. These permanent easements will be located on properties adjacent to or near the CT DOT corridor (refer to Section 2.2 and the Volume 2 maps for additional information).

The new monopoles between Fairfield Avenue (east of catenary structure 737) and Congress Street Substation will be located primarily on privately-owned or City of Bridgeport property. In this area, the railroad tracks are at an elevated grade, with roads on either side. As a result, UI proposes to acquire new permanent easements from these property owners. Such new permanent easements will extend 32 feet from either side of the centerline of the new double-circuit monopoles.

The new structure heights will vary by location but will generally range from about 100 to 135 feet above ground. The tallest structures, at 195 feet, will be between Pequonnock and Congress Street substations in order to support a long span over both the I-95 overpass and the western bank of the Pequonnock River.

2.1.2 Substations

UI's 115-kV lines are presently connected to the Ash Creek, Resco, Pequonnock, and Congress Street substations.[20] The Ash Creek, Pequonnock, and Congress Street substations are 115-kV/13.8-kV facilities that step down power delivered from the 115-kV lines to feed UI's local electric distribution system, which serves customers in the Greater Bridgeport/Fairfield area. The rebuilt 115-kV lines also will connect to these substations. No expansion of the existing substations will be required for the Project.

The 115-kV lines proposed to be rebuilt as part of this Project will interconnect to UI's new Pequonnock Substation via the 115-kV line segments that will be rebuilt as part of UI's Pequonnock Substation Rebuild Project. However, as part of this Project, the jumper connections at the riser structures for Lines 1130 and 8909B will be modified to correctly align the phases of the re-built circuits to the existing line terminal structures in the substation yard.

UI's rebuilt 115-kV lines along the CT DOT corridor will continue to connect to the Resco Substation via the existing 0.3-mile Resco Tap line. As part of the Project, the top shield wire on the existing Resco Tap line will be replaced with OPGW and the hardware on the five existing Resco Tap line structures will be modified to support the new OPGW and the associated OPGW fiber splice boxes. New underground fiber optic cable will be installed inside the Resco Substation to connect the fiber at the OPGW splice box to the control enclosure. The location of the tap point will slightly change due to the new configuration of the rebuilt 115-kV lines adjacent to the railroad tracks. Thus, one span of conductor will be installed to reconnect the existing Resco Tap with the rebuilt 115kV lines.

At Ash Creek and Congress Street substations, hardware modifications will be required on existing structures within each substation to accommodate the new larger 1590 kcmil conductor, as well as the new OPGW and the associated OPGW fiber splice boxes. Further, new underground fiber optic cable will be installed inside each substation to connect the fiber at the OPGW splice box to the substation control enclosures. In addition, one new monopole

[20] UI's 1430 and 1130 lines connect to the Eversource transmission system near the Fairfield-Westport border. These two lines continue, under Eversource ownership, to the west along the CT DOT corridor.

(Structure P714WS-3, approximately 45 feet tall) will be installed within Ash Creek Substation to support the new OPGW.

2.2 LAND REQUIREMENTS

2.2.1 Route Characteristics

In the Project area, the total width of the CT DOT railroad corridor varies substantially, from a minimum width of 60 feet (in Bridgeport where the MNR tracks are elevated adjacent to Railroad Avenue) to a maximum width of 210 feet. However, excluding the portion of the corridor adjacent to Railroad Avenue and CT DOT-owned railroad station parking areas, most of the corridor is generally between 85 and 150 feet wide. Within this corridor, the existing catenary support columns (one north of the railroad tracks and another south of the railroad tracks) are typically separated by approximately 60 feet.

However, because the railroad tracks and catenary structures are not uniformly centered in the middle of the CT DOT corridor, the width of the CT DOT property on either side of the tracks and catenary structures varies. In the Project area, the distance from the northern catenary support column and the northern edge of the CT DOT property ranges from 5 to 105 feet, whereas the distance from the southernmost catenary support column to the southern edge of the CT DOT property varies from 15 to 85 feet.

UI's existing 0.23-mile ROW between the CT DOT corridor and Ash Creek Substation varies in width from approximately 40 feet to 192 feet.

The Volume 2 maps illustrate the CT DOT property boundaries, the location of the railroad tracks and catenary structures, and the proposed locations of the rebuilt 115-kV lines within and adjacent to the railroad corridor. The maps also depict the existing and proposed width of the UI ROW to Ash Creek Substation, as well as the locations of the existing lattice towers and proposed monopoles.

2.2.2 Permanent Easement Requirements

UI has designed the proposed Project to align the new monopoles, where possible, either within or directly adjacent to the CT DOT corridor and within UI's existing transmission easement (between the CT DOT corridor and Ash Creek Substation), while maintaining compliance with North American Electric Reliability Corporation, Inc. (NERC) and UI standards. However, in some locations, the new monopoles cannot be accommodated on CT DOT property because of the narrow width of portions of the railroad corridor, conflicting existing or planned land uses, topographic constraints, and the UI/CT DOT objective of separating the UI and MNR infrastructure to the extent practical. In addition, where the new 115-kV structures will be located within, but near the edge of the CT DOT corridor, UI also must acquire additional permanent easements from adjacent property owners. These additional easements will be needed to maintain appropriate clearances from the new 115-kV conductors to surrounding objects and vegetation, as required by NERC and UI standards.

Based on UI's current Project plans (which reflect the results of engineering and field studies conducted to date), UI proposes to acquire approximately 19.25 acres of permanent easements from property owners abutting or near the CT DOT railroad corridor property or adjacent to the UI ROW to Ash Creek Substation. Table 2-2 identifies the locations, by structure number, where UI anticipates that permanent easements will be required to accommodate the rebuilt 115-kV transmission lines. The locations of the areas in which permanent easements will be required are depicted on the aerial-based maps in Volume 2 and summarized as follows:

- A total of 72 new single-circuit monopoles will be installed from new Structure 648S to Fairfield Avenue (west of Structure B737 in Bridgeport). Of these 72 monopoles, 70 will be located south of and parallel to the MNR tracks and two will be located north of the railroad tracks; 53 of the monopoles (74%) will be on CT DOT property. Of the 19 new single-circuit monopoles located outside of the CT DOT railroad corridor (18 on south side of the tracks and one on north side of the tracks), one will be located on Town of Fairfield property, one will be located on CT DOT property adjacent to U.S. Route 1, and 17 will be on privately-owned property.

- A total of 31 new monopoles will be installed between Fairfield Avenue (east of Structure B737) and Congress Street Substation. Of these monopoles, 15 (12 double-circuit and three single-circuit) will be located south/east of the MNR tracks and 16 (nine double-circuit and seven single-circuit) will be located north/west of the railroad tracks. Because the railroad tracks in this area are elevated and bordered by roads and other development, all monopoles in

this section will be located outside of the CTDOT railroad corridor. Ten monopoles will be located on City of Bridgeport property, two will located within the CT DOT property adjacent to I-95, and 19 will be located on privately-owned property. UI proposes to acquire new permanent easements from all the owners of properties adjacent to the CT DOT railroad corridor in this area.

In total, UI proposes to acquire approximately 19.1 acres of new permanent easement (4.25 acres north of the CT DOT corridor and 14.85 acres south of the railroad corridor) to accommodate these new structures – that is, to provide space for the monopoles; to establish and maintain required conductor clearances; and to access utility infrastructure from adjacent properties.

In addition to the 19.1 acres of permanent easement required for the new monopoles and for clearance standards, UI proposes to acquire approximately 0.15 acre of new permanent easement across other private properties. These permanent easements will be needed to access Project construction sites and to provide ingress/egress for the long-term operation and maintenance of the rebuilt 115-kV lines.

To operate and maintain the upgraded 115-kV lines, continuous linear access along the railroad corridor will not be required. UI anticipates that access to the new structures will involve a combination of the use of the public road network, existing "pathways" (defined herein as existing gravel roads, paved roads, or parking areas located on private property). In addition, based on current Project plans, two new permanent access roads extending from the public road network, across private property, will be required to reach the rebuilt structures for operation/maintenance purposes.

Table 2-2: Proposed Permanent Easement Locations, by Line Segment and Structure

Project Segment	Structures for which New Permanent Easement Required (by Total Number of Structures, Structure Number)		Estimated Permanent Easement\ (Acres)		
	Structures Located on CT DOT Property, but Requiring Easements on Adjacent Properties	Structures Outside of CT DOT Property*	New Permanent ROW	Permanent Access Roads	Total
Structure B648 to Ash Creek Substation	24 P661S, P665BS, P668S, P669S, P671S, P673S, P675S, P676S, P677S, P678S, P679S, P682S, P689S, P690S, P691S, P692S, P693S, P704S, P709S, P710S, P710AS, P711AS, P712S, P713S	13 P655S, P656S, P657S, P664S, P681S, P695S, P696S (On CT DOT U.S. Route 1 ROW), P698S (Town of Fairfield Property-S. Benson Road ROW), P699S, P700S, P701S, P703S, P708S	5.85	0.05	5.90
Ash Creek Substation to Resco Substation Tap (Ash Creek Substation to Catenary Structure 737)	6 P725S, P726S, P727S, P730S, P733S, P737S	6 P716S, P721ES, P723S, P724S, P728S, P737N	3.15	0.10	3.25
Ash Creek Substation to Resco Substation Tap (Catenary Structure 737 to Resco Substation Tap)	None	9 P738N, P739N, P740N, P742N P743N, P744N, P744EN & P745N (All on City of Bridgeport Property) P745S	2.60	0	2.60
Resco Substation Tap - Pequonnock Substation	None	17 P746S, P748S, P749S, P750S, P751S, P752S, P756S (City of Bridgeport Housing Authority Property), P758S, P760S, P762S, P765AS (City of Bridgeport Housing Authority Property) P756N & P757N (On CT DOT I-95 ROW) P758N, P759N, P760N P762N (City of Bridgeport Property)	5.75	0	5.75
Pequonnock Substation – Congress Street Substation	1 P775AS	3 P779S, P783N & P783S (All on City of Bridgeport Property)	1.75	0	1.75
TOTAL	**31**	**48**	**19.10**	**0.15**	**19.25**

*= Structures located on municipal or State property are identified; all other structures proposed for location outside the CT DOT corridor will be on privately-owned land. The proposed structures in Fairfield extend from Structure P648S to P728S and the proposed structures in Bridgeport include structures P730S to P783N. In addition, CT DOT has a lease on the adjacent property at P657S.

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2.2.3 Temporary Access Road and Temporary Work Pad Requirements

In the Project area, the entire CT DOT corridor extends through an urban-suburban area where the transportation network is fully developed. As a result, public roads and abutting parking lots, private access roads, and driveways provide access to the vicinity of the CT DOT corridor.

To rebuild the 115-kV transmission lines, remove the existing 115-kV lines and UI infrastructure facilities from the railroad catenary support columns, and modify certain existing transmission line structures, UI proposes to use a combination of existing public roads, existing pathways, and new temporary or permanent access roads extending along the CT DOT corridor and from the public road network to the CT DOT corridor. Where the CT DOT corridor is sufficiently wide and terrain allows, UI proposes to align access roads on CT DOT property. The Volume 2 maps identify the locations of UI's proposed access roads for the Project.

For construction, access to each new monopole site will be required, as will a work pad from which the installation of the new structure will be performed. To remove the existing 115-kV lines and facilities from the railroad catenary structures, access also will be needed and, in general, will be similar to the access required for monopole installation. To remove the existing 115-kV lines and facilities from the catenary structures along the elevated portions of the MNR tracks (generally between Fairfield Avenue and Congress Street Substation), construction equipment will be staged either within Railroad Avenue, Water Street, or other paved areas. In addition, to rebuild the 115-kV line segment between Pequonnock and Congress Street substations, UI anticipates that some construction activities may be staged from a barge positioned in the Pequonnock River.

Construction access to each site will be from the same side of the CT DOT corridor in which the work will occur. Although the rebuilt 115-kV lines will span the railroad tracks in several locations, UI does not propose any direct construction access across the MNR rail lines. Refer to Section 3 for additional details regarding Project construction.

Based on current Project plans, an estimated 10 acres of temporary construction easements from owners of properties near the CT DOT corridor will be required for the Project. However,

this estimate is subject to change as UI continues to refine Project designs and construction plans. The amount of temporary easement needed for construction will be based on not only the final Project plans, but also on consultations with potentially affected property owners. These easements will be for temporary access roads and work pads for Project construction, including for the removals of bonnets and other infrastructure from the CT DOT corridor.

Access and construction activities within the railroad corridor will be coordinated with CT DOT/MNR. Refer to the Volume 2 maps for the proposed locations of temporary access roads and work pads.

2.3 PROPOSED REBUILD TRANSMISSION LINE SPECIFICATIONS

2.3.1 Conductor and OPGW Size and Specifications

The rebuilt 115-kV lines, support on either double- or single-circuit monopoles, will consist of 1590 kcmil aluminum conductor steel supported (ACSS) "Lapwing" conductors. However, the new structures will be designed to support 2156 kcmil ACSS "Bluebird" conductors and to meet the clearance requirements for such conductors, should such a future conductor upgrade be needed to support an increased demand for electricity.

The new single-circuit monopoles will support either one 0.583-inch 72 count fiber or one 0.726-inch 96 count fiber OPGW. The double-circuit monopoles will support two 0.583-inch 72 count fiber OPGW.

2.3.2 Proposed Overhead Line Design, Appearance, and Height

The 115-kV lines will be rebuilt in either single- or double-circuit configurations on galvanized steel monopoles, supported by reinforced concrete pier foundations. Based on current Project engineering plans, only one monopole – to be installed within Ash Creek Substation to support OPGW – will be directly embedded. The conductors will be arranged vertically (refer to the cross-section drawings in Volume 2). In addition, the new monopole design includes braced post insulators, which will limit conductor movement and blowout.

Along the western portion of the Project between Structures P648S and P737, the new monopoles will be offset from the catenary support columns based on the CT DOT railroad corridor width, CT DOT/MNR and NESC clearance requirements and UI standards. This offset will vary based on location, but on average will be 20 feet.

However, some of the new monopoles will be located significantly more than 20 feet from the railroad catenary support columns, including in areas where the CT DOT corridor is sufficiently wide to accommodate a larger offset and in areas where railroad embankments, swales, culverts and existing infrastructure must be avoided. In these areas, the heights of the new monopoles can be shorter because the vertical clearance from the MNR catenary structures is not a factor.

In some locations, the new structures will be sited in-line (with no offset) from the catenary support columns, as needed to avoid conflicts with adjacent land uses (e.g., parking lots and roadways). In such locations, the MNR electrical facilities will be transferred from the existing catenary support columns and underbuilt on the new steel monopoles.

Along the eastern portion of the Project in Bridgeport (east of catenary structure 737 to Congress Street Substation), the characteristics of the railroad corridor (narrow width; elevated alignment of the MNR railroad tracks, bordered on either side by local roads or developed land uses) preclude the location of the rebuilt 115-kV monopoles on CT DOT property. As a result, along this Project segment, UI proposes to align the new double-circuit monopoles primarily on privately-owned or City of Bridgeport property adjacent to the railroad corridor. A new easement will be acquired from these property owners. The new easement will extend approximately 32 feet from the centerline of the new double-circuit monopoles but will vary based on structure configuration and span length.

However, between South Avenue and Warren Street in Bridgeport, densely-developed urban areas border the railroad corridor and adjacent local roads. To minimize adverse effects to these urban areas (such as the need for the conductors to span above residences), UI proposes to rebuild each of the two 115-kV lines along this segment in a single-circuit configuration.

Specifically, the 91001-1 Line will be aligned south of the CT DOT corridor, adjacent to the south side of Railroad Avenue. The 1130 Line will span the MNR tracks between existing catenary structures 752 and 753 and will be located on the north side of the railroad corridor until recrossing to the south side of the MNR tracks near catenary structure 762. This allows all four existing steel poles bounding I-95 to be re-used. After crossing I-95, the 1130 Line will parallel I-95 for approximately 1,200 feet before rejoining the railroad corridor. This alignment is proposed to locate the 115-kV conductors farther away from residential properties and to minimize impacts to those properties.

The heights of the proposed monopole structures will vary by location, depending on span length. The typical span length between structures ranges from approximately 300 to 450 feet. However, in some locations, longer spans (up to 800 feet) were warranted to minimize impacts to environmental resources (e.g., wetlands, watercourses) and to nearby land uses (e.g., parking lots, residential backyards, buildings, roadways). The proposed monopole heights, by Project segment, are:

- ***Structure P648S to Ash Creek Substation Connection***: 95-135 feet.
- ***Ash Creek Substation to Structure P737N***: 95-135 feet.
- ***Structure 737N to Resco Tap:*** 95-115 feet.
- ***Resco Tap to Pequonnock Substation Vicinity***: 115-145 feet.
- ***Pequonnock Substation Vicinity to Congress Street Substation***: 120-195 feet. The tallest structures (195 feet tall) are proposed to support the new 115-kV conductors on a 1,450-foot-long span above two elevated I-95 overpasses, the Pequonnock River, and Stratford Avenue. This span is the longest on the Project.

2.3.3 Proposed Structure Locations

The proposed locations of the new monopoles are illustrated on the maps and Plan and Profile Drawings in Volume 2. In designing the rebuilt 115-kV lines, UI took into consideration the constraints associated with the varying widths of the CT DOT corridor; the need to maintain clearance between the 115-kV conductors and the MNR electrical facilities (signal and feeder wires), as well as between the conductors and adjacent objects and vegetation; and the location

of the CT DOT corridor adjacent to various environmental resources and existing/planned land uses, including residential, commercial, and industrial developments.

Between catenary structures 648 and 737, UI initially identified potential locations for the rebuilt 115-kV structures using a baseline offset from the existing catenary structures. Under this approach, the proposed monopoles were first positioned 25 feet south of the existing railroad catenary support columns, resulting in standard span lengths between monopoles of approximately 300 feet. Placing each of the proposed monopoles in such a manner (that is, directly offset from but adjacent to an existing catenary support column) would result in the shortest transmission line structure heights, and also the shortest span length, but the greatest number of new monopoles. This initial structure alignment plan did not factor in site-specific constructability or environmental factors.

After conducting this baseline structure spotting, further constructability analyses were performed that resulted in shifts to the initially identified locations of the proposed monopoles. In general, proposed structure locations were shifted to:

- Avoid conflicts, to the extent practical, with the surrounding built infrastructure and land uses on abutting properties (i.e., buildings, residential properties, parking lots, and private access roads and public roads).
- Avoid underground utilities identified during due diligence subsurface surveys. (These surveys are in the process of being performed and thus far have been completed along about 50% of the Project area.)
- Eliminate or minimize constructability concerns (proposed monopoles are positioned, where possible, to avoid side-slopes and to accommodate future vehicle access between the new monopoles and the railroad catenary support columns).
- Avoid or minimize impacts to environmental features or sensitive land uses (wetlands, watercourse, culverts, and swales).

Along the eastern portion of the Project (from east of catenary Structure 737 to Congress Street Substation) the MNR tracks are elevated and the width of the CT DOT corridor is narrow too narrow to accommodate the new monopoles. As a result, in this area, all the new monopoles must be located outside the CT DOT corridor. Therefore, UI's primary consideration in

identifying potential monopole locations was to minimize impacts to private and City of Bridgeport properties to the extent practical, such as by situating the proposed transmission line structures as close to property corners as possible and/or in other undeveloped portions of a parcel. UI also consulted with officials of the City of Bridgeport to identify future development plans for the areas near the railroad corridor and to minimize or avoid impacts to such plans.

Along the UI ROW from the CT DOT corridor to Ash Creek Substation, UI identified locations for the proposed single-circuit monopoles in the general vicinity of the existing lattice steel towers. The monopole locations were selected to avoid or minimize impacts to environmental resources, including to Ash Creek and the tidal and freshwater wetlands near the creek.

The Volume 2 maps and Plan and Profile drawings reflect the currently proposed structure locations, based on UI's current plans and engineering design information.[21]

These structure locations may be modified as the Project design process advances, due diligence subsurface surveys are completed and UI continues to coordinate with CT DOT, representatives of the Town of Fairfield, and the City of Bridgeport and other State and Federal regulatory agencies, and the affected public. For example, each proposed structure location is being further evaluated based on the results of additional constructability reviews, more detailed engineering design, and environmental studies.

Future changes could occur based on information obtained from more detailed field studies (e.g., subsurface geotechnical investigations, environmental surveys, constructability reviews) and final engineering design, as well as input from municipalities, regulatory agencies, and the public. Updated information will be provided in UI's Application to the Council. Final

[21] The initial structure spotting (original engineering design basis) commenced with the assumption that a new double-circuit monopole would be offset from each existing MNR catenary structure. The poles were assigned numbers (e.g., P659S) that corresponded to the nearest catenary structure. As work on the Project design proceeded, proposed poles were shifted or eliminated to account for site-specific constraints (e.g., longer than originally planned span lengths to avoid or minimize work in wetlands/watercourses). As a result, 32 of the originally planned monopoles have been eliminated. Because the poles were not re-numbered after these design changes, there are certain gaps in the structure numbers identified on the Volume 2 maps. Note: the numbers of the structures that were eliminated from the Project design are: 653, 658, 660, 662, 670, 672, 674, 680, 683, 687, 694, 697, 702, 707, 715, and 722 – all in Fairfield; and 729, 731, 733, 736S, 741, 747, 757S, 759S, 761, 763, 776, 777, 778, 780, 781, and 782- all in Bridgeport

structure locations will be identified in the Project's Development and Management (D&M) Plan(s), which UI will submit to the Council for review and approval, prior to the commencement of construction.

2.4 ESTIMATED PROJECT COSTS AND FACILITY SERVICE LIFE

The estimated capital cost for the siting, design, and construction of the Project is approximately $210 million. The Project transmission facilities are expected to have a minimum service life of approximately 40 years.

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3. PROPOSED CONSTRUCTION AND OPERATION/MAINTENANCE PROCEDURES

3.1 INTRODUCTION AND OVERVIEW

UI will construct, operate, and maintain the rebuilt 115-kV lines in full compliance with the latest revisions of standards of the NESC, the Institute of Electrical and Electronic Engineers (IEEE) and the American National Standards Institute (ANSI); good utility practice; and UI's technical specifications, final engineering plans, and the conditions of regulatory and siting approvals obtained for the Project. In addition, the Project will be constructed in accordance with the terms of UI's agreement with CT DOT. That agreement specifies certain non-standard construction methods and schedules, including the performance of certain Project tasks to avoid or minimize conflicts with rail operations.

This section describes the procedures and methods that will be used to construct, operate, and maintain the Project facilities, as well as UI's protocols for the reliability, safety, and security of the transmission system. The main Project construction components will consist of the following:

- Rebuild the 115-kV transmission lines on galvanized steel monopoles to be located on either side of the MNR railroad tracks (depending on location), mostly within CT DOT property. The new monopoles will be either single- or double-circuit.

- Interconnect the rebuilt lines to Eversource's transmission system, to UI's existing Ash Creek and Congress Street substations, to the existing transmission line tap interconnecting with the Resco Substation, and to the existing transmission lines interconnecting with UI's new Pequonnock Substation. making minor associated modifications within the substation boundaries and installing single-circuit and double-circuit monopoles as needed to maintain the existing 115-kV connections to the substations.

- Replace the existing shield wire with new OPGW on UI's existing 115-kV transmission line connection to the Resco Substation.

- Remove UI's existing 115-kV facilities and related appurtenances inclusive of the bonnets from the railroad catenary support columns.

- Remove, partially remove, or modify existing UI monopoles, lattice tower, and W-flange structures located in the CT DOT corridor.

- Remove the existing double-circuit lattice towers that currently support the existing 115-kV transmission lines interconnecting to UI's Ash Creek Substation.

- Restore the areas affected by construction (including temporary access roads) to approximate pre-construction conditions, to the extent practical, by regrading and, where applicable, by seeding. As part of the restoration process, construct or upgrade any access roads to remain permanently.

In general, UI currently plans to construct the Project in four segments, with each segment rebuilt and placed into service prior to the initiation – in most cases - of extensive work on the next segment.[22] Due to system outage limitations, UI's proposed sequence for segment construction is:

- Ash Creek Substation to UI existing Structure TP735S (1.50 linear miles/1.50 circuit miles).
- UI existing Structure TP735S to Pequonnock Substation (1.75 linear miles/3.75 circuit miles).[23]
- Existing catenary structure B648S to Ash Creek Substation (3.96 linear and circuit miles).
- Pequonnock Substation to Congress Street Substation (0.52 linear miles/1.04 circuit miles).[24];

Sections 3.2 through 3.6 describe the construction procedures that UI proposes for the Project, including the methods and protocols that will be used to minimize environmental impacts (e.g., wetland and watercourse crossings, soil / groundwater management). Procedures are described for the 115-kV line rebuild work, interconnections of the rebuilt 115-kV lines to UI's substations, and the removal of the existing 115-kV facilities from the railroad corridor.

Section 3.7 summarizes UI's approach for construction monitoring, while operation and maintenance procedures applicable to the 115-kV facilities are described in Section 3.8. Data regarding the Project's reliability, safety, and security is included in Section 3.9.

[22] The Project construction schedule, which is described generally in Section 4, will be defined further in the Project D&M Plan(s). Some construction activities may overlap from segment-to-segment. For example, civil and foundation work may commence on the Ash Creek Substation to Structure TP735S segment prior to the completion of the Pequonnock to Congress Street substation segment.

[23] Excludes the replacement of the shield wire on the Resco Tap line with OPGW.

[24] The term "circuit miles" refers to the 115-kV conductor lengths and because of the location of two 115-kV lines along portions of the Project area, does not correspond to the length of the CT DOT railroad corridor.

In addition, as required by the Council's regulations, prior to the commencement of construction activities, UI will prepare and submit one or more Project-specific D&M Plan(s)[25] to the Council for review and approval. The D&M Plan(s) will include maps at a scale of 1"=100' or larger, along with supporting documentation regarding detailed procedures for constructing the Project. Project construction will be performed in accordance with the procedures described in the D&M Plan(s), which will reflect conformance to the conditions of the Council's approval of the Project, as well as compliance with other regulatory requirements and UI technical specifications. UI will monitor and perform inspections of Project construction activities for conformance to these requirements, as described in Section 3.7.

3.2 GENERAL CONSTRUCTION SEQUENCE AND SUPPORT AREAS

3.2.1 Typical Construction Sequence

Based on UI's current plans, the Project will be constructed in four segments, with work along each segment involving the same general sequence of activities. The Project construction will be staged from one or more laydown/material staging areas/contractor yards; multiple smaller, laydown areas also could be used at points along the 115-kV line route (refer to Section 3.2.2). Table 3-1 summarizes the general sequence of Project construction activities.

Project construction activities are discussed in Sections 3.3 and 3.4. During construction, certain work activities and sequences may vary, based on the characteristics and locations of the rebuilt 115-kV lines (e.g., single- vs. double-circuit; within or outside of the CT DOT corridor) and on factors such as final Project design, and the conditions of the Council's or other agencies' regulatory approvals. Additional details regarding construction procedures and sequencing will be provided in the Project's D&M Plan(s).

3.2.2 Laydown/Material Staging Area/Contractor Yard(s), including Field Offices

To support the 115-kV line rebuild work, temporary construction laydown/material staging areas/contractor yards, including field offices, will be required. Typically, such sites are not

[25] For example, based on the anticipated construction of the Project in different segments, UI may elect to prepare a separate D&M Plan for each segment. Each such D&M Plan would be provided to the Council for review and approval prior to the commencement of the segment's construction.

identified until a few months prior to the start of construction; UI will seek Council approval of these sites prior to use.

A primary laydown/material staging area/contractor yard typically requires approximately 2-5 acres to accommodate space for construction field office trailers and parking, as well as for storing Project materials, staging construction equipment and supplies, fractionization tanks (used for temporarily storing water removed from Project foundation excavations), and temporarily stockpiling materials removed from the old 115-kV facilities (e.g., bonnets, 115-kV conductor, old monopole structures[26]) prior to appropriate off-site reuse or disposal. The laydown/material staging area/contractor yard also will provide a site for marshalling construction crews, holding daily safety meetings, and assigning daily work.

[26] Based on UI's current Project plans, six monopoles, four lattice steel towers, and one W-flange beam structure (comprised of five W-flanges) will be removed as part of the rebuild work.

Table 3-1: General Project Construction Sequence

STEP 1: TYPICAL PRE-CONSTRUCTION ACTIVITIES (ALL SEGMENTS)
• Survey and stake construction work areas, including edge of CT DOT property and UI easement (where different) and proposed structure locations
• Confirm and re-flag environmental resource areas (e.g., wetland and watercourse boundaries) or other sensitive areas to be avoided
• Mark vegetation clearing limits
• Locate and mark utilities
STEP 2: TYPICAL CONSTRUCTION ACTIVITIES (ALL SEGMENTS)
• Establish laydown/material staging areas / contractor yard(s) to support the construction effort
• Establish temporary erosion and sedimentation controls as needed
• Remove or mow vegetation, where necessary
• Install temporary matting in wetlands as needed; install temporary bridges to traverse small watercourses
• Establish or upgrade access roads to new monopole sites
• Create a level work pad at each monopole site, as well as at conductor pulling sites and if necessary, at guard structure sites
• Install new structure foundations and assemble/erect new structures
STEP 3: TYPICAL CONSTRUCTION ACTIVITIES: PEQUONNOCK SUBSTATION TO CONGRESS STREET SEGMENT
• Remove the existing 115-kV line facilities from the south/east side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets). Some of this work may be staged from a barge positioned near the CT DOT corridor in the Pequonnock River. Any existing monopoles that are no longer required on the south/east side of the railroad tracks will also be removed.
• Install conductors, and OPGW
• Install rebuilt 115-kV line connections to UI substations
• Place the rebuilt 115-kV lines in service
• Remove the existing 115-kV line facilities from the north/west side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets). Any existing monopoles and lattice towers that are no longer required on the north/west side of the railroad tracks will also be removed. This activity will include establishing temporary work pads at the locations of the facilities to be removed. Existing access roads and city streets will be used.
STEP 3: TYPICAL CONSTRUCTION ACTIVITIES: EVERSOURCE STRUCTURE B648S TO ASH CREEK SUBSTATION SEGMENT AND THE ASH CREEK SUBSTATION TO UI STRUCTURE TP735S SEGMENT
• Remove the existing 115-kV line facilities from the south side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets). Any existing w-flange structures that are no longer required on the south side of the railroad tracks will also be removed.
• Install conductors, shield wire, and OPGW
• Remove existing lattice towers that currently support the existing 115-kV line connection UI's Ash Creek Substation
• Install rebuilt 115-kV line connections to UI's Ash Creek Substation
• Place the rebuilt 115-kV lines in service (by segment)
STEP 3: TYPICAL CONSTRUCTION ACTIVITIES: STRUCTURE TP735S TO PEQUONNOCK SUBSTATION SEGMENT
• Install all new conductors and OPGW that can be installed with the existing 115-kV line facilities in place.
• Remove the existing 115-kV line facilities from the south side catenary structures (i.e., existing shield wires, conductors, hardware, steel bonnets).
• Install remaining conductors and OPGW in order to place the southern circuit (Line 91001) in service.
• Remove the existing 115-kV line facilities from the north side catenary structures (i.e., existing OPGW, conductors, hardware, steel bonnets). All temporary steel poles installed as part of the Pequonnock Substation Rebuild Project will also be removed.
• Install remaining conductors and OPGW in order to place the northern circuit (Line 1130) in service.
STEP 4: TYPICAL CONSTRUCTION ACTIVITIES (ALL SEGMENTS)
• Remove temporary construction access and work pads along with associated matting and bridges
• Perform final clean-up and restore/stabilize areas affected by construction (e.g., by seeding as needed).
• Maintain erosion and sedimentation controls until areas affected by construction are stabilized.

Because the Project will be constructed in segments, UI anticipates that smaller temporary laydown/material staging areas/contractor yards may be established at certain locations along or near the CT DOT corridor, depending on the rebuild work required. These satellite laydown/material staging areas/contractor yards would provide space to store materials, supplies, and equipment needed for the 115-kV rebuild work along specific portions of the Project route.

The preferred locations for Project laydown/material staging areas/contractor yards are within or in the general vicinity of the railroad corridor, on UI property, or at existing nearby commercial or industrial sites. Establishing such areas within CT DOT property or otherwise near the railroad corridor will improve construction efficiency and minimize the movement of equipment, manpower, and supplies to and from the railroad corridor along public roads.

3.3 STANDARD OVERHEAD TRANSMISSION LINE CONSTRUCTION PROCEDURES

The following subsections describe UI's standard construction procedures for rebuilding the 115-kV lines and removing the existing transmission facilities, based on UI's current Project plans. The Volume 2 maps illustrate the planned Project construction areas, including the locations of tree clearing, access roads, work pads, new monopoles, and the existing structures to be removed. Detailed construction information will be provided in the Project's D&M Plan(s).

3.3.1 Pre-Construction Survey and Vegetation Removal

Prior to the commencement of construction along a Project segment, UI will perform surveys to mark the boundaries of work areas, including new structure locations and permanent easements, as well as to clearly flag or otherwise demarcate the boundaries of sensitive environmental resources (such as wetlands, and watercourses). UI also will survey and appropriately mark areas of vegetation to be removed.

Existing vegetation, including trees, will be removed from construction sites (including access roads and work pads) and as required both to provide access for construction equipment and to maintain clearance from the rebuilt 115-kV line conductors. As a result, vegetation clearing will be required along the south side of the CT DOT corridor in Fairfield, as well as within construction

work areas (as needed) on both the north and south sides of the railroad corridor in Bridgeport. Because the Bridgeport portion of the Project extends through densely developed urban areas, only minimal vegetation clearing will be required for the 115-kV line rebuild work in that area.

The existing vegetation that must be removed for the Project consists of a mix of tall shrubs and mature trees,[27] along with low-growing herbaceous species. Overall, UI estimates that approximately 7 acres of trees will be cleared. The Volume 2 maps illustrate the areas where tree removal or trimming will be required for the Project.

In certain areas, "danger trees" or "hazard trees", which are trees deemed a potential risk to the overhead 115-kV lines, also may need to be trimmed or removed.[28] Such danger or hazard trees, which could be situated on private property, would typically be identified after the rebuilt lines are installed. If danger or hazard tree trimming or removal is required, UI will coordinate with the affected property owner.

UI has coordinated with CT DOT regarding the vegetation clearing that will be required within the railroad corridor. UI also will consult with the owners of properties in those areas where permanent or temporary easements must be obtained for the construction and operation/maintenance of the 115-kV lines, where vegetation removal also will be required.

Clearing and grubbing will be accomplished by conventional methods, using a combination of chain saws, hand labor, and mechanized equipment. Trees will be directionally felled to minimize impacts.

As currently planned, all vegetative materials cut on CT DOT property will be removed and disposed of properly, outside of the Project area. Similarly, trees and shrub vegetation cut on easement areas outside of the CT DOT corridor will be removed from the Project area, unless the property owner requests the wood or another disposition method.

[27] Mature trees are defined herein to consist of tall-growing vegetation typically greater than 6 inches diameter breast height (dbh).
[28] A danger tree is a tree that, due to its location and height, could cause a flashover or damage to the structures or conductors, or violate the conductor zones, if it were to fall toward the transmission lines. A hazard tree is a tree that exhibits some type of defect or damage (e.g., weakness, broken limbs, decay, infestation) that increases the risk of it falling into the transmission lines.

Construction mats, comprised of timber or composite materials, will be used to cross small watercourses and to access wetland areas where vegetation clearing is required. The mats will be cleaned prior to use to avoid the spread of invasive wetland species. Cut vegetation will not be felled into watercourses. In wetlands, trees and brush will be cut flush with the ground surface and the stumps will be left in place unless removal is required for Project construction. All other cut vegetation will be removed from wetland areas.

Typically, temporary erosion and sedimentation controls will be installed after initial vegetation removal and in advance of earth disturbance activities, such as grubbing, stump removal, and the establishment of access roads / work pads. All erosion and sedimentation controls will be installed and maintained in accordance with Project-specific and Connecticut requirements, including the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*; the Connecticut Department of Energy and Environmental Protection (CT DEEP) *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities* (General Permit); and the Stormwater Pollution Control Plan (SWPCP) that UI will prepare for the Project, pursuant to the General Permit.[29] Section 3.6.1 and 6.2 provide additional discussion regarding erosion and sediment controls, as well as stormwater management.

Erosion and sedimentation controls will be inspected and repaired or replaced as necessary until the areas affected by the Project are stabilized and UI submits a Notice of Termination, per the General Permit, to CT DEEP.

3.3.2 Access Roads and Work Pads

Access Roads

To access Project work sites, UI will use a combination of public roads and proposed or existing access roads within or adjacent to the CT DOT railroad corridor. Access will be required to each new monopole site, as well as to reach the existing 115-kV facilities to be removed from the catenary support structures and other structures (monopoles, lattice towers, W-flange structures)

[29] Pursuant to Conn. Gen. Stat. §22a-430b, construction activities, such as the Project, which will result in the disturbance of 1 or more total acres of land area must comply with the CT DEEP's General Permit. Pursuant to the requirements of the General Permit, prior to the start of construction, UI will submit to CT DEEP a Registration Form and will prepare a SWPCP that details stormwater management and erosion/sedimentation control measures for the Project construction.

that either will be modified or will be removed. The Volume 2 maps identify UI's proposed Project access roads based on the current design.

Access roads may be permanent or temporary and will consist of materials appropriate to the different characteristics of the Project areas traversed (e.g., upland, wetlands). To minimize or avoid the potential for soil to be tracked from Project work sites onto public roads, rock "aprons," track pads, or equivalent stabilization will be established at the entrances and exits to work sites from public roads.

Most Project access roads will be in uplands and typically will consist of gravel, although timber mats (or equivalent) also may be used. UI currently proposes only one permanent access road along the edge of one wetland (wetland W-B,[30] located within the CT DOT corridor between Structures P648S and P954S) and does not anticipate that temporary roads across in other wetlands will be required. For Project construction, one temporary access road, expected to consist of a timber mat span, will be required across one perennial freshwater stream (WC-8). Temporary access also will be required to remove a lattice steel tower situated on a small island in Ash Creek, near Ash Creek Substation.

In general, Project access roads during construction will be approximately 16 feet wide. However, in some areas, roads will be wider to accommodate equipment turning and passing or to account for terrain. UI will also use existing access (e.g., paved or graveled areas), where available. Existing paved access is not expected to require significant upgrades, whereas existing non-paved access may require the addition of gravel or asphalt patch.

In the areas along the rebuilt 115-kV lines where access is required for operations and maintenance purposes, permanent access roads typically will consist of gravel and will generally be 12 to 16 feet wide to minimize resource impacts while providing safe ingress/egress. However, in some areas, permanent roads may be wider to accommodate equipment turning and passing.

[30] Wetlands (W) and watercourses (WC) in the Project area were identified based on field delineations; refer to Section 5.2 for further information and to the Volume 2 aerial-based maps for the locations of water resources.

Work Pads

Construction work pads will be required to install the new monopoles, as well as to remove the existing 115-kV facilities from the catenary support structures and the existing structures (monopoles, lattice towers, W-flange structures) that will no longer be needed. Accordingly, along the rebuilt 115-kV line route, work pads will be required at each new structure location, at conductor and OPGW pulling sites, and at each location where existing 115-kV facilities will be removed or modified. Work pads will consist of gravel or timber construction mats (or equivalent).

The size of each work pad will vary based on location and space available. In general, the typical work pad for installing a new monopole will be approximately 40 feet by 100 feet; however, specific work pad dimensions will vary by location. The work pads will be used to stage structure components for final on-site assembly, as well as to provide a safe, level base for the construction equipment used to install structure foundations and to erect the structures. In most areas, minimal grading is expected to be required to establish work pads.

Pads for conductor pulling also will be required at various locations along the 115-kV line route. These pull pads are expected to be approximately 40 feet by 400 feet. The specific locations and dimensions of each work pad and pull pad will be provided in the Project D&M Plan(s).

Temporary work pads will be required at the catenary structures where UI's existing 115-kV facilities will be removed. The size of these work pads will vary based on location, topography, and space available within or adjacent to the CT DOT railroad corridor.

In general, the typical work pad for 115-kV facility removals will be approximately 40 feet by 60 feet. The work pads for the removal of the 115-kV facilities and bonnets may be co-located with the work pads required for the installation of the new monopoles.

UI anticipates that in upland areas, portions of the gravel work pads used during Project construction for the installation of the rebuilt 115-kV lines will be left in place to provide a stable base for the performance of transmission line operation and maintenance activities. Such work pads are estimated to be approximately 40 feet by 60 feet but may vary by location. In most cases,

UI expects that the construction of Project work pads and access roads will generate minimal excess spoils. If cut and fill balance is not achieved, any unused spoils will be managed in accordance with the *Materials Management Plan*, which UI will prepare for the Project. Contractors will be required to follow this Plan.

3.3.3 Foundation and Structure Installation

Foundation Installation

The new monopoles are expected to be installed primarily on drilled pier foundations[31]. Such foundations are expected to average 15-35 feet in depth. The depth of the foundations will depend on subsurface conditions, such as soil characteristics, depth to bedrock, and the type of structure. Spoils generated from the drilling process will be managed pursuant to the Project's *Materials Management Plan* (refer to Section 3.6.1 for additional details regarding this Plan).

Auger drilling will be used to perform the excavations for the drilled pier foundations. The size of each excavation typically will be 6-10 feet in diameter. However, because the foundations for the structures proposed for location on either side of the 1,450-foot-long I-95/Pequonnock River span in Bridgeport (Structures P775S and P779S) may have diameters of up to 13 feet, the excavations for such foundations would be correspondingly larger.

Temporary or permanent vibratory casings, or equivalent, may be used to provide soil support as needed to complete the excavation work and place concrete. The temporary casing may be removed from the pier foundations as concrete is placed or soon thereafter. For the installation of the new foundations within the CT DOT corridor, UI will coordinate with CT DOT/MNR to determine appropriate drilling methods to avoid any potential for impacts to the rail bed.

Once the foundation excavation is complete, steel reinforcing bars and an anchor bolt cage will be placed in the excavation and encased in concrete. The concrete will be conveyed from the mixer to the place of the final deposit by methods that will prevent the separation or loss of material.

[31] Direct embed structures and structures supported by pile type foundations may be installed in certain locations, pending the results of further engineering analyses.

Any water displaced during the concrete pour will be managed according to the *Materials Management Plan*.

Field tests of the concrete will be conducted regularly. In general, as an indication of other physical properties, the quality of the concrete being produced will be judged by the compressive strength developed within a given period.

Structure Assembly and Installation

After the structure foundation is in place and the concrete is cured, the steel transmission monopole will be assembled and erected. Structure components will be delivered to work pads and then assembled on site. Typically, structures will not be erected on the concrete piers for a minimum of 28 calendar days after the concrete has been poured and until the compressive strength of the concrete has reached 4,500 pounds per square inch (psi).

The galvanized steel monopole structures may be assembled on the ground and erected as a complete unit or assembled in pieces with a crane. Once a structure is erected and framed with the support insulators and hardware, it will be ready for the installation of the overhead lines. Conductor pulling blocks, which are a required tool for installing the new OPGW, shield wires, and conductor, will also typically be installed at this time.

Structure Grounding

Each transmission line structure will be grounded prior to being energized to provide a path for the energy from lightning discharges to enter the earth and safely dissipate. The foundation of each transmission line structure will provide some natural grounding through contact with the surrounding earth. However, to provide further protection, a minimum of two ground rods, and associated ground conductor, will be buried adjacent to each foundation. Typically, the ground rods will be installed after the completion of the foundation and before the installation of the structure. The need for and location of additional ground rods will be determined by the construction contractor.

In locations where the MNR signal and feeder wires will be underbuilt on the steel monopoles, a copper wire will be installed underground between the ground system of the monopole and the ground system of the nearest existing catenary structure.

3.3.4 Conductor and OPGW Installation

The installation of the overhead line conductors, OPGW, and shield wires will require the use of pulling and tensioning equipment, as well as reels of conductor and OPGW, which will be positioned at temporary pulling work pads along the transmission line route. Helicopters may be used to install pulling ropes at the commencement of the conductor/OPGW pulling process.

To maintain clearance at road crossings during conductor and OPGW installation, temporary guard structures or boom trucks will be positioned adjacent to the crossings. The proposed locations of temporary pulling work pad and guard structure pads are illustrated on the Volume 2 maps.

The conductors will be pulled under tension to avoid contacting the ground and other objects. The remaining insulators and hardware will then be installed at strain and dead-end structures. Finally, the conductors and shield wires will be pulled to their design tensions and attached to the hardware. Linemen in bucket trucks will perform this operation.

3.3.5 Cleanup and Restoration

Cleanup and restoration activities will include the removal from Project areas of construction debris, signs, flagging, and fencing, as well as temporary (i.e., timber mat or equivalent) work pads and access roads. Areas affected by construction, including contractor laydown/material staging yards, will be restored and stabilized, as appropriate, to approximate pre-construction conditions (e.g., seeded, graveled, repaved as necessary) and in accordance with UI's SWPCP requirements as necessary or where applicable. As discussed in Section 3.3.2, some gravel access roads are expected to remain in place permanently to facilitate future UI operations and maintenance activities (refer to the Volume 2 maps).

All temporary work pads and access roads will be removed from tidal and inland wetlands. Timber mat bridges (or equivalent) used to provide construction access across small streams will similarly

be removed. Wetland areas affected by construction will be either allowed to revegetate naturally, reseeded with a temporary annual seed mix (such as annual rye for inland wetlands) that will promote stabilization, or reseeded with wetland seed mixes or in accordance with restoration plans approved for such use by CT DEEP. In areas within the conductor clearance zones, wetland vegetation will be managed to promote low-growing wetland species consistent with the operation of the overhead 115-kV lines.

Materials used to construct most work pads and all temporary access roads in upland areas also will be removed, unless otherwise specified by the landowner. Such materials will either be properly disposed of or otherwise re-purposed. In some areas, permanent gravel work pads and access roads will remain, for UI's use during transmission line maintenance.

In areas subject to erosion, temporary erosion and sedimentation controls will remain in place until permanent stabilization is achieved, pursuant to the requirements of the CT DEEP General Permit and the Project-specific SWPCP. The materials from the existing 115-kV facilities that will be dismantled and removed may be temporarily stockpiled at Project staging areas. Ultimately, these materials will be recycled or disposed of properly.

3.4 SUBSTATION AND LINE CONNECTIONS

The rebuilt 115-kV lines will be connected to UI's Ash Creek and Congress Street substations, as well as to the 1430 Line's point of connection with Eversource's system (west of UI Structure P648S), to the Resco Substation Tap line, and to the 115-kV transmission line segments that UI will rebuild to connect to its new Pequonnock Substation. The following summarizes the substation and other line connections, as well as the Project-related work that will be performed within the Ash Creek, Resco, and Congress Street substation fence lines.

3.4.1 Substation Connections

Ash Creek Substation. To connect the re-built 115-kV lines to UI's Ash Creek Substation, the three existing double circuit lattice towers between the railroad tracks and the substation fence will be removed and each will be replaced by two single-circuit steel monopoles. New conductor and OPGW will also be installed in this section. The two steel monopoles that will replace the lattice

tower currently located on the island north of the south bank of Ash Creek will be installed south of Ash Creek and north of the substation fence. In addition, one approximately 45-foot-tall monopole will be installed within the existing fenced portion of Ash Creek Substation to support the new OPGW. (Refer to the Volume 2 maps for the proposed locations of these new monopoles.)

Congress Street Substation. In order to connect the rebuilt 115-kV lines to UI's Congress Street Substation, new conductor and OPGW will be installed up to an existing double-circuit steel monopole within the existing fenced portion of the substation. The existing shield wires and conductor will be replaced with new conductors and OPGW between the existing monopole and the termination structures inside the substation.

3.4.2 Line Connections

Eversource-UI Point of Connection. The rebuilt 1430 Line conductors and OPGW will terminate at the first proposed UI steel monopole (Structure P648S) east of Sasco Creek. From Structure P648S to the west, the existing 1430 Line conductors and shield wire will remain, extending over Sasco Creek to connect to Eversource's eastern-most 1430 Line catenary structure B647S.

Resco Tap Line/Substation Connection. UI's existing 115-kV tap line connects the 115-kV lines along the CT DOT corridor to the Resco Substation. As part of the Project, the northern interconnecting span of the 91001-1 Line at the Resco Tap (that is, from Structure P745S to Resco Tap Structure 5) will be replaced with new conductor and OPGW so that rebuilt line parallel to the railroad tracks can maintain the interconnection to the Resco Tap Line and Resco Substation.

Except for replacing existing shield wire with OPGW, no other Project work will be performed on the five-structure Resco Tap Line, which extends to Resco Substation.

New Pequonnock Substation Connections. As part of UI's Pequonnock Substation Rebuild Project, the existing 115-kV lines along the CT DOT corridor in the vicinity of the substation (Lines 1130/91001-1 and 8809A/8909B) will be re-built with new steel monopoles, 115-kV conductor, and OPGW. This Fairfield-Congress Rebuild Project will connect to these new

monopoles (i.e., structures P765BS and P766DC for Lines 1130 and 91001-1 and Structure P774S for Lines 8809A and 8909B).

The Volume 2 maps illustrate the locations of these structures. Hardware modifications to ensure proper phasing will be required at Structures P766N and P767S, both planned to be installed inside the fenced in portion of the UI's new Pequonnock Substation.

3.4.3 Substation Hardware and OPGW-Related Modifications

The Project will include hardware modifications and, where appropriate, the installation of new OPGW splice boxes at the take-off structures within the switchyards at Ash Creek, Resco, and Congress Street substations. At each of the three substations, new underground fiber optic cable will be installed to connect the fiber at the OPGW splice box, located within each substation, to the control enclosure.

3.5 REMOVAL OR MODIFICATION OF EXISTING 115-KV FACILITIES

The existing UI facilities to be removed from the CT DOT corridor or otherwise modified as part of the Project are listed in Table 2-1 and illustrated on the Volume 2 maps.

The removal of UI's existing 115-kV facilities will be coordinated with the installation of the new 115-kV lines, as well as with CT DOT/MNR. This work will typically proceed by segment, as described in Section 3.1 and Section 4.

The schedule for these removals will depend on the type and location of the facilities and is further described in Table 3-1 in Section 3.2.1.

Access will be required to reach each of the existing 115-kV facilities to be removed or modified. Work pads also will be needed at each of these locations.

The construction activities required to remove the existing 115-kV facilities from the catenary support structures will involve rail track or signal outages. As a result, UI anticipates that this work will be performed during non-standard construction shifts (e.g., during nighttime, on

Sundays, etc.) that correspond to non-peak rail use periods. The work will be closely coordinated with CT DOT/MNR.

In general, the conductors and OPGW or shield wire will be removed first, followed by the removal of the steel bonnets and other structures. Removal activities will typically include dismantling the towers and recycling materials to the extent practical. Materials that cannot be recycled or reused will be disposed of properly.

3.6 SPECIAL CONSTRUCTION AND BEST MANAGEMENT PROCEDURES

UI will implement the procedures described in this section during construction in site-specific locations, as required to respond to constructability issues or to avoid or minimize Project impacts. These procedures may be modified to reflect the conditions of Project-specific approvals that will subsequently be obtained from State and Federal regulators. Final best management procedures will be included in the Project D&M Plan(s).

3.6.1 Erosion/Sedimentation Control, Stormwater Management, and Materials Management

UI will install and maintain erosion and sedimentation control measures during the Project construction to avoid or minimize the potential for surface water runoff, erosion, and sedimentation to occur outside of the work limits. These measures will conform to any Project-specific permit conditions from CT DEEP and the USACE, as well as applicable regulations concerning soil and erosion/sedimentation control and stormwater management, including CT DEEP's General Permit, the *2002 Connecticut Guidelines for Sedimentation and Erosion Control*, and the provisions of the Project-specific SWPCP.

UI also proposes to prepare a *Materials Management Plan* that will provide specifications for the contactor to follow regarding the handling of excess soil, spoil, solids, or groundwater generated during Project construction (e.g., from grading, excavations for structure foundations). In addition, the *Materials Management Plan* will include specifications for handling, recycling, or otherwise disposing of other Project materials, such as the components of the 115-kV facilities that will be

removed from the catenary structures (including but not limited to bonnets, lattice steel towers, wood and steel poles, concrete waste, and railroad ties [if any]).

3.6.2 Water Resource Crossings and Spans

Portions of the CT DOT corridor extends near both inland and tidal wetlands and watercourses (refer to the Volume 2 maps). Major waterbody crossings include the Mill River, Ash Creek, and the Pequonnock River. The Project facilities also will extend across 100-year and 500-year floodplains as designated by the Federal Emergency Management Agency (FEMA). All crossings of water resources and other construction activities in wetlands and watercourses will be performed in accordance with the Council's requirements, the conditions of USACE and CT DEEP regulatory approvals, and Project technical plans and specifications.

With respect to water resources, based on current construction plans, the Project will:

- Extend across 13 watercourses (including the Mill River, Ash Creek [two crossings], and the Pequonnock River)[32]:
  - ✓ No new transmission line structures (monopole foundations) will be located in any watercourses.
  - ✓ The rebuilt 115-kV lines (conductors and OPGW) will span all watercourse crossings.
  - ✓ During Project construction, temporary timber matting (or equivalent) will be required across one inland watercourse (WC-8 in Fairfield). Temporary work also will be required in a small portion of Ash Creek to remove an existing lattice steel tower along the 0.23-mile UI ROW from the railroad corridor to Ash Creek Substation.
  - ✓ No construction will be required in the Pequonnock River; however, some Project construction activities between Pequonnock and Congress Street substations may be staged from a barge positioned in the river.
- Require some construction (e.g., access roads or work pads; tree removal to conform to electrical clearance standards) within six of the 10 wetlands located in the Project area. Four of the wetlands in the Project area will be avoided by construction activities. Based on UI's current Project plans:
  - ✓ No new monopoles will be located in wetlands.
  - ✓ In four wetlands, forested vegetation will be removed within the rebuilt 115-kV conductor clearance zones and as otherwise required for construction (refer to the

[32] Note that whereas Sasco Creek is considered to be within the Project area because it near Structure B648S, the rebuilt 115-kV lines will not extend over the creek.

vegetation removal limits illustrated on the Volume 2 maps). This vegetation removal will result in a change in wetland cover type, converting forested wetland to scrub-shrub wetland. However, no wetland habitat will be permanently lost. In total, tree clearing will be required in approximately 0.07 acre of inland wetlands and 0.05 acre of tidal wetland.

- ✓ Temporary work pads, comprised of timber mats or equivalent, will be located in three wetlands (where no upland alternatives to reach Project work sites are available). Approximately 0.04 acre of inland wetlands and 0.03 acre of tidal wetlands will be temporarily affected by such construction activities.
- ✓ One permanent access road will be required along the edge of one inland wetland (W-B in Fairfield), resulting in an impact of 0.04 acre. UI anticipates that this permanent access road, which will be located within the CT DOT corridor, will consist of aggregate material. No temporary (construction) access roads are proposed in wetlands.

Refer to the Volume 2 maps for the locations of watercourses in the Project area, as well as to Sections 5.2 and 6.3 for additional information regarding the locations and types of water resources in the Project area and the water resources that will be affected by construction activities.

3.6.3 Wetland Invasive Species Control Methods

The inland and tidal wetlands in the Project area are, for the most part, characterized by invasive wetland plant species, such as common reed (*Phragmites australis*). To minimize the spread of such invasive wetland species, UI will require its contractors to implement standard procedures, such as ensuring that timber mats (or equivalent) are cleaned prior to being brought to Project work sites or transferred from one Project wetland to another. Details regarding UI's proposed wetland invasive species control methods will be provided in the Project D&M Plan(s).

3.6.4 FEMA Flood Zones

The Project will extend across 100- and 500-year floodplains identified by FEMA. A total of 29 new monopoles will be located in FEMA-designated 100-year floodplains and seven new monopoles will be located in 500-year floodplains.

In the locations where these new structures must unavoidably be located in FEMA-designated floodplains, UI will design and install the new monopoles to withstand any foreseeable major flood

events. UI also expects to coordinate with CT DEEP and the USACE to assure that the installation of the monopoles within the floodplains will have no adverse effects on floodplain storage capacity.

However, no new monopoles will be located in FEMA-designated floodways and the rebuilt 115-kV lines will span all major watercourses. Sections 5.2 and 6.3 provide additional information about the Project location in relation to floodplains. (Refer also to the Volume 2 maps.)

3.6.5 Blasting

In some areas along the Project route, bedrock will be encountered at shallow depths. UI currently expects to use mechanical measures (e.g., hoe ramming, chipping) to remove bedrock as necessary to create level work pads or access. However, based on the depth, extent, and type of bedrock identified during detailed subsurface studies of the Project, it is possible that controlled blasting could be required in some locations.

If blasting is necessary, UI will retain a licensed blasting contractor to develop a site-specific blasting plan(s). The resulting blasting plan(s) will be provided to the municipal fire marshal and reviewed by the CSC as part of the D&M Plan process. The blasting plan(s) will take into consideration the site's geologic conditions, as well as the locations of nearby utilities and land uses.

A blasting plan typically will contain information about the blasting work to be performed, schedule, safety, noise and vibration monitoring, pre- and post-blast inspections, and traffic control measures, as warranted. Detailed information regarding the contents of a blasting plan, if required, will be included in the Project's D&M Plan(s). If the need for blasting is determined after the submission of the D&M Plan(s), UI will provide the blasting plan(s) separately to the Council for approval.

3.6.6 Soils and Groundwater Testing and Management

As part of the Project planning process, UI performed geotechnical and environmental characterization studies to assess soil and groundwater along the 115-kV rebuild route. The

objectives of these studies were to assess subsurface conditions, not only for structure foundation design purposes, but also to determine the appropriate methods for managing soils and groundwater during construction.

Materials excavated during the Project construction process will be managed and disposed of in accordance with the Connecticut Guidelines for Soil Waste Management. UI will manage any soils to be reused in accordance with the Connecticut Remediation Standard Regulations (RSRs). Based on the results of the Project-specific studies, UI anticipates that most excavated materials will be loaded directly into dump trucks and then transported for disposal or management at an approved off-site location.

Topsoil or spoils (if any) that will be temporarily stockpiled at work sites or approved nearby staging areas will be contained within appropriate erosion and sediment controls (e.g., straw bales, silt fence) and may be covered with poly/plastic, pending off-site disposal. In areas where the characterization studies indicate that topsoil or spoil materials may be re-spread over work sites as part of restoration, stockpiles will be protected with temporary erosion and sediment controls and as appropriate, reseeded for temporary stabilization pursuant to the applicable general permit requirements or SWPCP.

3.7 CONSTRUCTION MONITORING

During Project construction, UI will assign personnel to monitor work activities and to verify that the work is performed in accordance with State and Federal permit and approval requirements, UI standards, and UI's agreement with CT DOT/MNR.

For example, after the Council's certification of the Project, UI will prepare and submit one or more D&M Plan(s) to the Council for review and approval. The D&M Plan(s) will detail Project construction procedures, incorporating the methods that will be implemented to conform to the specific conditions of the Council's approval and the requirements of other State and Federal permits, as applicable.

In addition, UI will prepare and submit to CT DEEP a Project-specific SWPCP. CT DEEP approval of this plan will be required before construction can commence. Pursuant to the SWPCP and General Permit, UI will retain qualified field inspector(s) to monitor Project construction, specifically to verify the effectiveness of erosion and sedimentation controls and other site stabilization measures. The SWPCP inspections will be conducted both routinely and after heavy rain events. Such monitoring is expected to continue for one growing season after Project work areas are restored and stabilized (refer to Section 3.6.1 for additional information regarding erosion and sedimentation control inspections and the SWPCP).

3.8 OPERATION AND MAINTENANCE PROCEDURES

UI will operate and maintain the rebuilt 115-kV facilities in accordance with standard Company procedures, required industry standards, and good utility practice.

In general, the location of the upgraded 115-kV facilities on the new galvanized steel monopoles, rather than atop the railroad catenary structures will facilitate UI inspection and maintenance activities by avoiding potential conflicts with railroad operations. For maintenance on the existing 115-kV facilities atop the catenary structures, UI must coordinate extensively with CT DOT/MNR to schedule the work, which requires MNR feeder and/or signal outages, as well as track outages.

In contrast, UI anticipates that the typical maintenance of the rebuilt lines, where the 115-kV monopoles are offset from the catenary structures, will not require MNR feeder/signal or track outages. Instead, UI standard operations and maintenance procedures are expected to apply. However, for work within the railroad corridor, UI will continue to coordinate with CT DOT/MNR regarding the use of railroad-approved flaggers and the performance of operations/maintenance work on the monopoles that will support MNR wires.

The proposed minor modifications to UI's three existing substations to accommodate the rebuilt 115-kV lines and/or new OPGW will not affect or alter existing operations and maintenance practices at any of these facilities.

3.9 PROJECT FACILITIES RELIABILITY, SAFETY AND SECURITY INFORMATION

The Project will be designed in accordance with UI standards and NESC sound engineering practices and constructed in compliance with these standards and good utility practice. The rebuilt 115-kV lines will be maintained pursuant to UI's Operating Procedures, which are in conformance with industry standards, regulations, and best management practices.

3.9.1 Protective Equipment

The Project will use UI's existing protective relaying equipment to automatically detect abnormal system conditions and to send a protective trip signal to circuit breakers to isolate the faulted section of the transmission system.

The fiber optic cable that will be installed on the rebuilt 115-kV transmission lines will provide a robust and reliable communications path for the existing protective relaying systems. The protective relaying and associated equipment, along with a Supervisory Control and Data Acquisition (SCADA) system for 24/7 remote control and equipment monitoring, is housed at UI's System Operations Center.

3.9.2 Substation Security, including Fire Suppression Technology

In the Project area, UI's existing substations are already gated and equipped with lighting to facilitate work at night under emergency conditions or during inclement weather. Further, the perimeter of each substation is entirely enclosed with a 14-foot high chain-link fence topped with approximately 1 foot of barbed wire to discourage unauthorized entry and vandalism. The Project will not involve the expansion of any of the substations; as a result, these security measures will remain fully in place during Project construction and operation/maintenance. The substations also presently have low-level lighting for safety and security purposes.

During Project construction, access to the substations will be controlled, with the substation gates kept closed and locked as needed. In addition, substation gates will be locked at the end of the workday during Project construction and at all times after the Project is completed, unless UI

personnel are on site. Appropriate signs are posted at each substation, alerting the general public to the presence of high voltage at the facilities.

Smoke detection systems are already in place in the existing relay and control enclosures at the five UI substations. In the event that smoke is detected, these smoke detection systems will automatically activate an alarm at UI's Electric Control Center (ECC), and the system operators then would take the appropriate action. The relay/control enclosures at each substation are equipped with fire extinguishers. The relay/control enclosures at each substation are equipped with portable fire extinguishers (20 pound halotron units) that meet or exceed National Fire Protection Association (NPFA) standards. The manual fire extinguishers are electronically monitored by the substation control enclosure fire alarm system, which meets or exceeds NFPA requirements, reports all alarm, trouble, and supervisory conditions to the ECC via SCADA connections, providing constant system monitoring.

3.9.3 System and Physical Security

This section provides a description of security measures for the proposed Project facilities, consistent with the Council's *White Paper on the Security of Siting Energy Facilities* (*White Paper*), as amended[33]. The *White Paper* focuses on the unpredictable, intentional acts of perpetrators who may want to damage the physical structure of the transmission facilities.

The proposed Project will be consistent with the *White Paper* guidelines, which target security issues associated with four primary areas (Planning, Preparedness, Response, and Recovery). For each of these four areas, the following first lists the discussion topic included in the *White Paper* and then provides UI's security approach for the topic, as relevant to the Project.

Planning

Identify the physical vulnerabilities most likely to pose a security threat: The rebuilt 115-kV transmission lines will be constructed along the highly utilized CT DOT/MNR railroad corridor, which is not presently and cannot be, entirely fenced off from the public. Unauthorized personnel could relatively easily identify the transmission lines and then gain access to individual monopoles. However, existing substations typically are points of greater system vulnerability than

[33] The CSC's White Paper was initially adopted in the Council's Docket 346.

transmission lines. Because multiple transmission and distribution circuits connect the UI substations, an attack on a substation would be more likely to affect multiple circuits (and therefore more than one source of supply) than would an attack on a portion of the transmission lines. The UI substations are visible and easily accessible via access off public roads. However, the substations already have security measures in place and the Project will not add any new vulnerabilities to the substations.

Identify the type and characteristics of the facility and any ways in which the facility's setting affects security concerns: The Project setting poses no particular security concern because of the location of the lines within the heavily trafficked railroad corridor and the densely developed urban/suburban areas adjacent to the CT DOT corridor. In this area, hostile activity will be easier to detect in a timely manner than would be the case if the 115-kV facilities were located in isolated rural areas. Moreover, the 115-kV lines on the new monopoles will be less accessible to unauthorized personnel than the existing transmission lines atop the lattice-like catenary structures. Further, the presence and activities of adjacent landowners, businesses, passers-by, and in the case of the transportation corridor, railroad and CT DOT personnel, all provide deterrents to and sources of information about, attempted hostile activities.

Examine any pertinent ways in which the facility is linked to other facilities and systems and potential repercussions from a facility or system interruption. Examine whether the proximity of the facility to other electric facilities, either dependent or independent, presents security challenges: The region's electric supply systems are tightly networked, such that a disturbance to one part of the system can cause an overload or voltage violation on other, fairly distant parts of the system. However, in a system that is planned and operated according to applicable reliability standards, the sudden and unexpected loss of even a critical system element when the system is already under stress would not result in cascading outages, or damage to customer or utility equipment. The rebuilt 115-kV transmission lines will help provide such a robust system and will improve reliability overall by replacing aging transmission infrastructure, while maintaining all of the same substation points of interconnection as the existing 115-kV lines.

Examine if there is an established method to help regional, State and national security officials maintain situational awareness of this facility: UI has 70 years of experience in successfully operating the 115-kV lines along the railroad corridor, as well as established procedures to help regional, State and national security officials maintain situational awareness of its facilities. The Connecticut Valley Exchange (CONVEX) monitors UI's transmission facilities and those of other member utilities in Connecticut in real time and maintains a procedure for identifying and reporting sabotage events to local and Federal officials, neighboring entities, and regulatory authorities. The Independent System Operator – New England (ISO-NE) similarly monitors the security status of the entire New England bulk power system. Causes of outages are investigated promptly and, when appropriate, reported to law enforcement officials.

Preparedness

Examine site security infrastructure, including site monitoring, physical and nonphysical barriers and access controls: The UI substations in the Project area are fenced and gated to discourage unauthorized entry and vandalism. Access is limited through locked gates and only authorized personnel are permitted to enter. Security at low risk sites includes electronic access

control and Closed Circuit TV. UI complies with NERC guidelines for assessing the degree of protection each component of the grid should receive and the recommended types of precautions that these facilities should have in place.

Review any simulated exercises that include local police, fire, and other emergency response teams. Examine whether local law enforcement/emergency response liaison is in place and review mutual aid agreements between affected entities: UI regularly consults with first responders across its service territory. The addition of the Project facilities would not call for any change in established procedures that are in place for notification and response. The Company's Public Outreach personnel routinely act as liaisons with municipal officials. The Connecticut Department of Emergency Services and Public Protection (DESPP) Training and Exercise Division sponsors emergency preparedness training, seminars, exercises, and conferences for local first responders, as defined in Homeland Security Presidential Directive 8 (i.e., police, fire, emergency management, emergency medical services, public health, public works, private sector, non-governmental organizations and others). These presentations and seminars are designed to cover Mitigation, Preparedness,Response and Recovery. UI is represented on the Private Sector Council of DESPP, which meets quarterly and more frequently as needed. UI has participated, and would continue to participate, in State and regional emergency exercises.

Response

Examine notification procedures to public and/or local officials, including the types of security issues that would warrant such notification: For the rebuilt 115-kV transmission facilities, UI does not anticipate any change in existing, pre- established public notification procedures, including notifications as required to the NERC and CONVEX.

Examine mitigation measures, including alternate routing of power, strategically located spares and mobile backup generation: By replacing aging electric transmission system infrastructure, the Project will improve the reliability and resiliency of the grid in UI's service territory and in Connecticut overall. UI continually prepares for outage contingencies. The system is planned and operated so that the sudden and unexpected loss of the 115-kV lines along the CT DOT corridor would not result in a widespread loss of load or in damage to utility or customer equipment. UI also keeps an inventory of spare equipment in order to quickly restore facilities to service after most failures.

Recovery

Identify measures that will be taken, if necessary, to restore natural resources at the site of the facility: In the event of an incident, the first priority will be to eliminate any threat to public safety and then to repair the transmission facilities. In responding to an incident, natural resources at or adjacent to the site will be protected to the extent practical and subsequently restored to pre-incident conditions as appropriate. Mitigation protocols for impacts to wetlands and water resources, if any, will be coordinated with the appropriate resource agencies, such as the USACE and/or the CT DEEP.

Determine whether reporting procedures are established to evaluate and improve the effectiveness of local emergency response teams, methods to limit negative impacts on

neighboring electric facilities, and restoration of the natural environment: UI investigates and responds to any incident associated with its infrastructure. Depending on the magnitude and consequences of the incident, the Company's processes and/or after action reviews evaluate what improvements may be needed to minimize the potential for future adverse effects on its facilities, the environment, and neighboring electric facilities in future incident response, as well as the effectiveness of the interface with local emergency response teams.

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4. CONSTRUCTION SCHEDULE AND WORK HOURS

4.1 CONSTRUCTION SCHEDULE

UI has designed and planned the Project over several years. In 2018, UI performed initial engineering assessments of the condition of the portions of the railroad catenary structures that support UI's infrastructure between catenary structure B648S and Congress Street Substation. UI then conducted more comprehensive analyses to select a preferred Project, define the Project design, categorize environmental and land use resources, and identify measures to avoid or mitigate impacts. UI plans to construct the Project in stages, over multiple years.

Based on current plans, UI anticipates that the Project will be constructed in four segments, with each segment rebuilt and placed into service prior to the initiation – in most cases - of extensive work on the next segment. Due to transmission system outage limitations, UI's proposed sequence for construction is:

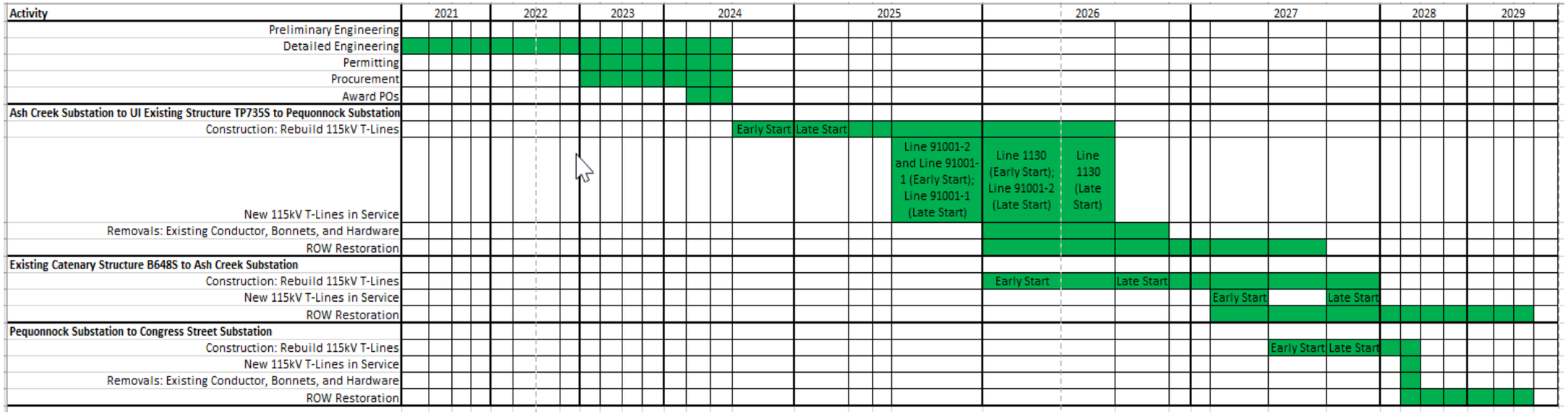
- Segment 1: Ash Creek Substation to UI existing Structure TP735S.
- Segment 2: UI existing Structure TP735S to Pequonnock Substation.
- Segment 3: Existing catenary structure B648S to Ash Creek Substation.
- Segment 4: Pequonnock Substation to Congress Street Substation.

In general, along each segment, the construction of the new 115-kV lines will proceed in a linear fashion and will include separate work crews to perform vegetation removal, access roads/work pad installation, structure foundation work, and structure/conductor/OPGW installation. Work will be performed both to install the new 115-kV monopoles and to remove the existing 115-kV infrastructure from the railroad catenary structures.

Figure 4-1 illustrates UI's anticipated schedule for the Project. All the rebuilt 115-kV lines are expected be in service by the end of June 2028. At that time, the existing 115-kV facilities also are expected to be removed from the catenary structures. Full restoration of areas disturbed by construction activities (e.g., temporary access roads and work pads, laydown/staging yards) is

expected to extend beyond the Project in-service date. Such final restoration will include site stabilization, reseeding, and, as appropriate, landscaping.

Figure 4-1: Project Schedule



**Note: The Project schedule is subject to change based on the receipt of regulatory approvals or other factors. More details regarding the schedule will be included in the Project D&M Plan(s). Early Start- Construction start Q4 2024. Late Start- Construction start Q1 2025.*

4.2 CONSTRUCTION WORK HOURS

The work hours for the construction of the Project will reflect the results of UI's coordination with CT DOT and MNR, including transmission line and rail outage considerations. Work involving activities within the CT DOT rail corridor, particularly the removal of the existing 115-kV lines and bonnets from the catenary structures, will be scheduled to avoid or minimize conflicts with rail operations. Further, Project work hours will vary based on the location and type of construction activity being performed. Specific work hours will be defined in the Project D&M Plan(s).

However, based on the results of consultations to date with CT DOT and MNR, including for UI's other transmission line rebuild work along other portions of the CT DOT corridor, UI anticipates that Project construction hours will be similar to the following:

1. **Hours for the Performance of Construction Work Offset from the Railroad Tracks and at Laydown/Material Staging Areas/Contractor Yards**. Typical work hours for the rebuilt 115-kV line construction will be from 7 AM to 7 PM, Monday through Saturday. These work hours will apply to locations where the new 115-kV structures will be offset from the railroad tracks, as well as to the laydown/material staging areas/contractor yards (including areas where temporary Project office trailers are established) that are required to support the construction. Construction personnel may arrive and leave Project laydown/material storage areas and contractor yards outside of these hours as needed to prepare for construction (e.g., for meetings in office trailers, holding safety tailboards).

2. **Hours for the Construction of New Structures that Require Railroad Track Outages**. Where the rebuilt 115-kV lines are planned for location on monopoles in-line with the catenary structures, close to the railroad tracks, track outages will be required. Such outages, which will be defined based on further consultations with CT DOT and MNR, typically will be during non-peak rail use times. As a result, in these areas, 115-kV line construction is expected to be limited to weekend or overnight periods. The same hours will apply to work at the laydown/material staging areas/contractor yards required to support these activities.

3. **Tasks Requiring 24/7 Work**. Certain construction tasks will require work on Sundays or beyond standard daily or nighttime work shifts, particularly when outages are required. For example, to connect the rebuilt 115-kV lines to the UI substations, certain transmission and/or distribution equipment will have to be taken temporarily out of service. UI will coordinate this work with the Connecticut Valley Electric Exchange (CONVEX) to obtain specific outage times. To complete such tasks as efficiently as possible with minimal service disruptions, work may have to be performed continuously (24 hours per day, for the number of days required).

4. **Non-Standard Work Hours at Laydown/Material Staging Areas/Contractor Yards**. The laydown/material storage area/contractor yards are required to support construction activities. As a result, yard work hours will be a function of the required work hours for different construction activities. For example, laydown/material staging areas/contractor yards must be available to support night-time removal of the 115-kV facilities and bonnets from the catenary structures, as well as day-time construction activities that involve standard work hours. As a result, depending on the specific construction tasks ongoing at a particular time, the Project laydown/material staging areas/contractor yards may operate on a 24 hours per day, 7 day per week basis.

5. **Hours for Work to Remove the Existing 115-kV Lines and Bonnets from Railroad Catenary Structures**. UI's work to remove 115-kV infrastructure from the railroad catenary structures will involve track outages and will require specific work hours and restrictions, as defined by CT DOT/MNR. Such work may have to be performed seven days/week. The specific work hours that may apply are:

   - Any work requiring MNR distribution outages will typically be performed between 9:30 AM and 3:30 PM or between 10:00 PM and 4:00 AM.

   - Any work requiring high rail access will typically be performed between 9:00 PM and 7:00 AM.

   - Work requiring the crossing of all railroad tracks will typically be performed between 10:00 PM and 5:00 AM, Friday through Sunday (actual working time is typically 2:00 AM to 4:00 AM).

5. EXISTING ENVIRONMENTAL CONDITIONS

This section describes the existing environmental, land use, and cultural resources in the Project area, including the CT DOT corridor within or near which most of the proposed 115-kV transmission line rebuild work will be performed, as well as the additional areas outside the CT DOT property where UI proposes to acquire new permanent easement, temporary easement or which are relevant as environmentally or culturally sensitive locations. This information, which reflects the results of UI's studies completed to date, was compiled from environmental, cultural, and land use data maintained by Federal, State, and local governments, as well as field investigations of the Project area commissioned by UI. As part of the ongoing Project planning process, UI also consulted with the affected municipalities and various State and Federal agencies concerning environmental resources in the Project area. UI will continue such consultations, as the Project planning and regulatory review processes continue to evolve.

In addition to the information in this section, Appendix A includes correspondence between UI and Federal/State agencies regarding the Project, while Appendices B through D contain the technical reports commissioned by UI to characterize the Project's ecological resources, visual resources, and cultural resources. The aerial-based maps in Volume 2 illustrate the existing environmental conditions and land use features in the Project area, including, but not limited to:

- The CT DOT railroad corridor property (including CT DOT's property boundaries, the locations of the MNR rail lines, existing catenary structures, the Southport, Fairfield, Fairfield Metro, and Bridgeport train stations, and existing and proposed UI 115-kV structures).
- The UI ROW between the CT DOT corridor and Ash Creek Substation, as well as fee-owned property, including the Ash Creek, Pequonnock, and Congress Street substations.
- Locations of UI's proposed permanent easement adjacent to or in the vicinity of the CT DOT corridor.
- Municipal boundaries and zoning classifications.
- Topography.
- Water resources, including Federal and State jurisdictional freshwater and tidal wetlands and watercourses.

- Special flood hazard areas, including 100-year and 500-year floodplains, as designated by FEMA.
- Forested areas.
- Areas generally identified by the CT DEEP Natural Diversity Data Base (NDDB) as potential habitat for Federal- and State-listed (protected) species.
- Land uses, zoning, and coastal zone boundaries.
- Designated public recreational areas.
- Schools, daycares, hospitals, and other community facilities.
- Areas listed on the National or State Registers of Historic Places (NRHP, SRHP) and local historic districts (LHDs).
- Interstate and State highways, as well as local roads, railroad stations, and the Bridgeport-Port Jefferson Ferry Terminal.

5.1 TOPOGRAPHY, GEOLOGY, AND SOILS

5.1.1 Topography

The Project area, which is generally situated about 0.5 to 1 mile inland from Long Island Sound, is located within the southern portion of the Western Upland and the Coastal Lowlands physiographic provinces. The general terrain in this region is characterized by low ridges, beaches, and harbors along and in the vicinity of Long Island Sound. In general, topography in the region exhibits slopes of less than 8%. Topography along and adjacent to the CT DOT corridor in general ranges from 5 to 85 feet above sea level (asl) in North American Vertical Datum of 1988 (NAVD88). In areas of wetlands or near other waterbodies (e.g., river crossings), the ground typically slopes away from the railroad corridor to a lower elevation.

Overall, the topography in the Project area has been influenced by both the development of the rail lines and nearby urban/suburban uses. As a result, the areas near the railroad tracks are generally level and characterized by minimal topographic variation. However, in some locations within the CT DOT corridor, the topography slopes toward the railroad tracks, while in others it slopes away

from the tracks. In addition, along portions of the CT DOT corridor in Bridgeport, the railroad tracks are elevated approximately 12 feet above the surrounding terrain.

Within the Project area, topographic variations are most evident near water crossings, road crossings, and other areas where land use developments have modified the terrain via cut or fill. The MNR lines (and UI's existing 115-kV facilities on top of the railroad catenary structures) span all water crossings and extend either beneath road overpasses or above roads (via bridges). There are no at-grade road crossings along the CT DOT corridor in the Project area.

The Project area is not near and does not traverse any traprock ridge or amphibolite ridge areas as specified in Conn. Gen. Stat. § 8-1aa(1). Similarly, no major ridgelines parallel or are located in the immediate vicinity of the Project area.

The topography along the 0.23-mile UI ROW that extends between the CT DOT corridor and Ash Creek Substation also is characterized by minimal relief, with elevations ranging from 0 to 20 feet asl.

5.1.2 Bedrock and Surficial Geology

Bedrock in the Project area generally is comprised of metamorphic rocks, such as schists, and sedimentary rock, including New Haven arkose, locally known as brownstone. According to the USGS Bedrock Geological Map of Connecticut (December 2010), the surficial geology in the Project area generally consists of glacial meltwater deposits, including thin till (10-15 feet thick), thick till (greater than 10-15 feet thick), and drumlins (where till depths can exceed 100 feet); tidal marsh deposits; and sand/gravel overlying other surficial deposits. In general, the surficial materials in the Project area also have been modified by the historical construction of the railroad corridor and other land use developments, resulting in the presence of materials that are not native.

To assess subsurface conditions along the proposed route of the rebuilt 115-kV lines, UI commissioned geotechnical analyses, including test borings.[34] The results of the geotechnical

[34] Approximately 42 test borings have been conducted to date; additional borings are scheduled to be performed prior to construction.

studies conducted to date confirmed the published data regarding general bedrock and surficial conditions in the Project area. Specifically, the test borings identified bedrock at varying depths, ranging from 12 feet to more than 50 feet below ground surface. Bedrock was generally described as consisting of moderately hard, highly weathered schist to hard, slightly weathered granitic gneiss.

The test borings completed during the geotechnical studies also verified that surficial materials along the proposed Project route have been affected by historical developments along and near the railroad corridor. Specifically, the presence of fill materials was documented in the majority of borings. In general, fill material was observed at depths between 1.5 and 15 feet below ground surface. In most of the borings, the fill was characterized as silty sand and poorly-graded sand, with varying amounts of silt and gravel.

Alluvial deposits were encountered in the Project area near Ash Creek and the Pequonnock River; these deposits, with depths of between 5 to 44 feet below ground surface, consist mainly of clayey sand, sandy clay, sandy silt, or silty sand. Glaciodeltaic and/or glacial till deposits were observed, at varying depths, throughout most of the Project test borings. Glaciodeltaic deposits are primarily described as silt sand, poorly graded sand with varying amounts of silt, and sandy silt, whereas the till encountered was primarily described as silt sand, poorly- graded sand, clayey sand, and well graded sand with varying amount of silt. Lastly, glaciofluvial deposits were observed at depths of approximately 15 to 28 feet below ground surface, consist primarily of poorly graded sand mixed with gravel.

5.1.3 Soils

The CT DOT railroad corridor and most of the uplands immediately adjacent to it have been affected, over the past 100 years or more, by various land use developments, including the creation and maintenance of the MNR railbed using crushed rock for ballast. As a result, the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) identifies most soils along and in the vicinity of the CT DOT rail corridor in the Project area as in the Urban Land or Udorthents-Urban Land complexes. Udorthents is a miscellaneous upland type used to denote

moderately well to excessively drained earthen material that has been so disturbed by cutting, filling, or grading that the original soil profile can no longer be discerned.

Native soils remain intact in isolated portions of the Project area, mostly within freshwater and tidal wetlands and watercourses. Some locations of native upland soils are also found in the Project area; these consist of glaciofluvial soils (e.g., the Agawam series), derived from outwash surficial material.

The wetland complex located east of Sasco Creek contains mucky peats from the Westbrook series, which are derived from shallow organic material associated within the tidal wetlands. This soil type is difficult to fill and develop. Along the CT DOT corridor, inland wetland soils are mapped by NRCS as part of the Udorthent Urban land complex, derived primarily from urban influenced parent material.[35]

The Project area encompasses one location mapped by the NRCS as Prime Farmland. There are no areas mapped as Statewide Important Farmland soils within the Project area.

The mapped Prime Farmland, which consists of Agawam fine sandy loams, is located in the westernmost portion of the Project area, on the south side of the CT DOT corridor north of South Gate Lane and west of Westway Road in Fairfield (generally between proposed Structures P648S and P651S). However, in this area, the designated Prime Farmland soils are not used for agricultural purposes. Instead, land uses consist of the CT DOT corridor and single-family residences, with wooded and lawn areas.

Portions of the Project area in Fairfield and Bridgeport include soils classified by NRCS as susceptible to erosion. However, none of these soils are identified as most susceptible (highly) erodible soils. Appendix B includes a soils report that provides additional information regarding the characteristics of the soils in the Project area.

[35] The baseline soils information obtained from the NRCS maps and surveys supplements the field investigations that UI commissioned to identify regulated wetlands in the Project area. Connecticut wetlands are defined as land, including submerged land, (excluding tidal wetlands), which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial and floodplain by the NRCS. Wetlands in the Project area were delineated by registered professional soil and wetland scientists in 2019 and 2022.

5.2 WATER RESOURCES AND WATER QUALITY

The CT DOT corridor extends through southeastern Fairfield County, generally paralleling the coast approximately 0.5-1 mile inland from Long Island Sound. As a result, water resources within and in the vicinity of the Project area include freshwater and tidal wetlands, freshwater and tidal watercourses, waterbodies (harbors), floodplains, and groundwater resources.[36]

UI conducted both baseline research to define designated water resources (including published data regarding wetlands and watercourses, FEMA floodplains, drinking water supply sources) and field investigations to delineate State and Federal jurisdictional water resources (e.g., freshwater/tidal wetlands and watercourses) in the Project area. The field investigations were conducted along the proposed Project route, within and near the CT DOT railroad corridor and existing UI ROW to Ash Creek Substation, including in the areas identified as potential access routes and proposed work sites.

5.2.1 Drainage Basins and CT DEEP Water Quality Classifications

The Project area is located within the southern portions of the Southwest Coast drainage basin, which discharges into Long Island Sound and is one of Connecticut's eight major drainage basins. Within the Southwest Coast major drainage basin, the Project area crosses two CT DEEP sub-regional basins: the Southwest Shoreline sub-regional basin, and the Southwest Eastern sub-regional basin.

For each Connecticut drainage basin, CT DEEP maintains extensive water resource information and promotes watershed management with the goal of improving water quality by protecting surface and ground waters from degradation; restoring degraded surface waters to conditions suitable for fishing and swimming; restoring degraded groundwater to protect existing and designated uses; and defining priorities for pollution abatement.

[36] No lakes or ponds are located in the Project area.

Accordingly, as summarized in Tables 5-1 and 5-2, CT DEEP established Water Quality Standards and Classifications, for both groundwater and surface water. CT DEEP evaluates each waterbody and assigns a standard identifying the water quality management objectives for that water resource.

The Project area extends across two tidally-influenced surface watercourses: Ash Creek and the Pequonnock River, both of which are classified as SB.[37]

Table 5-1: Summary of Connecticut Ground Water Use Goals

Groundwater Resource Class	Designated Use Description
GAA	Existing or potential public supply of water suitable for drinking without treatment; baseflow for hydraulically connected surface water bodies.
GAAs	Ground water that is tributary to a public water supply reservoir.
GA	Existing private and potential public or private supplies of water suitable for drinking without treatment; baseflow for hydraulically connected surface water bodies.
GB	Presumed not suitable for human consumption without treatment; industrial process water and cooling waters; baseflow for hydraulically connected surface water bodies;
GC	Assimilation of permitted discharges. Example: a lined landfill for disposal of ash residue from a resource recovery facility. The GC hydrogeology and hydrologic setting provides the best safeguard to adjacent resources.
GA* & GAA*	Groundwater quality goal and designated use is Class GA or GAA, however there may be a known or potential impairment sources. Water quality is threatened or may be impaired.

Source: R.C.S.A., Section 22a-426-7.

[37] The Project does not cross Sasco Creek, which is also tidally-influenced and has a CT DEEP water quality classification of SA.

Table 5-2: Summary of Connecticut Surface Water Use Goals

Surface Water Resource Class	Designated Use Description
Freshwater	
AA	Existing or proposed drinking water supply, fish and wildlife habitat, recreation, water supply for industry and agriculture
A	Potential drinking water supply, fish and wildlife habitat, recreation, navigation, industrial and agricultural water supply.
B	Fish and wildlife habitat, recreation, industrial and agricultural water supply, navigation
B*	Currently not fully meeting goal of Class B.
B/AA or B/A	Water quality goal is Class AA or A. Water quality is threatened.
C/AA or C/A	Water quality goal is Class AA or A. Water quality is impaired.
C/B or D/B	Water quality goal is Class B. Water quality is impaired.
Coastal Marine	
SA	Habitat for marine fish, other aquatic life, and wildlife; recreation, industrial water supply, direct shellfish consumption, navigation
SB	Habitat for marine fish, other aquatic life, and wildlife; recreation, industrial water supply, navigation. Commercial shellfish harvesting.
SB/SA, SC/SA	Water quality goal is Class SA. Water quality is impaired.
SC/SB, SD/SB	Water quality goal is Class SB. Water quality is impaired.

Source: R.C.S.A., Section 22a-426-4.

In most of the westernmost portion of the of the Project area, the CT DEEP classifies groundwater as GA, although two areas in the immediate vicinity of Mill River and Southport Harbor are classified as impaired GA. In the remainder of the Project area, through eastern Fairfield and Bridgeport, CT DEEP classifies groundwater as GB. In the Project area, groundwater does not serve as potable water supply; instead, potable water is provided by the Aquarion Water Company.

5.2.2 Surface Water Resources (Freshwater and Tidal)

The Project area encompasses or extends across various freshwater and tidal surface water resources. The Project area's water resources were identified based on the results of desktop studies and research, followed by field surveys (conducted in 2019 to 2022[38]) to delineate water resources that meet Federal and State jurisdictional criteria.

[38] Water resource field surveys were performed by a Professional Wetlands Scientist (PWS) and a Certified Professional Soil Scientist (CPSS).

The methods used to field-delineate Federal and State jurisdictional water resources are described in the Water Resources Delineation Report included in Appendix B, which also includes wetland/watercourse delineation forms. As detailed in this appendix, State jurisdictional wetlands and waterbodies are defined solely on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land. Watercourses are defined as rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, vernal, or intermittent, public or private, which are contained within, flow through or border upon the State or any portion thereof. The Volume 2 maps identify the specific locations of both freshwater and tidal water resources delineated in the Project area. This section summarizes the results of the water resource studies.

Federal jurisdictional water resources ("Waters of the United States") include lakes, rivers, and streams, as well as vegetated wetlands. In the Project area, Federal jurisdictional waters and wetlands, which are regulated by the USACE, were delineated in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual Northcentral and Northeast Region* ([*Manual*], Version 2.0, January 2012). To qualify as a Federal jurisdictional wetland, three parameters must be present: dominant hydrophytic vegetation, hydric soils, and hydrological conditions. The National Wetlands Inventory (NWI) classifications used in the field studies are listed in Table 5-3 and included in the Volume 2 map key.

Table 5-3: Wetlands and Watercourse Classification Key

National Wetlands Inventory (NWI) Classification of Wetlands and Deepwater Habitats Classification Key	
Classification Designation	**Classification Description**
E1UBL	estuarine, subtidal, unconsolidated bottom
E2EMP5d	estuarine, intertidal emergent persistent irregularly flooded, *Phragmites australis* partly drained/ditched
PEM	palustrine emergent
PFO	palustrine forested
PSS	palustrine scrub-shrub
R2UBH	riverine, lower perennial unconsolidated bottom permanently flooded
R4SBC1	riverine, intermittent streambed seasonally flooded, hyperhaline/hypersaline
R5UBh1	riverine, unknown perennial unconsolidated bottom, permanently flooded, hyperhaline/hypersaline
R6	Riverine, ephemeral

As illustrated on the Volume 2 aerial-based maps and referred to in this section, delineated wetlands and watercourses along the CT DOT corridor and in the vicinity of the proposed 115-kV transmission line rebuilds are identified sequentially, from west to east. Wetlands are denoted as a "W" and are given an alphabetical identifier. Watercourses are denoted with "WC" and given a numerical identifier. Tidal wetlands and watercourses are demarcated by a "T" in this classification system. On the facing page text associated with the 1" = 400' maps in Volume 2, wetlands and watercourses are listed by NWI classification and type (inland, tidal); these aerial maps also generally illustrate the locations of the water resources. The 1"=100' maps in Volume 2 provide a clearer view of each water resource, by Project-specific wetland and watercourse number.

Watercourses and Waterbodies

A total of 14 watercourses were delineated within the Project area – that is, along and near the CT DOT corridor and along UI's ROW between the railroad corridor and Ash Creek Substation. These resources include 12 perennial watercourses, one intermittent stream, and one ephemeral drainage.

Of these 14 watercourses, six are tidal or have tidal influence, including Sasco Creek,[39] two tidal watercourses associated with Ash Creek, Ash Creek (two crossings of Ash Creek within the Project area), and the Pequonnock River. Table 5-4 summarizes the major characteristics of these water resources from the Connecticut Environmental Conditions Online (CT ECO) *Water Quality Classifications* database.

The eight inland (non-tidal) watercourses include Mill River and seven small streams that parallel or flow alongside of the railroad tracks. Some of these small streams may have been created because of the historic development and elevations along the railroad. These small streams serve as important storm drainages, but most do not provide robust biodiversity

[39] The Project will not involve any work in or over Sasco Creek. However, for the purposes of this analysis, the creek is referenced because existing catenary structure B648S (where the Project rebuild work will commence) is located approximately 150 feet east of the creek and, for Project construction, UI proposes to install a matted work pad that will temporarily extend into the wetland associated with and east of the creek.

function. Three of the streams (WC-2, WC-7, and WC-9) extend beneath the railroad tracks via culverts.

Of the 14 watercourses, four (Sasco Creek, Mill River, Ash Creek, and WC-9), are directly spanned by the rail lines. In addition, UI's existing double-circuit transmission lines that extend from the railroad corridor to Ash Creek Substation span Ash Creek.

Except for Sasco Creek, Ash Creek, Mill River, and the Pequonnock River, all the watercourses in the Project area are generally less than 50 feet wide. In contrast, the main channel of Ash Creek is approximately 65 feet wide within the UI ROW portion of the Project area; Mill River is approximately 65 feet wide but expands to 450 feet wide immediately adjacent to and south of the railroad corridor span. The Project will cross approximately 950 feet over the western bank of the Pequonnock River.

None of the rivers in the Project area are designated as wild and scenic under the Federal Wild and Scenic Rivers Act (16 U.S.C. §§1271-1287) or by Connecticut (Conn. Gen. Stat. §§25-199 – 199c).

Table 5-4: Watercourses in the Project Area

Municipality / Volume 2, 100 / 400-Scale Mapsheet Nos.	Watercourse / Waterbody Name (Number)*	Flow Type Intermittent (I), Perennial (P), or Ephemeral (E)	Freshwater (F) or Tidal (T)	Water Quality Classification within Project Area**
1/1	Sasco Creek	Perennial	T	SA
2/1	WC-2	Perennial	F	A/AA
4/2	WC-3	Perennial	F	A/AA
4-5/2	WC-4	Ephemeral	F	A/AA
5/2	WC-5	Intermittent	F	A/AA
5-6/2	Mill River	Perennial	F	SA
12/4	WC-7	Perennial	F	A/AA
12/4	WC-8	Perennial	F	A/AA
12-13/4	WC-9	Perennial	F	A/AA
14/4	WC-10	Perennial	F	A/AA
15/4	TWC-11	Perennial	T	A/AA
15/4	TWC-12	Perennial	T	A/AA
15, 18/4-5	Ash Creek***	Perennial	T	SB
27-29/7	Pequonnock River	Perennial	T	SB

*Refers to Project-specific number given to the water resource during field investigations and shown on the Volume 2 aerial-based maps.
**Watercourses not specifically classified are considered as Class A or Class AA, per Connecticut's Water Quality Standards.
Shading indicates tidal watercourse.
***Project crosses Ash Creek at two locations – once along the CT DOT corridor and once along the UI ROW to Ash Creek Substation.
Note: While in the general Project area, the Project will not cross Sasco Creek.

Wetlands

Ten wetlands were delineated in the Project area - within and adjacent to the CT DOT corridor and along UI's ROW that extends to Ash Creek Substation. Of these, three are tidal, with one located east of Sasco Creek (TW-A) and two adjoining Ash Creek along the UI ROW (TW-I and TW-J). Table 5-5 lists the delineated wetlands, identifying each wetland based on the NWI classification regarding habitat type and whether invasive plant species are present in the wetland.[40]

Table 5-5: Wetlands in the Project Area

Municipality / Project 100/400 Scale Mapsheet Nos. (Volume 2)	Wetland Number*	NWI Classification	Inland (I) or Tidal (T)	Invasive Species Identified** (Y/N)
1/1	TW-A	E2EMP5d	T	Y
2/1	W-B	PEM	I	Y
4-5/2	W-C	PEM	I	Y

[40] Table 5-3 and the Volume 2 map key list the NWI classifications applicable to the Project area. The principal classifications of wetlands in the Project area are: PFO = palustrine forested; PSS = palustrine scrub-shrub; PEM = palustrine emergent marsh; E2EMP5d = estuarine intertidal emergent *Phragmites australis*.

Municipality / Project 100/400 Scale Mapsheet Nos. (Volume 2)	Wetland Number*	NWI Classification	Inland (I) or Tidal (T)	Invasive Species Identified** (Y/N)
5-6/2	W-D	PEM	I	Y
11/3	W-E	PFO/PEM	I	Y
11/3	W-F	PEM	I	Y
13/4	W-G	PEM	I	Y
14/4	W-H	PEM/PSS	I	Y
15/4	TW-I	E2EM	T	Y
18/5	TW-J	E1UBL	T	Y

*Refers to Project-specific number given to the water resource during field investigations and shown on the Volume 2 aerial-based maps.
**Indicates a species listed by CT DEEP as an aquatic invasive species was identified during wetland delineation by BL Companies.
Shading indicates a tidal wetland.

5.2.3 Flood Zones

Subsequent to Hurricanes Irene (2011) and Sandy (2012) and similar storm events in 2020-2021, the FEMA reclassified flood zones in much of the State's coastal area. FEMA classifies Special Flood Hazard Areas for insurance and floodplain management purposes and has prepared maps designating certain areas according to the frequency of flooding (Flood Insurance Rate Maps [FIRM]). An area mapped within the 100-year flood designation has a 1% chance of flooding each year or is expected to flood at least once every 100 years. Areas designated "AE" indicate a base floodplain where base flood elevations have been determined by FEMA. An area within the 500-year FEMA-designated flood zone has a 0.2% chance of flooding each year. Such areas (between the 100-year and 500-year flood zones) are considered to have a moderate flood hazard; a Zone "X" on FEMA mapping refers to these areas.

FEMA defines a "regulatory floodway" as a "channel of a river or other watercourse and the adjacent land areas that must be reserved to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height". FEMA defines a "floodplain" as "any land area susceptible to being inundated by floodwaters from any source". In other words, a floodplain is the area that includes the floodway, as defined above, and the floodway fringes, which are the remaining areas on either side of the floodway that comprise the floodplain. FEMA and State regulations allow communities to allow the floodway fringes to be modified and developed if certain requirements are met.

The Project area extends across several FEMA-designated 100-year and 500-year flood zones, as well as regulatory floodways.[41] Along the CT DOT corridor, the railroad tracks (and UI's existing 115-kV lines on the catenary structures) are located at elevations above the FEMA-designated flood elevations and thus are not in the flood zones.

However, the areas adjacent to the tracks (at the toe of the railbed) are within FEMA-designated floodplains associated with various watercourses and wetlands, including Sasco Creek, TW-A, W-B, WC-2, Mill River, W-D, W-F, WC-7, WC-8, WC-9, W-G, W-H, WC-10, TWC-11, TWC-12, W-I, and Ash Creek (along the UI ROW) TW-J, Ash Creek (at the CT DOT crossing along the Fairfield and Bridgeport border), and the Pequonnock River. Overall, between catenary structure B648S and Congress Street Substation, the Project area[42] extends for approximately 2.8 miles within areas designated as 100-year floodplains and 1.5 miles within areas designated as 500-year floodplains (refer to the Volume 2 maps). In addition, approximately 0.36 mile of the Project area is along regulated floodways associated with Mill River, WC-9, portions of Ash Creek, and the Pequonnock River.

All four of UI's existing substations in the Project area are located within floodplains. Both Congress Street and Pequonnock substations are located within the 100-year floodplain associated with the Pequonnock River. The Resco Substation is within the 100-year floodplain of Black Creek Harbor. Ash Creek Substation is located within mapped 100-year and 500-year floodplains associated with Ash Creek.

Overall, within the Project area, the potential for flooding is a concern. For example, Fairfield experienced flooding due to storm surges during recent tropical storms and hurricanes, and a resiliency study was completed in 2017 that reviewed Ash Creek. Furthermore, the Connecticut Institute for Resiliency and Climate Adaptation (CIRCA) has identified the anticipated rise in sea level that must be considered, given the location of the Project. Pursuant to Connecticut Public

[41] Some of the monopoles that support UI's 1130 Line, which is located along the CT DOT corridor north of the MNR tracks in Fairfield and the western portion of the Project area in Bridgeport, also are within FEMA-designated 100- and 500-year flood zones.

[42] Including the CT DOT corridor at the toe of the railbed (i.e., the portions of the CT DOT property excluding the railroad tracks) and UI's ROW between the railroad and Ash Creek Substation.

Act 18-82, the CT DEEP adopted the CIRCA recommended sea level change scenario of 0.5 meters (1 foot 8 inches or 20 inches).

5.2.4 Groundwater Resources, Public Water Supply, and Aquifer Protection Areas

As part of the subsurface investigations of the proposed locations for the rebuilt 115-kV transmission line structures, UI compiled information regarding depth to groundwater. Based on the results of that testing, the depth to groundwater in the Project area is estimated to range from 5 feet to 20 feet or more below grade. Groundwater was not encountered in all test borings. Further, groundwater levels can be expected to fluctuate seasonally.

As noted in Section 5.2.1, based on CT DEEP's *Water Quality Classification*s map data (October 2018), most groundwater in the Project area is classified as GB. Groundwater is not used for drinking water in the Project area; the Aquarion Water Company of Connecticut provides potable water from a series of reservoirs and filtration plants (none of which are located near the Project area).

According to CT DEEP data, no designated Aquifer Protection Areas are located near the Project area.

5.3 BIOLOGICAL RESOURCES

5.3.1 Vegetation

Vegetative communities in the general vicinity of the Project area are characteristic of the southern New England urban/suburban region. Typical vegetative habitats found in the vicinity of the Project area include suburban lawns, trees, and landscaping; narrow buffer strips of vegetation; and freshwater and tidal wetlands.

Within the CT DOT corridor, vegetation is generally sparse immediately adjacent to the railroad tracks and overall is dominated by non-native invasive species, as well as escaped ornamental vegetation associated with residential landscaping. Scattered areas of shrubs and mature trees characterize portions of the CT DOT property farther from the railroad tracks.

Trees, which are found along the boundaries of the CT DOT property, are primarily deciduous hardwoods common to Connecticut, including oak (*Quercus spp.*), red maple (*Acer rubrum*), black cherry (*Prunus serotina*), staghorn sumac (*Rhus typhina*), and quaking aspen (*Populus tremuloides*). Due to the historical development and maintenance activities within the railroad corridor, disturbed areas also include a complex of common introduced native species and many invasives, such as common reed (*Phragmites australis*), garlic mustard (*Alliaria petiolata*), Japanese barberry (*Berberis thunbergii*), rugosa rose (*Rosa rugosa*), and multiflora rose (*Rosa multiflora*). No areas of core forest are found in the Project area or vicinity.

In the Project area, the tidal wetland systems associated with Sasco Creek and Ash Creek are exceptions to the non-native vegetative communities that dominate other wetlands in the Project vicinity. Below the Connecticut Jurisdiction Line (CJL), native tidal marsh vegetation (i.e., *Spartina spp.*) is present, while common reed is found in the wetland areas above the CJL elevation. [43]

Except for these two tidal riverine habitats, wetlands within the Project area are typically characterized as low quality and disturbed, with vegetation often dominated by invasive species, predominantly common reed and honeysuckle (*Lonicera spp.*).

5.3.2 Wildlife, Including Breeding Birds

Wildlife

The wildlife that may inhabit the Project area can be expected to be typical of that found near residential/commercial/industrial developments in coastal areas. The Project area supports wildlife associated with urbanized environs. Such habitats are of low significance, as they tend to support disturbance-dependent wildlife, which are often species subsidized by human activities (e.g., rats, skunks, racoons).

[43] Connecticut's Coastal Jurisdiction Line refers to the location of the topographical elevation of the highest predicted tide referenced to the most recent National Tidal Datum Epoch as published by the National Oceanic and Atmospheric Administration and described in terms of feet of elevation above the North American Vertical Datum of 1988.

The Project area is situated within a densely developed landscape with high traffic roadways and railroad tracks that present significant barriers to the movement of terrestrial wildlife, including mammals, amphibians, and reptiles. For the same reasons, the Project area provides limited habitat for birds. In some locations, near the CT DOT railroad corridor, small remnant habitat "islands" may provide support for migratory birds passing through during seasonal movements along the Connecticut coastline. However, there are no areas of large core forests of greater than 250 acres in the vicinity and thus long-term habitat for birds along and in the vicinity of the CT DOT corridor is restricted to disturbance-tolerant species.

Breeding Birds

To assess the birds that may breed in the habitats found in the Project area, UI conducted baseline research using published data regarding breeding birds in Connecticut, supplemented by observations during biological field studies performed for the Project. In addition, UI reviewed information compiled on breeding birds during prior transmission line work in the area. The following summarizes the results of these analyses.

Birds Identified during Field Investigations and from Prior Transmission Line Work

UI identified two bird species (osprey and peregrine falcon) as nesting in the general Project vicinity, based on field studies of this Project area or prior transmission facility work. The following describes these species:

- **Osprey** *(Pandion haliaetus)*: During UI's field visits of the Project area, osprey (*Pandion haliaetus*) nests were observed on catenary structures near Southport Harbor, on UI's existing transmission towers between the CT DOT corridor and Ash Creek Substation, and north of the Pequonnock Substation. Specifically, osprey nests are located near catenary structure B647 (which is located west of the Project area in Westport) and catenary structure B672 (near Mill River in Fairfield), as well as on two existing UI lattice steel towers: one on the Ash Creek lattice tower on the island in Ash Creek, and a second near Water Street and the bus station in Bridgeport adjacent to the Pequonnock River.

- **Peregrine Falcon** *(Falco peregrinus):* Based on prior utility work and preliminary consultation with CT DEEP NDDB, a peregrine falcon nest is known to be located on the I-95 bridge over the Pequonnock River in Bridgeport. Peregrine falcon nests are highly susceptible to disturbance during the nesting season, which occurs April through July.

Breeding Bird Inventory: Research

For the purposes of this evaluation, potential suitable habitat for breeding birds was assumed to be areas within approximately 100 feet (both north and south) of the CT DOT corridor, along UI's ROW leading to Ash Creek Substation, and locations beyond the CT DOT property boundary where UI proposes to acquire new permanent easement.

To assess the potential for breeding birds in the Project area, an initial inventory was generated solely based on the presence of suitable habitat. That preliminary list was then refined by considering such factors as bio-geographical distribution, the presence or absence of critical habitat features and minimum patch size requirements (i.e., for area-sensitive species).[44]

Table 5-6 presents the refined breeding bird list. The inventory is subdivided by habitat type. A species is listed under the habitat that represents its primary breeding type. However, a species may be present within the ecotones associated with their primary habitat at any given time. The following habitat types occur within the Project area:

- *Saltmarsh and Riverine* – saltmarsh habitat is restricted to the tidal marshes bordering Sasco Creek and Ash Creek. Riverine habitat refers to the open water (such as Sasco Creek, Mill River, Ash Creek, and Pequonnock River), and species that utilize this habitat as a primary feeding site, with nesting occurring along the shoreline and immediately bordering habitats.

- *Emergent Marsh and Scrub-Shrub Wetlands* – these include freshwater and brackish marshes, most of which occur along the edge of the railroad bed, many of which are dominated by common reed. Also included are scrub-shrub wetlands (a.k.a. shrub swamps). These two wetland cover types are often intermingled.

- *Urban and Suburban* – these include upland (non-wetland) areas that are largely occupied by commercial and residential developments, but include areas occupied by small woodland and forest patches, or ornamental landscaping. Species utilizing these areas are habitat generalists or edge habitat users, including species often referred to as "disturbance tolerant" or "backyard birds" as they are adaptable to anthropogenic habitats. Also included are species that might inhabit the edges of small second-growth deciduous forest patches.

[44] The Project area is within the Connecticut's Coastal Zone Ecoregion, which is part of the Atlantic Flyway, a major north-south route for migratory birds that generally follows the Atlantic coast. As a result, flocks of birds move through the area in both the spring and fall. The breeding bird inventory list for the Project excludes potential temporary stopover habitat for these migrants.

The list of birds in Table 5-6 was developed utilizing a habitat-based catalog of known breeding birds in Connecticut. The primary source was *The Connecticut Bird Atlas*, which provides data including the distribution and abundance of breeding birds within Connecticut between 2018-2020, and documents changes since the first *Connecticut Breeding Bird Atlas* which was conducted in the 1980's. This study is the most comprehensive review to date of Connecticut's breeding birds. The *Birds of the World* (Poole and F. B. Gill, online database) was also reviewed as an additional resource on habitat utilized, and eBird (Cornell Lab of Ornithology) was used to confirm recent records.

Table 5-6: List of Birds Potentially Breeding in the General Project Area*

Common Name	Scientific Name	Listing Status (State)
Saltmarsh and Riverine Habitat		
American Black Duck	*Anas rubripes*	
Bald Eagle	*Haliaeetus leucocephalus*	Threatened
Belted Kingfisher	*Ceryle alcyon*	
Black-crowned Night-Heron	*Nycticorax*	
Blue-gray Gnatcatcher	*Polioptila caerulea*	
Canada Goose	*Branta canadensis*	
Clapper Rail	*Rallus longirostris*	
Common Merganser	*Mergus merganser*	
Common Tern	*Sterna hirundo*	Special Concern
Double-crested Cormorant	*Phalacrocorax auritus*	
Fish Crow	*Corvus ossifragus*	
Gadwell	*Mareca strepera*	
Glossy Ibis	*Plegadis falcinellus*	Special Concern
Great Black-backed Gull	*Larus marinus*	
Great Egret	*Casmerodius albus*	Threatened
Green Heron	*Butorides virescens*	
Herring Gull	*Larus argentatus*	
Killdeer	*Charadrisus vociferus*	
Laughing Gull	*Larus atricilla*	
Least Bittern	*Ixobrychus exilis*	Threatened
Little Blue Heron	*Egretta caerulea*	Special Concern
Mallard	*Anas platyrhynchos*	
Marsh Wren	*Cistothorus palustris*	
Osprey	*Pandion haliaetus*	
Red-shouldered Hawk	*Buteo lineatus*	
Ring-billed Gull	*Larus delawarensis*	
Saltmarsh Sparrow	*Ammodramus caudacutus*	Special Concern
Seaside Sparrow	*Ammodramus maritimus*	Threatened
Snowy egret	*Egretta thula*	Threatened
Swamp Sparrow	*Melospiza georgiana*	
Tree Swallow	*Tachycineta bicolor*	
Willet	*Catoptrophorus semipalmatus*	Special Concern
Wood Duck	*Aix sponsa*	
Yellow-crowned Night-Heron	*Nyctanassa violacea*	Special Concern
Emergent Marsh and Scrub-Shrub Wetlands		
American Black Duck	*Anas rubripes*	
Belted Kingfisher	*Ceryle alcyon*	
Carolina Wren	*Thryothorus ludovicianus*	
Clapper Rail	*Rallus longirostris*	

Common Yellowthroat	*Geothlypis trichas*	
Eastern Kingbird	*Tyrannus*	
Gray Catbird	*Dumetella carolinensis*	
Great Blue Heron	*Ardea herodias*	
Green Heron	*Butorides virescens*	
Least Bittern	*Ixobrychus exilis*	Threatened
Mallard	*Anas platyrhynchos*	
Marsh Wren	*Cistothorus palustris*	
Red-winged Blackbird	*Agelaius phoeniceus*	
Song Sparrow	*Melospiza melodia*	
Swamp Sparrow	*Melospiza georgiana*	
Willow Flycatcher	*Empidonax trailii*	
Yellow Warbler	*Setophaga petechia*	
Urban-Suburban Habitats		
American Crow	*Corvus brachyrynchos*	
American Goldfinch	*Carduelis tristis*	
American Redstart	*Setophaga ruticilla*	
American Robin	*Turdus migratorius*	
Baltimore Oriole	*Icterus galbula*	
Barn Swallow	*Hirundo rustica*	
Barred Owl	*Strix varia*	
Black-and-white Warbler	*Mniotilta varia*	
Black-capped Chickadee	*Parus atricapillus*	
Black Vulture	*Coragyps atratus*	
Blue Jay	*Cyanocitta cristata*	
Broad-winged Hawk	*Buteo platypterus*	Special Concern
Brown Creeper	*Certhia americana*	
Brown-headed Cowbird	*Molothrus ater*	
Cedar Waxwing	*Bombycilla cedrorum*	
Chestnut-sided Warbler	*Dendroica pensylvanica*	
Chimney Swift	*Chaetura pelagica*	
Chipping Sparrow	*Spizella passerina*	
Common Grackle	*Quiscalus quiscula*	
Common Nighthawk	*Chordeiles minor*	Endangered
Common Raven	*Corvus corax*	
Cooper's Hawk	*Accipiter cooperii*	
Downy Woodpecker	*Picoides pubescens*	
Eastern Bluebird	*Sialia sialis*	
Eastern Phoebe	*Sayornis phoebe*	
Eastern Screech-Owl	*Otus asio*	
Eastern Towhee	*Pipilo erythrophthalmus*	
Eastern Wood-Pewee	*Contopus virens*	
European Starling	*Sturnus vulgaris*	
Gray Catbird	*Dumetella carolinensis*	
Great Crested Flycatcher	*Myiarchus crinitus*	
Great Horned Owl	*Bubo virginianus*	
Hairy Woodpecker	*Picoides villosus*	
Hermit Thrush	*Catharus guttatus*	
House Finch	*Carpodacus mexicanus*	
House Sparrow	*Passer domesticus*	
House Wren	*Troglodytes aedon*	
Indigo Bunting	*Passerina cyanea*	
Least Flycatcher	*Empidonax minimus*	
Monk Parakeet	*Myiopsitta monachus*	
Mourning Dove	*Zenaida macroura*	
Northern Cardinal	*Cardinalis*	
Northern Flicker	*Colaptes auratus*	
Northern Mockingbird	*Mimus polyglottos*	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	

Orchard Oriole	*Icterus spurius*	
Ovenbird	*Seiurus aurocapillus*	
Pileated Woodpecker	*Dryocopus pileatus*	
Purple Martin	*Progne subis*	Special Concern
Red-bellied Woodpecker	*Melanerpes carolinus*	
Red-eyed Vireo	*Vireo olivaceus*	
Red-shouldered Hawk	*Buteo lineatus*	
Red-tailed Hawk	*Buteo jamaicensis*	
Rock Dove	*Columba livia*	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	
Ruby-throated Hummingbird	*Archilochus colubris*	
Tufted Titmouse	*Parus bicolor*	
Warbling Vireo	*Vireo gilvus*	
White-breasted Nuthatch	*Sitta carolinensis*	
Wild Turkey	*Meleagris gallopavo*	
Wood Thrush	*Hylocichla mustelina*	
Worm-eating Warbler	*Helmitheros vermivorus*	
Yellow-rumped Warbler	*Dendroica coronata*	
Yellow-throated Vireo	*Vireo flavifrons*	

References: The Connecticut Bird Atlas 2018-2020 (http://www.ctbirdatlas.org). Birds of the World (A. F. Poole and F. B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.
*Includes species based on the review of published research.

5.3.3 Vernal Pools

In conjunction with 2019 and 2022 wetland delineation studies, UI conducted field surveys of the Project area to determine if vernal pools were present. Vernal pool surveys were performed in early spring of both 2019 and 2022, the optimum time-of-year to identify vernal pool species, while water levels are high and signs of amphibian breeding visibly evident.

Overall, UI's investigations found no vernal pool habitat within or proximate to the Project area. The lack of vernal pools in the Project area is not unexpected given that amphibian species dependent on vernal pools rely on upland forest surrounding the breeding pools for primary habitat during the non-breeding season. Upland forest is lacking in the Project area, which is characterized by infrastructure and dense urban/suburban development and is highly disturbed in nature. Furthermore, observed hydroperiods[45] for wetlands in the Project area were generally found to be inappropriate for vernal pool amphibians. Specifically, most wetlands were either saturated or permanently flooded, and many convey stormwater during high precipitation events, and few possessed the seasonal flooding required by vernal pool indicator species.

[45] The period in which a soil area is waterlogged. Hydroperiod determines not only the length of time that amphibian larvae have for developing to the point where they can leave the water for land, but also the number and types of predators to which they are exposed.

5.3.4 Fisheries

The Project area traverses various perennial watercourses that are either known to support or have the potential to support warm water and other fisheries habitats. These include but are not limited to, Mill River and the Pequonnock River. Warm-water fisheries are generally less sensitive than cold-water, and more tolerant of habitat disturbance and modifications to water quality.

Mill River has recently been stocked with certain cold-water species (trout); however, it is not expected that this watercourse supports self-sustaining trout populations in the vicinity of the CT DOT corridor crossing. Similarly, no State-designated or wild trout management areas are located in the vicinity of the CT DOT corridor. The American eel, the only catadromous fish[46] in Connecticut, is found in all waterbodies in the State, including certain watercourses in the Project area.

The Project area is also near areas that support anadromous fish (i.e., fish species that spend most of their adult lives at sea but return to freshwaters to spawn). Mill River support alewife anadromous fish runs, and Mill River also supports blueback herring and sea lamprey fish runs. The Pequonnock River in Bridgeport also supports both alewife and sea lamprey runs. These anadromous species migrate to the first barrier on each waterway.[47] Striped bass and gizzard shad, also anadromous species, also feed in many coastal rivers in Connecticut and may periodically be found in the larger watercourses in the Project area. Ash Creek is not listed by CT DEEP as supporting anadromous fish.

Tidal watercourses in the general Project vicinity support shellfish beds, including, but not limited to, portions of Sasco Creek, Mill River, Ash Creek, Black Rock Harbor, and the Pequonnock River.[48] The closest known shellfish resources to the Project are associated with Mill River, approximately 0.35 mile south of the CT DOT corridor, as well as within Ash Creek approximately 0.20 mile south of Ash Creek Substation.

[46] According to CT DEEP, catadromous fish live most of their adult lives in freshwater but must return to saltwater to spawn.
[47] https://portal.ct.gov/-/media/DEEP/fishing/fisheries_management/Migratory-Fish-Runs.pdf
[48] https://portal.ct.gov/DOAG/Aquaculture1/Aquaculture/Shellfish-Area-Classifications--Maps

The portion of Sasco Creek that is located west of the Project area is mapped as Restricted-Relay by the Connecticut Department of Agriculture Bureau of Aquaculture, meaning shellfish can be harvested by special license and may not be directly harvested for market or consumption. The remaining watercourses in the Project area are mapped as Prohibited, meaning that there has been no current sanitary survey or that a sanitary survey has been conducted and determined that shellfish cannot be harvested due to public health risks.

5.3.5 Federal and State-Listed Threatened, Endangered, or Special Concern Species

To evaluate the potential for Federal or State-listed species to occur in the Project area, UI conducted research, evaluated potential habitats during field investigations of the Project area, and consulted with both the USFWS and the CT DEEP NDDB program. The following summarizes information regarding both Federally- and State-Listed species; additional information is provided in Appendix B.

Federally Listed Species

To determine whether the Project area coincides with the known habitat of species identified by the Federal government as threatened, endangered, or species of concern, UI consulted with the USFWS's New England Ecological Services Field Office using the Information for Planning and Consultation (IPaC) system. IPaC identified one species listed as "endangered", two species listed as "threatened", and one unlisted "candidate" species as potentially occurring within the Project area. (Refer to Appendix A for the USFWS's IPaC review, dated August 23, 2022). These species are as follows:

- **Northern long-eared bat (*Myotis septentrionalis*)**: The northern long-eared bat is listed by USFWS as "threatened". The Project area is not located within 150 feet of a known occupied maternity roost tree or within 0.25 mile of a known northern long-eared bat hibernaculum. There are currently no documented northern long-eared bat maternity roost trees in Connecticut. The nearest northern long-eared bat habitat resource to the proposed Project is located in the Town of Greenwich, Connecticut, over 15 miles from the western end of the Project. While some tree cutting is proposed as part of the Project, there are no known records of this species in the immediate vicinity of the Project.

- **Red knot (*Calidris canutus rufa*)**: Red knot, federally listed as "threatened" species, is a shorebird typically found along the Connecticut coastline during northbound and southbound migrations between wintering locations in South America and the Caribbean. The birds spend most of their time foraging along the waterline within the intertidal zone

and are known to occur at inland locations. Red knots can typically be found on Connecticut's barrier beaches from mid-April to the end of May, and then again from July through mid-September. Some non-breeding individuals may linger along the state's barrier beaches between migratory periods, while late individuals may pass through on southbound migration well into November.

Migration habitats include both high-energy ocean or bay-front areas, as well as tidal flats in more sheltered bays and lagoons. Preferred wintering and migration microhabitats are muddy or sandy coastal areas, specifically, the mouths of bays and estuaries, unimproved tidal inlets and tidal flats. In many wintering and stopover areas, quality high tide roosting habitat (i.e., close to feeding areas, protected from predators, with sufficient space during the highest tides, free from excessive human disturbance) is limited.

- **Roseate tern *(Sterna dougallii dougallii)***: Roseate tern is listed by USFWS as "endangered". Roseate terns are a shorebird that have a white body and black head cap, with a rosy tint on the breast and bright orange-red legs and feet that are easily identifiable. This species nests in colonies along sand or gravel beaches or along rocky offshore islands, often occurring near shallow water for fishing. Nests are often found under dense grass or under boulders. The roseate tern arrives in Connecticut in late April to early May and stay through the summer months before leaving for wintering locations located in South America.

  A large colony of nesting roseate terns is located on Falkner Island, which is 3 miles off the coast of Guildford, Connecticut, and approximately 28 miles from the Project area. Smaller colonies also occur on barrier beach islands and saltmarsh islands. As described for the red knot, the Project area does not encompass the type of coastal habitat that is preferred by Roseate terns. The UI ROW across Ash Creek spans intertidal areas but is not near suitable nesting habitat for the species.

- **Monarch Butterfly (*Danaus plexippus*)**: The monarch butterfly was identified in December 2020 as a candidate for listing as endangered or threatened under the Federal Endangered Species Act. However, due to USFWS work on higher-priority listings, the butterfly is not yet listed and no critical habitat has been designated for the species. The USFWS will review the candidate status of the butterfly on a yearly basis until a decision is made.

State-Listed Species

The NDDB maps represent approximate locations of (i) endangered, threatened and special concern species and (ii) significant natural communities in Connecticut. The locations of species and natural communities depicted on the maps are based on data collected over the years by CT DEEP staff, scientists, conservation groups, and landowners. In some cases, an occurrence represents a location derived from the literature, museum records, and/or specimens.

Early in the Project planning process, UI's review of CT DEEP NDDB mapping revealed that NDDB polygons are present along and adjacent to portions of the CT DOT corridor. As a result,

in 2019, UI initiated consultation with NDDB and requested a preliminary assessment review to gain an early understanding of the State-listed species that may be present in the Project vicinity. In a letter dated September 18, 2019, the NDDB indicated that known extant populations of two State-listed species are potentially present in the vicinity of the Project area: the State threatened peregrine falcon and State special concern blueback herring (*Alsoa aestivalis*).

As Project plans evolved, UI reached out to NDDB representatives again on January 17, 2022 and requested an updated review. The NDDB's most recent determination letter ("Determination" No. 202200482, dated January 28, 2022; refer to Appendix A) confirmed that no additional species had been added to its initial listing of the two species and provided recommendations for protective measures to be implemented during Project construction to avoid adverse impacts to each species. UI will continue to consult with the NDDB and will maintain a valid NDDB determination through the full duration of the Project.

The characteristics of each of these State-listed species, and the results of consultations conducted to date with CT DEEP, are summarized below.

- ***State Threatened Bird Species – Peregrine Falcon:*** As described in Section 5.3.2, NDDB identified a Peregrine falcon nest located on the I-95 bridge over the Pequonnock River in Bridgeport. The Peregrine falcon nesting season occurs from April 1 – July 31. Peregrine falcons are very territorial during the breeding season and will make their presence known if near a nest site. Correspondence received from CT DEEP states that if any Project work is conducted during the active nesting season (April 1 through July 31), CT DEEP recommends a 330-foot buffer from active construction equipment locations that are not within the nest's line-of-sight, or a 660-foot buffer from nests that are in the line-of-sight of construction work areas.

- ***State Special Concern – Blueback Herring*:** NDDB identified records of Blueback herring in the Mill River in Fairfield. The MNR tracks presently span the Mill River, as does UI's 1130 Line. Based on current plans, UI does not plan to perform any in-water work at the Mill River; therefore no further consultation is required with a CT DEEP Fisheries Division.

5.4 COASTAL RESOURCES

Approximately 4.7 miles of the Project area extends across the designated coastal boundary, including in 3.1 miles in Fairfield and 1.6 miles in Bridgeport. Within the coastal boundary, the

Project area traverses mostly uplands. However, immediately east of Sasco Creek, near Ash Creek, the Ash Creek Substation, and the Pequonnock River, the Project area encompasses tidal wetlands, tidally-influenced waterbodies, intertidal flats, and/or estuarine embayments (refer to the Volume 2 maps for the location of the Project area in relation to the coastal boundary).

The closest public coastal access points (as identified by CT DEEP) to the Project area are Perry's Green, located on Sasco Creek approximately 0.23 mile southwest of the western end of the Project area along Southport Harbor, and at the Village at Black Rock, located on Fairfield Avenue immediately adjacent to the Ash Creek Substation. Perry's Green is a small waterfront park that provides public fishing access to the harbor. The Village at Black Rock is a coastal access site that allows bird and wildlife viewing from a waterfront walkway that extends for approximately 250 linear feet along Ash Creek.

The Connecticut Coastal Management Act (CCMA) includes both coastal resource policies, which pertain to all uses occurring in or affecting any resource category identified in the CCMA, and coastal use policies, which apply to major uses and activities subject to the coastal management program. The coastal resources identified by the CCMA are:

Beaches and Dunes	Bluffs and Escarpments
Coastal Hazard Areas*	***Coastal Waters and Estuarine Embayments****
Developed Shorefronts*	***Intertidal Flats****
Island*	Rocky Shorefronts
Shellfish Concentration Areas	Submerged Aquatic Vegetation
Tidal Wetlands*	Landscape Protection and Visual Impacts
Shorelands*	

Applicable to the Project area.

In addition to policies regarding the identified coastal resources, the CCMA also includes coastal use policies pertaining to a range of activities, including general development, transportation, energy facilities, and water dependent uses, among others.

Most of the Project area within the coastal boundary is considered "shorelands", defined as those areas, exclusive of coastal hazard areas, that are not subject to dynamic coastal process and that

consist of typical upland features. Generally, these areas contain no tidal wetlands, FEMA flood or erosion hazard areas, or other sensitive resources. However, the Project area crosses designated "Coastal 'Flood' Hazard Areas". As defined in the CCMA, such areas are lands inundated during coastal storm events or subject to erosion induced by such events, including flood hazard areas as defined and determined by the National Flood Insurance Act and all erosion hazard areas as determined by the Commissioner of the CT DEEP.

5.5 LAND USE, RECREATION, AND COMMUNITY FACILITIES

5.5.1 Existing Land Uses and Zoning

The Project area extends for approximately 4.9 miles in Fairfield and 2.7 miles in Bridgeport. In addition to the CT DOT railroad corridor, which has long been established for linear transportation and utility use, the Project area is characterized by lands zoned and used for various residential, recreational, commercial, and industrial purposes. In general, developed urban downtown and commercial/industrial areas predominate near the railroad corridor in Bridgeport and eastern Fairfield, with more residential, open space/recreational, and retail/commercial uses near the western portion of the railroad corridor in the remainder of Fairfield.

In Fairfield, the CT DOT corridor extends through the Southport section of the town and serves as the northern boundary of the town's central business district, which extends along U.S. Route 1 (Boston Post Road). In Bridgeport, the CT DOT corridor extends across four identified neighborhood districts: Black Rock, West Side/West End, South End, and Downtown. The City-identified neighborhood assets located near the Project in each district include West End Park and Went Field Park (West Side/West End); the University of Bridgeport and Seaside Park (South End); and the Bridgeport-Port Jefferson Ferry Terminal, transit station (bus, train), Housatonic Community College, Total Mortgage Arena and Hartford Healthcare Amphitheater, and Barnum Museum (Downtown).

The Volume 2 maps illustrate the dominant land uses in the general vicinity of and adjacent to the Project area, as well as zoning.

5.5.2 Open Space and Recreational Areas

The Project area does not cross and is not located in the immediate vicinity of any national wildlife refuges or parks; State parks, forests, wildlife management areas or greenways; or "Blue-Blazed Hiking Trails" managed by the Connecticut Forest and Park Association. Similarly, neither the CT DOT corridor nor UI's ROW to Ash Creek Substation traverse designated public hiking trails. However, several municipal recreational areas (parks, open space, trails, and recreational areas) are in the vicinity of or immediately adjacent to the Project area. These municipal open space and recreational areas are illustrated on the Volume 2 maps and described below.

The major watercourses spanned by or near the Project area generally support water-based recreational activities. For example, Sasco Creek, Ash Creek, Mill River, Cedar Creek, and the Pequonnock River all support recreational uses such as fishing, boating, and aesthetic appreciation.

The following summarizes primary recreational use areas in the Project vicinity, by municipality (refer to Table 5-7 for a list of recreational areas and the distance from the proposed Project area to each, as well as to the Volume 2 maps):

Fairfield: According to the Town of Fairfield's *Town Plan of Conservation and Development 2016* (POCD) the Town owns and manages approximately 1,100 acres of open space and 400 acres of parks, representing approximately 7.8% of the Town's total land area. These areas are scattered throughout the town, with some concentration near shoreline and wetland areas. Jennings Park occupies 1.1 acres immediately south of the CT DOT corridor, between Post Road and North Benson Road.

Recreation and open space areas in Fairfield within 2,000 feet of the proposed Project area include:

• Southport Beach	• Sasco Creek Beach
• H. Smith Richardson Wildlife Preserve	• Kings Highway West Open Space
• Perry's Green	• Southgate Lane Open Space
• Westway Open Space-Sasco Creek Marsh	• Southport Park
• Palmers Neck Park	• Mill Plain Green
• Ludlowe Road Community Park	• Fairfield Town Gazebo
• Jennings Garden	• Jennings Park
• Bill Burr 4-H Park	• Sargent Murphy Memorial Playground
• Sunnieholm Park	• Welch Terrace Marsh Open Space
• Creek Riverside Open Space	• Fairfield Metro Conservation Area
• Grasmere Open Space	• Harold R Woods Wetland Open Space-Turkey Creek Marsh

Bridgeport: According to the City of Bridgeport's *Plan Bridgeport: Master Plan of Conservation and Development 2019* and *Parks Master Plan 2011*, the City owns and manages more than 45 parks totaling 1,346 acres and representing approximately 16% of the City's total land area. The City's parks are a mix of regional, community, neighborhood, and mini parks scattered throughout the City and with significant parklands along the waterfront, particularly Seaside Park, which extends adjacent to Long Island Sound, approximately 0.8 mile south of the Project area.

Recreation and open space areas in the City of Bridgeport within 2,000 feet of the proposed Project area include:

• West End Park	• Went Field Park
• McLevy Green	• Baldwin Plaza
• Riverfront Park	• Majestic Park

5.5.3 State, Regional, and Local Land Use Plans

To evaluate the consistency of the proposed Project with State, regional, and local land use plans, UI reviewed published information available from each of the two municipalities, as well as regional policy documents and the State's *Conservation and Development Policies: The Plan for Connecticut* (C&D Plan).

State and Regional Plans

The goal of Connecticut's C&D Plan is to guide and balance response to human, environmental, and economic needs in a manner that best suits the State's future, considering risks associated with

increased coastal erosion due to sea level changes. The current C&D Plan (2018-2023) was adopted on May 4, 2022 and will be in effect until the Office of Policy and Management drafts the next C&D Plan (2025-2030) for submittal to the Connecticut General Assembly prior to the start of the 2025 legislative session.

The Project is consistent with the current Plan's overall objectives and is particularly relevant to the Plan's Growth Management Principle #1: Redevelop and Revitalize Regional Centers with Existing or Currently Planned Physical Infrastructure.

The Project will serve a public need by ensuring that the existing 115-kV lines are rebuilt to continue to provide reliable electric service to the region. Moreover, the Project will conform to the C&D Plan's recommendation to "ensure the safety and integrity of existing infrastructure over its useful life through the timely planning and budgeting for maintenance, repairs, and necessary upgrades" (C&D Plan, p. 7) and will "minimize the potential risks and impacts from natural hazards, such as flooding, high winds, and wildfires, when siting infrastructure…" and will "consider potential impacts of climate change on existing and future development" (C&D Plan, p. 8).

Fairfield and Bridgeport are among the six communities[49] that form the Connecticut Metropolitan Council of Governments (MetroCOG), a regional planning organization dedicated to identifying cooperative projects and opportunities for its member municipalities. The MetroCOG's core disciplines are transportation, land use, environmental and natural hazard mitigation, planning, brownfields assessment and remediation, economic development, regional shared services, and a variety of GIS/mapping services.

In December 2015, MetroCOG published a POCD (Reconnect Region) as a guidance document for the region's governments as they make polices regarding land use, housing, transportation, infrastructure, economic development, sustainability, and other issues. The plan's land use and development theme is "concentrate, conserve", which includes the goal of focusing future development in existing corridors that provide transportation and utility infrastructure and

[49] The other municipalities are Easton, Monroe, Stratford, and Trumbull.

installing stronger, storm/flood resistant new infrastructure (including transmission wires) to prepare for future storms and to facilitate the use of renewable and reliable energy sources. Additionally, the plan recommends Bridgeport Harbor as a hub for energy related uses. The proposed Project will be consistent with these policies, particularly because it will be co-located along or near the CT DOT corridor, which has historically been used for both transportation and electricity transmission purposes.

Local Land Use Plans

To evaluate the consistency of the proposed Project with municipal land management objectives, UI reviewed various local plans and land use information. Generally, the municipalities' POCDs anticipate that the CT DOT corridor and adjacent, already developed land use patterns, will remain in the future. None of the plans identify local land use policies that would be inconsistent with the proposed Project.

Fairfield. As the central planning document for the Town, the *Town Plan of Conservation and Development* (November 2016) evaluates current conditions and establishes a future vision for land use in the Town. The plan identifies Fairfield as a predominantly residential community with significant commercial and industrial corridors primarily located along I-95 and the CT DOT railroad property. The plan encourages maintaining industrial uses along the railroad corridor and maximizing the use of existing utility and energy infrastructure. Additionally, the plan recommends facilitating the transition to renewable energy sources for electricity through upgrades to utility infrastructure.

Bridgeport. As the central planning document for the City, *Plan Bridgeport (the City's Plan of Conservation and Development* (April 2019) focuses on four major themes relating to the municipality's physical form, economic and social health, and quality of life. These themes include waterfront redevelopment, transit-oriented development, neighborhood strengthening, and creating conditions for increased residential development.

Plan Bridgeport does not specifically address utility infrastructure improvements, but notes the importance of attracting economic development, including reducing the tax burden on residents

by growing the municipal Grand List and encouraging the development of vacant or underutilized properties. The plan identifies a goal of promoting the growth of the energy industry in Bridgeport, with a focus on green energy generation and support for such energy. Additionally, the plan has a recommendation to construct improvements designed for the Federally-funded Downtown Intermodal Improvements Phase II program, which is located adjacent to the CT DOT corridor at the intersection of Fairfield Avenue and Water Street.

Other City of Bridgeport land use plans that address areas in the general Project vicinity include:

- The *Waterfront Master Plan* (January 2017) describes opportunities for waterfront redevelopment and revitalization. The Plan contemplates a potential public waterfront pathway along the western side of Bridgeport Harbor, adjacent to the ferry terminal and the PSEG Bridgeport Harbor Station (BHS) property.

- The *South End Revitalization Zone Strategic Plan* (2014) shows the Project area as within an "eco-industrial" planning district that encompasses waterfront areas. The Plan recognizes that the properties along Bridgeport Harbor consist nearly exclusively of power generation-related uses, such as PSEG's BHS, and recommends that the effect that these uses have on the South End be mitigated by screening and landscaping and that eventually the older power generation facilities be transitioned to renewable energy.

- The *West Side/West End Neighborhood Revitalization Plan (2007)* identifies the Project area as a business corridor asset and encourages industrial uses that focus on energy and green industries.

- The *Pequonnock River Trail Extension Alignment Study* (draft April 2015) focused on bicycle routes for recreational cyclists to connect Bridgeport destinations such as Seaside Park, the University of Bridgeport, Beardsley Park and Zoo, etc. The study identifies Ferry Access Road as part of the bicycle route.

- The *Downtown Master Plan (2007)* identifies a future vision and strategy for downtown Bridgeport with a particular focus on "the teardrop" shaped downtown core outlined by the elevated MNR rail tracks to the south, State Route 8 to the northwest, and the Pequonnock River to the northeast. The plan highlights the planned Intermodal Transportation Center with new bus terminal, ferry terminal, commuter rail, commuter garage, and Main Street portal, linked by a promenade and retail arcade. This terminal is immediately adjacent to the CT DOT railroad corridor. Much of the plan focuses on ensuring complementary development west of the Intermodal Transportation Center.

In addition, Bridgeport also is in the process of developing plans to restore public access to portions of its coastal waterfront, including to a 3-acre parcel – referred to as the "Sliver by the River" – that is situated along the west bank of the Pequonnock River, east of the CT DOT corridor between the I-95 bridge over the river and the south of the Seaview Avenue Railroad Bridge and Congress

Street Substation. This property is currently vacant and is prone to flooding. Options for the parcel, such as potential passive recreational opportunities (e.g,, trail) and green infrastructure (e.g., green bulkhead, marsh restoration) are being examined. This parcel was identified as an opportunity site in Bridgeport's *Waterfront Master Plan.*

5.5.4 Community Facilities

The CSC defines community facilities as public and private schools, licensed daycare centers, licensed youth camps, public playgrounds, hospitals, group homes, and recreational areas. The community facilities within 2,000 feet of the Project area are listed in Table 5-7 and shown on the Volume 2 maps.

Table 5-7: List of Community Facilities within 2,000 Feet (0.38 mile) of the Project Area

Community Facility Type/Name	Address	Distance from Proposed Project Area* (miles, direction)
Daycare Facilities		
Southport Cong Preschool-Toddler Program	524 Pequot Avenue, Southport	0.04, South
Trinity Parish Nursery School	651 Pequot Avenue, Southport	0.12 South
St Paul's Nursery School – Fairfield	661 Old Post Road - Fairfield	0.25, South
Bright Beginnings Early Childhood Program	356 Black Rock Turnpike, Fairfield	0.16, North
Bright Horizons at Fairfield	682 Commerce Drive, Fairfield	0.09, North
Pumpkin Preschool	449 Grasmere Avenue, Fairfield	0.15, North
The Learning Experience – Fairfield	1375 Kings Highway, Fairfield	0.08, North
Family Child Care	1668 Fairfield Avenue, Bridgeport	0.16, North
Cora Wright Early Learning Center	233 Bennett Street, Bridgeport	0.23, South
Liz Learn and Play Child Care	77 Davis Ave, Bridgeport	0.13, South
Sunflower Family Learning Center	24 Whittier Street, Bridgeport	0.17, South
Mary Immaculate Day Care Center	1111 Wordin Avenue, Bridgeport	0.24, South
Steamulating Young Minds Imagination Academy	246 Lenox Avenue, Bridgeport	0.37, North
West End Child Care	361 Bird Street, Bridgeport	0.24, South
Bridgeport YMCA/SECC PALS 1 Child Care Center	650 Park Avenue, Bridgeport	0.09, North
Children's Play House of Bridgeport	63 Butler Avenue, Bridgeport	0.2, North
Donna's Little Doves Child Development Center	215 Warren Street, Bridgeport	0.05, South
Family Child Care	73 Park Terrace, Bridgeport	0.13, South
Family Child Care	289 West Liberty Street, Bridgeport	0.2, North
Lil Sunshine Home Day Care	45 Butler Avenue, Bridgeport	0.16, North
Mercy Learning Center Early Childhood Education Program	637 Park Avenue, Bridgeport	0.07, North

Community Facility Type/Name	Address	Distance from Proposed Project Area* (miles, direction)
Safari Adventure Family Day Care	285 Hanover Street, Bridgeport	0.18, North
Scholastic Renaissance	102 Cottage Street, Bridgeport	0.21, North
The Angels Day Care	24 Butler Avenue, Bridgeport	0.18, North
Toya's Little ToTs Day Care	217 Lewis Street, Bridgeport	0.11, North
Bridgeport YMCA/Kolbe Educational Center	401 Kossuth Street, Bridgeport	0.12, East
Early Childhood Laboratory School	900 Lafayette Boulevard, Bridgeport	0.23, West
Jaime A Hulley Child Care Center	460 Lafayette Street, Bridgeport	0.02, South
Lighthouse Summer Program	45 Lyon Terrace, Bridgeport	0.29, West
Transportation		
Southport Train Station	96 Station Street & 400 Center Street, Southport	0.01, South
Fairfield Train Station	165 Unquowa Road & 333 Carter Henry Drive, Fairfield	0.01, South
Fairfield Metro Train Station	61 Constant Comment Way, Fairfield	0.01, North
Bridgeport Transportation Center	525-710 Water Street, Bridgeport	0.01, West
Bridgeport and Port Jefferson Ferry	1 Ferry Access Road, Bridgeport	0.01, East
Schools		
The Southport School	214 Main Street, Southport	0.18, South
Cajal Academy	303 Linwood Avenue, Fairfield	0.01, North
Get Schooled Academy	63 Tide Mill Terrace, Fairfield	0.26, South
Saint Anthony's School	149 South Pine Creek Road, Fairfield	0.17, South
Great Beginnings Montessori School	148 Beach Road, Fairfield	0.15, Southeast
Roger Ludlowe Middle School	689 Unquowa Road, Fairfield	0.27, North
Fairfield Ludlowe High School	785 Unquowa Road, Fairfield	0.37, North
St. Thomas Aquinas Catholic School	1719 Post Road, Fairfield	0.13, South
Tomlinson Middle School	200 Unquowa Road, Fairfield	0.02, North
Fusion Academy of Fairfield	777 Commerce Drive, Fairfield	0.06, North
Geraldine Claytor Magnet Academy	240 Ocean Terrace, Bridgeport	0.27, South
Park City Prep Charter School	1550 State Street, Bridgeport	0.11, North
Whittier Elementary School	82 Whittier Street, Bridgeport	0.1, South
Bassick High School	1181 Fairfield Avenue, Bridgeport	0.24, North
Cesar A. Batalla School	606 Howard Avenue, Bridgeport	0.05, North
Great Oaks Charter School	40 Cherry Street, Bridgeport	0.05, South
Housatonic Community College	900 Lafayette Boulevard, Bridgeport	0.19, West
Elias Howe School	303 Clinton Avenue, Bridgeport	0.27, North
New Beginnings Family Academy	184 Garden Street, Bridgeport	0.01, North
Roosevelt School	680 Park Avenue, Bridgeport	0.1, North
University of Bridgeport	126 Park Avenue, Bridgeport	0.32, South
Capital Preparatory Harbor Upper School	777 Main Street, Bridgeport	0.1, West
The Bridge Academy	160 Pulaski Street, Bridgeport	0.13, Northeast

Community Facility Type/Name	Address	Distance from Proposed Project Area* (miles, direction)
Bridgeport Hope School	283 Lafayette Street, Bridgeport	0.18, South
Horizons at Greens Farms Academy	1057 Broad Street, Bridgeport	0.20, West
Group Homes		
Broadhurst Manor	1038 Old Post Road, Fairfield	0.15, Southeast
Mental Health Residential Living Center	964 Iranistan Avenue, Bridgeport	0.33, North
Park City Residential Care Home	752 Park Avenue, Bridgeport	0.19, North
Youth Camps		
Wakeman Boys & Girls Summer Camp	385 Center Street, Southport	0.01, South
Sportsplex Camp	85 Mill Plain Road, Fairfield	0.01, Northwest
Wakeman Boys and Girls Club Smilow Burroughs Summer Camp	2414 Fairfield Avenue, Bridgeport	0.28, South
Recreational Areas		
Southport Beach	1334 Pequot Avenue, Southport	0.2, South
Sasco Creek Beach	138 Beachside Avenue, Southport	0.2, South
H. Smith Richardson Wildlife Preserve	39 Sasco Creek Road, Westport	0.35, Southwest
Sasqua Wildflower Preserve - Aspetuck Land Trust	297 Westway Road, Southport	0.05, south
Kings Highway West Open Space	999 Kings Highway W, Southport	0.38, North
Perry's Green	703 Harbor Road, Southport	0.28, Southeast
Southgate Lane Open Space	139 S Gate Lane, Southport	0.18, South
Westway Open Space-Sasco Creek Marsh	593 Westway Road, Southport	0.18, North
Southport Park	Old Post Road, Southport	0.06, North
Palmers Neck Park	2566 Post Road, Southport	0.05, South
Mill Plain Green	110 Sturges Road, Fairfield	0.28, North
Southport Village Park	263 Pequot Avenue, Southport	0.05, South
Ludlowe Rd Community Park	91 Ludlowe Road, Fairfield	0.09, North
Fairfield Town Gazebo (Sherman Town Green)	1451 Post Road, Fairfield	0.14, South
Jennings Park	900 Post Road, Fairfield	0.01, Southeast
Jennings Garden / Town Hall Green	611 Old Post Road, Fairfield	0.23, Southeast
Bill Burr 4-H Park	1 Timothy Street, Fairfield	0.13, Northwest
CT Audubon Birdcraft Museum	314 Unquowa Rd, Fairfield	0.15, North
Sargent Murphy Memorial Playground	51 Nichols Street, Fairfield	0.26, South
Sunnieholm Park	77 Sunnieholm Drive, Fairfield	0.33, Southeast
Welch Terrace Marsh Open Space	near 6 Rugby Road, Fairfield	0.28, South
Creek Riverside Open Space	111 Riverside Drive, Fairfield	0.35, Southeast
Fairfield Metro Conservation Area	Ash Creek Boulevard, Fairfield	0.01, South
Grasmere Open Space	198 Home Street, Fairfield	0.26, North
Harold R Woods Wetland Open Space-Turkey Creek Marsh	110 Shoreham Terrace, Fairfield	0.33, Southeast
West End Park	125 Anthony Street, Bridgeport	0.29, South
Oldfield Park	201 Oldfield Road, Fairfield	0.35 Southeast

Community Facility Type/Name	Address	Distance from Proposed Project Area* (miles, direction)
Went Field	120 Wordin Avenue, Bridgeport	0.01, North
McLevy Green	102 Bank Street, Bridgeport	0.14, West
Baldwin Plaza	1135 Broad Street, Bridgeport	0.16, West
Washington Park	E Washington Avenue and Noble Avenue, Bridgeport	0.26, North
Seaside Park	1 Barnum Dyke, Bridgeport	0.30, South
Riverfront Park	208 Housatonic Avenue, Bridgeport	0.16, Northwest
Majestic Park	1471 Main Street, Bridgeport	0.29, Northwest
Wheeler Park	45 Lyon Terrace, Bridgeport	0.33, West
West Side II Park	369 Bostwick Avenue, Bridgeport	0.36, South

* Distance from the proposed Project area to a community facility is generally measured from the facility location to: (1) the nearest boundary of the CT DOT property in locations where the rebuilt 115-kV lines will be within the railroad corridor; or (2) the nearest point of the proposed UI permanent easement in locations where the rebuilt 115-kV lines are proposed for alignment outside the CT DOT corridor.

5.6 VISUAL AND AESTHETIC CHARACTERISTICS

The Project area generally coincides with the CT DOT railroad corridor, which has been a dominant landscape element for 180 years. The railroad catenary structures also are visually distinctive and are approximately 100 years old. Within the CT DOT corridor, the existing UI 115-kV transmission facilities consist of the Line 1130 monopoles (which were installed in the 1990s), located parallel to and north of the MNR tracks in Fairfield and western Bridgeport; the visually distinctive 115-kV lines and bonnets on top of the southern catenary structures in Fairfield and western Bridgeport and atop both the north and south catenary supports in the eastern portion of the Project area (which date to the 1960s); and, in some areas, steel lattice towers. These structures are all established components of the visual environment in the Project area. This is also true for the steel lattice towers that support UI's double-circuit 115-kV lines along the 0.23-mile ROW between the CT DOT corridor and Ash Creek Substation.

The visual environment adjacent to the railroad corridor varies but is generally characterized by a mix of industrial and commercial areas. In addition to the I-95 and MNR corridor, the four MNR stations,[50] PSEG's Bridgeport Harbor Generating Station, and UI's existing substations are just a few examples of dominant landscape features in the Project area. Some areas along and in the

[50] The four MNR stations include the Southport Train Station, Fairfield Train Station, Fairfield Metro Train Station, and Bridgeport Train Station.

vicinity of the railroad corridor and near the 0.23-mile UI ROW also include single-family residences and town house developments.

In general, views of UI's existing infrastructure along the CT DOT corridor consist of extensions (bonnets and 115-kV lines) on top of the railroad's catenaries and, in some locations, independent steel monopoles and lattice towers. The railroad catenaries with UI's existing bonnets/wires are typically approximately 60-80 feet above ground level (AGL). The 1130 Line monopoles range from 80 to 120 feet in height, while the lattice towers along UI's ROW leading to Ash Creek Substation are approximately 100 feet tall. The tallest structure supporting UI's existing 115-kV lines is the 215-foot tall lattice tower situated between the railroad tracks at the Bridgeport Train Station.

Appendix C provides additional information about the visual analyses conducted of the Project area, including representative views of the existing visual character near the Project area and simulations of the proposed Project infrastructure.

The Project is not near any designated national scenic areas, National Heritage Corridors, or State heritage areas. Federal and State heritage areas are places where historic, recreational, cultural, natural, and scenic resources combine to form landscapes that are recognized as important, either from a national or Connecticut perspective.

Similarly, no CT DOT Scenic Land Strips[51] and no locally designated scenic roads are within or adjacent to the Project area.

5.7 CULTURAL (ARCHAEOLOGICAL AND HISTORIC) RESOURCES

To evaluate archaeological and historic resources in and near the Project area, UI commissioned Heritage Consultants LLC (Heritage) to perform a *Phase 1A Cultural Resources Assessment Survey*.

[51] CT DOT Scenic Land Strips are roadside properties, located primarily outside of highway ROWs, which were purchased by CT DOT pursuant to a program under the 1965 Federal Highway Beautification Act. The purpose of this program was to control the proliferation of billboards and other unsightly views along Federally designated highways. In Connecticut, there are 33 such parcels located along seven highways in eight towns; however, none are in the Project area.

The objectives of the Phase 1A survey were to:

- Gather and present data regarding previously identified cultural resources in the vicinity of the Project;
- Investigate the Project area in terms of natural and historic characteristics; and
- Evaluate the need for additional cultural resource investigations, based on the potential archaeological or historic sensitivities of the area.

Accordingly, Heritage researched existing information related to the Project area and its immediate surroundings, including historical mapping, aerial imagery, soils data, railroad history, and published literature regarding the locations of historic and archaeological resources. Cultural resources considered during the study included archaeological sites, National and State Register of Historic Places (NHRP and SRHP) properties and historic districts, and Local Historic Districts (LHDs). The cultural resources data were collected from the Connecticut State Historic Preservation Office (SHPO), the archives of Heritage Consultants, LLC, and online data maintained by the City of Bridgeport and the Town of Fairfield regarding the locations and extents of LHDs.

The NHRP is the official list of the Nation's historic places that are considered worthy of preservation as recognized under the National Historic Preservation Act of 1966. The SRHP is maintained by the SHPO and recognizes historic resources also listed on the NRHP, as well as some locally significant properties or districts that have not been listed on the NRHP. Finally, LHDs are typically designated by a local ordinance, which falls under the jurisdiction of a local historic preservation review commission with a municipality.

Appendix D includes Heritage's *Phase 1A Cultural Resources Assessment Survey*; on September 23, 2022, Heritage submitted this report, along with a Project Notification Form, to the SHPO.

The following reviews the results of Heritage's key findings regarding the history of the Project area along and in the vicinity of the CT DOT railroad corridor, as well as known archaeological and historic resources near the Project area.

Railroad History. The CT DOT railroad corridor has an historic context. The railroad history in Fairfield and New Haven counties, including the CT DOT corridor along and near which the Project is proposed, dates from 1840s, when Connecticut's third railroad, the New York & New Haven (NY&NH) Railroad, was incorporated. The NY&NH rail line extended from New Haven west into New York State. In 1872, the NY&NH Railroad merged with the Hartford & New Haven Railroad to become Connecticut's largest transportation company, renamed the New York, New Haven & Hartford Railroad (NYNH&HRR). The NYNH&HRR owned electric generation facilities and in 1907 began to use alternating current (AC) electricity to power a segment of the railroad between New York and Stamford.

Between 1911 and 1914, the entire rail corridor extending from New York east to New Haven was converted to operate on electricity. At that time, the transmission of electricity to the railroad using the catenaries and wires was developed; electric signaling, and communications were added later. This basic system has remained in place and in operation for more than 100 years and thus lends to the current MNR railroad and associated infrastructure an historical context related to railroad history, transportation, and the 19th/20th century development of the Connecticut shoreline.

Archaeological Resources. To assess the archaeological sensitivity of the Project area, Heritage reviewed previously recorded archaeological sites on file with the SHPO. This review revealed that six previously recorded archaeological sites are located within 500 feet of either side of the Project. Of these, two sites are located in Fairfield, and four are situated in Bridgeport.

Four of these sites are situated in areas well outside of the Project area and will not be directly impacted by the Project. The remaining two archaeological sites are located on the southeastern edge of the Project area along the bank of the Pequonnock River in Bridgeport. These two archaeological sites contain historical period shipwrecks that are submerged along the bank line of the Pequonnock River. These underwater resources will not likely be disturbed by the Project; however, it is noted that the bank line of the river has changed since these vessels sunk and the sites may now be buried within terrestrial soils.

Other archaeological and environmental data demonstrates the portions of the of the Project area along the railroad corridor have been largely disturbed. As a result, these areas retain little, if any, potential to contain intact archaeological deposits. The areas containing Poles P-657S, P-659P, P-739N, P-740N, P-742N, P-743N, P-744N, P-744EN, P-745N, P-745S, P-746S, and P-748S may retain the potential to yield cultural deposits due to their association with the Southport Historic District/Southport NRHP/SRHP/LHD and the Railroad Avenue Industrial District. It is recommended that archaeological investigation of these 12 locations be conducted prior to construction in order to determine if they contain intact archaeological deposits.

Historic Resources (NRHP/SRHP). A review of data on file with the SHPO determined that there are seven individually listed NRHP and the SHRP properties and six NRHP and the SHRP historic districts (and portions of their contributing elements) located within 500 feet of the Project. The NRHP and the SHRP listed resources, located in both Fairfield and Bridgeport, are discussed below and illustrated on the Volume 2 maps:

- **Southport Historic District** also known as the Mill River Historic District, is a 225-acre area in Fairfield and is also a LHD. A portion of the district was listed on the NRHP in March of 1971. The eastern boundary of the district was expanded in 1994, and the boundary was further extended in 2007; these areas are also listed on the SHRP. The Southport Historic District is considered significant because it was the center of trade and commerce in Fairfield in the eighteenth and nineteenth centuries. More than 150 buildings are part of this district. Portions of the Southport Historic District and LHD are located within the southwestern portion of the Project area, in the vicinity of South Gate Lane, Banks Place, Spruce Street, and Station Street.

- **Southport Railroad West Bound and East Bound Stations** are two historic railroad stations located at 96 Station Street and 100 Center Street in Fairfield. Both stations were listed on the NRHP in July of 1989, and both are contributing elements of the Southport Historic District discussed above. The railroads stations are also considered part of the Connecticut SRHP. The late nineteenth century Late Victorian style stations are considered significant in the areas of transportation and architecture. Both stations fall within the Project area and are historical elements of the exiting railway corridor.

- **Fairfield Railroad Stations**, which were listed on NRHP in 1989 and are also considered SRHP properties, include the east bound station on the south side of the tracks and the west bound station on the opposite side. They are considered significant for their Late Victorian Stick/Eastlake architecture and for their contribution to railroad passenger service in the historical development of Fairfield. The Fairfield Railroad Stations represent historical elements of the railroad corridor and are situated adjacent to the Project corridor.

- **Railroad Avenue Industrial District** is a 50-acre historical industrial area situated in western Bridgeport. It was listed on the NRHP in September of 1985 and is also listed on the Connecticut SRHP. At the time district was listed, there were 11 late nineteenth and twentieth century factory complexes that were located along both sides of Railroad Avenue between Wordin and Fairfield Avenues. Most of the complexes have been since demolished due to urban renewal efforts. The buildings were significant for their architecture and for their contribution to the historical development of Bridgeport. The Railroad Avenue Industrial District extends along both sides of the CT DOT corridor for approximately 0.4 mile.

- **Division Street Historic District** is a 39-acre nineteenth century residential area located in Bridgeport's West Side-West End area. The district was listed on the NRHP in June of 1982 and added simultaneously to the SRHO. The historic district is considered significant for its Greek Revival, Gothic and Italianate styles of architecture. The southern extent of the Division Street Historic District is located just north of the Project area along the northern side of the CT DOT corridor on Black Rock Avenue and Couse Street.
- **Barnum-Palliser Historic District**, which was listed in the NRHP in 1982, is a 5.9-acre late nineteenth century residential area located in Bridgeport. The historic district is listed on the NRHP, is considered a SRHP District, and an LHD. At the time the area was listed to the NRHP, there were 33 residences and a brick schoolhouse located there. The historic district is significant due to the architectural style found within the area. The northern portion of the Barnum-Palliser Historic District falls is located just south of the Project area in the vicinity of Austin Street.

- **David Perry House** also known as the Seery-Bolster House, is a nineteenth century historical residence located at 531 Lafayette Street in Bridgeport. This property was listed to the NRHP and SRHP in 1984. The building is considered significant for its architecture and local history. The David Perry House is located approximately 150 feet north of the CT DOT corridor.

- **Barnum Museum** also known as the Barnum Institute of Science and History, partially overlaps with the Bridgeport Downtown South Historic District. The Barnum Museum itself it located at 820 Main Street in Bridgeport. The building that houses the museum collections was listed on the NRHP in November of 1972 and is also a SRHP resource. The museum is significant for its association with Phineas Taylor Barnum and for its architecture and contribution to urban planning. This historical resource is located approximately 150 feet west of the Project area near Water Street.

- **Bridgeport Downtown South Historic District** is a 27-acre late nineteenth century residential area located in the south-central portion of Bridgeport's central business district in Bridgeport. The district was listed on the NRHP in September of 1987 and is significant for its various types of architectural styles including Late Victorian, Greek Revival, Romanesque, Queen Anne, Islamic Revival, Beaux Arts, Colonial Revival, Neoclassical, and Art Deco. It is also listed on the SRHP. The district also is considered significant because it encompasses the well-preserved structures that illustrate the development of

Bridgeport's central business district as the commercial, financial, cultural, and social center of one of Connecticut's early twentieth century urban-industrial and regional-government centers. The easternmost portion of this historic district is approximately 150 feet west of the Project area in the vicinity of Water Street.

- **Bridgeport Downtown North Historic District** is a 20-acre late nineteenth to mid-twentieth commercial district located in downtown Bridgeport. This district was listed on the NRHP in November of 1987 and was simultaneously added to the SRHP. It is considered significant because, like the Bridgeport Downtown South Historic District, it encompasses well-preserved structures that illustrate the development of Bridgeport's business district as the commercial, financial, cultural, and social center of one of Connecticut's early twentieth century urban-industrial and regional-government centers. The southeastern portion of this historic district is approximately 150 feet west of the Project area in the vicinity of Water Street.

- **United States Post Office-Bridgeport Main** is a building is located at 120 Middle Street at Golden Hill Street in Bridgeport. The building, which was completed in 1934, is a significant example of the Art Deco/Art Modern stylistic influences. The post office is also significant for the art it contains on its interior walls. It was listed on the NRHP and SRHP in 1986 and is also a contributing property of the Bridgeport Downtown North Historic District. The building is located approximately 300 feet east of the Project area.

- **Connecticut Railway & Lighting Company Car-Barn** was an historical streetcar maintenance facility located at 55 Congress Street in Bridgeport. It was originally constructed in 1910 and was listed on the NRHP and SRHP in December of 1987. The Car Barn was located 400 feet northwest of the CT DOT corridor, near UI's existing Congress Street Substation. However, this facility was demolished in 2008.

- **Pequonnock River Railroad Bridge** is a bridge is located at Grand Street and spans the Pequonnock River in Bridgeport. The bridge, which was constructed between 1897 and 1902, is considered significant. The bridge was added to the NRHP (and SRHP) in June of 1987; however, it had to be completely replaced in 1993 due to corrosion and metal fatigue.

5.8 TRANSPORTATION, UTILITIES, AND ENERGY FACILITIES

5.8.1 General Transportation and Utility Network

The Project area is characterized by a well-developed transportation network, consisting of local roads, State/interstate highways (e.g., I-95, U.S. Route 1, State Routes 130 and 135), and the CT DOT corridor containing the MNR lines. In the Project area, the CT DOT corridor includes four rail tracks, as well as railroad stations in Southport, Fairfield (main and Metro), and Bridgeport. The Project area also is served by a full complement of utilities (electric, natural gas, sewers, public water, telephone, cable). In addition, Fairfield and Bridgeport border Long Island Sound and

include harbors, including Southport Harbor, Black Rock Harbor, and Bridgeport Harbor that provide marine transportation access for a variety of watercraft.

Within the railroad corridor, UI's existing 115-kV transmission lines span all local, State, and interstate highways, as well as rivers that provide opportunities for marine transportation or use (e.g., recreational boating, other). The Volume 2 maps illustrate the transportation network in the Project area.

No airports are located in the immediate Project area. The nearest airport is Sikorsky Airport, a general aviation facility that is situated along Long Island Sound in the Town of Stratford, approximately 2.95 miles east-southeast of Congress Street Substation. UI consulted with the Federal Aviation Administration (FAA) regarding the location of the Project in relation to these airports (refer to Appendix A and Section 6.9).

The Bridgeport & Port Jefferson Ferry (Ferry), operated by the Bridgeport & Port Jefferson Steamboat Company, is located along Bridgeport Harbor, immediately adjacent to and east of the CT DOT railroad corridor and south of I-95. The Ferry, which is accessible from Railroad Avenue and Ferry Access Road, provides passenger and vehicle transport services across the Long Island Sound between its terminal at 1 Ferry Access in Bridgeport and the Port Jefferson terminal in Jefferson, New York. Approximately 500,000 cars and 1 million passengers annually use the Ferry, which operates seven days per week.

5.8.2 Description of the CT DOT Railroad Corridor

As summarized in Section 5.7 and described further in the *Phase 1A Cultural Resources Assessment Survey* (Appendix D), the CT DOT/MNR railroad corridor, referred to as the New Haven Line, dates to the mid-1800s. The New Haven Line extends from the City of New Haven, through southern New Haven and Fairfield counties, to the New York border, where ownership of the rail line transitions to the Metropolitan Transit Authority (MTA).

CT DOT owns the tracks and stations along the New Haven Line and its branch lines to New Canaan, Danbury, and Waterbury, while MNR operates the rail system. In addition to the

MNR trains, Amtrak's Northeast Regional and Acela Express use the tracks between New Haven and New York. The New Haven Line is part of the electrified Northeast Corridor rail system, which is among the busiest commuter lines in North America in terms of ridership and service frequency.

In the Project area, the primary entities operating within the CT DOT corridor are MNR and Amtrak. The MNR-operated New Haven Line extends between New Haven and Grand Central Terminal in New York City and includes interconnecting rail lines to other areas in Connecticut (via the New Canaan, Danbury, and Waterbury Branch Lines). MNR and Amtrack operate daily rail passenger service within the Project rail corridor, including weekends and holidays.

According to the *New Haven Line Capacity and Speed Analysis* conducted by the CT DOT and published in June 2021, the New Haven Line has a peak ridership period between the 6:00 AM and 10:00 AM. During this time, MNR operates a total of 53 westbound trains and 12 commuter trains, in addition to 32 eastbound trains and 15 commuter trains. During the same period, Amtrak operates three westbound and four eastbound trains. This combined total of 119 trains during the four-hour peak period is matched by only a few locations globally. The cumulative result of the rail traffic is that scheduling track or signal outage events requires intricate construction scheduling, often preferentially placed in off-peak nighttime hours.

In the Project area, the CT DOT corridor encompasses four tracks for the entire length of the project. Four train stations are located along the rail corridor in the Project area: Southport, Fairfield, Fairfield Metro, and Bridgeport Transportation Center (refer to the Volume 2 maps). All stations include associated parking areas.

CT DOT / MNR is in the process of performing corridor and track improvements along the New Haven Line. These improvements include upgrading the power supply system to meet future electrified rail system demands (for both MNR and Amtrak), replacing main line bridges, track expansion work and buttressing the catenary system. Potential projects include station improvements at.

5.8.3 Energy Facilities

Energy facilities within a 5-mile radius of the Project area that are owned or operated by a public service company are listed in Table 5-8.[52]

Energy facilities in the immediate vicinity of the Project area include Eversource's 115-kV transmission system (which connects to and extends west from the UI system along the CT DOT corridor), UI's four substations connected to the lines along the CT DOT corridor, and the PSEG BHS. These facilities are visible on the Volume 2 maps.

[52] Table 5-8 excludes the UI substations described as part of this Project.

Table 5-8: Energy Facilities within 5-Mile Radius of Transmission Line Route

Facility Name	Address	Facility Type	Distance & Direction from Project Route
Eversource substation (Compo)	Compo Road South, Westport	Substation	3.4 miles SW
Eversource substation (18P)	New Creek Road, Westport	Substation	1.1 mile SW
Eversource substation (Sasco Creek)	Clayton Street, Westport	Substation	0.8 mile SW
UI substation (Singer)	Henry Street, Bridgeport	Substation	0.3 mile S
UI substation (Hawthorne)	180 Hawthorne Drive, Fairfield	Substation	3.6 miles N
Transmission Line	Along the CT DOT corridor wet of catenary structure B648S (Fairfield-Norwalk)	Electric Transmission Lines	West along CT DOT corridor (distance varies)
Transmission Line	Weston Substation to Hawthorne Substation (Trumbull)	Electric Transmission Line	3.6 miles N
Transmission Line	Hawthorne Substation to Old Town Substation (Bridgeport)	Electric Transmission Line	3.6 miles N
Fairfield University CHP Plant	1073 N Benson Road, Fairfield	Natural Gas Power Plant	0.65 mile NW
Bridgeport Fuel Cell, LLC	1366 Railroad Avenue, Bridgeport	Natural Gas Power Plant	0.01 mile N
Wheelabrator Bridgeport	6 Howard Avenue, Bridgeport	Biomass Power Plant	0.1 mile S
Inland Fuel	145 Admiral Street, Bridgeport	Petroleum Product Terminal	0.1 mile S
UB Fuel Cell	Walnut Street, Bridgeport	Natural Gas Power Plant	0.23 mile S
Bridgeport Energy Project	10 Atlantic Street, Bridgeport	Natural Gas Power Plant	0.1 mile S
Bridgeport Station	1 Atlantic Street, Bridgeport	Natural Gas Power Plant	0.01 mile SE
Bridgeport	95 Harbor Avenue, Bridgeport	Petroleum Port	0.36 mile E
Harborview Terminals, Inc.	1 Seaview Avenue, Bridgeport	Petroleum Product Terminal	1.0 miles SE
Sprague Operating Resources LLC	250 Eagles Nest Road, Stratford	Petroleum Product Terminal	1.2 miles SE
Global Co. LLC	400 Eagles Nest Road, Bridgeport	Petroleum Product Terminal	1.3 miles SE
Devon Station	734 Naugatuck Avenue, Milford	Petroleum Power Plant	4.5 miles E
GenConn Devon LLC	700 Naugatuck Avenue, Milford	Petroleum Power Plant	4.5 miles E
Digital Fairfield	Merritt Boulevard, Trumbull	Natural Gas Power Plant	4.3 miles NE
UI Substation (Old Town)	Kaechele Place, Bridgeport	Substation	3.4 miles N
Unknown 172420	1770 Stratford Avenue, Stratford	Substation	2.2 miles E
Transmission Line	Old Town Substation to Trumbull Tap	Electric Transmission Line	3.4 miles N
Transmission Line	Trumbull Tap to Barnum Avenue Substation	Electric Transmission Line	0.8 mile NE
Barnum Avenue	Barnum Avenue, Bridgeport	Substation	0.8 mile NE
Transmission Line	Barnum Avenue Substation to Baird Substation	Electric Transmission Line	0.8 mile E
Transmission Line	Baird Substation to Milvon Substation	Electric Transmission Line	2.2 miles E
Transmission Line	Baird Substation to Devon Substation	Electric Transmission Line	2.2 miles E
Transmission Line	Devon Substation to Trumbull Tap	Electric Transmission Line	4.5 miles E
Transmission Line	Devon Substation to Trap Falls Substation	Electric Transmission Line	4.5 miles E
Devon	Naugatuck Avenue	Substation	4.5 miles E
East Devon	Devon Substation to East Devon Substation	Electric Transmission Line	4.5 miles E

5.9 SOIL AND GROUNDWATER AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

The Project will be situated within and near the CT DOT corridor, in areas that have historically been developed for railroad and other commercial and industrial purposes. As a result, UI conducted research and field investigations concerning potential areas of environmental concern with respect to the presence of soil and groundwater contamination. Results from field studies and online environmental database queries suggest soil and groundwater conditions are typical of highly developed urban/suburban areas characterized by a mix of commercial, industrial, and waste management.

In addition, the Project route is adjacent to two remediated waste sites, both located south of the CT DOT corridor in Fairfield, in the vicinity of UI's proposed monopoles:

- **Exide Corporation Battery Facility (Exide) Property, 2190 Post Road**. Exide manufactured batteries on this approximately 6.2-acre site east of Mill River, abutting the Post Road and the CT DOT railroad corridor. Exide ceased production of batteries at the site in 1981 and subsequently spent years removing lead contaminated soil, completing site cleanup work in 2019. Subsequently, the CT DEEP determined that the site remediation had been completed and no further corrective actions are required.

- **Fairfield Metro Train Station / Fairfield Metro Conservation Area, 219 and 300 Ash Creek Boulevard**. The Fairfield-Metro Train Station and associated parking was developed on portions of the former site of the Bullards Company foundry. The Fairfield Metro Conservation Area also encompasses portions of the former foundry property. Contamination associated with the former foundry was remediated during the construction of the train station and included the installation of a cap on portions of the property.

As described in Section 5.1, the historical research and geotechnical investigations conducted to date of the proposed Project route determined that fill materials are located at most of the proposed 115-kV transmission structure sites. Ultimately, UI proposes to take 122 borings along the Project route, including at the sites of monopoles proposed for location near the Exide and Fairfield Metro sites. Currently, 42 of the borings, including soil sampling, have been completed. Samples were collected for analysis of the following potential contaminants:

- Volatile Organic Compounds (VOCs) by EPA Method 5035/8260;
- Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270;

- Polychlorinated Biphenyls (PCBs) by EPA Method 8082;
- Eight Resource Conservation and Recovery Act (RCRA) Metals by EPA Method 6010/7470;
- Total Petroleum Hydrocarbons (CT Extractable Total Petroleum Hydrocarbons [ETPH] Method);
- Waste characteristic parameters (by Method SW 846) Reactive Sulfide and Cyanide,
- Conductivity, Flashpoint, pH, and paint filter.
- Toxicity Characteristic Leaching Procedure (TCLP) single metals

Any substance detected in the soil samples will be referenced to concentrations thresholds identified in the applicable Connecticut Remediation Standard Regulations (RSR) criteria.

Based on the analytical results of soil samples collected during the geotechnical studies, the soils along the Project route will be characterized into one of the following four categories: clean, polluted, contaminated, and potentially hazardous. A classification of "clean" refers to soil in which the analytical constituents are not detected above laboratory reporting limits. If the clean material is not reused at Project construction sites, the material will be transported to an approved reuse and/or disposal facility.

A classification of "polluted" refers to soil that may contain detected constituents above background concentrations, but below the baseline RSR soil standards. Background conditions are defined as naturally occurring constituents that have been detected at similar concentrations throughout the proposed alignment. Polluted soil may be reused onsite at the work location from which it was generated. Otherwise, the material will be transported to an approved reuse and/or disposal facility.

A classification of "contaminated" refers to soils that have an exceedance of the baseline RSR soil criteria. Contaminated soil will need to be disposed of at a licensed disposal facility.

A classification of "potentially hazardous" includes soils that have an exceedance of the Resource Conservation and Recovery Act (RCRA) hazardous soil standards, possibly meeting the definition of hazardous waste.

During the on-going geotechnical investigation conducted of the Project area, groundwater was encountered and measured in 40 of the 42 borings completed to date at depths ranging from less than 5 foot to 20 feet below ground surface. Groundwater samples are being collected from wells installed when groundwater is encountered during the geotechnical investigation and submitted for the analysis of the following potential contaminates:

- Volatile Organic Compounds (VOCs) by EPA Method 8260;
- Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270;
- Eight Resource Conservation and Recovery Act (RCRA) Metals by EPA Method 6010/7470;
- Extractable Petroleum Hydrocarbons (CT Extractable Total Petroleum Hydrocarbons [ETPH] Method);
- pH

Based on the results of groundwater analyses, groundwater along the Project route will be characterized into one of the following two categories: (1) treatment not required; or (2) containment, treatment, and/or disposal required. Groundwater encountered during the installation of the 115-kV monopoles will be managed in accordance with the procedures defined in the Project-specific SWPCP and *Materials Management Plan*.

5.10 AIR QUALITY, NOISE, AND LIGHTING

5.10.1 Air Quality

Ambient air quality is affected by emissions from mobile sources (e.g., vehicles) and stationary sources (e.g., manufacturing facilities, gasoline stations, power plants). Naturally occurring pollutants, such as radon gas, also affect air quality. Ambient air quality in Connecticut is monitored by CT DEEP and air quality conditions are assessed based on compliance with the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants (sulfur dioxide, carbon monoxide, nitrogen dioxide, particulate matter, lead, and ozone).

The State is in attainment for all criteria pollutants except ozone. CT DEEP data shows that measured ozone levels in southern Connecticut (including in Fairfield County) exceed the NAAQS on several days each summer, depending on weather conditions. Ambient air quality in the Project area can generally be expected to mirror these conditions in the State.

The U.S. Environmental Protection Agency (EPA) has determined that carbon dioxide (CO_2) is a pollutant and has included CO_2 in its list of criteria pollutants. Areas of non-attainment have not yet been established for CO_2 or other greenhouse gases.

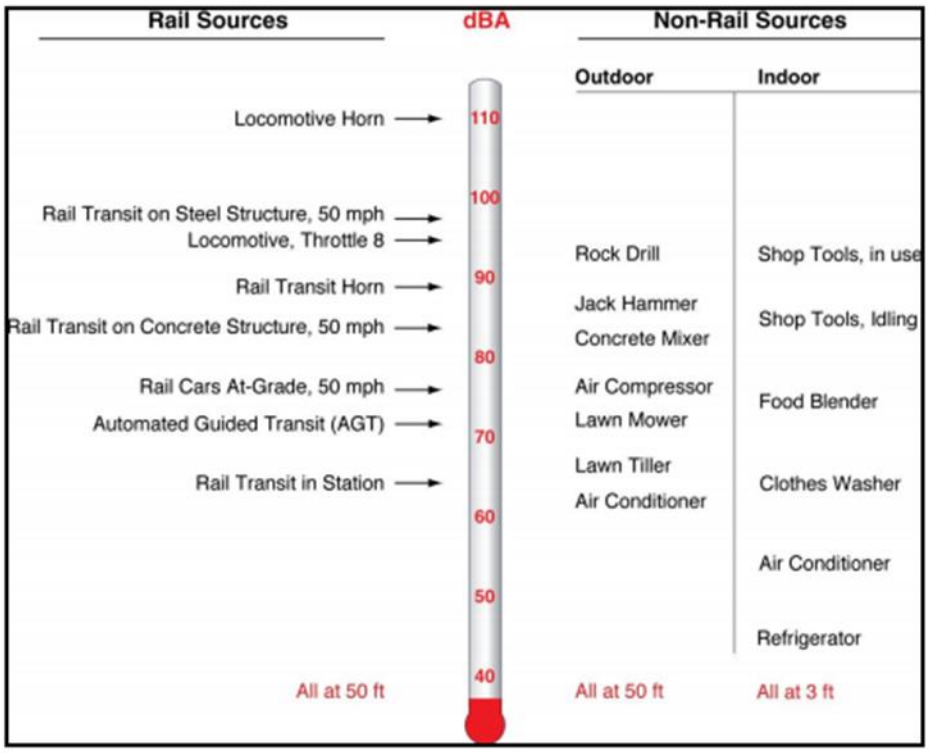
In an effort to reduce particulate emissions, the CT DEEP has promulgated regulations (RCSA § 22a-174-18) that prohibit unnecessary idling for more than 3 minutes. Exceptions are made for weather extremes and certain service vehicles.

5.10.2 Noise

Existing noise levels in the Project area are representative of developed urban/suburban settings and are dominated by train movements along the railroad corridor and traffic along I-95 and other roads, as well as by commercial and industrial uses. Prominent sources of existing sound in the Project area include rail, vehicular, aviation, residential, commercial, and industrial noise. Seasonally, ambient noise levels are affected by natural sources such as insect and bird noise. Of these sources, the most dominant noise is related to the railroad, including rail car transit and horn noises.

Typical rail-related noise levels are shown in Figure 5-1. As this figure illustrates, the noise from certain rail-related activities is comparatively higher than sound levels associated with various activities typical of urban/suburban areas, including from construction.

Figure 5-1: Typical Noise Levels Associated with Railroad and Other Activities



Source: Danbury Branch Improvement Program Task 5: Section 2: Noise and Vibration (https://www.dotdata.ct.gov/DanburyBranchStudy/documents/Impact%20Reports/02%20Noise%20and%20Vibration%20Impact%20Report_FINAL.pdf)

Roads in the vicinity of the Project area feature typical noise due to vehicle traffic that is variable throughout the day. The nature and frequency of municipal emergency responses (i.e., police, fire, ambulance) can periodically have a localized impact on sound conditions in the area. The CT DOT railroad corridor generally parallels I-95; vehicular movements on this highway will have a greater effect on noise levels in the Project area in locations where the interstate is closer to the railroad corridor.

In residential areas, the noise environment varies seasonally, with sound contributions from outdoor power equipment (lawn equipment, snow blowers, etc.) and outdoor activities. Typical noise levels associated with commercial and industrial uses are related to vehicle movements and equipment operations, depending on the type of facility. The ambient noise environment also will vary based on time-of-year. For example, portions of the Project area traverse wetland and tidal areas, where insects and birds may be the primary sources of ambient noise during the spring-fall months.

Noise Ordinances: State and Local

The State noise regulations (RCSA §§ 22a-69-1 to 22a-69-7.4) prescribe the A-weighted maximum sound pressure levels, based on land use at the noise emitter and receptor. These regulations define daytime vs. nighttime noise periods, classify noise zones based on land uses, and identify noise standards for each zone, specifying that noise emitters must not cause the emission of excessive noise beyond the boundaries of their noise zone so as to exceed the allowable noise levels on a receptor's land.

Table 5-9 lists the Connecticut noise zone standards, by emitter (source) and receptor (receiver) noise classification.

Table 5-9: State of Connecticut: Maximum Sound Pressure Level Noise-Control Levels (By Emitter and Receptor Land Use)

Noise Emitter Land Use	Noise Receptor Land Use			
	Industrial	Commercial	Residential (Day)	Residential (Night)
Residential	62 dBA	55 dBA	55 dBA	45 dBA
Commercial	62 dBA	62 dBA	55 dBA	45 dBA
Industrial	70 dBA	66 dBA	61 dBA	51 dBA

Notes:
The State of Connecticut defines "day" as the hours from 7:00 AM to 10:00 PM, and night from 10:00 PM to 7:00 AM all days of the week.

In accordance with Conn. Gen. Stat. Section 22a-73, municipalities also may adopt noise control ordinances, which must be approved by the Commission of the CT DEEP and be consistent with the State noise regulations. The Bridgeport Noise Ordinance mirrors the State requirements (i.e., with the same A-weighted maximum sound pressure levels, based on land use at the noise emitter and receptor) with slight variations from the State in the defined daytime hours. The Fairfield Noise Ordinance only addresses nighttime noise and mirrors the State requirements for maximum sound pressure levels based on land use at the noise emitter and receptor (residential land use receptors default to the State's night requirements).

The State and municipal ordinances all exempt construction related noise from the regulations during specified daytime hours, defined as follows:

- State of Connecticut daytime hours are 7:00 AM to 9:00 PM Monday through Saturday, and 9:00 AM to 9:00 PM Sunday;

- Bridgeport defines daytime hours as 7:00 AM to 6:00 PM Monday through Friday, and 9:00 AM through 6:00 PM on Saturday and Sunday;

- Fairfield defines daytime hours as 7:00 AM to 10:00 PM Monday through Thursday, 7:00 AM through 11:00 PM on Friday, 8:00 AM through 11:00 PM on Saturday, and 8:00 AM through 10:00 PM on Sunday.

Construction activities are permitted under both State and local noise ordinances. The areas surrounding the project corridor consist mostly of commercial and industrial zones where existing ambient noise levels include traffic, office, industries, and rail related noise.

5.10.3 Lighting

The Project area is within an urban/suburban region that includes developed land uses that are typically well-lit from a variety of sources, including public street lighting, lighting at the four railroad stations along the CT DOT corridor, and lighting on individual commercial/industrial buildings and retail signs. The headlights of vehicles traveling on I-95 and other major roads in the area also contribute to illumination levels. Lighting levels vary based on the types of land uses. Industrial and commercial land uses typically feature higher levels of light because such facilities commonly include building and parking lot lighting.

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6. POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES

The Project, which will continue the established co-location of the 115-kV transmission lines along or near the CT DOT railroad corridor, will have a positive long-term effect on the reliability of the electric system in southern Fairfield County and in the region. Specifically, the Project will improve the reliability of the electric grid by upgrading the 115-kV lines to current electrical industry standards and by designing the new structures to address resiliency challenges associated with climate change.

Because the transmission line rebuild work will be predominantly in previously disturbed areas within or mostly parallel to the railroad corridor, overall environmental effects are expected to be minor and highly localized to the Project vicinity. Moreover, most effects will be short-term, lasting only during the Project construction phase.

UI has designed the Project to avoid or minimize adverse environmental and social impacts to the extent practical, coordinating closely with CT DOT to align as many of the rebuilt structures within the existing railroad corridor as possible and to schedule construction to avoid or minimize impacts to rail operations. In addition, UI will coordinate with CT DEEP to develop measures to avoid or mitigate impacts to environmental resources, as well as representatives of Fairfield and Bridgeport to limit impacts to nearby land uses and to traffic movements on local roads.

The anticipated impacts and proposed mitigation measures identified in this section are based on UI's historical experience in constructing/rebuilding, operating, and maintaining electric transmission lines (including those along this and other segments of the CT DOT railroad corridor in Fairfield and New Haven counties), as well as on the results of the Project-specific environmental and cultural resource studies, visual impact analyses, engineering, geotechnical, constructability reviews, and agency consultations conducted to date specifically for this Project.

Additional measures to avoid or minimize environmental effects may be identified as part of input received during the MCF process, and as the Project's engineering design is finalized and further constructability and environmental investigations, as well as visual resource analyses, are performed. Project plans also will be refined as appropriate based on the input provided during the

CSC process, the completion of other Federal and State agency reviews, and consultations with regulatory agencies, stakeholders, and the general public. The final Project plans will reflect conformance to the conditions of Project-specific regulatory and siting approvals, including mitigation measures that will be incorporated in the Project D&M Plan(s).

6.1 TOPOGRAPHY AND GEOLOGY

The construction of the Project will have minimal adverse effects on topography and geology. In general, limited grading is expected to be required to establish construction access roads and work pads as required to reach new monopole sites, to install the rebuilt 115-kV lines, and to remove the existing 115-kV facilities from the catenary structures. At locations where grading is required, temporary soil erosion controls will be installed as necessary to avoid or minimize the potential for off-site erosion, followed by applicable stabilization methods.

Based on the results of the geotechnical investigations conducted to date along the proposed alignment of the rebuilt 115-kV transmission lines (refer to Section 5), bedrock is likely to be encountered during excavations for certain structure foundations. Due to the weathered nature of the observed bedrock, rock encountered at construction sites is expected to be removed using mechanical methods (such as excavators, drilling, or pneumatic hammers). Rock removal activities will generate dust, vibration, and noise temporarily in the immediate vicinity of work sites. Given the proximity of the Project facilities to the CT DOT/MNR infrastructure, in certain locations, UI may require Project activities causing vibration to be coordinated with CT DOT/MNR and closely monitored to avoid potential impacts to the railroad. In addition, property owners will be notified when working in close proximity to buildings on adjacent parcels.

Blasting is not expected to be necessary to remove rock. However, if blasting is required, UI will develop a *Blasting Control Plan* in compliance with industry, State, and UI procedures. The plan will be provided to the CSC for approval, as well as to the appropriate fire marshal(s).

Any excess soils or rock generated by from grading or structure foundation excavation will be either temporarily stockpiled at construction work sites or loaded directly into dump trucks for off-site management or disposal in accordance with applicable regulations. These materials will be

managed in accordance with UI's Project-specific *Materials Management Plan* and the SWPCP and UI's construction contractors will be required to implement these plans.

6.2 SOILS, GROUNDWATER, AND STORMWATER MANAGEMENT

The construction of the Project will result in localized and minor impacts to soils as a result of activities such as grading (to be performed as needed to establish work pads and access roads) and excavations for new structure foundations. In addition, minor impacts to soils could potentially occur at laydown/material staging sites and contractor yards, if these temporary work areas are not located on paved or graveled properties.

The majority of the new 115-kV monopoles will be located within Urban-complex soils in the CT DOT corridor. However, in the western-most portion of the Project area in Fairfield, four new monopoles (structures P648S through PS51S) will be located in areas mapped as Prime Farmland. However, all four proposed monopoles will be aligned on undeveloped CT DOT property south of the MNR tracks and west of Westway Road. None of this area is currently used or zoned for agricultural purposes.

UI recognizes that soils disturbed by construction activities could be subject to erosion from wind or stormwater, and thus will develop a Project-specific SWPCP, pursuant to the CT DEEP's General Permit. The SWPCP will be implemented by UI and its construction contractor(s) to avoid, minimize, or eliminate potential adverse environmental effects during Project construction, and will identify measures to reduce the likelihood of sediment migration from construction sites. After the completion of the 115-kV line work, the sites effected by Project activities will be restored and permanently stabilized. As a result, the operation of the rebuilt 115-kV lines will not result in long-term adverse effects to soils.

Similarly, neither the construction nor the operation of the Project facilities will adversely affect groundwater resources (e.g., Aquifer Protection Areas, public water supplies, private groundwater wells). In the Project area, groundwater is not used for direct potable water supply. However, based on the results of test borings conducted along the proposed route of the rebuilt 115-kV lines, groundwater will be encountered during the excavation of the transmission structure foundations.

The following subsections describe UI's approach for appropriately managing soils, groundwater, and stormwater during Project construction.

6.2.1 Soil Management and Erosion Control

At Project work sites where soils will be disturbed and construction activities could potentially lead to erosion or sedimentation (as a result of mechanized vegetation clearing equipment, grading, excavation for structure foundations, and general soil / spoils stockpiling), temporary erosion controls will be installed and maintained as needed. These controls typically will include hay/straw bales, silt fence, straw wattles, coir logs, diversion swales, track pads, hay bale corrals for management of spoils or concrete washout areas, and erosion control blankets. UI will routinely perform monitoring and inspections to verify the effectiveness of the erosion and sedimentation controls and will modify such measures as required during different construction phases.

Some soils generated as a result of monopole foundation excavations or grading for work pads or access roads may be temporarily stockpiled at work sites (away from water resources) or at approved Project staging areas. The soil stockpiles will be appropriately protected from wind and stormwater erosion in accordance with the procedures defined in the Project-specific SWPCP and the construction plans/specifications.

Specifically, erosion and sedimentation controls will be deployed in accordance with the SWPCP, the General Permit, and the construction plans/specifications. The types of erosion controls used will be appropriate to the urban/suburban areas and environmental resources in the Project area. In addition, pursuant to the General Permit and the Project SWPCP, UI's qualified environmental inspector will perform weekly and post-rain event inspections of construction sites.

Temporary erosion controls will remain in place and will be maintained, as necessary, throughout the period of active Project construction until disturbed sites are appropriately stabilized. Areas affected by construction will be restored to pre-construction conditions (to the extend practical) and in accordance with State and Federal regulatory requirements, as applicable. SWPCP

inspections are expected to continue for at least one full growing season following site stabilization, per the General Permit.

Soils generated during Project work will be managed in accordance with applicable regulations. The Project-specific *Materials Management Plan*, which will reflect the results of UI's soil testing along the Project route, will describe soil and groundwater management procedures applicable to Project work sites. In particular, based on the results of the laboratory analyses, UI will group soils along the proposed 115-kV transmission line route into four categories: clean soil, polluted soil, contaminated soil, and potentially hazardous soil. The category of soil at each work site will determine the applicable soil management approach. For example, except for soils categorized as clean, UI anticipates that soils excavated during Project construction will be loaded directly into roll-offs or dump trucks and transported to pre-determined and approved off-site management or disposal facilities. Appropriate management methods and disposal facilities will be identified based on the soil designation. The handling, manifesting, transport, and ultimate disposal of the soil material will be in accordance with applicable regulatory requirements.

UI also expects to develop specific plans, as needed, for construction activities near two remediated waste sites in Fairfield. These areas are:

- **Exide Site: Structures P673A, P675S, P676S and Associated Temporary Access Roads**. UI proposes to install three monopoles within the CT DOT corridor east of Mill River, adjacent to the northern boundary of the former 6.2-acre Exide site located at 2190 Post Road in Fairfield (U.S. Environmental Protection Agency [EPA] ID: CTD001181148). The proposed monopoles will not be located on the former Exide property. Further, although the CT DEEP determined that the site remediation had been completed and no further corrective actions are required, UI plans to take soil borings at each of the three proposed monopole locations and then perform laboratory analyses to characterize the soil. During construction, soils will be handled under applicable regulations. In addition, UI would minimize soil disturbance associated with the creation of proposed temporary access roads from the Post Road, across the site, to the CT DOT corridor.

- **Fairfield Metro Train Station/Ash Creek Boulevard Parcel: Structures P713WS, P713WS-1, P714ES, P714ES-1, P716S, P719S, P718S** UI proposes to install seven monopoles along the perimeter of two parcels (219 and 300 Ash Creek Boulevard) that were formerly part of the Bullards Company foundry property. These areas were remediated in advance of the construction of the Fairfield Metro Station and associated parking area on the south side of the CT DOT corridor. UI understands that part of the site remediation included the installation of a geomembrane cap. Based on current information on the parcels, it appears proposed structures P714ES-1, P713WS-1, P719S, and P720S may be in close proximity to the limits of the geomembrane cap. UI is presently

conducting further due diligence regarding the proposed locations of the new monopoles in relation to the remediated areas and expects to perform Project construction to avoid impacts to such areas.

6.2.2 Dust Control

Fugitive dust may be generated from Project construction activities such as vegetation removal, construction vehicle and equipment movements on non-paved access roads and work pads, and structure foundation excavation. Dirt from unpaved access roads may also be tracked onto adjacent paved surfaces. Crushed stone (or equivalent) anti-tracking pads also will be installed, as necessary to mitigate fugitive dust and tracking of dirt. To minimize the amount of dust generated by Project construction, standard dust minimization practices will be implemented. For example, access roads may be sprayed with water to minimize dust. Paved road surfaces affected by construction will be regularly inspected and swept as necessary by UI's contractors to remove excess accumulations of dirt.

6.2.3 Groundwater

Typically, groundwater encountered during the construction of the rebuilt 115-kV lines will be dewatered in accordance with the procedures defined in the Project-specific SWPCP and *Materials Management Plan*. Proposed management activities for groundwater dewatered during the Project may include but will not be limited to the use of vacuum trucks and off-site management at an approved facility, temporary storage at Project work sites in fractionization (frac) tanks prior to off-site disposal, and/or discharge to sanitary sewers and/or surface waters, with treatment if required. All dewatering activities will be conducted in accordance with applicable local and/or State permitting requirements.

6.3 WATER RESOURCES AND WATER QUALITY

The Project will involve temporary impacts to water resources, including both inland and tidal wetlands and watercourses. However, these impacts will be minor and localized to the Project area. No new monopoles will be located in wetlands or watercourses and only one permanent access road is proposed for location along the edge of a wetland. As a result, the Project will involve minimal permanent impacts (fill) to wetlands.

Similarly, the Project will not affect any vernal pools (none are located in the Project area) and will not result in adverse effects to Connecticut's water quality goals. However, in some wooded wetlands, trees will be removed, resulting in a permanent conversion of the wetland vegetation from palustrine forested to shrub-scrub or emergent, but no net loss of wetlands.

The Project will require the installation of 30 new monopoles in 100-year floodplains and seven new monopoles in 500-year floodplains. However, the addition of these structures will have a negligible, if any, adverse effect on floodplain storage capacity, given the size of each affected flood storage area.

As the Project design and construction planning process continues, UI will continue to avoid or minimize the potential for adverse direct and indirect effects to water resources, to the extent practical. For effects that are unavoidable, UI will identify and implement mitigation measures, including the performance of construction in accordance with the conditions of Project approvals received from the CSC, CT DEEP, and USACE.

The following sections summarize the Project's anticipated impacts to water resources. These impacts are estimated based on UI's current engineering design and construction plans for the Project. As the Project engineering design and planning process evolves and Federal / State regulatory reviews proceed, UI anticipates that Project plans, including the D&M Plan(s), will be refined as appropriate to include additional measures to avoid or minimize impacts to water resources.

6.3.1 Watercourses

A total of 14 watercourses are found within the Project area. The rebuilt 115-kV overhead conductors will span all watercourses along the Project route, including Mill River, Ash Creek (two crossings), and the Pequonnock River.

However, construction activities will be required in two of watercourses, resulting in short-term impacts. For example, temporary work will be required in Ash Creek (tidal) to remove an existing lattice steel tower that is located on a small rocky island just north of Ash Creek Substation. In

addition, UI proposes to install a temporary access road (using timber mats or equivalent) across one small perennial watercourse in Fairfield (WC-8); this watercourse parallels the south side of the railroad tracks in the CT DOT corridor. Construction equipment will be prohibited from directly fording through streams.

Table 6-1 summarizes the anticipated 0.2 acre of temporary Project impacts (due to temporary matting or equivalent) to these inland and tidal watercourses. These estimated impacts are based on UI's current Project plans.

Table 6-1: Summary of Estimated Project Impacts to Inland and Tidal Watercourses

Shading = Tidal Watercourse

Volume 2 Mapsheet No. (100/400 scale)	Watercourse Designation / Name	Estimated Project Impact, by Type (acres)	
		Temporary Impacts (acres)	
		Access Roads	Work Pads
12/4	WC-8 (P)	0.1	-
15/4	Ash Creek (P)	-	0.1
Total Impacts		0.1	0.1

Note: All numbers rounded for preliminary impact estimation purposes.

During construction, all the watercourses in the Project area will be protected, as necessary, using various best management practices. Erosion and sedimentation controls (e.g., silt fence, straw wattles, straw/hay bales) will be installed around access roads and work pads as appropriate to limit the potential for erosion and sedimentation outside designated construction work areas, thereby avoiding siltation and turbidity into watercourses. These measures and controls will be installed and inspected regularly pursuant to the Project SWPCP and the conditions of the General Permit.

Further, to minimize the potential effects of Project construction on water resources, UI anticipates that the following other general types of measures (or equivalent) will be implemented:

- Anti-tracking pads at the intersections of Project access roads and public roads, as well as the use of dust control measures (such as applying water to exposed soils/gravel areas) also will serve to minimize the potential for the deposition of soils disturbed by Project activities into nearby waterbodies.

- Concrete (used for structure foundations) will be mixed, placed, and disposed of to avoid or minimize the risk of concrete materials entering a watercourse.

- Existing riparian vegetation within 25 feet of watercourse banks will be maintained or cut selectively, to the extent practical.

In addition, for the temporary work required in Ash Creek to remove the existing lattice steel tower from the small island near Ash Creek Substation and for the use of a barge in the Pequonnock River to stage construction along a small portion of the route in Bridgeport, UI will develop appropriate construction plans in consultation with the involved regulatory agencies.

6.3.2 Wetlands

UI's proposed Project design minimizes or avoids impacts to water resources to the extent practical. However, the Project will involve minor, short- and long-term impacts to six tidal or freshwater wetlands (refer to Table 6-2). Although all the new 115-kV monopoles will be placed in upland locations, one permanent access road will extend within the CT DOT corridor across the northern portion of one wetland (W-B, located west of Westway Road in Fairfield). In addition, some wooded wetland vegetation will have to be removed for the Project construction and to maintain clearance from the rebuilt 115-kV lines.

As summarized in Table 6-2, temporary impacts to three wetlands (two freshwater [W-F, W-H] and one tidal [TW-I]) will result from the installation of construction work pads. The proposed permanent access road across wetland W-B will require approximately 0.04 acre of fill, resulting in a long-term wetland impact. This permanent road, which will be located entirely within the CT DOT corridor, is needed to allow UI access to four new monopoles (P648S to P652BS). Permanent access to these four monopoles is necessary to allow UI to act in the event that maintenance or emergency response is required. UI will coordinate with and obtain the necessary authorizations from CT DEEP and/or USACE for the planned activities in wetlands.

Table 6-2: Summary of Estimated Project Impacts to Wetlands

Shading = Tidal Wetland

Volume 2 Mapsheet No. (100/400 scale)	Wetland No.	Estimated Project Impact, by Type (Acres)				
		Temporary Impacts		Permanent Impacts		Wetland Vegetation Clearing
		Access Roads	Work Pads	Access Roads	Work Pads	
1/1	TW-A	-	-		-	0.01*
2/1	W-B			0.04	-	0.04
11/3	W-F	-	0.02	-	-	0.03*
14/4	W-H	-	0.02	-	-	-
15/4	TW-I	-	0.03	-	-	
18/5	TW-J	-	-	-	-	0.04*
TOTAL INLAND WETLAND IMPACTS		-	**0.04**	**0.04**	-	**0.07**
TOTAL TIDAL WETLAND IMPACTS		-	**0.03**	-	-	**0.05**

*Refers to long-term change in wetland vegetation type (e.g., forested to shrub-scrub), but not a net reduction in wetland function or size.
Numbers rounded for preliminary impact estimation purposes.

As part of Project construction, trees and shrubs will be removed in four wetlands (two inland and two tidal). This vegetation clearing is required either for construction work areas or to provide mandated distances between the 115-kV lines and trees. The vegetation clearing in the two tidal wetlands (TW-A and TW-J) is required to provided mandated clearance between the 115-kV lines and trees. After the completion of the Project, UI will manage the vegetation near the 115-kV transmission lines to promote low-growth species, consistent with the operation of overhead transmission lines. This will change the wetland vegetation type but will not cause a loss of wetland acreage. A total of 0.07 acre and 0.05 acre of vegetation clearing will occur in the inland and tidal wetland areas, respectively.

During Project construction, UI will implement measures to protect wetlands. Accordingly, UI will install erosion and sediment controls and will perform environmental inspections, pursuant to the Project SWPCP and the General Permit. To minimize impacts to wetlands during the Project work, UI will:

- Assure that Project construction contractors conform to the requirements of USACE and CT DEEP permits and Council conditions concerning work in wetlands.

- Install appropriate erosion controls as needed to prevent or minimize the potential for sedimentation into wetlands. Use straw bales instead of hay bales to prevent the spread of non-wetland plant seeds.

- Implement procedures for petroleum product management to avoid or minimize the potential for spills into wetlands (e.g., to the extent possible, store petroleum products in uplands more than 25 feet from wetlands, refuel construction equipment, except for equipment that cannot be practically moved, in upland areas only).

- Cut forested wetland vegetation without removing stumps except in areas where the intact stumps pose a concern for the installation of timber mat (or equivalent) access/workspace and the safety of construction personnel. To the extent practical, shrub and tree vegetation in wetlands will be removed manually.

- Install timber construction mats (or equivalent) for work in wetlands.

- Stabilize affected wetland areas with temporary seeding or an appropriate wetland seed mix. Do not apply woodchip mulch and fertilizer within wetlands. Use straw as mulch for stabilization near wetlands, as necessary.

Additional wetland mitigation measures may be identified as UI continues to perform engineering analyses, constructability reviews, and environmental studies of the proposed Project, as well as during the regulatory review of the Project by the CSC and other agencies.

6.3.3 Flood Zones

The proposed rebuilt 115-kV transmission lines will extend across FEMA-designated 100- and 500-year flood zones. As illustrated on the Volume 2 maps, these zones are associated with Sasco Creek, Mill River, WC-9, and Ash Creek in Fairfield; as well as Cedar Creek and the Pequonnock River in Bridgeport.

Existing roads or temporary construction matting (or equivalent) are expected to be used for most construction access in floodplains. Temporary matting (or equivalent) also is generally expected to be used for work pads, as needed, in floodplains. If appropriate, such temporary matting may be secured to avoid movement in the event of flooding.

After Project work activities are completed, temporary work pads and access roads will be removed, and the affected areas returned to approximate pre-construction grade. Permanent

access, as required, will remain; UI will coordinate with CT DEEP to assess the impacts of permanent access roads in the floodplains.

However, the Project will require the installation of some new structures and permanent access roads in floodplains. The alignment of the new monopoles and related permanent access roads within these floodplains cannot be avoided, due to the linear extent of each floodplain along the Project route. Table 6-3 identifies the new monopoles that must be located in floodplains, by structure number and watershed, and provides an estimate of the anticipated impact, in terms of cubic-foot loss of flood storage capacity.

Table 6-3: Proposed Monopoles and Permanent Access Roads in 100- and 500-Year Flood Zones

Volume 2 Mapsheet No. (100/400 scale)	Floodplain Watershed	Proposed Structure Number	Within 100-year or 500-year Flood Zone	Monopole Foundations: Estimated Impact Volume (CF)*
2/1	Sasco Creek/Mill River	P654S	100-year	103
10/3	Ash Creek	P695S	500-year	20
10/3	Ash Creek	P696S	500-year	9
11/3	Ash Creek	P698S	100-year	12
11/3	Ash Creek	P699S	100-year	149
11/3	Ash Creek	P700S	100-year	93
11/3	Ash Creek	P701S	100-year	75
12/3	Ash Creek	P703S	100-year	20
12/4	Ash Creek	P704S	100-year	95
12/4	Ash Creek	P706S	100-year	105
13/4	Ash Creek	P708S	100-year	165
13/4	Ash Creek	P710S	500-year	10
14/4	Ash Creek	P712S	500-year	26
14/4	Ash Creek	P713ES-1	100-year	125
14/4	Ash Creek	P713ES-2	100-year	131
15/4	Ash Creek	P714WS-3	100-year	8
15/4	Ash Creek	P714WS-2	100-year	132
15/4	Ash Creek	P714WS-1	100-year	176
18/5	Ash Creek	P730S	100-year	107
19/5	Ash Creek	P733S	100-year	117
19/5	Ash Creek	P736NN	100-year	0**
20/5	Ash Creek	P737N	100-year	0**
20/5	Ash Creek	P737S	500-year	168
20/5	Ash Creek	P738N	500-year	221
20/5	Ash Creek	P739N	500-year	25
23/6	Cedar Creek Harbor	P749S	100-year	99
23/6	Cedar Creek Harbor	P750S	100-year	53
23/6	Cedar Creek Harbor	P751S	100-year	16
24/6	Cedar Creek Harbor	P752S	100-year	77
24/6	Cedar Creek Harbor	P752N	100-year	88
26/7	Pequonnock River	P762S	100-year	306
26/7	Pequonnock River	P762N	100-year	246
26/7	Pequonnock River	P765AS	100-year	335
28/7	Pequonnock River	P775AS	100-year	0**
28/7	Pequonnock River	P779S	100-year	400
29/7	Pequonnock River	P783S	100-year	472
29/7	Pequonnock River	P783N	100-year	277

100-year floodplain

*Impact volume (cubic feet [CF]) pending final engineering design of structure foundations.

**Proposed Structures P736NN, P737N and P775AS are currently located where the existing ground elevation equals the FEMA 100-year floodplain elevation.

As listed in Table 6-3, 30 new monopoles will be located in 100-year floodplains and an additional seven new monopoles will be located in 500-year floodplains. Permanent access roads to five new monopoles also will be located within 100 or 500-year floodplains; these permanent access roads are required for UI operation and maintenance purposes. However, UI proposes to install all the permanent access roads at grade, thereby avoiding any impacts to floodplain storage capacity.

The anticipated impact of the installation of the new monopoles in the floodplains was estimated based on the following structure design information. Specifically, each monopole in a flood zone is expected to have a foundation base that ranges in diameter from approximately 7 to 10 feet (with some exceptions). Based on these structure foundation dimensions, the potential impacts to the floodplains, per monopole foundation, will range from approximately 8 to 400 cubic feet, depending on the existing grade and floodplain elevation at the proposed pole location.

Overall, the 29 monopoles that must unavoidably be placed in 100-year floodplains will displace approximately 3,990 cubic feet of total flood storage capacity. The permanent impacts to each 100-year floodplain are estimated as follows:

- Sasco Creek / Mill River Floodplain: 110 cubic feet (CF) total impact
- Ash Creek Floodplain: 1500 CF total impact
- Cedar Creek Harbor Floodplain: 340 CF total impact
- Pequonnock River Floodplain: 2040 CF total impact

This displacement of floodplain storage capacity will be insignificant compared to the total drainage area of the watersheds in which the floodplains are located. For example, the local basin of Ash Creek watershed in the Project area encompasses 5.6 square miles, while the local basin of the Pequonnock River watershed in the Project area includes a drainage area of 12.3 square miles.

Overall, the loss of flood storage capacity in these floodplains will be negligible, compared to the total flood storage capacity of each drainage basin. As a result, UI does not anticipate that the Project will have any adverse effects on flood dynamics and will not alter the floodplains or chances for flooding. UI will coordinate with CT DEEP regarding any further analyses of the

Project's potential effects on floodplains, as well as the need for mitigation (if any) to compensate for the small amount of flood storage capacity impact in each of the affected floodplains.

In addition, UI has accounted for this future sea level rise in the design of the Project. In locations where CIRCA is projecting a 20-inch sea level rise, UI will design each monopole to assure that the top of the foundation is located at least 1 foot above the FEMA 100-year flood elevation plus the 20-inch sea level rise projection. In summary, in areas along the Project route where sea levels are anticipated to rise, the top of each monopole foundation will be elevated at least 32 inches above the currently projected FEMA 100-year flood elevation.

6.3.4 Groundwater Resources and Public Water Supplies

Groundwater within the Project area is not used for direct potable water supply. Neither the construction nor the operation of the Project will adversely affect groundwater resources (e.g., Aquifer Protection Areas, public water supplies, private groundwater wells).

6.4 BIOLOGICAL RESOURCES

The Project will extend along or near the CT DOT railroad corridor, adjacent to densely developed urban/suburban areas. As a result, neither the construction nor the operation of the Project is expected to result in significant adverse effects to vegetation, wildlife, or fisheries resources. No vernal pool species habitat will be affected by the Project.

However, the Project will require vegetation removal within and adjacent to the CT DOT corridor, including within the areas that UI proposes for new permanent easement and as necessary to maintain appropriate clearance between the rebuilt 115-kV conductors and vegetation. The need to maintain low-growing vegetation near the rebuilt 115-kV lines will, in certain areas, represent a long-term change in vegetative community type.

6.4.1 Vegetation

The construction of the Project will result in both short- and long-term, but minor effects on vegetation, including mature trees, narrow strips of primarily non-native, shrub/scrub species, and

plants common to freshwater and tidal wetlands. Based on current Project plans, UI identified the areas where vegetation removal will be required on CT DOT property, within the proposed new UI permanent easement, and/or along access roads leading to work sites. Likewise, UI determined the extent of clearing to be required in both wetland and upland habitats.

Vegetation in some areas (e.g., where clearing is required for the removal of the 115-kV lines from the southern catenary structures) will be removed during construction, but subsequently will be allowed to completely revegetate. However, in areas along the rebuilt 115-kV transmission line route, vegetation will be permanently managed to promote low-growing species consistent with the operation of the overhead transmission lines, pursuant to industry and UI standards for conductor clearance.

As summarized in Table 6-4, approximately 1.0 acre of trees will be removed as required for Project construction; however, after the completion of Project work, these areas will be allowed to revegetate naturally, including with trees. An additional approximately 5.5 acres of trees will be removed from Project areas that then will be permanently managed in low-growth vegetative species, consistent with overhead transmission line operation and vegetation management. UI is committed to minimizing clearing to ensure only trees that present a realistic threat to the resiliency of the electric transmission system post-construction are removed.

Table 6-4: Estimated Tree Removal, by Municipality

Municipality	Trees to be Removed for Temporary Construction Activities* (Acres)	Permanent Tree Removal** (Acres)
Fairfield	0.8	5.0
Bridgeport	0.2	0.5
TOTAL	**1.0**	**5.5**

* Includes clearing necessary for Project construction, including temporary off-CT DOT corridor access roads and work pads, and clearing associated with Project activities that are outside of vegetation management areas for wire clearance zones.
**Permanent tree removal refers to areas where trees will be cleared during construction (i.e., within CT DOT property and on UI's new UI permanent easement areas); after Project construction, UI will manage these areas in low-growing vegetative species that are compatible with the operation of the overhead 115-kV lines.

Converting treed areas to shrubland, open field, or old field vegetation along the rebuilt 115-kV lines will modify habitat, representing a long-term, but not a necessarily adverse, affect. The creation of additional shrubland and early successional habitat (and the preservation of such

existing habitat) may represent a long-term benefit for many species because shrubland habitat is otherwise declining in New England. This decline is a result of various factors (e.g., conversion of farms, suburban / urban development, ecological succession, absence of fires).

In Connecticut, transmission line ROWs are a major source of shrubland habitat, providing early successional habitats characterized by a mixture of grasses, flowering plants, shrubs, and saplings. Such communities within ROWs provide a variety of wildlife habitat functions (e.g., food, cover and nesting habitat for birds and small mammals).

6.4.2 Wildlife, including Birds

As a result of the removal of both upland and wetland vegetation, Project construction will cause both temporary and permanent impacts to the wildlife species found in the urban/suburban environment along the CT DOT corridor. However, most of the existing habitat along the CT DOT corridor supports generalist species and similar habitats exist in nearby areas. Negligible direct impacts to wildlife will occur as a result of Project activities.

Further, to minimize potential construction impacts to certain species, such as osprey (which currently have known nests in the Project area on two railroad catenary structures and on existing lattice steel towers near Ash Creek Substation and north of Pequonnock Substation) and the peregrine falcon, UI proposes to continue to coordinate with CT DEEP to define and implement mitigation measures. Such measures may include timing construction, to the extent possible, to avoid critical periods in the birds' life cycles (e.g., nesting, fledgling of young birds), the removal of nests during the inactive period (pursuant to CT DEEP protocols) or through the use of other BMPs.

After the completion of construction, temporary work areas on CT DOT property will be allowed to revegetate in accordance with Project SWPCP and CT DOT specifications. To the extent that CT DOT allows revegetation within the railroad corridor, wildlife species can be expected to repopulate such habitats. Similarly, within UI's new permanent easements where vegetative regrowth will be managed pursuant to the Company's ROW standards, wildlife using those vegetative communities can be expected to repopulate the easement areas over time.

6.4.3 Fisheries

The Project is not expected to affect either freshwater or marine fisheries. The rebuilt transmission lines will span watercourses that have been identified as potential fisheries habitat, including Mill River and the Pequonnock River.

The Mill River is reported to support blueback herring. For construction work on either side of the river (including the installation of new monopoles P671S and P673S, and the removal of the existing 115-kV lines and bonnets from the railroad catenary structures), UI will install and maintain erosion controls to avoid or minimize the potential for sedimentation.

At the Pequonnock River, which provides habitat for various fish species, the rebuilt 115-kV lines will span approximately 1,300 feet of the western bank of the river, extending over both I-95 and the Stratford/Fairfield Avenue bridge. To install the rebuilt 115-kV lines and remove the existing 115-kV facilities from the CT DOT corridor, UI anticipates that some construction may be performed from a barge, which would be anchored near the west bank of the river. Based on current analyses, UI does not anticipate that the barge would have an impact on fisheries. Appropriate erosion and sediment control measures will be utilized for upland work adjacent to the Pequonnock River to avoid sedimentation or other impacts to the river.

Some in-water work (across intertidal mud flats) is proposed within Ash Creek to remove the existing lattice structure located on a small rocky island within the watercourse. However, the work required to remove the lattice tower will only require access across the mud flat for a short time and, to minimize impacts to the creek habitat, will be performed using best management practices and in accordance with the conditions of Federal and State regulatory approvals.

To the extent possible, existing riparian vegetation at stream crossings along the Project route will be maintained. Riparian zones are conducive to fish habitats, as these zones preserve shaded areas along waterbodies, reduce stream bank erosion during flood events, and act as natural filters to nutrients, pollutants, and sediments. In areas where riparian vegetation must be removed, UI will implement erosion and sedimentation control procedures to avoid the potential for sedimentation; such procedures will be defined in the Project SWPCP. These controls will prevent disturbances

to existing fisheries within waterbodies along the Project. Furthermore, these controls will be maintained throughout construction and will remain in place until the areas are revegetated and stabilized. Inspections will be performed pursuant to the Project SWPCP to verify the protection of water quality and fisheries.

6.4.4 Federal and State-Listed Threatened, Endangered, or Special Concern Species

UI will implement appropriate measures to protect the species identified by the CT DEEP NDDB and the USFWS (refer to the discussion in Section 5.4.4 and to the agency correspondence in Appendix A) as potentially occurring in the Project area. Appropriate protection plans for these species will be defined in conjunction with CT DEEP. Based on consultations with Federal and State agencies conducted to date, UI has identified the following general approaches for avoiding or mitigating impacts to the species known to be present in the Project area.

- **Peregrine falcon.** Peregrine falcons (a State-listed Threatened species) are known to nest on the I-95 bridge over the Pequonnock River, which directly abuts the Project area. If Project construction in the vicinity of the nest occurs outside of the April-July breeding season, CT DEEP indicated that active nests would be avoided; thus, no additional precautions would be required. CT DEEP recommends work not be conducted between April and July within 330 feet of active nests that are out of line-of-sight, or within 660 feet from nests that are within the line-of-sight. In advance of Project construction in the vicinity of this Peregrine falcon nesting area, UI will coordinate with CT DEEP to determine the methods to best avoid impacts to the species, given the planned construction schedule and whether the nest is occupied at the time of construction.

- **Blueback herring.** This fish (a species of Special Concern in Connecticut) is known to occur within Mill River. CT DEEP recommended that UI coordinate with a CT DEEP fisheries biologist to mitigate negative effects if any in-water Project work is proposed. However, no Project work is proposed in the Mill River and UI does not anticipate any impacts to this species.

- **Northern Long Eared Bat.** Based on the consultations conducted to date with USFWS, UI understands that no known northern long eared bat resource areas (e.g., hibernaculum, roost trees) are known in the Project area. Tree removal for the Project currently is allowed under the USFWS Programmatic Biological Opinion and 4(d) rule for northern long-eared bat, which is currently a Federally-listed threatened species. USFWS is reviewing the bat for potential re-listing as endangered; a final decision by USFWS is expected by November 2022. If northern long-eared bat is listed as endangered, UI expects to coordinate further with USFWS and CT DEEP to avoid any potential impacts to the northern long-eared bat habitat.

- **Red Knot and Roseate Tern**. These two shorebirds (red knot = Federally-listed threatened species and roseate tern = Federally-listed endangered species) were identified by USFWS as potentially occurring in the vicinity of the Project area. However, both shorebird species are associated with coastal habitats, which are not located along or near the CT DOT corridor or UI's ROW to Ash

Creek Substation. Therefore, UI does not anticipate that the Project will affect these two bird species.

To assure that construction contractors are fully aware of the requirements for avoiding or minimizing potential impacts to listed species, UI will prepare and distribute a Contractor Species Protection Plan to all Project field personnel. The Plan will provide resources for identifying each sensitive species in the area and will specify the measures to be implemented to protect the species. Further, UI will provide contractor training regarding the listed species and the Plan.

6.5 COASTAL RESOURCES

Although approximately 4.7 miles of the Project extends through the designated coastal boundary in (3.1 miles in Fairfield and 1.6 miles in Bridgeport), the rebuilt 115-kV transmission lines will continue to be aligned along or near the railroad corridor, maintaining the decades-long co-location of transportation and energy infrastructure. Based on the CT DEEP's Connecticut Coastal Management Manual and the Coastal Site Plan Review Checklist, the Project is not expected to result in any long-term adverse impacts to designated coastal resources or uses.

Specifically, the Project will not adversely affect beaches and dunes, rocky shorefronts, coastal bluffs and escarpments, or shellfish concentration areas. In addition, the Project will not affect any existing designated coastal access points or primary coastal uses, such as boating, fishing, beach-going, and swimming.

The Project will involve minimal temporary construction activities in tidal areas. For example, to remove UI's existing lattice steel tower from a small island in Ash Creek near the Ash Creek Substation, the Project will involve temporary work in Ash Creek and associated intertidal flat areas. However, these construction activities will be highly localized and will be performed to minimize impacts to the coastal area. The lattice steel tower will be replaced with two new monopoles located in within UI's Ash Creek Substation property.

To install some of the new 115-kV lines and remove the existing 115-kV facilities from the CT DOT / MNR facilities between Pequonnock and Congress Street substations, UI anticipates that a barge, anchored near the west bank of the Pequonnock River, will be required. However, the barge

will be required for only the limited construction period and will not result in any impacts to coastal water resources.

Sediment and erosion best management practices will be implemented to avoid the potential for degradation of existing drainage patterns and shoreline erosion, and to protect existing wildlife, finfish, and shellfish. No existing or proposed waterfront coastal uses or recreational areas will be affected by the Project.

The Project will modify the viewshed in the vicinity of the rebuilt 115-kV lines (refer to Appendix C). However, compared to the existing 115-kV lines on the railroad catenary support structures, the proposed monopoles will be taller, allowing longer conductor span lengths and thus minimizing the number of 115-kV line structures in coastal resource areas. For example, UI proposes longer span lengths across the Mill River, Ash Creek, and Pequonnock River.

6.6 LAND USE, RECREATION, AND COMMUNITY FACILITIES

The proposed rebuilt 115-kV transmission lines will continue to be collocated within or near the long-established CT DOT corridor. The Project will improve the reliability of the 115-kV lines and will be consistent with various State, regional, and local land use plans. As a result, except for the areas where UI must acquire new permanent easement to accommodate the rebuilt transmission lines, the Project will result in generally limited and temporary impacts on land uses, mostly during the construction phase.

Based on current Project plans, UI proposes to acquire approximately 19.25 acres of new permanent easements (refer to Table 2-2 for a list of locations where permanent easement is expected to be required, as well as to the Volume 2 maps). Such permanent easements will be required to accommodate the new 115-kV structures, wire, blowout, and vegetation removal in accordance with electric transmission clearances (19.1 acres) and to provide access across private properties to reach the rebuilt 115-kV lines (0.15 acre).

The areas in which UI proposes to acquire new easement are adjacent to or near the CT DOT railroad corridor, as well as along the UI ROW to Ash Creek Substation. In some of the areas

where UI proposes to acquire new easement, existing sheds and debris, etc. will have to be removed for the construction of the Project. Future land uses within the new easements will be restricted to those compatible with overhead transmission line operation. In general, UI's easement will prohibit the construction of buildings, pools, and structures.

Further, on some portions of the CT DOT property, existing encroachments (e.g., sheds, debris) are within the Project area and will have to be removed prior to Project construction. UI will coordinate with CT DOT/MNR regarding these encroachments and the plans for removal.

The Project is consistent with the overall State, regional, and local objectives for continuing to provide a reliable resilient electrical transmission system to assist in serving existing customers and promoting economic growth. The municipalities traversed by the Project have published POCDs. In general, these plans indicate that the linear CT DOT corridor will continue as a transportation/infrastructure asset and that land uses in the areas near the railroad corridor in the future will reflect the current well-established pattern of land uses (e.g., railroad stations, commercial / industrial development, residential areas). None of the plans identify local land use policies that are inconsistent with the Project.

The Project is located near various existing recreational areas (refer to Table 5-8). Jennings Park, located in Fairfield south of the CT DOT corridor and west of South Benson Road, is the closest recreational area to the Project. In the vicinity of Jennings Park, UI proposes (based on current Project plans) to install one new monopole (Structure P696S) near the southern CT DOT property boundary and to acquire any necessary permanent easement from the Town of Fairfield to accommodate clearance requirements for the rebuilt 115-kV lines. UI also proposes to establish a permanent access road on Town property, paralleling the CT DOT corridor, to provide access to Structures P695S and P696S (refer to the Volume 2 maps). UI will continue to coordinate with the Town of Fairfield regarding the Project plans in relation to Jennings Park.

Similarly, UI expects to continue to coordinate with Bridgeport representatives concerning the proposed Project facilities (specifically, structures P779S and P783S) and the City's plans for the undeveloped "Sliver by the River" area adjacent to the Pequonnock River.

No designated scenic areas are located in the Project vicinity. As a result, neither the construction nor the operation of the proposed transmission lines will have adverse effects on recreational uses or scenic areas.

The Project area extends through a well-developed urban/suburban area that includes a wide variety of community facilities, such as daycare centers, schools, group homes, and youth camps (refer to Table 5-8). The construction of the Project is not expected to directly affect any of these facilities.

6.7 VISUAL AND AESTHETIC CHARACTERISTICS

To evaluate views of the Project from nearby locations, UI completed a *Visual Assessment & Photo Simulation Report*, which is provided in Appendix C. This assessment incorporated a combination of a predictive computer model, field evaluations, and a review of various data sources to evaluate the visibility associated with the Project on both and present representations of the character of those views. The assessment includes viewshed analysis mapping, select photographs of existing conditions and corresponding photo-simulations that portray scaled renderings of the Project structures.

In general, the Project will alter the viewscape in the immediate vicinity of the CT DOT corridor. The proposed 115-kV transmission line monopoles, which will generally range in height from 100 to 135 feet above ground level (and up to 195 feet above ground level), will be aligned primarily on, adjacent to, or near the CT DOT property, in the immediate vicinity of the long-established railroad corridor. Views of the new monopoles will replace views of UI's existing infrastructure (e.g., bonnets and 115-kV lines on top of the catenary structures), and the new structures and transmission circuits will not be prominent features especially given the existing development and infrastructure associated with the CT DOT corridor. While the new poles will be taller than the existing bonnets, the increased heights allow for longer spans between poles.

In some areas, residences are located in close proximity to the CT DOT corridor, most of which have at least partial views of the existing railroad and electrical infrastructure. In some locations

where direct lines of sight exist at close distances, the new poles may become more prominent features within the viewscape.

Six historic districts and portions of their contributing elements are located within 500 feet of the Project corridor. Due to their proximity to the existing railroad and electrical corridor, the rebuilt monopoles will have a visual effect on these resources. There are also 15 individually listed NRHP and/or SRHP properties within 500 feet of the Project area that will also have their viewsheds altered as a result of construction. The potential indirect visual effects to historic resources are discussed in Section 6.8.

Photographic locations 1 through 14 in Appendix C provide views of existing and proposed conditions along the Project corridor. The photo-simulations depict visual representations of the rebuilt 115-kV lines from vantage points near the railroad corridor. The simulations depict the proposed replacement monopoles and circuits, and the removal from the catenary structures of the existing UI bonnets and 115-kV facilities.

6.8 CULTURAL (ARCHAEOLOGICAL AND HISTORIC) RESOURCES

The Phase IA survey completed by Heritage revealed that two archaeological sites have been recorded in close proximity to Project elements in Bridgeport: Sites 15-2 and 15-3. Although no new monopoles are planned in these areas, the sites are situated within or close to proposed Project work areas. Heritage recommends that the work areas near Sites 15-2 and 15-3 be covered with timber matting to protect any potential below grade archaeological deposits. If this is not feasible, Heritage recommends that a professional archaeologist be on site during construction to monitor any ground disturbing activities in these areas.

Heritage's Phase IA survey also has determined that the Project will have direct impacts associated with 12 proposed monopoles that are planned within the Southport Historic District/Southport NRHP/SRHP/LHD (P657S and P659) and the Railroad Avenue Industrial District (P739N, P740N, P742N, P743N, P744N, P744EN, P745N, P745S, P746S, and P748S). Since these areas have the potential to yield cultural deposits associated with various occupations, it is recommended that archaeological investigation of the locations of proposed Poles P657S, P659P, P739N, P740N,

P742N, P743N, P744N, P-744EN, P745N, P745S, P746S, and P748S be conducted to determine if they contain intact archaeological deposits.

Viewshed analysis completed during Heritage's Phase IA review revealed that Project components will be visible from the Division Street Historic District, Barnum-Palliser Historic District, Bridgeport Downtown North Historic District, and Bridgeport Downtown South Historic District and may represent an adverse effect to their viewsheds. Since all of these districts and many of their contributing elements are listed on the NR/SR, it is recommended that UI work in consultation with the CT-SHPO, as well as any other approved stakeholders, to offset the visual impacts of construction to the Division Street Historic District, Barnum-Palliser Historic District, Bridgeport Downtown North Historic District, and Bridgeport Downtown South Historic District.

Finally, the proposed Project will result in alterations to the existing railroad corridor, which contains the historical railroad and associated facilities that are themselves historical features and have been determined eligible for listing on the NRHP by the CT SHPO. These changes are not expected to have any adverse effect on the historical, character-defining aspects of the railroad features within the existing MNR corridor. Thus, no additional recordation of the railroad or its associated historical elements is recommended prior to construction.

6.8.1 Preliminary Viewshed Analysis and NRHP/SRHP Properties

Based on a preliminary viewshed analysis of the Project components, Heritage determined that the Project – specifically views of the monopole structures for the rebuilt 115-kV lines – will result in indirect visual effects on six historic districts and portions of their contributing elements that are listed on the NRHP and the SHRP, including the Southport Historic District/Southport, Railroad Avenue Industrial District, Division Street Historic District, Barnum-Palliser Historic District, Bridgeport Downtown North Historic District, and Bridgeport Downtown South Historic District. Specifically, to support the rebuilt 115-kV lines, monopoles in the viewsheds of the NRHP/SRHP structures are proposed be approximately 100 to 135 feet tall. In addition, there are 15 individually listed NRHP and/or SRHP properties that will have their viewsheds altered as a result of new monopoles.

UI has designed the Project to minimize overall environmental and social impacts, while targeting the overarching objective of improving the reliability of the electric system. UI's engineers determined that the monopoles are necessary for engineering and public safety reasons. Further, the proposed heights of the monopoles are directly correlated to minimizing the number of new transmission line structures, avoiding impacts to environmentally or culturally sensitive areas, and minimizing the need for new permanent easements.

UI plans to work on consultation with the CT-SHPO, as well as any other approved stakeholders, to mitigate the visual impacts of construction to the historic districts listed above.

6.8.2 Archaeological Resources

The Phase 1A Report as determined that there are six archaeological sites recorded within 500 feet of the Project area, including two in Fairfield and four in Bridgeport. Two of these sites are in close proximity to the Project area. While the two sites do not fall within areas where poles are proposed, they are situated within and close to proposed work areas. It is recommended that these areas be covered with timber matting during construction to protect any potential below ground resources, and if timber matting is not feasible, it is further recommended that a professional archaeologist is on site to monitor construction activities in the vicinity of these three sites.

In addition, the Phase 1A Report determined that the Project would have direct impacts associated with 12 pole replacement locations that are planned within the boundaries of the Southport Historic District/Southport (547S-659) and the Railroad Avenue Industrial District (739N, 740N, 742N, 743N, 744N, 744EN, 745S, 746S, and 748S). These areas have the potential to yield cultural deposits associated with various occupations of the Southport Historic District/Southport and Railroad Avenue Industrial District. It is recommended that archaeological investigation of the locations of these poles be conducted prior to construction to determine if they contain intact archaeological deposits. Further, timber mats are proposed for the work areas associated with these poles to protect the ground surface during construction.

Although unlikely given the past modifications to the railroad corridor and vicinity, buried archaeological materials potentially could be encountered during excavation activities performed

during Project construction. To address this contingency, UI will include in the Project D&M Plan(s) protocols for implementation if unanticipated cultural materials are unearthed during construction.

6.9 TRANSPORTATION, UTILITIES, AND ENERGY FACILITIES

As summarized in the following subsections, the construction and operation of the proposed Project will not result in any significant adverse effects on transportation, municipal utility systems, or other energy facilities.

6.9.1 Airports and Flight Paths

The Project is not located in the immediate vicinity of any airports or flight paths. However, UI conducted a review of all the proposed structures in coordination with the FAA's Obstruction Evaluation Group (OE) and on May 9, 2022, submitted applicable Project information (monopole locations and heights) to the OE for aeronautical studies under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, Part 77.

For all of the proposed monopole heights submitted, the FAA OE issued a "Determination of No Hazard to Air Navigation" (DNE), indicating the aeronautical studies revealed that the structures do not exceed obstruction standards, will not be a hazard to air navigation, and that no special lighting or markers will be required on the rebuilt 115-kV lines to maintain aviation safety. Three DNEs, which are representative of the 51 DNEs that the FAA issued for the Project, are included in Appendix A. Additional consultations with FAA will be conducted if Project design modifications call for an increase in monopole heights that would exceed obstruction standards and/or as required to update or extend the FAA's 2022 determinations regarding the Project.

6.9.2 CT DOT and MNR

Throughout the Project planning process conducted to date, UI has routinely consulted with CT DOT/MNR. For example, as the Project has evolved, UI shared Project design information with CT DOT/MNR representatives, who have reviewed, and provided comments.

For the Project, UI also will obtain and conform to the conditions of permits from CT DOT/MNR. Both construction and pre-construction activities are subject to CT DOT/MNR Right-of-Entry (ROE) Permits which must be secured by UI. For Project construction within the CT DOT corridor, UI will obtain a ROE permit that is expected to detail the special procedures that will be required for the installation of new monopoles, safe removal of legacy bonnets and the repositioning of any CT DOT/MNR assets necessary for the safe and effective operation of the rail corridor. Any transmission line maintenance activities within the railroad corridor also will be coordinated with CT DOT and conducted to avoid adverse effects to rail operations.

6.9.3 Public Transportation and Proposed Access

The Project area is readily accessible from the local and regional highway network. During construction, equipment and vehicles will use this road network, as well as temporary and permanent access roads established for the Project, to reach work sites.

Some construction activities would result in minor and short-term effects to vehicular traffic on the local roads leading to Project work sites. For example, localized traffic congestion may occur when heavy construction equipment or large components are transported to the work sites, as well as when construction personnel travel to and from the Project sites. However, these effects will be minor and short-term. To the extent practical, UI will coordinate work with impacted landowners and the relevant municipality to minimize potential impacts to traffic on local roads.

At locations where construction access along public roads could interfere with traffic flow patterns, UI will coordinate with the Fairfield and Bridgeport police departments and CT DOT (for State roads) to assure that appropriate construction warning zone signs are erected and that flaggers and/or police are on site to direct traffic. For example, in Bridgeport – particularly where the CT DOT corridor is narrow and the MNR tracks are elevated above grade, the rebuilt 115-kV lines will have to be located on new easements, generally adjacent to municipal roads. In these areas, construction activities may require temporary lane closures or detours, as well as nighttime work as necessary to avoid busy travel periods. UI would coordinate with Bridgeport to assess whether a traffic control plan is warranted for Project construction in these areas.

UI anticipates that access to all four railroad stations, the Bridgeport Bus Terminal, and Bridgeport & Port Jefferson Ferry will be maintained during construction.

In addition, UI will obtain encroachment permits from CT DOT for the proposed transmission line spans across Post Road (U.S Route 1), Benson Road (State Route 135), King's Highway (U.S. Route 1) in Fairfield; and Fairfield Avenue (State Route 130), I-95 (3 crossings), and Stratford Avenue (State Route 130) in Bridgeport. UI's construction contractors will be required to obtain appropriate permits related to the transportation of oversized loads and equipment to and from Project sites.

6.9.4 Utilities

The Project area is served by public water, sewer, and storm sewer systems, as well as other utilities. Neither the construction nor the operation of the Project will affect any existing municipal utilities.

In general, the rebuilt 115-kV lines will span all roads and will not affect buried infrastructure or overhead distribution lines. The final design of the Project will reflect the results of UI's detailed investigations of existing utility facilities, including MNR signal and communications wires, as well as consultations with CT DOT and MNR.

UI will coordinate with the relevant stakeholders regarding utility crossings and will design the Project to try to avoid impacts to existing utility systems, including the electrification, communications, and signaling systems used by MNR along the railroad corridor. As necessary, UI will temporarily or permanently relocate existing infrastructure outside of construction zones. In addition to Call Before You Dig procedures, UI utilizes a comprehensive program of advanced due diligence, including archival research, ground penetrating radar, and the use of soft dig to minimize any potential for interruption of existing utility systems.

6.9.5 Energy Facilities

The proposed Project will not result in any adverse impacts to existing energy facilities and will significantly benefit the Connecticut energy system by maintaining the reliability and resiliency of

UI's facilities, in accordance with applicable national and regional electric standards and criteria. The rebuilt 115-kV lines will be integral to the development of new energy infrastructure opportunities in surrounding locations. These upgrades will maintain and improve system reliability, preserve safety within and adjacent to the transmission line facilities, and provide technological enhancements to legacy system equipment.

6.10 AIR QUALITY, NOISE, AND LIGHTING

The Project will have minimal, short-term, and highly localized effects on air quality, noise, and lighting.

Air Quality

The development of the Project will result in short-term and localized effects on air quality because of emissions from construction equipment and vehicles, as well as from fugitive dust emissions generated during earth-moving and drilling activities. The operation of the Project facilities will not result in adverse impacts to air quality.

To minimize emissions from construction equipment and vehicles, UI will require Project contractors to properly maintain equipment and to adhere to Connecticut's anti-idling requirements (RCSA § 22a-174-18). In addition, UI will require its contractors to control dust emissions at work sites, as necessary, per guidance provided in the Project SWPCP.

To minimize tracking of dirt from Project construction areas onto paved roads, as necessary, crushed stone (or equivalent) anti-tracking pads will be used and, at ingress/egress points to Project construction sites, public roads will be swept.

Noise

The construction of the Project will result in minor and short-term increases in noise associated with construction activities, such as the movement and operation of construction equipment (e.g., earth movers, jackhammers, drilling rigs, cranes). However, the operation of the rebuilt transmission lines is not expected to cause any long-term change to the sound environment.

Further, the Project will not result in modifications that will change the sound output from any of the five substations. There will be associated temporary construction noise related to the work required to connect each of the substations to the rebuilt 115-kV transmission lines. However, there will be no long-term change to the operation of the substations.

During Project construction, noise impacts will be concentrated in the immediate vicinity of work sites on either side of the MNR rail lines, as well as along UI's permanent easements. Any construction related noise will temporarily raise ambient sound levels near work sites. However, this increase will be short-term, lasting only for the duration of Project activities in a particular location. Moreover, all Project construction activities will be within or near the CT DOT railroad corridor and near major highways (e.g., I-95, U.S. Route 1) and urban/suburban areas. In such areas, the existing ambient sound environment is affected by train and vehicular traffic. As a result, the short-term noise increases associated with Project work are expected to be a minor component of the background noise environment.

In general, the extent of a noise effect to humans is dependent upon a number of factors, including the change in noise level from ambient, the duration and nature of the noise, the presence of other noise sources, the number of people exposed to the noise, and the type of activity affected by the noise (e.g., sleep, recreation, conversation). UI's schedule for the construction of the proposed Project is expected to vary, depending on the type and location of work tasks.

As described in Section 4, to the extent practical, typical construction work hours are expected to be 7:00 AM to 7:00 PM, Monday through Saturday. However, all work on the catenary structures and near the rail lines must be closely coordinated with CT DOT/MNR, recognizing the need to maintain rail operations. As a result, UI expects that such construction activities will occur during non-peak railroad use periods, including at night and on Sundays, as required to minimize impacts to the rail system.

In addition, UI expects that the installation of the monopoles on new permanent easement, outside of the CT DOT corridor, may be timed to avoid peak vehicular travel periods in order to avoid traffic congestion. Such work also may require construction on Sundays or at night.

Further, 24/7 work will be required during certain critical periods requiring electrical outages on the UI system. The specific Project work hours will be identified in the D&M Plan(s).

Although construction noise is exempt under the Connecticut regulations for the control of noise, (RCSA § 22a-69-1.8(h)), UI is aware that Fairfield and Bridgeport have adopted noise control ordinances, which identify typical hours for construction activities. UI will coordinate with the Council and the municipalities regarding the construction schedule. To assure that the public is aware of the Project work activities, UI will inform the involved municipalities and stakeholders of the Project schedule regarding when nighttime construction activities are anticipated.

Lighting

Lighting will be required for Project construction activities that must occur during nighttime hours, which will be necessary to avoid conflicts with train movements. For such work, temporary portable lighting will be needed. However, UI will require its contractors to install temporary lighting such that the illumination is directed solely on work sites. As a result, lighting-caused glare outside of the approved construction work zones is not anticipated. The operation of the Project will not require any lighting along the new 115-kV transmission line route or any new lighting at the existing UI substations.

7. ELECTRIC AND MAGNETIC FIELD CONSIDERATIONS

To assess the alternating current (AC) electric and magnetic fields (EMF) associated with the Project, UI retained Exponent, a company with specialized expertise in such evaluations. To perform the EMF analyses, Exponent measured EMF levels associated with the operation of the existing 115-kilovolt (kV) lines located on top of the railroad catenary structures between the start of the Project in southwestern Fairfield at catenary structure B648S and the Congress Street Substation in Bridgeport. Exponent also modeled the expected EMF levels during the operation of the 115-kV lines as proposed to be rebuilt (on single-circuit vertical monopole structures located along the south side of the railroad tracks in Fairfield and on a combination of single- and double-circuit monopoles along the rest of the Project route, with all monopoles principally along or near the CT DOT-owned corridor). Exponent also evaluated EMF levels along the 0.23-mile existing UI ROW between the CT DOT corridor and Ash Creek Substation, where the existing lattice steel towers will be replaced with double-circuit monopoles. Based on these analyses, all calculated EMF levels associated with the Project will be a small fraction of those recommended limits for the general public in international health-based standards.

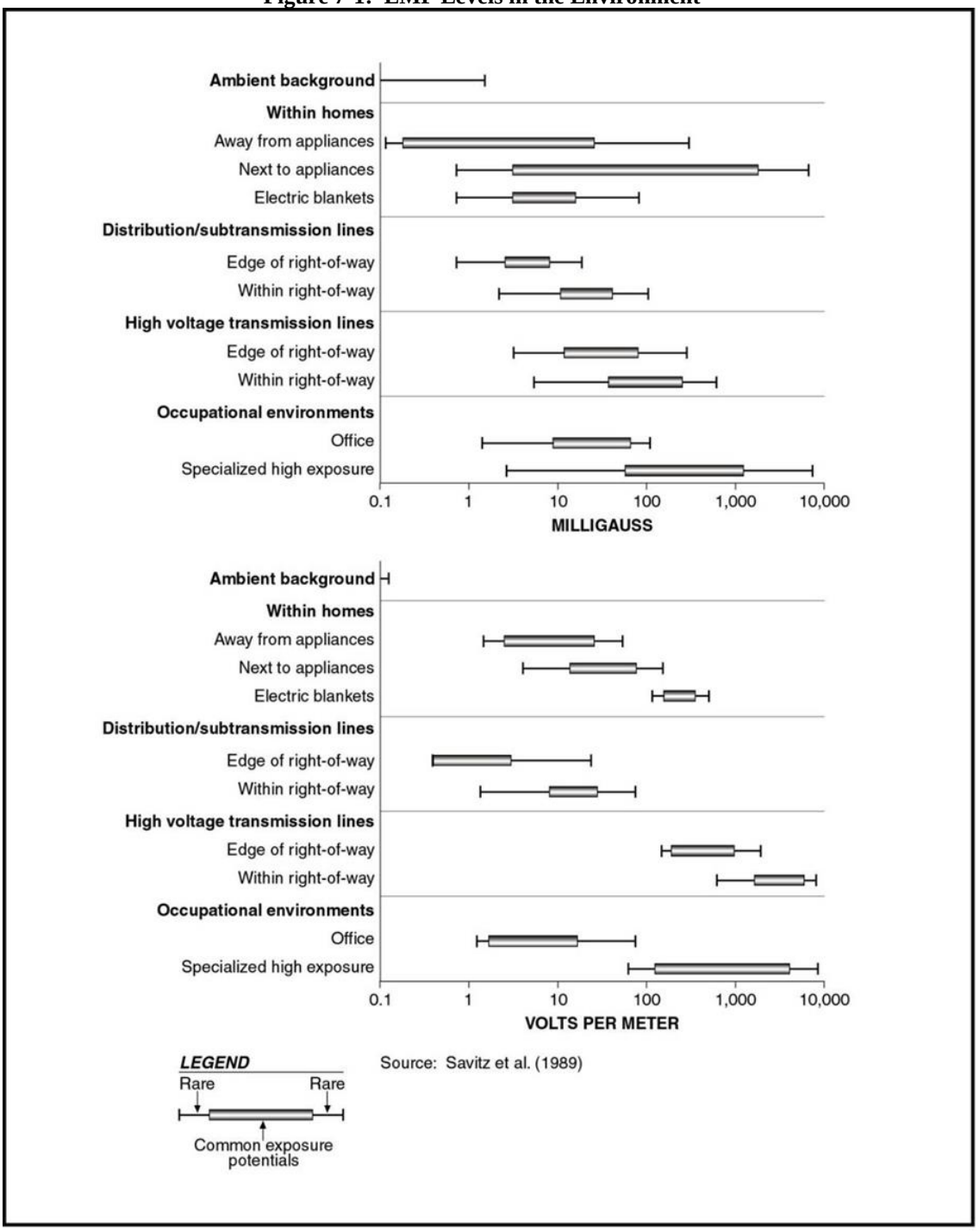
7.1 OVERVIEW

EMF surrounds anything that generates, transmits, or uses electricity. As a result, people living in modern communities are surrounded by various sources of EMF on a daily basis. Figure 7-1 depicts typical EMF levels in residential and occupational environments, as well as on or at the edges of transmission line rights-of-way (ROWs). Magnetic fields and electric fields are described as follows:

- ***Magnetic Fields:*** The current flowing on the conductors of a substation bus-line or an overhead transmission line generates a magnetic field near the conductor. The strength of Project-related magnetic fields is expressed as magnetic flux density in units of milligauss (mG) where 1 Gauss (G) = 1,000 mG. The AC carried by transmission lines (and thus magnetic fields) varies in direction and magnitude in a continuous cycle that repeats 60 times per second (i.e., at a frequency of 60-Hertz [Hz]). The level of the magnetic field around conductors varies with the circuit loading. Line loadings are expressed in units of amperes. Because of variations in line loadings, measurements or calculations of the magnetic field present a snapshot of the magnetic field at only one moment in time. On a given day, throughout a week, or over the course of months and years, the magnetic-field level can change depending on the patterns of power demand on the bulk transmission system.

- ***Electric Fields:*** The voltage on the conductors of transmission lines generates an electric field in the space between the conductors and the ground. Electric fields are blocked by many objects that are conductive, including fences, shrubbery, and buildings, and thus shield electric fields. Electric-field levels are expressed in units of kilovolts per meter (kV/m), where 1 kV/m = 1,000 volts per meter (V/m).

Figure 7-1: EMF Levels in the Environment[53]



[53] Savitz DA, Pearce NE, Poole C. 1989. Methodological issues in the epidemiology of electromagnetic fields and cancer. Epidemiol Rev 11:59-78.

7.2 MODEL CONFIGURATIONS

To calculate existing and proposed EMF levels associated with UI's existing and proposed 115-kV lines, Exponent used 18 separate models appropriate to the different transmission line configurations and the arrangement of transmission lines along the Project route. These segments are broadly categorized into five groups as illustrated in Figure 7-2 and described below.[54]

Group 1 Represents the portions of the route in Fairfield and Bridgeport where the existing transmission lines on the southern catenary structures are proposed to be relocated to steel monopoles on the *south* side of the CT DOT corridor. (The existing transmission line located on monopoles along the north side of the CT DOT corridor in these areas will not be modified as a result of this project).

Group 2 Represents a very short portion of the route that consists of a single modeling cross section along UI's existing 0.23-mile ROW between the CT DOT corridor (in Fairfield), across Ash Creek to the existing Ash Creek Substation (in Bridgeport). Along this UI easement, the existing double-circuit lattice structures (supporting both 115-kV lines) will be replaced with single-circuit vertical monopole structures, one for each line.

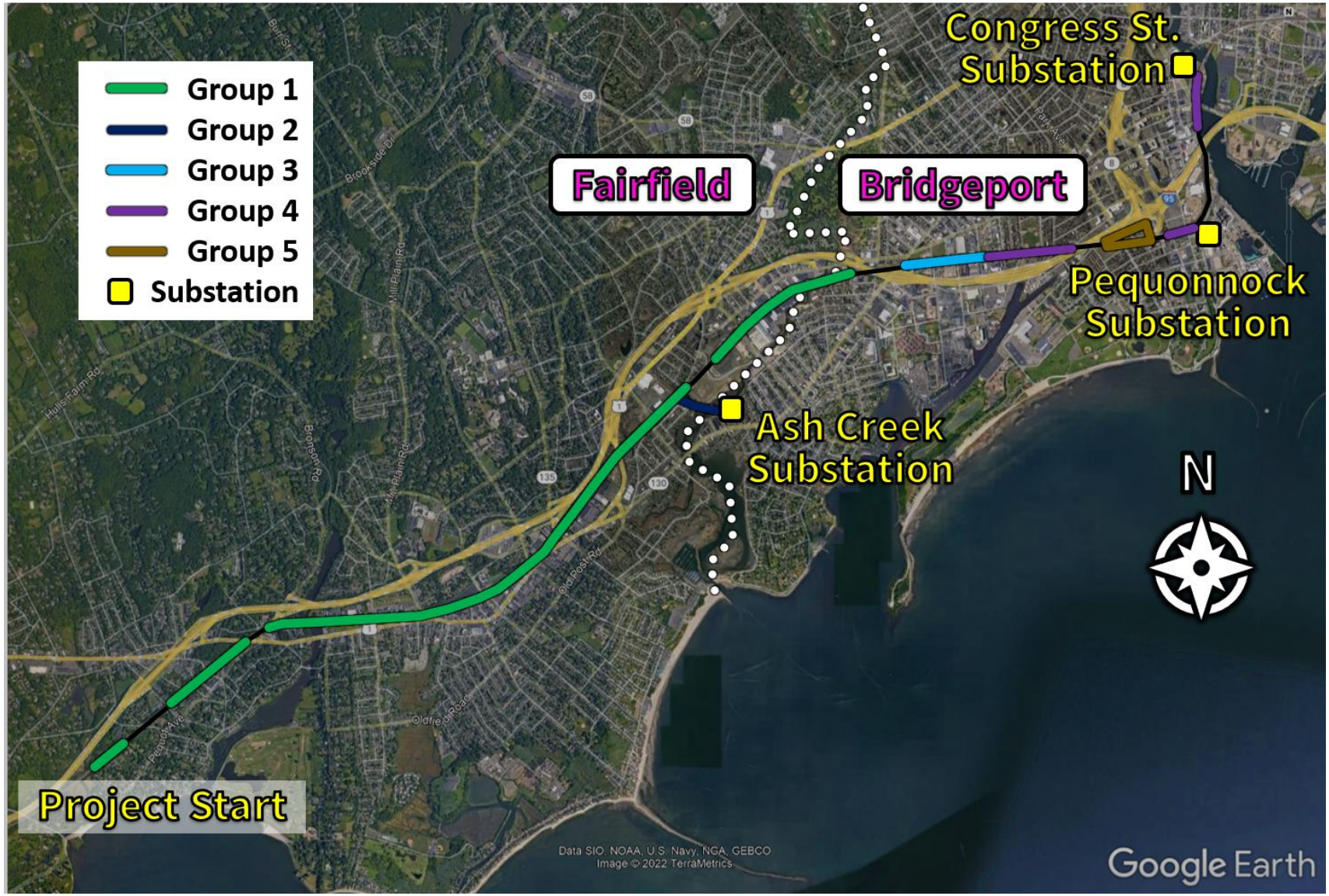
Group 3 Represents a very short portion of the route in Bridgeport where the two transmission lines (circuits on the north and south side of the CT DOT corridor), currently constructed on bonnets on the railroad catenary structures, will be rebuilt on double-circuit monopoles on the *north* side of the CT DOT corridor.

Group 4 Consists of three separate portions of the route in Bridgeport where the two transmission lines currently supported on the north and south railroad catenary structures will be rebuilt on double-circuit monopoles on the *south* side of the CT DOT corridor.

Group 5 Consists of two contiguous portions of the route in Bridgeport where the two transmission lines, currently constructed on the north and south railroad catenary structures, will be rebuilt on separate single-circuit monopoles, one on the north side of the CT DOT corridor and the other on the south side of the CT DOT corridor. Some of the northern proposed monopoles will be aligned along South Frontage Road, while the proposed southern monopoles will parallel the CT DOT corridor, resulting in the need for UI to acquire two separate permanent easements.

[54] Relatively short portions of the Project route where the configuration of adjacent structures change (such as at I-95 crossings) were not modeled.

Figure 7-2: Project Route Map Showing EMF Modeling Groups



***** Narrow black lines indicate areas where EMF modeling was not performed because the proposed structure design changes from one to the next; further, in these areas, the proposed rebuilt lines will not be near residences or CSC statutory facilities.

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7.3 MEASURED AND CALCULATED EMF LEVELS

7.3.1 Overview

Exponent took measurements of the EMF associated with the operation of the existing EMF sources, including the existing UI transmission lines along the CT DOT railroad corridor. The purpose of these pre-Project measurements was to characterize existing EMF levels along the CT DOT corridor and adjacent areas under pre-Project conditions. Exponent also performed modeling of the lines before and after the rebuild of the 115-kV lines to assess the effect of the Project on EMF levels over a longer time period.

Field levels were measured at a height of approximately 3.28 feet (ft) (1 meter [m]) above ground using instruments meeting Institute of Electrical and Electronics Engineers (IEEE) Standard 1308-1994 (R2010)[55] for obtaining accurate field measurements at power line frequencies and calibrated by EMDEX, LLC, using methods like those described in IEEE Standard 644-2019.[56] The measurements were taken and reported as the root mean square value of the field in accordance with IEEE Standard C95.3-2021[57] and IEEE Standard 644-2019. The locations where EMF measurements were obtained were within the CT DOT railroad corridor (as close to the edges of the CT DOT corridor as could be safely measured), at the edges of the relevant public street edges, and at or near the boundaries of adjacent properties. EMF measurements and calculations followed the CSC's 2014 EMF *Best Management Practices for the Construction of Electric Transmission Lines* (EMF BMP) and its 2007 *Electric and Fuel Transmission Line Facility Application Guide.*

Measured magnetic-field levels within the CT DOT corridor averaged between 5.9 and 27 mG. Measured electric-field levels near the edges of the CT DOT corridor varied between less than 0.1 and 0.2 kV/m with a maximum measured level of 0.4 kV/m. EMF measurements in other areas within 300 feet of the CT DOT corridor were generally lower, consistent with the rapid decrease in EMF levels with distance. The average measured magnetic field in these areas (outside the CT

[55] IEEE Recommended Practice for Instrumentation: Specifications for Magnetic Flux Density and Electric Field Strength Meters - 10 Hz to 3 kHz. (IEEE Std. 1308-1994, Reaffirmed 2010). New York: IEEE, 1994.
[56] IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines (IEEE Std. 644, New York: IEEE, 2019.
[57] IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz. (IEEE Std. C95.3-2021) New York: IEEE, 2021.

DOT corridor) varied from approximately 0.5 mG to 25 mG, and all electric-field levels were generally less than 0.1 kV/m. Generally higher EMF levels were measured nearest to the transmission (or distribution) lines and lower levels were measured away from transmission (or distribution) lines.

Exponent also modeled the EMF levels for the existing and proposed configurations of the 115-kV lines, assuming the peak and peak daily average loading in 2022 and the projected peak and peak daily average load anticipated in 2029 after the Project is scheduled to be completed. Overall the maximum ground-level EMF levels decrease as a result of the Project, primarily due to the greater height of the conductors supported on the new, taller monopoles compared to the height of the conductors on the catenary bonnet structures. However, the relocation of the transmission line off of the bonnet structures to monopoles slightly farther from the railroad tracks, and in some cases outside the CT DOT corridor, means that the maximum EMF levels will generally shift away from the railroad tracks and hence increase in areas along the edge of and away from the CT DOT corridor. The maximum electric field level at the edge of the CT DOT corridor or UI's proposed new easement before or after the Project is low and is approximately 1.2 kV/m or less.

7.3.2 Summary of Calculated EMF Levels, by Group

Additional evaluation of magnetic-field levels in each of the modeled Groups are described in greater detail below.

Group 1 (new proposed single-circuit monopoles on the south side of the CT DOT corridor):
In this area, the relocation of the 115-kV line off the southern catenary structures onto independent monopoles located along the southern portion of the CT DOT corridor will result in a slight increase in EMF levels to the south. EMF levels on the north side of the CT DOT corridor (where UI's existing transmission line is supported on monopoles) will either decrease or not significantly increase compared to existing levels. However, UI proposes to acquire new easement (as necessary) to ensure the new transmission line conductors maintain the necessary horizontal clearances to adjacent property as mandated by the NESC and UI's standard design criteria. At 100 feet (30 m) of either side of the CT DOT corridor or proposed new UI permanent easement, the maximum increase in post-project EMF levels compared to existing levels is approximately 5.5 mG or less and <0.1 kV/m.

Group 2 (paired single-circuit monopoles crossing Ash Creek):

EMF levels also were calculated to increase at the edges of the easement along the 0.23-mile ROW between the CT DOT corridor and the Ash Creek Substation. At 100 feet (30 m) of either side of the UI easement, the maximum increase in post-project EMF levels compared to existing levels is approximately 3.9 mG and <0.1 kV/m. However, the segment is mostly built over a waterway (Ash Creek).

Group 3 (new proposed double-circuit monopoles on the north side of the CT DOT corridor)
EMF levels on the southern edge of the public street boundary were calculated to decrease significantly compared with existing levels, but generally increase on the northern side of the new UI easement compared to existing levels. However, in these areas, there are no residences or statutory facilities along the Project route and the magnetic field decreases rapidly with distance such that at 100 feet (30 m) of the proposed UI permanent easement, the maximum increase is less than 0.5 mG.

Group 4 (new proposed double-circuit monopoles on the south side of the CT DOT corridor):
In these areas, the 115-kV lines will be removed from the catenary structures and rebuilt onto double-circuit monopoles located along the southern portion of the CT DOT corridor will result in a slight increase in EMF levels to the south. EMF levels on the north side of the CT DOT corridor will decrease significantly compared to existing levels. Additionally, UI proposes to acquire new easement (as necessary) to ensure the new transmission line conductors maintain necessary horizontal clearances to adjacent property, as in Group 1. At 100 feet (30 m) from the proposed UI easement to the south of the CT DOT corridor, the post-Project magnetic field levels decrease (by about 0.2 to 0.3 mG) compared to existing levels; electric field levels are calculated not to change as a result of the Project.

Group 5 (monopoles outside of and on both sides of CT DOT corridor)
In this area, the rebuilt 115-kV lines cannot be located within the narrow CT DOT corridor. As a result, UI proposes to acquire new permanent easements for the single-circuit lines to be located on either side of the railroad corridor. The new easements will ensure the new transmission line conductors maintain necessary horizontal clearances to adjacent property, as mandated by the NESC and by UI's standard design criteria. The relocation of one transmission line south of the CT DOT corridor and relocation the other transmission line to parallel South Frontage Road, north of the CT DOT corridor, results in increased EMF levels on both sides of the existing CT DOT corridor. Between the two proposed permanent UI easements, there is one residence where the magnetic field level is calculated to increase by approximately 5 to 20 mG (depending on location within the residence). North of proposed new easement along South Frontage Road and south of the permanent easement south of the CT DOT corridor, there are no residences within approximately 200 feet. At this distance magnetic field levels are calculated to be 2.0 mG or less before or after the Project.

7.4 ASSESSMENT CRITERIA

Neither the federal government nor the State of Connecticut has enacted standards for EMF from power lines or other sources at power frequencies; however, the CSC has developed EMF BMPs

for siting new transmission lines, as summarized in Section 7.5. Several states have statutes or guidelines that apply to fields produced by new transmission lines, but these are not health-based guidelines. For example, New York and Florida have limits on EMF that were designed to limit fields from new transmission lines to levels characteristic of the fields from existing transmission lines.

More relevant EMF assessment criteria include the exposure limits recommended by health and scientific organizations. These exposure limits are included in guidelines developed to protect health and safety and are based on reviews and evaluations of relevant health research.

The guidelines include exposure limits for the general public recommended by the International Committee on Electromagnetic Safety (ICES) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) to address health and safety issues.[58] In a June 2007 Factsheet, the World Health Organization recommended that policy makers adopt international exposure limit guidelines, such as those from ICNIRP or ICES for occupational and public exposure to EMF as noted in Table 7-1.[59]

Table 7-1: ICNIRP and ICES guidelines for EMF exposure at 60 Hz

	Exposure (60 Hz)	
Organization	Electric Field	Magnetic Field
ICNIRP		
Occupational	8.3 kV/m	10 G (10,000 mG)
General Public	4.2 kV/m	2 G (2,000 mG)
ICES		

[58] International Commission on Non-ionizing Radiation Protection (ICNIRP). Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz to 100 kHz). Health Phys 99:818-836, 2010; International Committee on Electromagnetic Safety (ICES). IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz (IEEE Std. C95.1-2019), 2019.

[59] World Health Organization (WHO). Fact Sheet No. 322: Electromagnetic Fields and Public Health – Exposure to Extremely Low Frequency Fields. Geneva, Switzerland: World Health Organization, 2007.

Organization	Exposure (60 Hz)	
	Electric Field	Magnetic Field
Occupational	20 kV/m	27.1 G (27,100 mG)
General Public	5 kV/m*	9.040 G (9,040 mG)

*Within power line ROWs, the guideline is 10 kV/m.

7.5 CONSISTENCY WITH CSC BEST MANAGEMENT PRACTICES

As noted, the CSC has adopted EMF BMPs, which are based on a consensus of health and scientific agencies that the scientific evidence "reflects the lack of credible scientific evidence for a causal relationship between MF [magnetic field] exposure and adverse health effects" (CSC BMP, 2014, p. 3). Nevertheless, the CSC concluded that precautionary measures for the siting of new transmission lines in Connecticut are appropriate and advocated for "the use of effective nocost and low-cost technologies and management techniques on a project-specific basis to reduce MF [magnetic field] exposure to the public while allowing for the development of efficient and cost-effective electrical transmission projects" (CSC BMP, 2014, p. 4).

The Project does not involve the development of new transmission lines, but rather will rebuild the existing 115-kV transmission lines within or near the CT DOT corridor or existing UI ROW (between the railroad corridor and Ash Creek Substation) within which the lines are presently located. The Project also includes no cost/low-cost design elements consistent with the CSC's EMF BMPs, such as:

- **Distance**: UI proposes to remove the existing transmission line(s) from the CT DOT catenary structures and to rebuild the 115-kV facilities on monopole structures that will be located closer to the edge of or outside of the CT DOT corridor. UI proposes to acquire new permanent easements, where necessary, to ensure the new transmission line conductors maintain necessary horizontal clearances to adjacent property, as mandated by the NESC and by UI's standard design criteria. The transfer of the transmission lines away from the CT DOT tracks reduces exposure of persons on passenger trains to magnetic fields.

- **Height of Support Structures**: The taller monopole structures will raise the heights of the rebuilt 115-kV transmission conductors compared to the heights of the 115-kV conductors on the existing catenary structures (which are about 60-80 feet [18-24 m] tall, with the UI facilities on top of the bonnets) and will be higher than minimum clearances required by the NESC.

- **Optimum Phasing**: Within the constraints of constructability (i.e., maintaining the same phasing between substations), UI has selected the phasing of the rebuilt lines to be optimal, minimizing Project-related EMF levels at the edge of CT DOT corridor or the new UI easement.

7.6 CONCLUSIONS

EMF calculations were performed using methods that are accepted within the scientific and engineering community and that have been found to match well with measured values. The results of these studies indicate that the *maximum* EMF levels decrease as a result of the Project. However, the relocation of the transmission lines off of the catenary structures/bonnets to monopoles farther from (and in some cases outside) the CT DOT corridor means that the maximum EMF levels will generally shift away from the CT DOT corridor and hence lead to some increase in EMF levels in locations outside the CT DOT corridor.

Where the new monopole structures are proposed to be constructed on the southern side of the CT DOT corridor (Group 1 in Fairfield, and Groups 4 and 5 in Bridgeport) there is a corresponding increase in EMF levels on the southern side of the CT DOT corridor. Similarly, where the new monopole structures are proposed to be constructed on the northern side of the CT DOT corridor (Groups 3 and 5 in Bridgeport), there is an increase in EMF levels on the northern side of the CT DOT corridor. Along UI's 0.23-mile ROW that extends between the CT DOT corridor and Ash Creek Substation (Group 2 at the boundary between Fairfield and Bridgeport), EMF levels increase on both sides of the UI easement.

Although EMF levels outside the CT DOT corridor are calculated to increase in the vicinity of the new monopole structure locations, EMF levels will decrease on the rail lines. Additionally, all EMF levels decrease rapidly with distance such that within 100 ft (30 m) of the proposed rebuilt 115-kV lines, the maximum increase compared to existing levels is approximately 5.5 mG. Electric-field levels at the edges of the CT DOT corridor or proposed UI permanent easements were calculated to be low (approximately 1.2 kV/m or less) before and after the Project.

In summary, the calculated EMF levels resulting from the Project will be a small fraction of the reference levels recommended for the general public in international health-based standards (i.e., ICES and ICNIRP). The engineering design and other activities initiated by UI include design elements consistent with the CSC's EMF BMPs.

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8. PROJECT PERMITS, APPROVALS AND CONSULTATIONS

During the Project planning process to date, UI consulted with representatives of various Federal and State agencies and stakeholders, including CT DOT / MNR, CT DEEP, USACE, USFWS, and FAA, as well as with officials from both Fairfield and Bridgeport. Appendix A includes copies of correspondence with Federal and State regulatory agencies regarding the Project. UI expects to continue to coordinate with the involved regulatory authorities, municipalities, and stakeholders as the planning for and development of the Project continues. This section identifies the permits and approvals required for the construction and operation of the Project and summarizes the agency and municipal consultations that UI has conducted thus far.

8.1 FEDERAL AND STATE AGENCY APPROVALS REQUIRED AND CONSULTATIONS

In addition to authorization from the Council, the Project will require certain approvals from other State agencies, as well as Federal regulators. Table 8-1 summarizes the permits and approvals expected to be required for the Project, along with the status of UI's consultations to date with the involved State and Federal agencies.

Further, UI meets with CT DOT and MNR on a bi-weekly basis. The purpose of these meetings is to maintain close communication with CT DOT and MNR throughout the Project planning and design process. UI expects to continue to coordinate with CT DOT and MNR during both the finalization of Project plans and throughout Project construction. For work within the railroad corridor, the Project is subject to an entry permit, which will be secured from MNR, and a letter of "No Objection" from CT DOT.

8.2 MUNICIPAL CONSULTATION FILING AND OUTREACH

In June 2021, UI initiated communications about the Project with both Fairfield and Bridgeport officials. The purpose of the meetings with the municipal officials was both to inform them about the proposed Project and to solicit input for UI's use in developing Project plans. Since June 2021, UI has regularly coordinated with the municipalities to provide information about the status of Project planning and activities (e.g., geotechnical borings along the CT DOT corridor, vegetation

management and clearing, and updates to proposed Project designs). In addition, UI participates in a quarterly utility coordination call with the City of Bridgeport regarding various UI projects within the City and at each meeting the Project is discussed.

The Council's MCF process, pursuant to which this document has been prepared and is being provided to Fairfield, Bridgeport, and Westport,[60] also represents a formalized mechanism both for apprising the public and elected officials about the proposed Project and for soliciting comments on the Project from local leadership and the public. During the 60-day municipal consultation period associated with the review of the MCF, UI will offer to meet with each municipality's chief elected official to review the proposed Project and this MCF, as well as to present an overview of the Council's process, the Company's anticipated submission to the CSC of an Application for the Project, and the methods available for the municipalities to provide input to that CSC process.

Comments provided by the municipalities as part of the MCF process will be reflected in the Application that UI submits to the Council.

In addition to the formal consultation process associated with the Company's CSC process, UI has pro-actively implemented and will continue to use various mechanisms for informing the general public about the Project. For example, in July 2021, UI mailed information about the proposed Project to all Project anticipated abutters in Fairfield and Bridgeport. This first-class mailing included a letter and Project Information Sheet, a website url (UIRailroadTLineUpgrades.com), and UI's Outreach Hotline number. The mailing was designed to provide Project information to abutters and to notify them of upcoming survey activities.

[60] Pursuant to Conn. Gen. Stat. §16-50*l*(e), UI is providing the MCF to the Town of Westport because the western portion of the Project is within 2,500 feet of the Fairfield-Westport boundary.

Table 8-1: Primary Permits and Approvals Expected to be Applicable to the Project

Agency	Potential Permit/Approval Required / Activity Regulated	Application Submitted or Consultation (Date)	Status
FEDERAL			
USACE	Clean Water Act Section 404 (inland and tidal water resource crossings)	Pending	Consultation in progress.
USFWS	Consultation per Section 7 of the Endangered Species Act	Preliminary screening submitted September 15, 2021, March 15, 2022, & August 23, 2022	Formal interagency consultation will be completed in conjunction with USACE Permit or will be resubmitted to USFWS as necessary
US Coast Guard	Notification	Anticipated notification prior to construction	
National Marine Fisheries Service	Consultation regarding work in tidal waters	Pending	
FAA	Form 7460-1: Notice of Proposed Construction or Alternation	Submitted Notices on May 9, 2022; FAA determination received on May 26, 2022	Consultation with FAA complete. No lighting or marking required on new monopoles. FAA coordination may be required for contractor cranes as construction gets closer.
STATE			
CSC	Municipal Consultation Filing Certificate of Environmental Compatibility and Public Need under C.G.S. § 16-50*l*(a)(1) Development and Management Plan (after issuance of certificate and prior to Council's approval to start construction)	October 2022 Expected filing: Quarter 1, 2023 Anticipated late 2023-mid 2024	Ongoing Pending Prepared after CSC approval of Application
CT DEEP • Land and Water Resources Division (LWRD)	Water quality certification per Section 401 of the Clean Water Act; pertains to inland and tidal water resource crossings Wetlands Certificate of Permission for minor activities	Expected filing prior to construction	Ongoing
• NDDB	State threatened and endangered species; special concern species and significant natural communities' consultation, survey, and review	Consultation submitted September 18, 2019 and resubmitted January 17, 2022.	Determination response letter from CT DEEP received January 28, 2022

Agency	Potential Permit/Approval Required / Activity Regulated	Application Submitted or Consultation (Date)	Status
• Stormwater & Dewatering	General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEEP-WAPED-GP-015) and SWPCP General Permit for the Discharge of Groundwater Remediation Wastewater (DEEP-WPED-GP-027), if necessary	To be submitted after CSC approval of the Application; anticipated Quarter 1, 2024	
• Bureau of Natural Resources, Wildlife Division	Osprey & Peregrine Falcon Consultation	Consultation in process	
• Coastal Management Program	Will be considered with any CT DEEP Certificate of Permission permitting process	Prior to construction	
CT DEEP, PURA	Approval of method and manner of transmission line construction and energization per CGS Section 16-243	Anticipated filing after or in conjunction with D&M Plan	
CT DOT	Encroachment permits for state highway crossings (U.S. Route 1, State Routes 130 and 135, I-95).	Anticipated submission after or in conjunction with D&M Plan	Anticipated 2024
MNR	Right of Entry Permit	Full Construction Permit: Anticipated submittal 2024	Permit for Investigation Phase: Completed August 16,2021
CT SHPO	Cultural Resource Consultation under C.G.S. § 16-50*l*(e)	Consultation &Phase IA Cultural Resources Report submitted September 23, 2022	
CT Department of Agriculture, Bureau of Aquaculture	Consultation regarding work in tidal waters potentially supporting shellfish	Pending	Pending

9. ALTERNATIVES

Based on the engineering analyses, environmental resource evaluations, and constructability reviews conducted to date, the Project represents UI's preferred solution for assuring that the 115-kV transmission lines presently co-located within the CT DOT railroad corridor from just east of the Fairfield boundary with Westport (catenary structure B648S) to Congress Street Substation are upgraded to:

- Adhere to current NESC and Company standards;
- Conform to UI design criteria (which includes withstanding hurricane Category 3 wind loads); and
- Maintain consistency with UI's overall program to improve the reliability of the regional electric system by removing its 115-kV lines in Fairfield and New Haven counties from the railroad catenary structures.

This preferred solution was selected as a result of an iterative process whereby UI first evaluated the structural condition of the portions of the railroad catenary structures that support UI's existing 115-kV lines and then identified and analyzed a range of alternatives for upgrading the lines. These alternatives included line rebuilds both on, and independent of, the existing railroad catenary/bonnet structures, underground 115-kV alignments, and delaying action (i.e., "No Action"). In evaluating options for rebuilding the 115-kV lines for this Project, UI also applied its recent experience in rebuilding other segments of its 115-kV lines along the CT DOT railroad corridor in Fairfield and New Haven counties.[61]

Section 9.1 summarizes the No Action Alternative. Section 9.2 identifies the alternatives that UI investigated but eliminated from consideration for the Project due to overriding engineering design, cost, or constructability issues. Section 9.3 describes the primary design

[61] To date, UI has removed its 115-kV transmission lines from the catenary structures along approximately 6 miles of the CT DOT railroad corridor. These lines were rebuilt under the following projects: Milford 115-kV Transmission Line Upgrade Project (2015-2016), CSC Petition Nos.1110 and 1151; Housatonic River Crossing 115-kV Transmission Line Replacement Project (2015-2016), CSC Petition No. 1138; Bridgeport 115-kV Transmission Line Upgrade Project (2017-2018), CSC Petition No. 1176; Stratford 115-kV Transmission Line Upgrade Project (2019-2021), CSC Petition No. 1304. In April 2018, UI submitted to the CSC, and subsequently obtained approval for, the Pequonnock Substation Rebuild Project (CSC Docket No. 483), which included the rebuild of 17 transmission structures to reconfigure the connections to the new substation. In August 2022, the CSC approved UI's application (Docket No. 508) for rebuilding its 115-kV lines along 9.5 miles of the CT DOT corridor in New Haven County (Milvon to West River substations).

alternatives considered prior to UI's identification of the proposed Project presented in this MCF, while Section 9.4 reviews configuration variations examined to minimize impacts in site-specific locations of the proposed rebuilt 115-kV alignments. Section 9.5 summarizes the overall justification for the Project.

9.1 NO ACTION ALTERNATIVE

As the first step in the alternatives evaluation process, UI examined the existing 115-kV lines and the consequences of the No Action Alternative - that is, "doing nothing" to upgrade or rebuild the existing transmission facilities between catenary structure B648S and Congress Street Substation. Under this alternative, UI's existing 115-kV transmission lines would continue in-service on the bonnets atop the railroad catenary structures. No improvements would be made to correct structural issues to conform to the current NESC and UI requirements and the lines would not be reconductored or otherwise upgraded.

UI performed an engineering assessment of the current condition of the portions of the railroad catenary support structures and bonnets in Fairfield and Bridgeport to which the 115-kV electric transmission assets are attached. The purpose of this assessment was first to analyze the structural integrity of the portions of the catenary/bonnet structures that presently support the 115-kV lines, taking into consideration the transmission lines' mechanical loading and then, when the existing structural support system was found to have integrity issues, to identify long-term solutions for supporting the UI facilities in accordance with national industry standards and Company technical specifications.

UI's assessment determined that the portion of the existing catenary/bonnet structures that support UI equipment exhibited structural deficiencies (e.g., age-related deterioration) that jeopardize the long-term integrity of the transmission lines. A structural failure of the existing UI support structures could result in a significant failure of the 115-kV circuits and/or a loss of power to one or more of the substations interconnected to the 115-kV lines along the railroad corridor. Thus, UI determined that the consequences of delaying action on this Project (i.e., the "No Action" option) would pose unacceptable risks to the electric transmission system and the provision of reliable service to electric customers.

Therefore, the No Action Alternative was rejected because it would not resolve the known asset condition issues, including mechanical loading, associated with the alignment of the existing 115-kV lines on top of the railroad catenary structures, and thus would not allow conformance with industry codes and Company standards. As a result, the 115-kV lines would continue to be at risk for structural failures associated with mechanical loadings or stress associated with major weather events (e.g., hurricanes). Such structural failures could lead to extended duration outages that would adversely affect electrical customers and the bulk power system.

9.2 ALTERNATIVES REVIEWED BUT ELIMINATED

UI reviewed and eliminated three alternatives (one overhead, two underground) for the Project. These alternatives were found to be incompatible with CT DOT policies and/or inconsistent with UI's objectives for cost-effectively maintaining the reliability of the electric system, while minimizing adverse environmental effects, social impacts, and cost. Any of these alternatives also would require UI to perform work within and – as necessary – adjacent to the railroad corridor (e.g., work pads, access roads) to remove the existing 115-kV facilities from the catenary structures.

The following sections summarize each alternative, along with the rationale for UI's decision to eliminate it from consideration.

9.2.1 115-kV Overhead Lines on New ROW Alternative

This alternative would involve the acquisition of an entirely new ROW, not within or adjacent to the CT DOT corridor, to accommodate the 115-kV lines that would be removed from both the southern catenary structure support columns in Fairfield and all other catenary structures in Bridgeport. UI determined that this alternative would not be feasible.

An entirely new ROW for an overhead double- or single-circuit 115-kV transmission line arranged in a vertical configuration would typically require a permanent easement approximately 70-80 feet wide. For the 115-kV line rebuilds, such a new ROW would have to extend for at least 7.3 miles, following an alignment that would connect to the Eversource

electric transmission system in the vicinity of Sasco Creek, as well as to UI's Ash Creek, Resco, Pequonnock, and Congress Street substations. UI would have to acquire an estimated 60-70 acres of new easement and, within that easement, would have to remove any incompatible uses (e.g., homes, commercial buildings, trees). Given the density of urban/suburban development in the southern Fairfield-Bridgeport area, this alternative would result in unacceptable environmental and social impacts and costs.

9.2.2 115-kV Underground Cable Configuration Alternatives

Introduction

The vast majority of transmission lines in Connecticut (as well as in the United States overall) are overhead. However, underground transmission systems may warrant consideration when overhead lines are not practical or cost-effective due to environmental or social impacts, constructability issues, and regulatory requirements. Such underground transmission systems consist of buried electric cables and splice chambers (which are required at specific intervals along a cable route).

As part of the evaluation of options for rebuilding the 115-kV lines, UI assessed the economic and environmental viability of rebuilding all the 115-kV circuits presently located on the catenary structures in an underground configuration. Using an underground configuration, UI estimated that the cable system would consist of cross-linked polyethylene (XLPE) cable, contained within a polyvinyl chloride (PVC) conduit placed in a concrete-encased duct bank. One XLPE cable system would be required for each of the 115-kV circuits. Underground cable installation typically requires the excavation of a trench, approximately 8-10 feet deep and 5 feet wide. This generally requires a minimum 30-foot-wide work area for the cable duct bank construction. The cable conduits must be encased in high-strength concrete for mechanical support and the trench backfilled with flowable thermal backfill (FTB) that serves to disperse the heat generated by the cables.

For each 115-kV circuit, the system also would require buried concrete splice chambers, where the underground cable sections would be spliced together. The splice chambers (each of which requires a typical excavation of approximately 12 feet wide by 12 feet deep and 28

feet long) would be spaced at intervals of approximately 1,800 to 2,500 feet along the transmission cable route.

As part of the analysis of undergrounding the 115-kV lines, UI reviewed not only the characteristics of the Project area, but also available data regarding other 115-kV lines that have recently been installed underground in Connecticut[62] and the CSC's life cycle studies[63] of overhead and underground electric transmission lines. The CSC studies include comparative information on overhead and underground transmission lines, not only regarding costs, but also general environmental impacts and permit requirements.

The most recent CSC study (*Life-Cycle 2017*, issued October 11, 2018), includes information comparing single-circuit 115-kV overhead lines (supported on steel delta monopoles) and underground single-circuit 115-kV XLPE cables. For comparison purposes, the CSC study found an underground single-circuit line to be significantly more costly to design, build, and permit than an overhead 115-kV line (approximately $15.5 million/mile for underground vs. $3.7 million/mile for overhead). The average annual costs to operate and maintain underground lines (approximately $17,240/circuit mile) was also determined to be greater than similar costs for an overhead circuit (approximately $14,481/mile).[64]

UI used the CSC study as a comparative guide, but also took into consideration its historical experience in building and operating underground transmission lines in southern Connecticut, as well as the particular characteristics of the CT DOT railroad corridor and the Project area in general.

Underground 115-kV Lines within CT DOT Corridor

UI reviewed the potential for rebuilding the 115-kV circuits underground, within the railroad corridor, primarily on CT DOT property where space is available. However, such an

[62] Recently, underground 115-kV XLPE lines were installed as part of Eversource Energy's Greenwich Substation and Line Project and Greater Hartford Central Connecticut Reliability Project (both installed in 2019-2020).

[63] Pursuant to Conn. Gen. Stat. § 16-50r(b), the CSC is required to prepare and publish information on transmission line life cycle costs every five years. Life cycle cost reflects the estimated capital cost and maintenance cost of a project over its estimated useful life.

[64] The Life Cycle 2017 report reflects costs over prior years and current dollars at that time (not adjusted to 2021).

underground alternative would not be consistent with CT DOT policies regarding planned efforts to improve customer service on the New Haven Line, which include increasing train speeds and, as such, adding supporting infrastructure like catenary structures, track sidings, bridge spans, and wayside equipment.

As part of the CSC's proceeding regarding UI's Milvon to West River Railroad Transmission Line 115-kV Rebuild Project (CSC Docket 508), CT DOT submitted comments to the CSC regarding the "all underground alternative" within the railroad corridor that UI considered, but eliminated from consideration, for that project. CT DOT's comments on Docket 508, as reproduced below, are equally applicable to this Project:

> Application Section 9.2 Alternatives Reviewed but Eliminated considered an "all underground configuration" but ultimately eliminated it and the Department concurs with that determination. The Department has previously testified that no longitudinal underground utility occupations are permitted within the ROW. Only transverse underground crossings are allowed. The railroad dates back to the mid-1800's and CBYD is not applicable and requires the hand digging down to at least 4 feet at every excavation point adding time, cost and impact to railroad operations. There are numerous facilities within the ROW (both railroad and private) which would interfere with, or potentially be damaged by an underground transmission line installation. Furthermore, as mentioned above, our service growth demands that we preserve as much of the ROW for our expansion needs.
>
> (CT DOT comments to the CSC in Docket 508, June 10, 2022)

Moreover, for this Project, even if CT DOT would allow co-occupancy within the railroad corridor, in locations where the corridor is narrow or the tracks are elevated above grade, UI would not be able to install the cable system on CT DOT property. In such locations, UI would have to acquire new easements from property owners to install the cable system or, if space is available, would have to align the cable system within road ROWs adjacent to the CT DOT corridor. Further, in areas where the railroad spans roads or watercourses (e.g., Mill River), UI would have to install the cable system using a trenchless technology, such as jack and bore or horizontal directional drilling (HDD), which would require temporary staging areas on either side of each crossing.

Because this "all underground" alternative along the CT DOT corridor would not be consistent with CT DOT policy, would require difficult construction adjacent to the New Haven Line, and would be more costly than any overhead 115-kV rebuild option, UI eliminated this alternative from consideration.

Underground 115-kV Lines within Public Road ROWs

UI considered, but also eliminated, an alternative that would involve rebuilding the 115-kV lines underground, primarily within road ROWs, between catenary structure B648 and Congress Street Substation. Any such route must necessarily connect the lines from an overhead-to-underground transition at or near catenary structure B648S and would need to connect to UI's Ash Creek, Resco, and Congress Street substations.

For the purposes of this analysis, UI assumed that the 115-kV lines located on the railroad catenary structures near the Pequonnock Substation would be rebuilt overhead and connected to the new Pequonnock Substation, as detailed in UI's Pequonnock Substation Rebuild Project (CSC Docket 483). Therefore, this underground alternative would connect to these rebuilt 115-kV overhead lines via underground-to-overhead (and vice versa) transition structures, which would be located along each of the two 115-kV circuits near Pequonnock Substation. East of the Pequonnock Substation transition structures, under this alternative, the Project 115-kV lines would extend in an underground cable configuration to Congress Street Substation, primarily under Water Street.

However, because there are no straight-line roads that would provide a direct path between catenary structure B648S and Congress Street Substation, any underground cable system would have to follow numerous State and local highways or extend for short distances across private/public property to reach the road system. For example, because catenary structure B648S is not located near any roads, the underground cable would have to extend from an overhead-underground transition at that structure, then traverse east within the back yards of homes on South Gate Lane to Westway Road. The cable route then could extend south within Westway Road before turning east onto Pequot Avenue and following Pequot Avenue to the Post Road (U.S. Route 1).

The cable system could potentially be aligned within Post Road, through Fairfield's central business district, and continuing east across Ash Creek, allowing an underground connection to Ash Creek Substation from the south via Poland Street. From Ash Creek Substation, the underground cable system could follow Fairfield Avenue to State Street, but then would have to be aligned along a varied network of local roads on both sides of the CT DOT corridor, including from State Street to Howard Avenue (to connect to the Resco Substation tap via an underground-overhead transition structure) to Railroad Avenue. In the vicinity of the Pequonnock Substation where the 115-kV circuits will be rebuilt overhead, the underground cable system would have to be aligned along Railroad Avenue to connect to the transition structures on the west side of the overhead segment. From the eastern transition structures, the underground cable system would be aligned along Water Street to connect to Congress Street Substation.

Trenchless crossings, involving HDD or an equivalent method, would be required to extend the cable system beneath the Mill River and Ash Creek. In addition, because the cable system would be installed primarily beneath roads containing other buried utilities (such as water, sewer, storm sewer, gas), it is likely that in some locations, the cable system, particularly the splice chambers, would have to be aligned outside of the road ROWs, requiring UI to acquire permanent easements. UI's existing Ash Creek and Congress Street substations also would have to be modified to accommodate the 115-kV underground line entries.

However, any underground transmission cable system alignment within the Fairfield-Bridgeport area would face constraints because of the number of underground utilities that already occupy space beneath the State and local road network. Examples are not only subsurface potable water, sanitary sewer, natural gas, and stormwater collection systems, but also the buried 345-kV Middletown-Norwalk electric transmission cable that was installed in the mid-2000s. As a result of the need to maintain space between any UI 115-kV cables and these utilities (both for construction and operational purposes), it is likely that in various areas, the 115-kV cables would have to be located outside road ROWs on adjacent private properties.

Further, because no roads provide a straight line route between catenary structure B648S and Congress Street Substation, UI estimated that this alternative would be a minimum of approximately 1.4 miles longer than the proposed overhead route along or near the CT DOT railroad corridor.

Such an alignment would be cost-ineffective and more time-consuming to construct and would result in extensive social, environmental, and land use disruptions in terms of traffic congestion, noise, and other impacts.

9.3 OVERHEAD TRANSMISSION LINE REBUILD ALTERNATIVES

UI initiated analyses of options for rebuilding the 115-kV lines along the railroad corridor more than six years ago. During the Project's conceptual engineering (performed in 2018), UI identified and evaluated four primary overhead transmission alternatives for resolving the structural integrity issues associated with the existing alignment of the existing 115-kV lines on top of the railroad catenary structures/bonnets between catenary structure B648S and Congress Street Substation. These four general alternatives, which varied based on location along the railroad corridor, included:

- Alternative 1: Install new double-circuit monopoles to support the 115-kV lines that are presently located on both the north and south catenary structure bonnets (Bridgeport), with the new monopoles installed within or directly adjacent to CT DOT property.

- Alternative 2: Install single-circuit monopoles, to support the 115-kV lines that are located either only on the southern catenary structure bonnets (Fairfield) or on both the north and south bonnets (Bridgeport), with the new monopoles to be located within or directly adjacent to the CT DOT property.

- Alternative 3: In Bridgeport, where both 115-kV circuits are supported on the railroad catenary structures, rebuild one 115-kV circuit on new single-circuit monopoles, making structural modifications to the catenary structures / bonnets to allow the continued support of the other circuit.

- Alternative 4: Rebuild the existing catenary structures / bonnets completely to correct all structural deficiencies and thus to allow the 115-kV lines to remain on the railroad support structures.

9.3.1 Alternatives 3 and 4: Eliminated from Consideration

UI's analyses determined that to implement either Alternative 3 or Alternative 4, extensive structural modifications to upgrade the existing railroad catenary structures and bonnets would be required. Compared to Alternatives 1 and 2, either of these options would involve significantly higher costs (on a 200% order-of-magnitude), as well as an extensive construction program, which would have to be scheduled and coordinated with CT DOT / MNR.

Moreover, maintaining the 115-kV lines on the railroad catenary structures would be inconsistent with CT DOT's current plans to improve railroad service and would continue to hamper CT DOT's maintenance of its railroad lines and equipment, which requires coordination with UI for transmission line outages. Likewise, maintaining the 115-kV lines on the catenary structures affects UI's line maintenance, which requires coordination with CT DOT to assure that the work does not interfere with rail operations. Alternatives 3 and 4 were eliminated from consideration as a result of the inconsistency with CT DOT and UI objectives, as well as the significant cost and constructability issues..

9.3.2 Hybrid Alternatives 1 and 2

After eliminating Alternatives 3 and 4, as well as underground options, UI conducted further engineering evaluations of Alternatives 1 and 2, each of which is applicable to portions of the 115-kV lines located on the railroad catenary support columns between catenary structure B648S and Congress Street Substation. These analyses evaluated factors such as:

- Electric transmission line design criteria (clearance between the conductors, the railroad tracks, and adjacent public/private properties; conductor blowout specifications; UI standard loading criteria and hurricane Category 3 criteria);
- The width of the CT DOT corridor adjacent to the MNR rail lines and the presence of constraints within the corridor, such as spur tracks;
- The need for additional permanent easements from adjacent landowners, in areas where the CT DOT corridor is not sufficiently wide to accommodate the new monopoles and maintain requisite conductor clearances;

- Cost; and
- Construction period (schedule).

For the Project, UI selected a hybrid of Alternatives 1 and 2, with the Fairfield portion of the Project proposed for location of single-circuit monopoles located on the south side of the MNR tracks (Alternative 2) and the Bridgeport portion of the Project consisting of a combination of double-circuit monopoles located north or south of the tracks (based on available space) and single-circuit monopoles located north and south of the CT DOT corridor (Alternatives 1 and 2).

9.4 SITE-SPECIFIC ROUTE AND CONFIGURATION VARIATIONS

After selecting the hybrid Alternative 1/2 as the preferred solution for rebuilding the 115-kV transmission lines between catenary structure B648S and Congress Street Substation, UI performed more detailed engineering analyses to further refine the Project design, taking into consideration the placement and configuration of the new monopoles. During this process, UI identified and examined options for the spacing and placement of the proposed monopoles, assessing in particular the required interconnections of the rebuilt lines to UI's existing substations, and the avoidance or minimization of impacts to environmentally or socially sensitive resources (such as inland and tidal wetlands and watercourse crossings, train stations, and other land uses). As part of the more detailed design process, UI also consulted with State, Fairfield, Bridgeport government officials, investigated environmental resources in the Project area, and performed real estate analyses to verify property boundaries between the CT DOT railroad corridor and adjacent public/private landowners.

As a result of these studies and consultations, UI identified six locations along the proposed route that merited further analyses of structure-specific transmission line routing variations or configuration options. At each of these locations, several options were evaluated, factoring in cost, constructability, environmental resources, land uses, real estate, and future operation and maintenance requirements.

Table 9-1 identifies each of these locations, by municipality and structure number; describes the rationale for the additional analyses; compares the options considered; and describes the preferred solution. The current design of the proposed Project incorporates the preferred options, as identified for each of these variations, and reflects the placement and configuration of the proposed monopoles to minimize environmental and social impacts to the extent practical.

Table 9-1: Summary of Route and Configuration Variations

Municipality / Variation	Reason for Variation	Within CT DOT Corridor (Y or N)	Options Considered	Recommendation
Fairfield				
Southport Train Station	A restaurant at the train station abuts the tracks	Y (But additional easements from abutting landowners would be required)	*Option 1*: Maintain the 115-kV circuit adjacent and parallel to the MNR tracks, transferring the MNR signal wires to new monopoles P659S and P660S. The new 115-kV conductors would span over the restaurant building and an outdoor dining area. *Option 2*: Align the new 115-kV monopoles south of the restaurant, diverging from the CT DOT corridor. This option would require UI to acquire more new easement acreage from the owners of property abutting the CT DOT corridor, as well as more vegetation clearing. The MNR signal wires would be transferred to new monopole P659S.	Option 1: This option limits vegetation clearing and the need for an additional easement. Further, after consultation with the Town of Fairfield, UI agreed to increase span lengths from 300 to 600 feet in this location to avoid impact to the restaurant's food delivery area.
Structure P662 to P667 (Pequot Avenue between Old Post Road and U.S. 1)	Multiple residences and outbuildings (garages, sheds) abut the CT DOT corridor in the area off Pequot Avenue between the Old Post Road and U.S. Route 1	Y/N (Both Options would require additional easements from abutting landowners. Option 2 installs a pole on private property.)	*Option 1*: Align the rebuilt 115-kV line on the north side of the MNR tracks to eliminate impacts to residences on the south side of the rail lines. This option would include two crossings of the four MNR rail lines. Between Structures 662 and 666A, the existing 1130 Line (presently located on single-circuit monopoles on the north side of the tracks) would be relocated to new monopoles farther to the north. The rebuilt 1430 Line would be transferred to the existing monopoles. *Option 2*: Install the new monopoles for the 1430 Line on the south side of the MNR tracks, requiring tree removal between the tracks and abutting residential properties.	Option 2: This option will avoid the need for two crossing or the railroad tracks. Longer spans (400-600 feet) will be used in this area to minimize the impacts to residential properties.
Fairfield Train Station	At the train station, a restaurant and ticketing building abut the railroad tracks.	Y/N (Option 1 would require permanent easements from the Town of Fairfield, while Option 2 would stay within the CTDOT Corridor)	*Option 1:* Align the 115-kV monopoles to the south of the tracks, avoiding the ticketing building and restaurant. This option would require aligning the monopoles on the south side of Carter Henry Drive. *Option 2*: Maintain the alignment of the rebuilt 115-kV line parallel and adjacent to the MNR tracks, with the conductors spanning the building.	Option 2: During consultations with the Town of Fairfield, the Town indicated a preference for keeping the rebuilt 115-kV lines as close to the railroad tracks as possible.
Bridgeport				
Resco Tap (Intersection of Howard Avenue and Railroad Avenue) to Structures P756N/P756S (East of I-95 crossing adjacent to Garden Street and South Avenue)	Significant underground utilities and urban development.	N	*Option 1:* Align the rebuilt 115-kV lines on the north side of Railroad Avenue, an area characterized by various major underground utilities and residential land uses. *Option 2:* Align the rebuilt 115-kV lines on the south side of Railroad Avenue, in a more industrial area.	Option 2: Due to the presence of existing underground utilities and residential development north of Railroad Avenue, UI proposes to align double-circuit monopoles on the south side of Railroad Avenue. In addition, the City of Bridgeport prefers the rebuilt lines to be located in this more industrial area.

Municipality / Variation	Reason for Variation	Within CT DOT Corridor (Y or N)	Options Considered	Recommendation
Structure P756S to P760N (East of second I-95 crossing)	In this location, various buildings are situated close to the elevated railroad tracks and along both sides of Railroad Avenue.	N	Option 1: Separate the two circuits onto single-circuit monopoles, with the northern circuit diverging from the CT DOT corridor to an alignment south of and parallel to I-95 before turning south near the State Route 8/25 ramp to rejoin the CT DOT railroad corridor. *Other Options:* All other options in this congested area would require the 115-kV conductors to span buildings.	Option 1: This option will avoid spans of the rebuilt 115-kV lines over buildings.
Structure P774S to P783N (Water Street)	Congested urban area and proposed streetscape improvements of Water Street	N	Option 1: Install three monopoles in the median of Water Street. Option 2: Install new monopole structures on the east side of Water Street, west of the CT DOT corridor. Option 3: Install new monopole structures on the east side of the CT DOT corridor. Option 4: Install structures on the west side of Water Street, away from the railroad corridor. Option 5: Underground cable segment (double-circuit XLPE cable) within Water Street. This option would be about 14-20 times more expensive than an overhead option. Option 6: Underground cable segment (double-circuit XLPE cable) installed via HDD beneath the Pequonnock River. This option would be approximately 15-30 times more expensive than an overhead option.	Option 3: This option maintains an overhead configuration for the re-built 115-kV lines but will align the transmission lines farther from Water Street and the proposed projects that Bridgeport plans in that area.

9.5 JUSTIFICATION FOR THE SELECTION OF THE PROPOSED PROJECT

After considering various options for rebuilding the 115-kV lines between the catenary structure B684S and Congress Street Substation, UI concluded that the proposed Project, to be aligned within the CT DOT railroad corridor to the extent practical, would best meet the Company's objectives for providing a cost-effective solution for maintaining the reliability and resiliency of the transmission grid, while avoiding or minimizing impacts to environmental resources, cultural resources, and land uses. In addition, the Project is consistent with CT DOT objectives for continuing the historical co-location with UI's facilities, while allowing the safe operation and maintenance of both the railroad and transmission lines.

In particular, the proposed Project:

- **Maximizes the use of CT DOT's long-established linear railroad corridor and minimizes the need to acquire additional property for utility use.** The continued co-location of the 115-kV lines primarily within the railroad corridor will be consistent with Federal policy regarding linear energy facility siting, as set forth in the Federal Energy Regulatory Commission's *Guidelines for the Protection of Natural, Historic, Scenic, and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities*.[65]

- **Minimizes environmental and land use impacts.** Although unavoidable temporary effects and minor long-term impacts to site-specific environmental resources and land uses will occur as a result of the construction and operation of the rebuilt 115-kV transmission lines, the development of the Project along or near existing utility and transportation corridors will be consistent with State and local land use policies and long-term goals for upgrading the electric transmission grid, and will minimize long-term adverse environmental impacts to the maximum extent practical.

- **Achieves a Cost-Effective Solution.** The proposed Project represents a cost-effective solution for accomplishing the required 115-kV rebuilds in the densely developed southern Fairfield and Bridgeport areas.

[65] Federal Power Commission, Order No. 414, Appendix A, Docket No. R-365 (November 27, 1970).

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10. ACRONYMS AND GLOSSARY OF TERMS

Acronym	Description
115-kV:	115-kilovolts or 115,000 volts
ACSS:	Aluminum Conductor Steel Supported, a common type of overhead conductor
AGH:	Above Ground Height
AGL:	Above Ground Level
ANSI:	American National Standards Institute
APA	Aquifer Protection Area
Application:	Application to the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need
BMP:	Best Management Practices
CCMA:	Connecticut Coastal Management Act
Certificate:	Certificate of Environmental Compatibility and Public Need (from the Connecticut Siting Council)
CIRCA:	Connecticut Institute for Resiliency and Climate Adaptation
CJL:	Coastal Jurisdictional Line
Conn. Gen. Stat.:	Connecticut General Statutes
Council (or CSC):	Connecticut Siting Council
CT DEEP:	Connecticut Department of Energy and Environmental Protection
CT DESPP:	Connecticut Department of Emergency Services and Public Protection
CT DOT:	Connecticut Department of Transportation
CT DOT Corridor:	Property owned by CT DOT encompassing the railroad tracks and areas both north and south of the tracks
CONVEX:	Connecticut Valley Exchange
CYD:	Cubic yard
D&M Plan:	Development and Management Plan (required by the Connecticut Siting Council)
dBA:	Decibel, on the A-weighted scale
dbh:	Diameter breast height (tree trunk measurement)
DESPP:	Department of Emergency Services and Public Protection
ECC:	Electric Control Center (UI)
EMF:	Electric and magnetic field
EMF BMP Document:	Electric and Magnetic Fields Best Management Practices for the Construction of Electric Transmission Lines in Connecticut prescribed by the Connecticut Siting Council
EPRI:	Electric Power Research Institute
FAA:	Federal Aviation Administration
FEMA:	Federal Emergency Management Agency
FIRM:	Flood Insurance Rate Map

Acronym	Description
HDD:	Horizontal Directional Drill
Hz:	Hertz (frequency)
ICES:	International Committee on Electromagnetic Safety
ICNIRP:	International Commission on Non-Ionizing Radiation Protection
IEEE:	Institute of Electrical and Electronics Engineers
iPac:	Information for Planning and Consulting (online USFWS review tool)
ISO-NE:	Independent System Operator – New England
kV:	Kilovolt; Equals 1,000 volts
kV/m:	Kilovolts per meter
LE:	Linear foot (feet)
LHD:	Local historic district
MCF:	Municipal Consultation Filing, part of the Connecticut Siting Council Application process
mG:	Milligaus (measurement of magnetic flux density)
MNR:	Metro-North Railroad
NAAQS:	National Ambient Air Quality Standards
NAVD88:	North American Vertical Datum 1988
NDDB:	Connecticut Natural Diversity Data Base (CT DEEP)
NERC:	North American Electric Reliability Council, Inc. (initially, the National Electric Reliability Council)
NESC:	National Electrical Safety Code
NRCS:	Natural Resources Conservation Service (United States Department of Agriculture)
NRHP:	National Register of Historic Places
OPGW:	Optical groundwire (a shield wire containing optical glass fibers for communication purposes)
Permanent Easement:	Pertains to the transmission line structures, wire clearances, access, vegetation management, limitations on structures that can be placed on the easement (e.g., buildings, pools,), and protection from excavation, all as needed for UI's installation, maintenance, operation, and repair of the utility infrastructure
POCD:	Plans of Conservation and Development
Project:	Fairfield-Congress Railroad Transmission Line 115-kV Rebuild Project
Project Area:	Collectively, the location of the work both within and outside of the CT DOT corridor
RCSA:	Regulations of Connecticut State Agencies
ROW:	Right-of-way
SCADA:	Supervisory Control and Data Acquisition System
SCENIHR:	Scientific Committee on Emerging and Newly Identified Health Risks
SF	Square Feet
SHPO:	State Historic Preservation Office
SRHP:	State Register of Historic Places
SWPCP:	Stormwater Pollution Control Plan

Acronym	Description
UI, Company:	The United Illuminating Company
USACE	United States Army Corps of Engineers
USGS:	United States Geological Survey (U.S. Department of the Interior)
WHO:	World Health Organization
XLPE:	Cross-linked polyethylene (cable)
XS:	Cross-section (drawing)