APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED

to the

CONNECTICUT SITING COUNCIL

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

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Prepared By:

THE UNITED ILLUMINATING COMPANY

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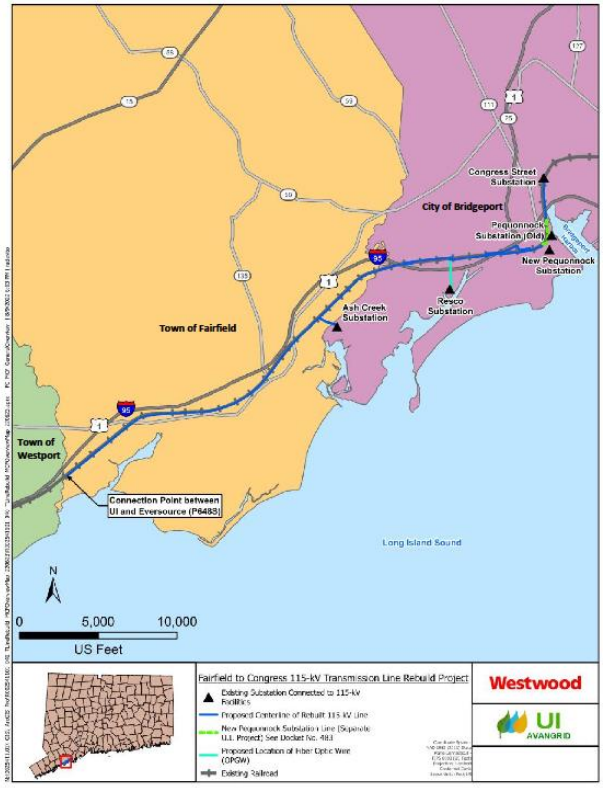
FAIRFIELD TO CONGRESS RAILROAD TRANSMISSION LINE 115-kV REBUILD PROJECT
TOWN OF FAIRFIELD AND CITY OF BRIDGEPORT

EXECUTIVE SUMMARY

Proposed Project: To maintain the reliability and improve the resiliency of the bulk electric transmission grid in Fairfield County, the State of Connecticut, and 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.

Figure ES-1: Project Area



Referred to as the **Fairfield to Congress Railroad Transmission Line 115-kV Rebuild Project (Project)**, UI proposes to remove the existing, approximately 60-year-old 115-kV lines and bonnets that are presently located on 157 CT DOT-owned railroad catenary structures and rebuild the transmission lines on 102 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, located within the CT DOT corridor just east of Sasco Creek in Fairfield, to UI's Congress Street Substation, adjacent to the west 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. Figure ES-1 identifies the general Project area.

The Project is part of UI's long-term plan for relocating its electric transmission facilities off the railroad catenary structures along the CT DOT corridor in Fairfield and New Haven counties and is consistent with recent Federal commitments to modernize the nation's power grid to facilitate the transmission and delivery of clean and resilient energy to consumers. The Project is subject to the jurisdiction of the Connecticut Siting Council (Council, CSC) and other State and Federal agencies.

Need for the Project: The Project will replace legacy electric system equipment and will upgrade the 115-kV lines to current National Electrical Safety Code and Company standards, including the design of transmission facilities to withstand extreme weather conditions (such as hurricane Category 3 wind loads). In addition, the Project will separate the railroad and transmission line facilities, thereby allowing both UI and MNR to operate, maintain, and adapt 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 is also 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 along the CT DOT railroad corridor.

Project Area: The Project area extends along the CT DOT railroad corridor from Catenary Structure B648S east to Congress Street Substation. All UI's existing single-circuit 115-kV lines are aligned on CT DOT property. These transmission facilities are located 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 0.23-mile UI ROW between the CT DOT corridor and Ash Creek Substation includes two 115-kV lines, supported in a double-circuit configuration on three lattice steel towers. Collectively, the 115-kV lines in the Project area provide electric power to 63,800 UI customers via connections to Ash Creek, Pequonnock, and Congress Street substations.

Resco Substation connects to the UI 115-kV system via a line tap (referred to as the Resco Tap) at existing Structure B745S, located south of the CT DOT railroad corridor near Howard Avenue. The tap line delivers electricity to the transmission grid from the WIN Waste Innovation Bridgeport[1] waste-to-energy plant.

History/Characteristics of the Railroad Corridor and Existing UI Facilities: In the Project area, the 7.6-mile[2] CT DOT-owned corridor includes four MNR tracks, which provide passenger service with stops at four MNR train stations: 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.

Railroad catenary structures, consisting of lattice posts with a truss over the railroad, span the tracks at intervals of approximately 300 feet. 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.

The age of UI's infrastructure within the CT DOT corridor varies. In the 1940s, UI added infrastructure to the railroad catenary structures generally between Pequonnock and Congress Street substations, also installing a 215-foot-tall lattice steel tower that straddles the MNR tracks at the Bridgeport Train Station. At that time, the lines were 69 kV; UI modified the bonnets and upgraded the lines in this area to 115 kV in the 1970s.

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 Pequonnock Substation. In the early 1990s, to support a new 115-kV transmission line between Pequonnock Substation and Eversource Energy's Ely Avenue Substation in the City of Norwalk (referred to as the Pequonnock-Ely Project), UI added bonnets

[1] Formerly, Wheelabrator Technologies, Inc.

[2] Although the CT DOT railroad corridor in the Project area extends for approximately 7.6 miles, UI's 115-kV rebuild work for this Project will be along 7.3 miles of the corridor. This is because UI is in the process of building a new Pequonnock Substation in Bridgeport and, as part of that project, is rebuilding the 115-kV lines (removing the UI facilities from the railroad catenary structures and installing the lines on new monopoles) along approximately 0.3 mile of the CT DOT railroad corridor.

and transmission line infrastructure to some of the northern catenary structures and installed monopoles north of the MNR tracks between catenary structures 648 in Fairfield and 737 in western Bridgeport. 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.

Although only two 115-kV lines are aligned on the catenary structures or parallel the railroad tracks in any one location between Catenary Structure B648S and Congress Street Substation, UI identifies the transmission lines by six different circuit numbers (i.e., 1430, 1130, 91001-2, 91001-2, 8809A, and 8909B) to designate the line locations in relation to substation connections. Table ES-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 ES-1: Existing UI 115-kV Lines, by Line Number, Location, and Typical Existing Configuration

Location by Catenary Structure No, Tap, or Substation	**Circuit No. Designation/Location in Relation to MNR Tracks**	
	115-kV Line: North of Railroad Tracks	**115-kV Line: South of Railroad Tracks**
Catenary Structure 648 – Ash Creek Substation	1130 (Independent monopoles + eight bonnets on northern catenary support columns)	1430* (On southern catenary support columns)
Ash Creek Substation – Resco Tap (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)

NOTES:
Shading = Denotes the existing portion of the 1130 Line (supported on independent monopoles and eight bonnets) that 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 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.

As Table ES-1 illustrates, throughout Fairfield and in western Bridgeport, UI's 1130 Line is already located principally on monopoles aligned along the north side of the CT DOT corridor. UI does not propose modifications to this portion of the 1130 Line; Project activities in Fairfield and western Bridgeport will be situated on the south side of the CT DOT corridor.

Figures ES-2 and ES-3 are 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 Bridgeport (with UI 115-kV lines on top of both the north and south catenary support columns).

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

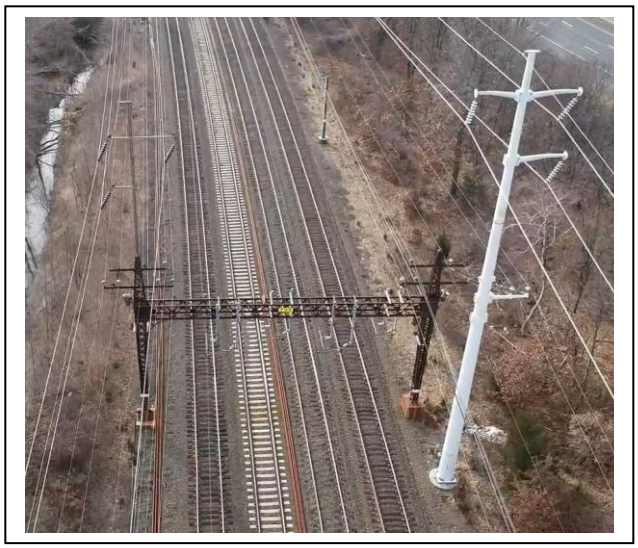
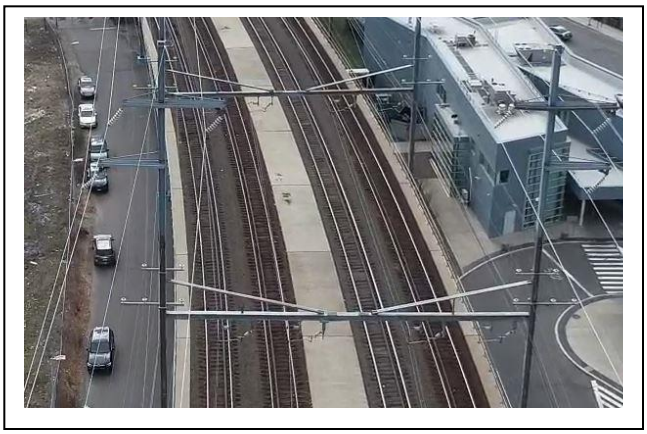


Figure ES-3: View of UI Infrastructure on North and South Catenary Structure Support Columns (Bridgeport)



The total width of the CT DOT-owned railroad corridor property varies, typically ranging from approximately 85 to 150 feet. Exceptions are where CT DOT owns more property adjacent to the railroad stations and in areas where the railroad tracks are elevated, where the width of the CT DOT corridor is narrower, coinciding with the elevated track area (e.g., in the vicinity of Railroad Avenue in Bridgeport, where the width of the CT DOT property associated with the elevated MNR tracks is generally approximately 60 feet).

The existing 115-kV lines situated atop the catenary structures and UI-owned bonnets are typically 60 to 80 feet above ground. 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. The double-circuit lattice steel towers along UI's ROW to Ash Creek Substation are approximately 100 feet tall.

Proposed Project: The Project will involve the following components:

- ***Rebuild the 115-kV lines presently located atop the railroad catenary support structures on independent, galvanized steel monopoles, in either single- or double-circuit configurations, and including new conductors and optical ground wire (OPGW)***. For approximately 5.1 miles from Catenary Structure B648S in Fairfield east to catenary structure B737 in Bridgeport, the existing 1430 and 91001-2 lines 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 existing 115-kV lines and infrastructure will be removed from both the north and south catenary columns; the double-circuit steel lattice tower that straddles the MNR tracks at the Bridgeport Train Station also will be dismantled and removed.

  The 115-kV lines will be rebuilt, on single-circuit monopoles, located south of the railroad tracks in Fairfield; in Bridgeport, the lines will be rebuilt mostly on double-circuit monopoles, located either north or south of the railroad tracks, depending on availability of space. 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.

- ***Connect the rebuilt 115-kV lines to UI's existing Ash Creek and Congress Street substations.*** UI will perform minor modifications inside the substations 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. In addition, UI will remove the 115-kV facilities (existing steel lattice towers, conductors, shield wire) along the UI ROW from the CT DOT corridor to Ash Creek Substation and will rebuild the two 115-kV lines on 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.*** Along the Resco Tap line, UI will replace the existing shield wire with new OPGW. One span of new conductor also will be installed near the CT DOT corridor to interconnect the rebuilt 115-kV lines to the Resco Tap line. Within Resco Substation, the OPGW will be installed via an underground connection.

- ***Decommission and remove UI's existing 115-kV facilities from the railroad catenary structures.*** UI will deenergize and remove the 115-kV lines, shield wire, and related infrastructure (bonnets, insulators, cross arms, and hardware) from the railroad catenary structures. Depending on the outcome of ongoing consultations with CT DOT/MNR, a small number of 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 lightning protection 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 102 new monopoles will be installed to support the rebuilt 115-kV lines.[3] The above-ground heights of the new 115-kV monopoles will generally range from approximately 95 feet to 145 feet above ground. However, taller structures (approximately 195 feet in height) will be required between Pequonnock and Congress Street substations to span both an Interstate 95 overpass and portions of the west bank of the Pequonnock River, following an alignment preferred by the City of Bridgeport to avoid Water Street and the train and bus stations.

UI plans to align the rebuilt 115-kV monopoles within the CT DOT corridor to the extent practical. In general, a 25-foot horizontal clearance is required between the new 115-kV conductors and adjacent objects and vegetation. However, because of site-specific constraints such as the narrow width and elevated nature of the CT DOT corridor in some locations, UI cannot install and operate the rebuilt lines entirely within CT DOT property while maintaining appropriate clearance distances between the 115-kV conductors and nearby land use developments / the CT DOT/MNR facilities. In such areas, UI will have to acquire new permanent easement on adjacent properties. Along the 0.23-mile UI ROW to Ash Creek Substation, UI also proposes to acquire additional permanent easement for the rebuilt 115-kV lines.

In total, UI proposes to acquire an estimated 19.25 acres of permanent easements, including 19.1 acres for the rebuilt 115-kV lines and 0.15 acre for permanent access to the lines. The proposed permanent easements, which total approximately 4.25 acres to the north and 15 acres to the south of the CT DOT corridor, would be acquired from private property owners and, in some locations, from the Town of Fairfield or the City of Bridgeport. An additional approximately 10 acres of temporary easements will be required to support Project construction activities.

[3] One additional monopole will be installed within Ash Creek Substation to support only OPGW. A total of 200 structures supporting the existing 115-kV lines (bonnets, lattice steel towers, other structures) will be removed.

Construction Activities: 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, which specifies certain non-standard construction methods and schedules, including the performance of Project tasks to avoid or minimize conflicts with rail operations.

UI anticipates that the Project will be constructed in four segments, 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: Existing Catenary Structure B648S to Ash Creek Substation.
- Segment 3: New Pequonnock Substation to Congress Street Substation.
- Segment 4: UI existing Structure TP735S to New Pequonnock Substation.

Along each segment, the construction of the rebuilt 115-kV lines typically 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. However, on all four segments, UI proposes to install certain structure foundations out of sequence in order to assure compliance with outage requirements and to perform cultural resource testing.

Separate crews will perform activities required to remove the existing UI infrastructure from the catenary structures, as well as to remove both other UI infrastructure within the CT DOT corridor and the lattice steel towers from the UI ROW that extends to Ash Creek Substation. Table ES-2 summarizes the general sequence of Project construction activities (the actual sequence of construction work may vary).

Temporary access roads will be required to reach most new monopole sites, 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.

Overall Project Schedule and Work Hours: UI anticipates that the rebuilt 115-kV lines will be in service by the end of May 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 hours will be determined based on consultations with CT DOT / MNR, taking into 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 necessary 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. 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.

Table ES-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
• Identify vegetation clearing limits as required
• 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 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.

Environmental Setting, Impacts, and Mitigation: The Project borders well-developed suburban and urban areas, extending for approximately 4.8 miles in Fairfield and 2.7 miles in Bridgeport (that is, approximately 7.3 miles along or near the CT DOT corridor and 0.23 mile along the UI ROW to Ash Creek Substation). In addition to the CT DOT railroad corridor, which has long been dedicated to linear transportation and utility purposes, 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 some 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. In addition, UI representatives consulted with various Federal and State environmental regulatory agencies. UI used the resulting baseline environmental information during the Project planning and design 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 UI ROW, 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 critical 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 typical construction activities (e.g., drilling for structure foundations) and the operation of construction equipment/vehicles; traffic congestion or detours due to construction activities; and potential inconvenience to railroad operations when rail outages are required.

The Project will result in impacts stemming from UI's acquisition of approximately 19.25 acres of new permanent easements, as well as the maintenance of the easements consistent with the safe and reliable operation of the overhead transmission lines. Project construction will result in the removal of a total of approximately 6.5 acres of trees, of which about 5.5 acres will be within UI's new permanent easement and 1 acre will consist of temporary construction easements. After the completion of Project construction, UI will manage the vegetation on the 5.5 acres of permanent easement in low-growth species, consistent with the operation of overhead transmission lines.

UI has designed the Project to avoid or minimize impacts to resources areas such as wetlands, watercourses, and floodplains.[4] For example, no new monopoles will be located in either wetlands or watercourses. Project construction will involve approximately 0.1 acre of temporary impacts to an intertidal area in Ash Creek (for access 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 of impact associated with the installation of a temporary access road across one unnamed inland stream along the CT DOT corridor.

[4] No vernal pools are located in the Project area.

In addition, along the edge of an inland wetland within the CT DOT corridor, UI proposes to establish a new permanent access road that will require an estimated 0.04 acre of permanent fill. No temporary access roads will be required in either tidal or inland wetlands. However, portions of three temporary work pads will be situated in wetlands, affecting approximately 0.1 acre of inland wetlands and 0.03 acre of tidal wetlands.

A total of 26 new monopoles will be located in 100-year floodplains and an additional nine monopoles will be installed in 500-year floodplains. However, given the size of these floodplains the effect of the monopoles on flood storage capacity will be negligible. Further, within floodplains within the coastal area, UI's structure foundations will be designed to account for sea level rise. In addition, permanent access roads to eight new monopoles will be located within 100 or 500-year floodplains; these permanent access roads are required for UI operation and maintenance purposes. UI proposes to install all the permanent access roads at grade, thereby avoiding any impacts to floodplain storage capacity.

The Project will result in alterations to the viewshed in the immediate vicinity of the CT DOT corridor and UI ROW to Ash Creek Substation. Based on the current Project design, the proposed new monopoles will be taller than most of the existing UI facilities and thus will potentially be more visible from certain locations near the railroad corridor. In general, the new structures and transmission circuits will not be introducing new prominent features, especially given the existing development and infrastructure associated with the CT DOT corridor, including the 80-foot to 120-foot-tall monopoles associated with the 1130 Line. Along the UI ROW to Ash Creek Substation, the three existing 1oo-foot-tall double-circuit lattice steel towers will be replaced with six monopoles (each approximately 115 feet tall), which also will modify views.

While the proposed monopoles are taller than the existing UI infrastructure being replaced along the railroad corridor, the increase in height allows for a greater separating distance between structures. This effect may also occur in some residential areas that 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 other similar locations where direct lines of sight exist at close distances, the new poles may become more prominent features within the viewscape.

UI commissioned analyses of cultural resources along the existing and proposed 115-kV line routes and in the Project vicinity. As a result of these analyses, various historic districts listed on the National Register of Historic Places/State Register of Historic Places (NRHP/SRHP) and portions of their contributing elements are located within 0.5 mile of the Project. The rebuilt monopoles will have a visual effect on these resources. UI also determined that certain proposed monopole locations require further archaeological examination to assess the potential for buried archaeological deposits. UI has been coordinating with the Connecticut State Historic Preservation Office (SHPO) regarding cultural resources and concurs with the SHPO's recommendations regarding the need for further analyses and mitigation.

Overall, 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 SHPO. 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, groundwater) generated during construction. Further, UI is continuing to coordinate with the SHPO regarding options for offsetting the indirect visual effect of the Project on historic resources. UI also has been routinely 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 UI's additional engineering design and constructability reviews; consultations with representatives of Fairfield, Bridgeport, along with Federal or State 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, SHPO, 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 MNR tracks means that the maximum EMF levels will generally shift away from the railroad 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 far below those recommended for the general public by international health-based standards. UI's proposed Project design reconfigures the 115-kV 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 the existing 115-kV lines and then identified and analyzed a range of alternatives, including No Action, line rebuild options on single-circuit and double-circuit monopoles or a hybrid thereof, underground cable systems, and 115-kV overhead configurations on entirely new ROW.

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, and 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, UI ROW, 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 uses in the densely-developed southern Fairfield and Bridgeport region.

Estimated Project Costs and Facility Service Life: The estimated capital cost for the siting, design, and construction of the Project is approximately $255 million. The Project transmission facilities are expected to have a service life of approximately 40 years.

Agency and Municipal Consultations: As part of the Project planning process, to date, UI has consulted with, and expects to continue to coordinate with various Federal, State, and local agencies, as well as with the public. The Council's Application process provides a formal avenue for agency and public input

regarding the Project. In addition, UI has an extensive Project outreach program, including a website, virtual open house, and video - all aimed at informing the public regarding the proposed 115-kV line rebuild work.

Further, pursuant to the Public Utility Environmental Standards Act, Connecticut General Statutes (Conn. Gen. Stat.) §16-50g et. seq., UI coordinated with representatives of both the Town of Fairfield and the City of Bridgeport in advance of the filing of this Application. On October 20, 2022, UI submitted to the chief elected officials of Fairfield, Bridgeport, and the Town of Westport[5] a Municipal Consultation Filing (MCF). The MCF, which was based on 115-kV line rebuild design information at the time, described UI's proposed Project plans and alternatives and presented information regarding environmental, cultural, and visual resources, as well as EMF. The MCF also included maps of the proposed Project route and nearby environmental and other resources, as well as engineering drawings (cross-sections) of both the existing locations of the UI facilities (to be removed) on the catenary structures and the proposed locations of the rebuilt 115-kV lines within or near the CT DOT corridor, as well as along the ROW to Ash Creek Substation.

After submitting the MCF, UI contacted municipal representatives to confirm receipt of the document and to offer to meet with each municipality to discuss the Project and review the MCF. During the 60-day MCF process and thereafter, UI also initiated various efforts to inform both the municipalities and the public about the Project, including meeting with Fairfield, Bridgeport, and Westport officials, as well as holding public information sessions, establishing a virtual open house, providing postcard mailings to abutters, and placing notices about the Project in local newspapers.

Specifically, UI created a Project website and in mid-January 2023, developed a Virtual Open House specifically for the Project. Recognizing continuing potential concerns about holding public gatherings as a result of COVID, the Virtual Open House design mirrors the format of an in-person open house. It includes a graphic of the typical open house set up and a video to guide participants through the Open House exhibits, which contain information regarding the Project (overview video), CSC process, Frequently Asked Questions and responses, Project Overview and Engineering, and Environmental and Community.

The Virtual Open House also features a registration with a place to include any comments or questions regarding the Project. UI also offered two Zoom appointment sessions in January 2023 to allow the public to ask specific questions or provide comments to UI Project representatives. In addition, at the request of the Town of Fairfield, UI held a public informational meeting about the Project in Fairfield on January 11, 2023. Similarly, UI held a public informational meeting in Bridgeport on January 23, 2023.

[5] In accordance with CSC requirements, UI provided a copy of the MCF to Westport officials because the westernmost portion of the Project is within 2,500 feet of the Fairfield-Westport border.

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1. PROJECT OVERVIEW AND NEED

1.1 PROJECT BACKGROUND, LOCATION, AND PURPOSE

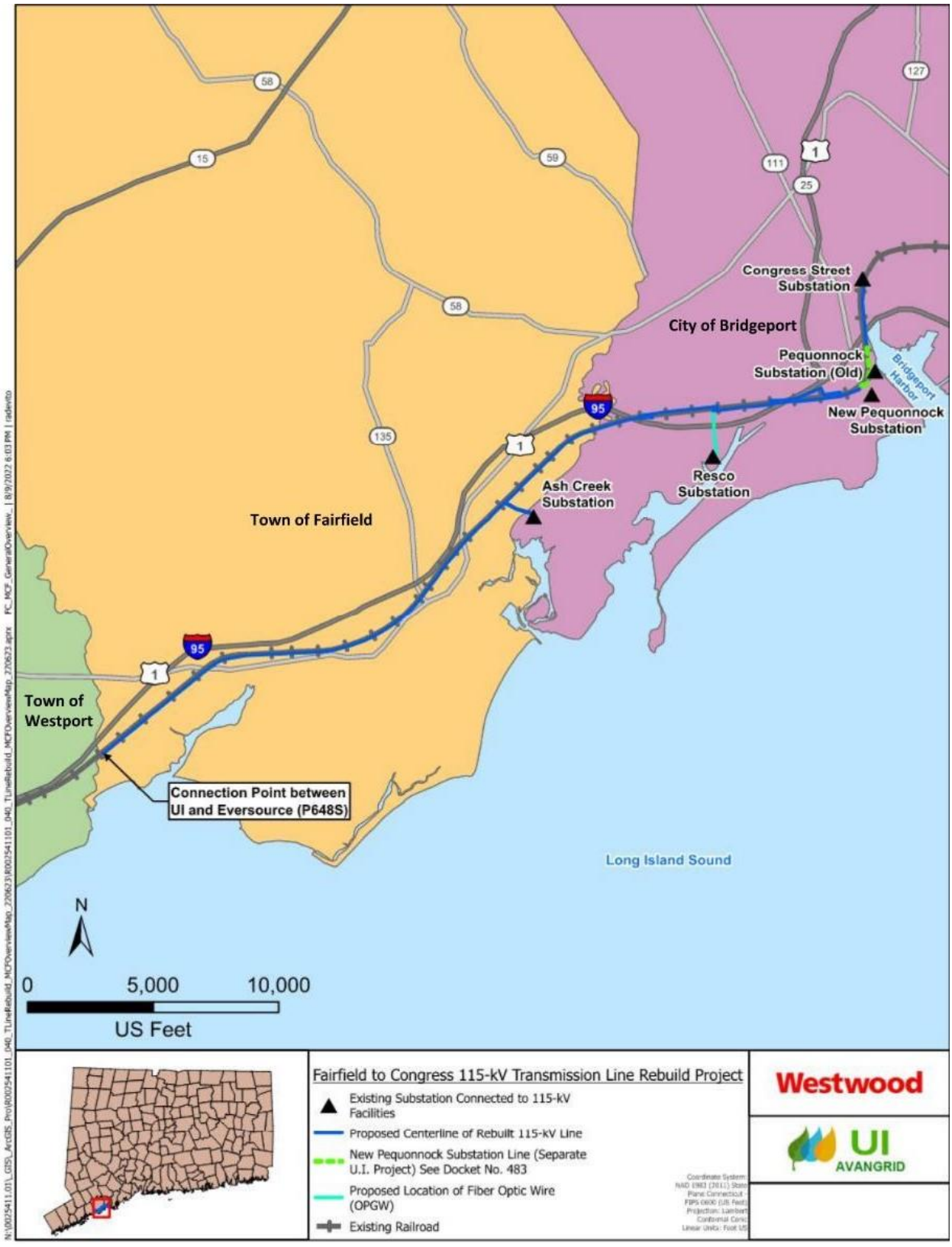
1.1.1 Project Overview

To maintain the reliability and improve the resiliency of the bulk electric transmission grid in Fairfield County, the State of Connecticut, and 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. Most of 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 improvements will remove the existing 115-kV lines and UI facilities that are presently located on the CT DOT-owned railroad catenary structure support columns, as well as other UI transmission line infrastructure within the CT DOT corridor (e.g., a steel lattice tower) and rebuild the transmission lines on new double- or single-circuit self-supporting steel monopoles, aligned generally parallel to the MNR tracks and predominantly within the CT DOT-owned corridor. The Project will extend approximately 7.3 miles 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), [6] to UI's Congress Street Substation, which is situated 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) extending from the CT DOT corridor to UI's Ash Creek Substation in Bridgeport and will connect the rebuilt 115-kV lines to UI's existing Resco, Pequonnock, and Congress Street substations (refer to Figure 1-1).

[6] 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 1-1: General Project Location



Overall, the Project will upgrade the 115-kV lines to current national standards, along with UI wind and ice load design standards. The Project will also replace 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. Currently, because the existing 115-kV lines are co-located on the railroad catenary structures, any operation and maintenance work requires extensive coordination between UI and MNR 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.[7]

The proposed Project is subject to the review and approval of the Connecticut Siting Council (Council or CSC). Accordingly, UI submits to the Council this *Application for a Certificate of Environmental Compatibility and Public Need* (Application) for the proposed Project.

1.1.2 Project Area and History of the CT DOT Railroad Corridor and UI Facilities

General Project Area

Along and in the vicinity of the CT DOT railroad corridor from Catenary Structure 648 in Fairfield east to Congress Street Substation in Bridgeport (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 atop 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 located 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 (referred to as the Resco Tap) at existing Structure B745S, which is located directly south of the CT DOT railroad corridor just east

[7] To date, UI has removed its 115-kV lines from the railroad catenary structures along approximately 6 miles of the CT DOT corridor in Bridgeport, the Town of Stratford, and City of Milford. In New Haven County, UI will 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 CSC for this Milvon-to-West River project (CSC Docket No. 508). The CSC approved the project in August 2022.

of Howard Avenue. The tap line delivers electricity to the transmission grid from the WIN Waste Innovation Bridgeport[8] waste-to-energy plant.

Historical Overview: Railroad Corridor and UI Facilities

Between the Westport-Fairfield boundary and Congress Street Substation, the CT DOT owns the approximately 7.6-mile corridor within which four MNR tracks are located. Four train stations are located along this portion of the railroad corridor: 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.

For the electric operation of the trains, railroad catenary structures span the tracks at intervals of approximately 300 feet. The 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) and to provide electric power to the rail system (i.e., the pantograph system on which the electric trains operate). The catenary structures consist of lattice posts with a truss spanning over the railroad.

In total, 157 catenary structures are located along the CT DOT corridor in the Project area. The catenary structures are numbered, pursuant to a CT DOT system, and in the Project area range from Catenary Structure 648 in western Fairfield to Catenary Structure 784 adjacent to Congress Street Substation.

Between Catenary Structure 648 and Congress Street Substation, the CT DOT corridor varies in width, but generally ranges from approximately 85 to 150 feet. However, portions of the corridor, such as adjacent to Railroad Avenue in Bridgeport, where the rail lines are elevated above grade, are narrower (approximately 60 feet wide). CT DOT owns additional property, used for parking, adjacent to the Southport, Fairfield Center, and Fairfield Metro railroad stations.

Under lease and maintenance agreements between UI and CT DOT / MNR,[9] UI can construct, maintain, and operate 115-kV lines within the railroad corridor. The UI infrastructure includes UI-owned columns, referred to as bonnets, which are installed on top of the railroad catenary supports. The bonnets support UI's 115-kV conductors, shield wires, insulators, and hardware: herein, these are referred to collectively as "UI's 115-kV facilities".

[8] Formerly, Wheelabrator Technologies, Inc.
[9] UI's lease agreement for the ROW is with CT DOT, whereas its maintenance agreement is with MNR.

UI's existing transmission facilities within the CT DOT vary in age. For example, in the early 1940s, UI interconnected its New Haven and Bridgeport transmission systems via two 69-kV lines that were placed on top of the north and south railroad catenary support columns. In the Project area, these 69-kV lines were installed along the CT DOT corridor generally between the existing Pequonnock and Congress Street substations. In this area, in addition to the use of the railroad catenaries to support the 69-kV lines, UI also installed a double-circuit lattice steel tower, which straddles the MNR tracks at the Bridgeport Train Station. In the 1960s, the 69-kV lines were upgraded to 115 kV. In the mid-1990s, UI replaced the 115-kV facilities along the CT DOT corridor in the vicinity of Congress Street Substation and the Pequonnock River (catenary structures B778 through B790) as part of the Bridgeport Viaduct Project (CSC Petition No. 280) to allow for reopening the Peck Drawbridge in Bridgeport.

Other UI facilities in the Project area date from the 1960s and later. For instance, all the UI infrastructure on the southern catenary support structures between Catenary Structure 648 in Fairfield and Pequonnock Substation was installed as 115-kV in the 1960s and thus is approximately 60 years old. In the early 1990s, UI installed a new 115-kV transmission line (referred to as the 1130 Line) within the CT DOT corridor, north of the MNR tracks. This 115-kV line, which was required to provide additional transmission service to southwest Connecticut, extends from Pequonnock Substation west to The Connecticut Light and Power Company dba Eversource Energy's (Eversource's) Ely Avenue Substation in the City of Norwalk. Referred to as the Pequonnock-to-Ely Project, this transmission line was approved by the CSC in 1991.[10]

For the portion of the Pequonnock-Ely Project in Bridgeport and Fairfield, UI installed the 1130 Line along the northern side of the CT DOT corridor between Pequonnock Substation and the interconnection of the UI and Eversource transmission systems at the Westport-Fairfield border. In this area, the 1130 Line is supported on a combination of single-circuit monopoles and bonnets/infrastructure added to the northern catenary support columns. Typically, the portion of the 1130 Line in Fairfield and western Bridgeport is supported on monopoles, whereas the eastern portion of the 115-kV line in Bridgeport is situated on top of railroad catenary structures. Exceptions are where the 115-kV lines are supported on monopoles, as required for longer spans, such as over two crossings of Interstate 95 (I-95) in Bridgeport, as well as in eight locations in Fairfield where the 1130 Line is supported on the northern railroad catenary support columns.

[10] CSC Docket No. 141. Eversource constructed and currently operates the portion of the 1130 Line west of Sasco Creek (i.e., the Fairfield-Westport boundary).

In the 1960s, UI connected the 115-kV lines along the railroad corridor to Ash Creek Substation, establishing the 0.23-mile ROW, within which three double-circuit lattice steel towers are installed. UI's single-circuit 115-kV tap line linking the lines along the CT DOT corridor to the Resco Substation was installed in the 1990s.

1.1.3 Description of Existing UI Transmission Lines in the Project Area

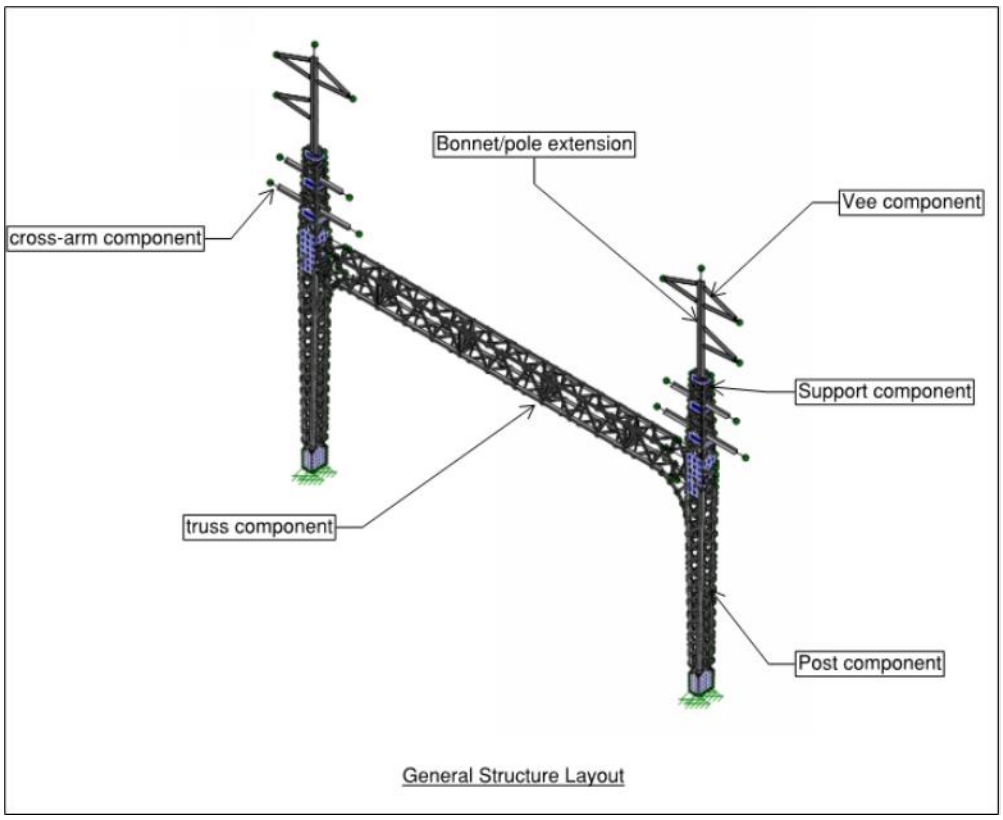
In the Project area, UI's existing 115-kV lines are positioned both north and south of the MNR tracks. All UI's existing 115-kV transmission lines are located within the CT DOT railroad corridor.

The existing UI 115-kV facilities that are overbuilt on the railroad catenary structures are typically approximately 60 to 80 feet above ground – that height includes the catenary support column, bonnets, and wires. The 1130 Line monopoles between Catenary Structures 648 and 737 range in height from approximately 80-120 feet above ground. In addition, at the Bridgeport Train Station, a single double-circuit steel lattice tower (supporting two UI 115-kV lines and approximately 215 feet in height) straddles the railroad tracks.

Figure 1-2 provides representative schematics of the catenary structures and the types of 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 both railroad catenary supports in the Project area. Figure 1-3 includes representative photograph of the existing alignment of the UI 115-kV lines in Fairfield (i.e., with the existing 115-kV line [the 1430 Line] on top of the southern railroad catenary structures and the 1130 Line on monopoles on the north side of the MNR tracks). Figure 1-4 illustrates the alignment of the UI lines on both the north and south railroad catenary support columns in Bridgeport.

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 648 and Congress Street Substation by six different numbers (i.e., the 1430, 1130, 91001-2, 91001-1, 8809A, and 8909B lines) to designate the line locations in relation to different substation connections.

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



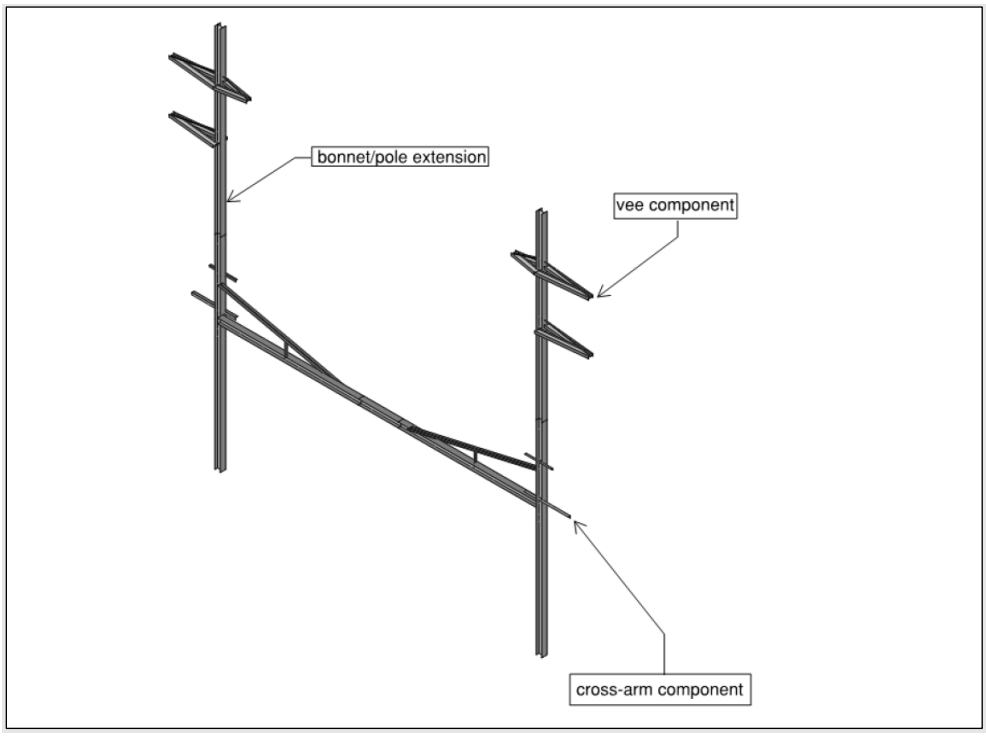


Figure 1-3: Representative UI Bonnet on Southern Railroad Catenary Structure and Line 1130 on Monopoles on North Side of Railroad Tracks (Town of Fairfield; View to the West)

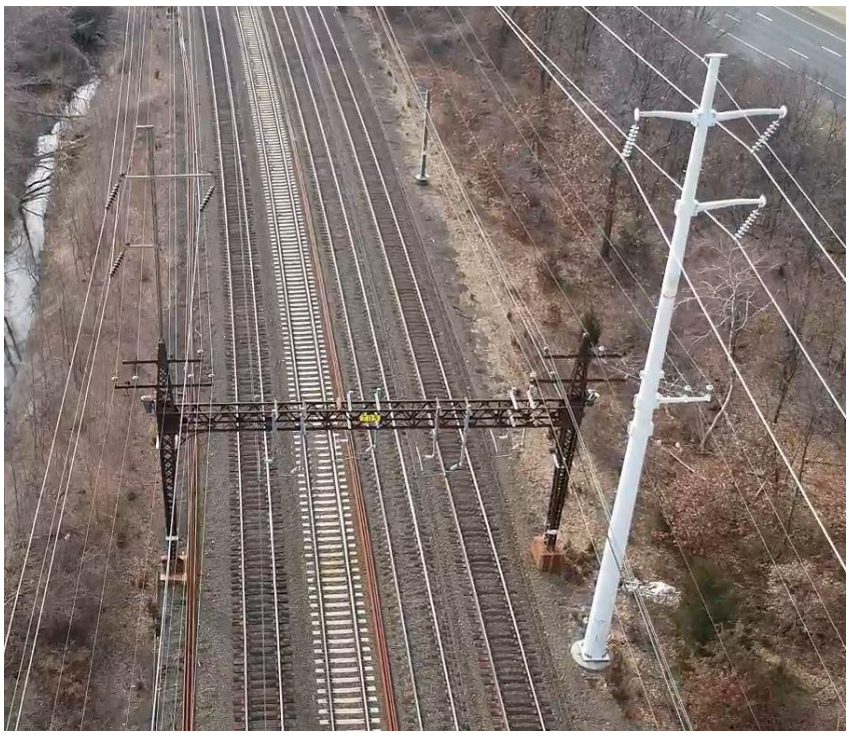


Figure 1-4: Representative Railroad Catenary Structures and UI 115-kV Lines on Bonnets near Congress Street Substation (City of Bridgeport; View to the East)

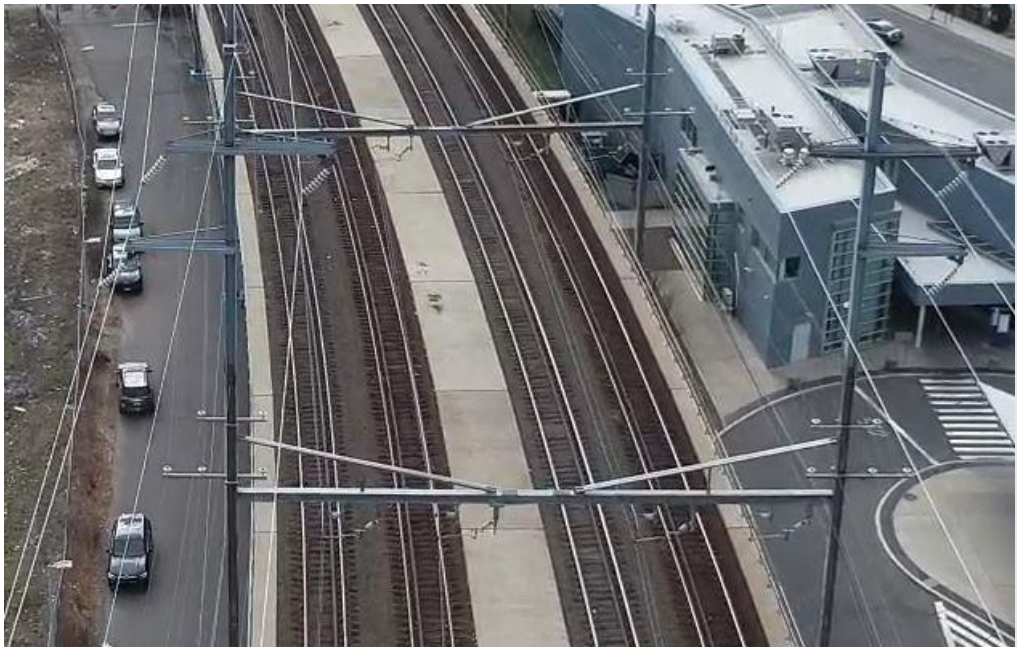


Table 1-1 identifies the 115-kV lines in the Project area, by number, existing configuration (e.g., on independent monopoles or on bonnets on top of catenary structures), and substation connections.

Figure 1-5 provides a schematic illustration of the location of each of the transmission lines along the CT DOT corridor within the Project area, identifying the line connections to each of the four substations.

Table 1-1: Existing UI 115-kV Lines, by Line Number, Location, and Typical Existing Configuration

Location by Catenary Structure No, Tap, or Substation	**Circuit No. Designation/Location in Relation to MNR Tracks**	
	115-kV Line: North of Railroad Tracks	**115-kV Line: South of Railroad Tracks**
Catenary Structure 648 – Ash Creek Substation	1130 (Independent monopoles)	1430* (On southern catenary support columns)
Ash Creek Substation – Resco Tap (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)

NOTES:

The 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 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.

Figure 1-5: Schematic Illustration of Existing 115-kV Line Locations and Configurations in the Project Area

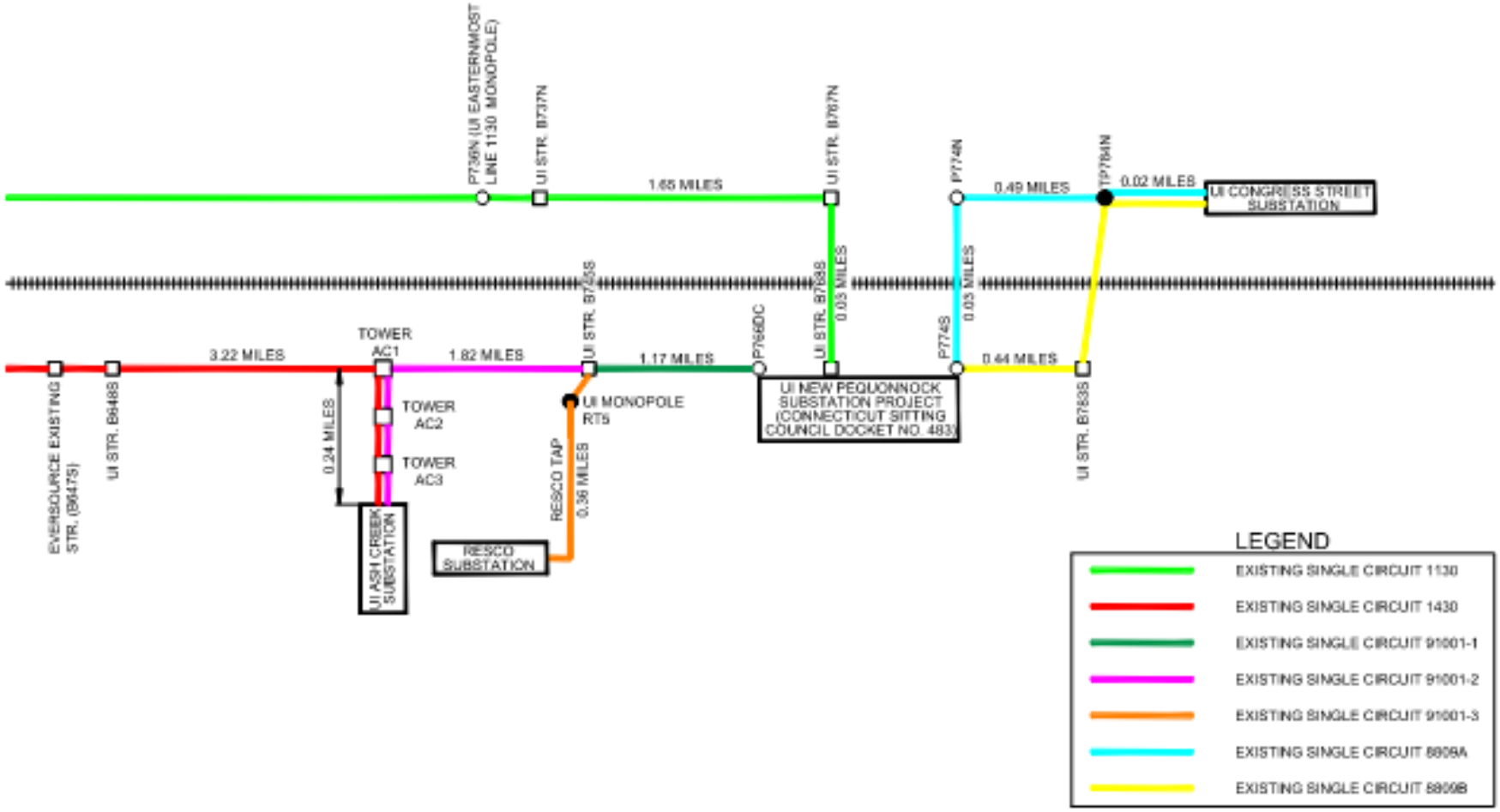


Table 1-2 summarizes the number of catenary structures and the length of the CT DOT segments between UI substations.

Table 1-2: Existing Catenary Structures (No.) / Length of UI 115-kV Lines along the CT DOT Corridor*

	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**
No. of Catenary Structures	87	36	24	10	**157**
Length of Segment (Miles)	3.75	1.9	1.15	0.5	**7.3**

*Note: Mileage is along the CT DOT corridor only and excludes the 0.23-mile UI ROW between the railroad corridor and Ash Creek Substation.

As noted in Section 1.1.2, the total length of the CT DOT railroad corridor between Catenary Structure 648 in Fairfield 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 (referred to herein as the "New Pequonnock Project"),[11] 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 existing transmission grid, is rebuilding the existing 115-kV lines along an approximately 0.3-mile portion of the CT DOT corridor in the vicinity of the old and new substations. Along this short segment of the CT DOT corridor, UI's existing 115-kV facilities (consisting of connections to the 1130, 91001-1, 8909A, and 8909B lines) will be removed from the railroad catenary structures and rebuilt as part of The New Pequonnock Project.

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.

Additional information concerning each of UI's existing 115-kV lines in the Project area is provided below.

[11] UI's New Pequonnock Project is described in CSC Docket No. 483.

1430 Line. UI's 1430 Line extends from the point of interconnection to Eversource's 1430 Line at the Westport-Fairfield boundary to Ash Creek Substation. The Project 115-kV line upgrades will commence at Catenary Structure B648S,[12] where UI's existing 1430 Line is supported on a bonnet located on top of the southern railroad catenary column.[13] Within the Project area, the 1430 Line is located on the southern MNR catenary support columns from Catenary Structure B648S east to Catenary Structure B713S, near Ardmore and Kenard streets in eastern Fairfield.

East of Catenary Structure B713S, the 1430 Line diverges southeast from the CT DOT corridor, extending for approximately 0.23 mile within an existing UI ROW, crossing Ash Creek (which forms the boundary between Fairfield and Bridgeport) before terminating at Ash Creek Substation. Within this UI ROW, the 1430 Line is supported on three steel lattice towers (referred to as structures AC1, AC2, and AC3) in a double-circuit configuration with UI's 91001-2 Line, which traverses north from Ash Creek Substation back onto the southern catenary structures within the CT DOT corridor, ultimately extending east to Resco Tap (refer to the discussion of the 91001-2 Line, below). The double-circuit steel lattice towers were installed in the 1960s and are approximately 60 years old. The 115-kV conductors were also installed in the 1960s and are approximately 60 years old.

1130 Line. The 1130 Line, which was installed in the 1990s, extends along the north side of the MNR tracks between Eversource's Ely Avenue Substation in Norwalk and UI's Pequonnock Substation in Bridgeport. Within the Project area, the 115-kV line extends east from the point of interconnection with Eversource's 1130 Line at the Westport-Fairfield boundary to Pequonnock Substation and is aligned on a combination of independent monopoles and bonnets on top of the northern railroad catenary support columns.

Specifically, from the Westport-Fairfield border east, through Fairfield, to Catenary Structure B737 in western Bridgeport, the 1130 Line is supported primarily on monopoles located parallel to and within the CT DOT corridor. Along this segment, the only locations where the 1130 Line is aligned on bonnets atop the northern MNR catenary structures are in Fairfield at the Post Road (U.S. Route 1) crossing (where the

[12] In this and other Project documents, a structure numbered with a "B" refers to the number of a catenary structure (e.g., 648) on which an existing UI bonnet/infrastructure is located (i.e., B648). An "S" at the end of the number(e.g., B648S) refers to the southern catenary support column, whereas a "N" at the end of a number refers to the northern catenary support column. As described further in Section 2 and illustrated on the Volume 2 maps and drawings, a structure designated with a "P" refers to a new pole proposed for the rebuilt 115-kV lines. "N" or "S" in a new 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).

[13] 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.

115-kV transmission lines span the road between catenary structures B665BN and B666AN) and at the Kings Highway (U.S. Route 1) crossing (where the 115-kV lines span the road between catenary structures B706AN and B706BN).

In Bridgeport, from Catenary Structure B737 east to the Pequonnock Substation, the 1130 Line is supported principally on the northern railroad catenary support columns. The Project does not include 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.

UI does not propose any Project modifications to the 1130 Line in Fairfield or to the portion of the 1130 Line that is supported on monopoles in Bridgeport, west of existing Structure TP735N.

91001-2 Line. The 91001-2 Line connects Ash Creek Substation and the Resco Tap. From Ash Creek Substation along UI's 0.23-mile ROW north to the CT DOT corridor, the line is supported, along with the 1430 Line as described above, on double-circuit steel lattice towers. Extending east within the CT DOT corridor, the 91001-2 Line is aligned 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 co-located with the 1130 Line on two UI owned single-circuit monopoles (TP734S and TP735S).

East of this I-95 crossing (extending to Resco Tap), the existing 91001-2 Line is again located on bonnets on top of southern railroad catenary structures.

91001-1 Line. This 115-kV line extends from the Resco Tap east to Pequonnock Substation. Except for the span of the I-95 crossing east of Black Rock Harbor (where the line is supported on two monopoles), the 91001-1 Line is aligned atop bonnets on the southern railroad catenary support columns.

8809A and 8909B Lines. These two 115-kV lines connect to Pequonnock and Congress substations. Between the two substations, except for the 215-foot-tall double-circuit steel lattice tower that is located above the MNR tracks at the Bridgeport Transportation Center and two monopoles (TP775AN and TP775AS) located adjacent to and south of the I-95 overpass, the 8809A Line is supported on the northern railroad catenary support columns, while the 8909B Line is aligned atop the southern catenary support columns. Both the 8809A and 8909B lines were installed on top of the catenary structures in the 1990s and thus the bonnets and related infrastructure are approximately 30 years old. The 115-kV conductor and shield wire are also approximately 30 years old.

1.1.4 Project Need

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).[14]

Specifically, UI concluded that the 115-kV lines must be rebuilt to meet current 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.

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):

- ***Rebuild the 115-kV lines presently located atop the railroad catenary support structures on independent, galvanized steel monopoles, in either single- or double-circuit configurations, and including new conductors and OPGW***. For approximately 5.1 miles from catenary structure B648S in Fairfield east to catenary structure B737 in Bridgeport, the existing 1430 and 91001-2 Lines 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 from the double-circuit steel lattice tower that straddles the MNR tracks at the Bridgeport Train Station. The lines will be rebuilt, primarily on double-circuit monopoles, located either north or south of the railroad tracks, depending on availability of space within the existing built environment to

[14] 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.

accommodate the new structures. In one area, the rebuilt lines will be placed on single-circuit monopoles, with one 115-kV line north of the railroad tracks and the other 115-kV line located south 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 steel lattice towers, conductors, shield wire) along the UI ROW from the CT DOT corridor 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. This work will also include the installation of one span of new conductor in order to interconnect the rebuilt lines to the Resco Tap.

- ***Decommission and remove UI's existing 115-kV facilities from the railroad catenary structures.*** UI proposes to deenergize and remove the 115-kV lines, shield wire, and related infrastructure (bonnets, insulators, cross arms) 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 or be may cut to a shorter length for MNR 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 102 new monopoles will be installed to support the rebuilt 115-kV lines.[15] The new structure heights will generally range from approximately 95 feet to 145 feet above ground. However, taller structures (195 feet) will be required between the Pequonnock and Congress Street substations to safely 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 predominantly 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 and the existing built environment or the CT DOT / MNR facilities.

UI also plans to expand the width of portions of the existing 0.23-mile ROW between the railroad corridor and Ash Creek Substation in order to accommodate the proposed separation of the existing double-circuit

[15] One additional monopole will be installed at Ash Creek Substation to support only OPGW.

lines into single circuit configurations and to meet the required clearance requirements for those single-circuit configurations. This proposed single-circuit configuration of the 1430 and 91001-2 lines shifts the conductors farther east than the existing double-circuit configuration on the lattice towers and is needed due to constructability and future system reliability. As such, UI will need to expand the existing ROW to the east.

As a result, UI proposes to acquire an estimated 19.25 acres of new permanent easements[16] 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.[17]

- Approximately 0.15 acre are required across other private properties to reach Project construction sites and, after the completion of construction, to provide permanent access for the operation and maintenance of the rebuilt 115-kV transmission lines.

In addition approximately 10 acres of temporary construction easements will be required to accommodate Project activities. Section 2 provides additional information about UI's proposed permanent and temporary easements for the Project.

1.3 ORGANIZATION OF THE APPLICATION

This Application is organized in three volumes.

Volume 1:

- Describes the need for the 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, as well as conductor and OPGW specifications and substation connections (Section 2);

- Describes construction and operation / maintenance information for the proposed Project facilities, including the anticipated permanent and temporary land requirements, as well as methods for installing the new monopoles and conductors, connecting the rebuilt 115-kV lines to UI's four

[16] 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.
[17] The width of the required permanent easement is pursuant to UI standards for transmission vegetation management.

substations near 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);
- Discusses existing environmental features in the Project area, including topography, geology, inland and tidal wetlands/watercourses, vegetation, wildlife, fisheries, land uses, recreational and community facilities, cultural resources, visual resources, transportation infrastructure, air quality, and noise (Section 5);
- Describes 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 115-kV lines and proposed Project facilities (Section 7);
- Reviews the permits and approvals required for the Project and summarizes the consultations with Federal, State, and local agencies completed to date and expected to be performed in the future for the Project (Section 8);
- Discusses the alternatives analyses that led to the selection of the proposed Project as the preferred solution for upgrading the existing 115-kV facilities (Section 9); and
- Provides acronyms and a glossary of terms used in this Application (Section 10).

Volume 1A contains appendices that provide supporting technical information used in the preparation of this Application, including but not limited to:

- Copies of agency correspondence (Appendix A);
- Environmental resource and other technical reports (Appendices B-D);
- A detailed EMF Report (Appendix E); and
- The CSC's Formal Requirements and Application Guide, which references the sections of this Application in which each of the CSC's application requirements is addressed (Appendix F).

Volume 2 provides detailed 11- x 17-inch Project maps, plans, and drawings, including:

- A Project location map and key index to the mapping.
- 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).
- Aerial-based maps, at a scale of both 1"=400' and 1"=100'.

- Plan and profile drawings of the proposed rebuilt 115-kV lines.

The aerial-based maps illustrate the locations of the proposed 115-kV facilities, as well as the locations of the railroad catenary structures from which UI's existing 115-kV facilities will be removed and the locations of other existing UI structures along the CT DOT corridor that will be modified or removed as part of the Project. Further, the aerial-based maps illustrate the boundaries of the CT DOT railroad corridor property, UI's proposed permanent easement, areas where vegetation (including tree) clearing will be required, and anticipated access roads and work areas. The maps also depict existing land uses and environmental resources, including wetlands and watercourses, floodplains, the coastal boundary, and cultural resources.

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

In the Project area, UI proposes to remove all its existing 115-kV transmission lines and facilities (e.g., bonnets, cross-arms, and hardware) from the railroad catenary support columns, to remove or modify other existing structures (e.g., the steel lattice tower that straddles the MNR tracks at the Bridgeport Train Station), and to rebuild the lines on independent single- or double-circuit monopoles, to be located parallel to and predominantly 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, 102 new single- or double-circuit monopoles will be installed.

Of the 102 new monopoles, 98 will be located along the CT DOT corridor: 63 single-circuit monopoles in Fairfield and 35 new monopoles in Bridgeport (21 double-circuit and 14 single-circuit). 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.[18] The primary Project components are illustrated schematically on Figure 2-1 (refer also to the Volume 2 maps) and summarized in Table 2-1.

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

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

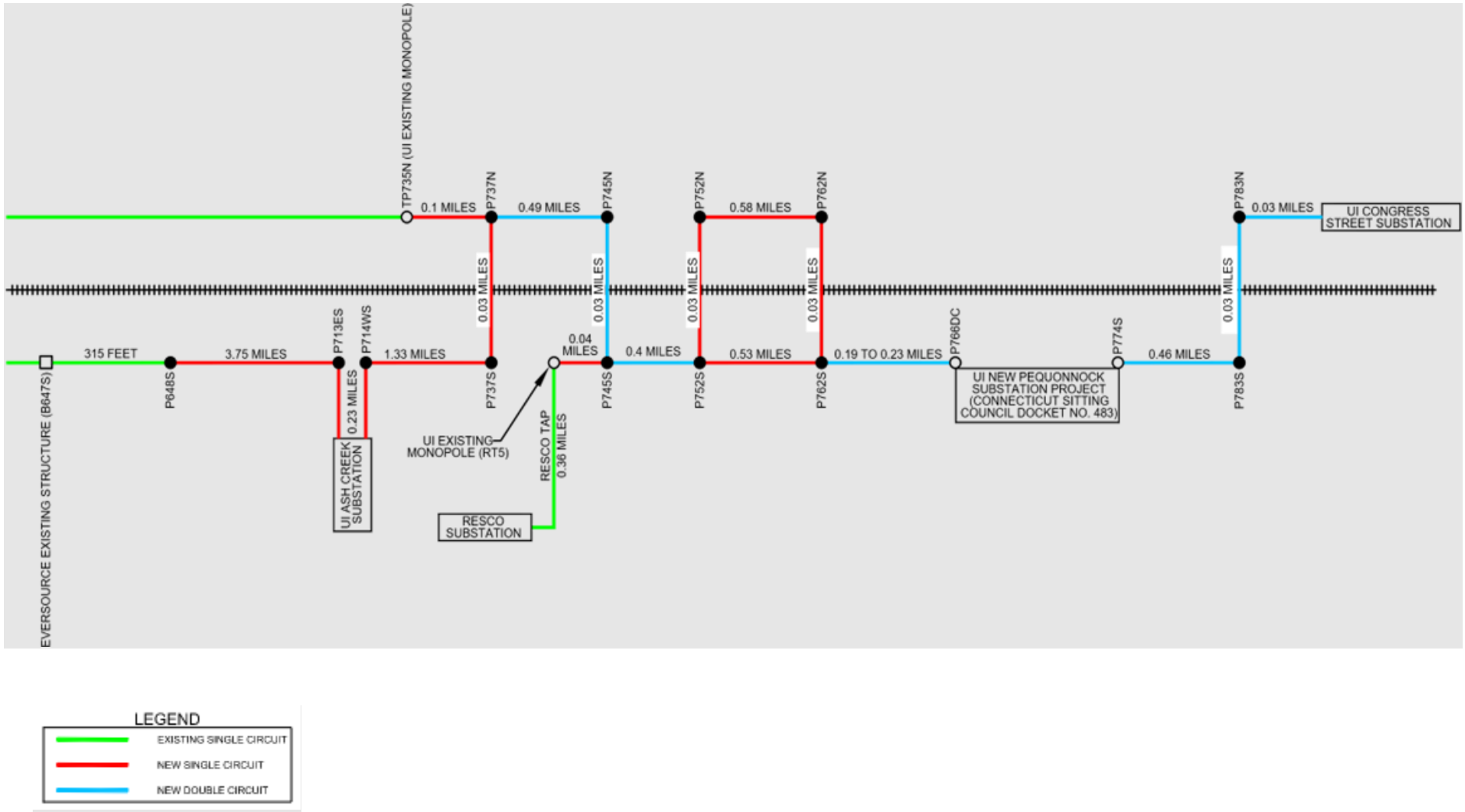


Table 2-1 Summary of Proposed Project Facilities, including Existing 115-kV Infrastructure to be Removed or Modified

Segment Location (Structure No. and Line No.)	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.)	W-Flange Structures to be Removed
Structure P648S to Structure P713ES (Line 1430)	3.73	51 Single-circuit	10 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	5 Deadend 3 Tangent 5 Tangent with MNR under build (signal or signal and feeder wires attached to new monopoles)	23	-	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	8 Double-circuit	3 Deadend 4 Tangent 1 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) ***Single-circuit***: 7 Deadend (One with UI Distribution Underbuild), 3 Tangent	41	3**	4	-	-
Pequonnock Substation (P774S) to Congress Street Substation (Lines 8809A & 8909B)	0.52	4 Double-circuit	4 Deadend	20	3^	-	1	-
TOTAL	**10.11 Circuit Miles**	**102**		**189**	**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 ground wire.

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) 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) will be reused.
- 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, 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, along with one of the Pequonnock Substation Rebuild Project temporary poles, will be removed as part of this Project.

The following provides additional information regarding the Project components that are summarized in Table 2-1:

1. ***Catenary Structure B648 to Structure B737 – approximately 5.4 miles – Remove 115-kV Facilities from Southern Catenary Structures and Rebuild Connection to Ash Creek Substation***: Along this segment, which includes the entire length of the Project in Fairfield,[19] Project activities will be required along the south side of the CT DOT corridor, where UI's existing 1430 and 91001-2 Lines and associated infrastructure are aligned on the railroad catenary structures. UI does not propose to rebuild the existing 1130 Line, located on monopoles, as well as eight bonnets, aligned to the north of the MNR tracks.[20] However, along this segment, UI also will remove the three double-circuit steel lattice towers (AC1, AC2, and AC3) that presently support the 1430 and 91001-2 Lines along UI's ROW that extends from the railroad corridor to Ash Creek Substation.

   UI's 1430 Line extends for a total of approximately 4 miles - 3.73 miles atop the southern railroad catenaries and 0.23 mile along UI's ROW from the railroad corridor to Ash Creek Substation. The 1430 Line facilities (bonnets, conductors, shield wire, etc.) will be removed from the southern catenary support columns and rebuilt on new single-circuit monopoles, located south of the railroad tracks. Along this segment, one of the new monopoles will also support MNR signal and feeder wires, which will be installed below (underbuilt) the transmission line.

   From new monopole Structure P713ES (to be located south of the MNR tracks) to Ash Creek Substation, the 1430 Line will be rebuilt along the UI ROW on three single-circuit monopoles. Along this UI ROW, the 91001-2 Line will also be rebuilt on three separate single-circuit monopoles.

   The 91001-2 Line will rejoin the CT DOT corridor at new monopole P714WS. From this new monopole east to Structure B737 (approximately 1.4 miles), the 91001-2 Line will be removed from the southern catenary structures and rebuilt on new single-circuit monopoles, all on the south side of the railroad tracks.

2. ***Catenary Structure B737 to Congress Street Substation – approximately 2.5 miles:*** Along this segment of the CT DOT corridor, UI's 115-kV lines are presently supported on both the north and south railroad catenary columns. The UI facilities will be removed from the catenary structures 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 transmission line structures. However, for approximately 0.5 mile, the rebuilt lines will be placed on single-circuit monopoles, with one line located north of the tracks and the other located south of the tracks. The proposed rebuilt line configurations are:

   - ✓ **B737 to Resco Tap.** At P737S, the rebuilt 91001-2 Line will extend north, spanning the railroad tracks. From P737N[21] (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 MNR tracks, mostly within private property. The new

[19] The Fairfield-Bridgeport boundary line (at Ash Creek) is between structures P728S and P730S.

[20] 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; these guy wires span the railroad tracks.

[21] 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, extending east from P737N.

monopoles cannot be located within the CT DOT corridor in this location because the railroad tracks are elevated, the CT DOT corridor is narrow, and a road is aligned directly north of and parallel to 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 (referred to as structures RT1 through RT5). As part of the Project, the existing 7#6 Alumoweld shield wire on the Resco Tap line will be removed and replaced with 0.582-inch 72 count OPGW.[22] However, no structures on the tap line will be replaced.

- ✓ **Resco Tap to Near New Pequonnock Substation (P766DC).** From the Resco Tap east to Structure P752S, the rebuilt 91001-1 Line and 1130 Line will be aligned 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 (approximately 0.5 mile) 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 to the south side of 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 of UI's 115-kV facilities (conductors, shield wire, the bonnets, steel lattice tower, hardware) will be removed. 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 of the CT DOT corridor, the two 115-kV lines will cross the MNR 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 in order to meet the NESC clearance requirements. The offset distance from the catenary structures to the new monopoles will vary based on location, but typically is expected to be 20 feet.

[22] The same OPGW will be installed between Ash Creek Substation and New Peqonnock Substation, as well as between New Pequonnock and Congress Street substations.

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 wide enough 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 approximately 32 feet from either side of the centerline of the new double-circuit monopoles but will vary based on structure configuration and span length.

The new structure heights will vary by location but will generally range from about 95 to 145 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

In the Project area, UI's existing 115-kV lines are connected to four UI substations (Ash Creek, Resco, Pequonnock, and Congress Street). 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 will also connect to these substations. No expansion of the existing substations will be required for the Project.

The 115-kV lines to be rebuilt as part of this Project will interconnect to the lines that UI will rebuild along the CT DOT corridor as part of its New Pequonnock Substation Project. However, as part of this Project, the jumper connections at the riser structures for the 1130 and 8909B lines will be modified to correctly align the phases of the re-built circuits to the existing line terminal structures in the Pequonnock Substation yard.

UI's rebuilt 115-kV lines along the CT DOT corridor will continue to connect to the Resco Substation via the existing 0.4-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 1590 kcmil ACSS 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 (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, ranging from about 40 feet wide between the railroad corridor and Ash Creek, and then increasing to more than 300 feet wide between the creek and the substation.

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 the railroad corridor, conflicting existing or planned land uses, and topographic constraints. Moreover, UI and CT DOT share the joint objective of separating the transmission line and railroad infrastructure to the extent practical. In such situations, UI proposes to acquire new permanent easements; the new monopoles will be located as close to the linear CT DOT corridor as possible, factoring in transmission line alignment and design requirements.

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 and one new double-circuit monopole will be installed from new Structure 648S to Fairfield Avenue (west of Structure B737 in Bridgeport). Of these 72 monopoles, 66 will be located south of and parallel to the MNR tracks, two will be located north of the railroad tracks, and four will be located within the existing UI ROW between the MNR tracks and Ash Creek Substation. A total of 53 of the 66 monopoles (74%) will be on CT DOT property or within the existing UI ROW. 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 30 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 15 (eight 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, with the exception of one, will be located outside of the CTDOT railroad corridor. Nine monopoles will be located on City of Bridgeport property, two will located within the CT DOT property adjacent to I-95, and 18 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, including along the existing UI ROW to Ash Creek Substation) to accommodate the new transmission line facilities – that is, to provide space for the monopoles; to establish and maintain required conductor clearances; and to access utility infrastructure from adjacent properties. Of the proposed 19.1 acres of permanent easement, approximately 8.58 acres will be in Fairfield and 10.52 acres will be in Bridgeport.

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, all in Fairfield. 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.

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	25 P652AS, 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)	5 P725S, P726S, P727S, P730S, P733S	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	8 P738N, P739N, P740N, P742N P743N, P744N& 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 Substation	1 P775AS	3 P779S, P783N & P783S (All on City of Bridgeport Property)	1.75	0	1.75
TOTAL	**31**	**47**	**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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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.

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 on monopoles, as well as to remove the existing 115-kV lines and 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 or to new monopole locations outside the CT DOT corridor.

For Project construction, access to each new monopole location 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 infrastructure from the railroad catenary structures, access also will be needed.

However, 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 in Bridgeport), construction equipment will be staged either within Railroad Avenue, Water Street, or other paved areas. In addition, to rebuild the 115-kV lines between Pequonnock and Congress Street substations, UI anticipates that construction may involve the use of a barge in the Pequonnock River.

Construction access to each new monopole location or bonnet removal site is expected to 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 anticipate that construction equipment access across the MNR rail lines will be required. (Refer to Section 3 for a description of Project construction methods.)

Where the CT DOT corridor is sufficiently wide and terrain allows, UI proposes to align access roads and work pads on CT DOT property. Access and construction activities within the railroad corridor will be coordinated with CT DOT/MNR.

However, in some areas, temporary easements for construction access roads and work pads will be required on properties outside of the CT DOT corridor. Overall, UI anticipates that approximately 10 acres of temporary construction easements will be required from the owners of properties abutting or near the CT DOT corridor. The Volume 2 maps identify the locations of UI's proposed access roads for the Project.

2.3 PROPOSED TRANSMISSION LINE REBUILD 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. Due to the large span length, 2156 kcmil ACSS High Strength "Bluebird" will be installed in the span that crosses over I-95 and portions of the west bank of the Pequonnock River between the Pequonnock Substation and Congress Street Substation.

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. 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.

One monopole, which will be directly embedded, will be installed within Ash Creek Substation to support OPGW.

Along the western portion of the Project between Structures P648S and P737S, 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, such as 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) and existing built environment. In such locations, the MNR electrical facilities (primarily signal wires, but in one location, both signal and feeder wires) 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 is anticipated to be acquired from these property owners. UI expects that 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 CT DOT 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 design will incorporate the use of four existing UI steel monopoles that are situated on either side of the I-95 crossing. After crossing I-95, the 1130 Line will parallel the interstate for approximately 1,200 feet

before rejoining the railroad corridor. This alignment is proposed to locate the 115-kV conductors farther 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) are warranted to minimize impacts to environmental resources (e.g., wetlands, watercourses) or 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:*** 95-125 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

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 have been completed in the majority of locations within the Project area where UI was granted a right of entry by a private landowner to perform due diligence work.)
- 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 too narrow to accommodate the new monopoles. As a result, in this area, all but one of 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 steel lattice towers. The monopole locations were selected to avoid or minimize impacts to environmental resources (e.g., Ash Creek, and the tidal and freshwater wetlands near the creek).

The Volume 2 maps and Plan and Profile drawings reflect the proposed structure locations, based on UI's current plans and engineering design information.[23]

These structure locations may be modified as UI continues to coordinate with CT DOT, representatives of the Town of Fairfield, the City of Bridgeport, State and Federal regulatory agencies, and the affected public.

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. Final 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.

2.4 ESTIMATED PROJECT COSTS AND FACILITY SERVICE LIFE

The estimated capital cost for the siting, design, and construction of the Project is approximately $255 million. The Project transmission facilities are expected to have a minimum service life of approximately 40 years.

[23] The initial structure spotting (original engineering design basis) commenced with the assumption that a new monopole would be offset from (i.e., aligned parallel to) 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, 33 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, 764, 776, 777, 778, 780, 781, and 782 - all in Bridgeport.

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 issued for construction (IFCs) specifications; 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.

Further, as required by the CSC's regulations, prior to the commencement of construction activities, UI will prepare and submit one or more Project-specific D&M Plan(s)[24] 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 cross-sections and 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.

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

[24] Based on the anticipated construction of the Project in segments, UI may elect to prepare one D&M Plan for the Project, or separate D&M Plans for each segment. If UI prepares separate D&M Plans for each Project segment, each such plan would be provided to the Council for review and approval prior to the commencement of the segment's construction.

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 some work on certain segments overlapping. These segments are as follows:

- Ash Creek Substation to UI existing Structure TP735S (1.50 linear miles and circuit miles).
- Existing Catenary Structure B648S to Ash Creek Substation (3.96 linear and circuit miles).
- New Pequonnock Substation to Congress Street Substation (0.52 linear miles/1.04 circuit miles).[25]
- UI existing Structure TP735S/TP735N to New Pequonnock Substation (1.75 linear miles/3.61 circuit miles).[26]

The Project construction schedule, which is described generally in Section 4, will be defined further in the Project D&M Plan(s).

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 and materials 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.

[25] 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.
[26] Excludes the replacement of the shield wire on the Resco Tap line with OPGW.

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.

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 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 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, other existing transmission structures) 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.

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
• Identify 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: NEW PEQUONNOCK SUBSTATION TO CONGRESS STREET SUBSTATION 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: CATENARY 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 NEW 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.

Note: UI anticipates that some foundations on all segments will be installed in advance of other segment-specific sequential construction activities to accommodate outage constraints or subsurface inspections for buried cultural resource materials. Refer to Sections 4 and 6.8 for additional information. Further details regarding construction will be provided in the Project D&M Plan(s).

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 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 D&M Plan(s).

Project construction will require a variety of equipment, such as backhoes, mechanical excavators, pneumatic hammers, augers, drill rigs, dump trucks, cranes, bucket trucks, flatbed trucks, and tensioning rigs. Vegetation removal will typically involve brush hogs or other mowing equipment, woodchippers, log trucks, chain saws, and similar equipment. Helicopters also may be used to facilitate wire stringing or other activities, such as the removal of existing UI infrastructure. In addition, UI anticipates that the construction of the transmission line segment between the New Pequonnock and Congress Street substations may involve work from a barge anchored near the west bank of the Pequonnock River. Additional information regarding construction methods and manner will be provided in the 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. However, the Bridgeport portion of the Project extends through densely developed urban areas, where only minimal vegetation clearing is expected to be required for the 115-kV line rebuild work.

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 (refer also to the discussion in Sections 5.3 and 6.3).

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, 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. Vegetation clearing methods will be further defined in the Project D&M Plan(s).

[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 may be used to access wetland areas if vegetation clearing involving mechanical methods is required. (UI anticipates that where wetland vegetation will be removed by hand, wetland mats will not be necessary.)

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 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] Sections 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

[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.

and other structures (monopoles, lattice towers, W-flange structures) 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 or paved surfaces.

Most Project access roads will be temporary (required only for construction) and will be located in uplands. The temporary access roads will consist of gravel or construction mats (timber or equivalent). In general, the temporary access roads required for Project 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.

As indicated on the Volume 2 maps, UI proposes to align access roads to avoid wetlands and water resources. However, for Project construction, a temporary access road, expected to consist of a timber mat span, will be required across one perennial freshwater stream (WC-8). In addition, temporary access also will be required in a tidal wetland remove a lattice steel tower situated on a small island in Ash Creek, near Ash Creek Substation.

Two permanent access roads are proposed to facilitate UI's transmission line maintenance activities. One permanent access road is planned within the CT DOT corridor, along the edge of wetland W-B,[30] between Structures P648S and P654S in Fairfield (refer to Volume 2, 1"=100' Map Sheets 1 and 2). The other proposed permanent access road would extend along the south side of the CT DOT corridor on Town of Fairfield property (Jennings Park; refer to Volume 2, 1"=100' Map Sheets 10 and 11). These 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 for operation and maintenance purposes.

[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) or will be situated within existing paved areas.

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 will also 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 may 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 that will require management. If a net zero cut and fill balance is not achieved, any unused spoils will be managed in accordance with the

Project specific *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]. Typical foundations are expected to average 15-40 feet in depth, although some foundations may be as deep as 90 feet. The depth of the foundations will depend on subsurface conditions, such as soil characteristics, depth to bedrock, and the type of structure. Spoils or groundwater 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, 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.

Temporary or permanent vibratory casings, or equivalent, may be used to provide soil support as needed to complete the drilling 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. Any additional concrete or water displaced during the concrete pour will be managed according to the Project specific *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.

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

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,[32] graveled, repaved as necessary) and in accordance with the CT DEEP General Permit and UI's Project-specific 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, as well as from any other locations where temporary matting is used 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 the appropriate seed mix determined by UI 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

[32] During the preparation of the D&M Plan(s) for the Project, UI will evaluate seed mixes, including those containing pollinator plant seeds, for use in restoration, as appropriate.

or otherwise re-purposed. In some areas, permanent 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 direct embedded 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 UI's first proposed steel monopole (Structure P648S) in Fairfield, east of Sasco Creek. Between Eversource's eastern-most 1430 Line catenary structure (B647S) in Westport and Structure P648S, the existing 1430 Line conductors and shield wire will remain, extending over Sasco Creek and terminating at Structure P648S.

Resco Tap Line/Substation Connection. UI's existing 115-kV tap 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 91001-3 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 is typically expected to proceed by segment, as described in Section 3.1 and Section 4. The schedule for the removal of the existing 115-kV infrastructure will depend on the type and location of the facilities (refer to Table 3-1 in Section 3.2.1) and will be further described in the D&M Plan(s).

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) 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 are anticipated to conform to any Project-specific permit conditions from CT

DEEP or 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*, 2004 *Connecticut Stormwater Quality Manual*, and the provisions of the Project-specific SWPCP.

UI also proposes to prepare a Project specific *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, structure removal, etc.). 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 14 watercourses (including the Mill River, Ash Creek [two crossings], and the Pequonnock River):[33]
  - ✓ 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), affecting approximately 0.1 acre. Temporary work also will be required in a small portion of Ash Creek to remove an existing lattice steel tower

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

along the 0.23-mile UI ROW from the railroad corridor to Ash Creek Substation. This work also will temporarily affect an estimated 0.1 acre.

- ✓ No foundations will be constructed in the Pequonnock River; however, some Project construction activities between Pequonnock and Congress Street substations may be executed or staged from a barge positioned in the Pequonnock River to accommodate safe work practices or access constraints.

- Require some construction (e.g., work pads; tree removal to conform to electrical clearance standards; one permanent access road) 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 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. (For a total of 0.12 acre of wetland impacts.)
  - ✓ 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 0.1 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 equipment and timber mats (or equivalent) are cleaned prior to being brought to Project work sites, transferred from one Project wetland to another, or leave the Project area all together. 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 26 new monopoles will be located in FEMA-designated 100-year floodplains and nine 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 proposes to use mechanical measures (e.g., hoe ramming, chipping) to remove bedrock as necessary to create level work pads or access and does not anticipate that any blasting will be required.

If UI subsequently determines that controlled blasting is required in specific locations, UI will retain a licensed blasting contractor to develop a site-specific blasting plan(s). The resulting blasting plan(s) will be coordinated with CT DOT, 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 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 State and when necessary Federal regulations, guidelines and best management practices. UI will manage any soil 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 INSPECTION AND 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 environmental or 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 would then 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[34]. The

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

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 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 will 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.

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 Project construction will commence in late 2024 in order to achieve an in-service date of May 2028 for all the rebuilt facilities. In general, the Project will be constructed in four segments, as follows:

- Segment 1: Ash Creek Substation to UI existing Structure TP735S.
- Segment 2: Existing Catenary Structure B648S to Ash Creek Substation.
- Segment 3: New Pequonnock Substation to Congress Street Substation.
- Segment 4: UI existing structures TP735N/TP735S to New Pequonnock Substation.

However, to take into account both transmission system outage windows, complex construction sequencing, and requirements from the SHPO regarding the performance of deep cultural resource testing,[35] UI proposes to install the concrete pier foundations for an estimated 43 monopoles in advance of the start of other construction. These monopole foundations, most of which are located in commercial or industrial areas, would be installed generally between late 2024 and June of 2025. Associated work pads and access also would be installed as needed to support the foundation work.

[35] The Project must be constructed taking into consideration various transmission system outage constraints. For example, because of the construction of the New Pequonnock Substation, outages cannot be taken on the Project until January 2025. During this outage time, UI proposes to install the foundations for 32 monopoles that must be installed during an outage window (due to proximity to the existing lines on the catenary structures). UI also proposes to install an additional 11 monopole foundations in advance of other Project construction in order to comply with the SHPO requirement for performing deep testing for archaeological materials in advance of construction (refer to the SHPO correspondence in Appendix A; pertains to monopoles P657S, 659S, 739N, 740N, 742N-745N, 745S, 746S, and 748S). Work on the 11 monopole foundations associated with the cultural resource testing is anticipated to commence in late 2024.

After the pre-installation of the above-referenced monopole foundations, UI expects to perform most construction work on a segment-by-segment basis, with each segment rebuilt and placed into service prior to the initiation – in most cases - of extensive work on the next segment. In general, along each segment, the construction of the new 115-kV lines will proceed in a linear fashion, with separate work crews performing 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, which estimates that by the end of June 2028, all the rebuilt 115-kV lines will be in service and the existing 115-kV facilities will have been 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.

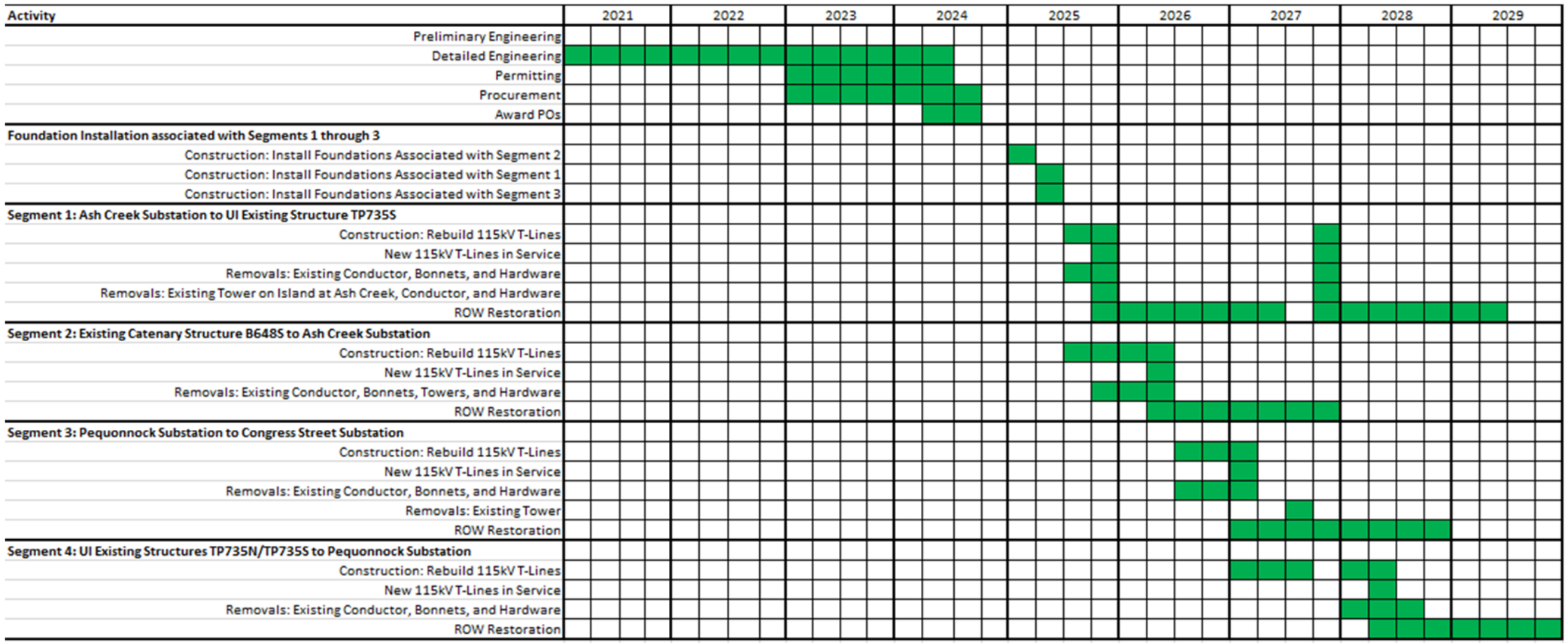
4.2 CONSTRUCTION WORK HOURS

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).

Figure 4-1: Project Schedule



Notes: 1. *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).*
2. Some monopole foundations, including certain of those on Segment 4, will be installed in the last quarter of 2024 in order to comply with the SHPO requirements for deep archaeological testing in advance of construction.

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).

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5. EXISTING ENVIRONMENTAL CONDITIONS

This section describes the existing environmental, land use, and cultural resources in the Project area, consisting of 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 reflects the results of UI's studies, as compiled from environmental, cultural, and land use data maintained by Federal, State, and local governments, as well as field investigations of the Project area. As part of the Project planning process, UI also consulted with the representatives of Fairfield and Bridgeport, as well as with 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, UI fee-owned property (including Ash Creek, Pequonnock, and Congress Street substations), and the Resco Tap line and Resco Substation.
- Locations of UI's proposed permanent easement adjacent to or in the vicinity of the CT DOT corridor and along UI's ROW to Ash Creek Substation.
- 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 typically 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 residential, commercial and industrial uses. As a result, lands 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 railroad 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 is also 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.[36] The results of these geotechnical studies 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

[36] Approximately 71 test borings have been conducted to date; additional borings are scheduled to be performed prior to construction.

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, which 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 adjacent to the railroad corridor 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.[37]

[37] 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.

The Project area encompasses one location mapped by the NRCS as Prime Farmland. 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 residential properties, with wooded and lawn areas. There are no areas mapped as Statewide Important Farmland soils within the Project area.

Portions of the Project area in Fairfield and Bridgeport include soil 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.

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 inland and tidal wetlands, freshwater and tidal watercourses waterbodies (harbors), floodplains, and groundwater resources.[38]

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 identify and delineate State and Federal jurisdictional water resources (e.g., freshwater/tidal wetlands and watercourses, vernal pools[39]) 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 by UI as proposed access roads and work pads for the Project.

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

[38] No lakes or ponds are located in the Project area.
[39] Although the water resource surveys were conducted in the spring, when vernal pools are most evident, none were found in the Project area. Refer to Section 5.3.3 for further information about vernal pools.

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.

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.[40] Other watercourses in the Project area are classified as A/AA, except for Mill River, which is classified as SA (refer to Table 5-4 for additional information about each watercourse in the Project area).

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.

[40] 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[41]) to delineate water resources that meet Federal and State jurisdictional criteria. 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.

[41] 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.

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 (e.g., W-B). Watercourses are denoted with "WC" and given a numerical identifier (e.g., WC-1). Tidal wetlands and watercourses are demarcated by a "T" in this classification system (e.g., TW-A, TWC-12). 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 designation.

Watercourses and Waterbodies

A total of 14 different 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 (including Sasco Creek, Mill River, Ash Creek, and the Pequonnock River), one intermittent stream, and one ephemeral drainage. The existing UI 115-kV lines span Ash Creek in two locations – one along the CT DOT corridor and one along the UI ROW to Ash Creek Substation. (Hence, in the Project area, the UI transmission lines span or are near watercourses in 15 separate locations.)

Table 5-4 summarizes the major characteristics of these water resources, based on data compiled from the Connecticut Environmental Conditions Online (CT ECO) *Water Quality Classifications* database. As this table shows, of the 14 watercourses in the Project area, five are tidal or tidally influenced, including Sasco Creek,[42] Ash Creek, and the Pequonnock River.

The remaining nine watercourses are freshwater (non-tidal) and include the Mill River in Fairfield and eight small streams that parallel or flow alongside 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 functions. Three of the streams (WC-2, WC-7, and WC-9) extend beneath the railroad tracks via culverts.

Of the 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.

[42] 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. Similarly, the existing 115-kV lines located on the railroad catenary structures span the Pequonnock River on a railroad bridge immediately east of Congress Street Substation. The Pequonnock River is referenced here because for the Project, UI proposes to span a portion of the west bank of the Pequonnock River between Pequonnock and Congress Street substations.

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

NOTES:
*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.

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 proposed 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 pursuant to Conn. Gen. Stat. §§25-199 – 199c.

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). The remaining seven wetlands are all inland wetlands.

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.[43]

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
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

[43] 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*.

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.[44] 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-8, WC-9, W-G, W-H, WC-10, TWC-11, TWC-12, TW-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[45] 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

[44] 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.

[45] 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.

the location of the Project. Pursuant to Connecticut Public 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.[46]

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.[47]

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).

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.

[46] Core forests are defined as forests that occupy large tracts of land, are surrounded by other forests, and are more than 300 feet from non-forest boundaries. Core forest is divided into three categories: small (<250 acres), medium (250-500 acres), and large (>500 acres). (University of Connecticut Center for Land Use Education and Research: Core Forest Explained https://media.clear.uconn.edu/projects/landscape/v2/forestfrag/measuring/core_explained.htm).

[47] 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.

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 UI transmission facility work in the vicinity. 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. UI has been coordinating with CT DEEP regarding these osprey nests.

- **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, UI first prepared a general inventory 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).[48]

[48] 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.

Table 5-6 presents the resulting list of bird species that may potentially breed in the Project area . 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.

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 1980s.

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. In addition to the list of potential breeding birds compiled, screenings through CT DEEP NDDB and USFWS were also completed (Refer to Section 5.3.5).

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 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 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 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. ** No species are federally listed by USFWS.

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 in the Project Area 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.

UI's investigations found no vernal pool habitat within or near the Project area. The lack of vernal pools is not unexpected because the Project area is characterized by dense suburban/urban developments that do not support the wetlands and other habitats that vernal pool species require. For example, the observed hydroperiods[49] for wetlands in the Project area were generally found to be inappropriate for vernal pool amphibians. Most wetlands were either saturated or permanently flooded, many convey stormwater during high precipitation events, and few possessed the seasonal flooding required by vernal pool indicator species. In addition, the amphibian species that breed in vernal pools rely on upland forests for primary habitat during the non-breeding periods. Such upland forest habitat also is lacking in the Project area.

5.3.4 Fisheries and Shellfish Resources

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 the 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[50] 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 supports alewife anadromous fish runs, as well as blueback herring (refer also to Section 5.3.5) 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

[49] 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.
[50] According to CT DEEP, catadromous fish live most of their adult lives in freshwater but must return to saltwater to spawn.

barrier on each waterway.[51] 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.

Portions of the tidal watercourses in the general Project vicinity support shellfish beds, including, but not limited to, Sasco Creek, Mill River, Ash Creek, Black Rock Harbor, and the Pequonnock River.[52] The closest known shellfish resources to the Project are in the Mill River, approximately 0.35 mile south of the CT DOT corridor, and in Ash Creek approximately 0.20 mile south of Ash Creek Substation. 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 that 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 for shellfish harvesting, 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.

The Project area does not encompass any Critical Habitats as mapped by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Services Endangered Species Act Critical Habitat Mapper. However, the NOAA mapping indicates that the Pequonnock River is considered Essential Fish Habitat for various Mid-Atlantic fish species and Highly Migratory Species.[53] Consultations with CT DEEP, Bureau of Natural Resources, Fisheries Division (refer to Appendix A correspondence) indicate that migratory (diadromous) fish species in the Pequonnock River include alewife, American eel, and Sea Lamprey. The migratory fish runs typically begin in April and continue into late June. Ash Creek does not include documented diadromous fish runs, with the exception of American eel.

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.

[51] https://portal.ct.gov/-/media/DEEP/fishing/fisheries_management/Migratory-Fish-Runs.pdf
[52] https://portal.ct.gov/DOAG/Aquaculture1/Aquaculture/Shellfish-Area-Classifications--Maps
[53] https://www.habitat.noaa.gov/apps/efhmapper/

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 two species listed as "endangered", one 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 December 8, 2022). These species are as follows:

- **Northern long-eared bat (*Myotis septentrionalis*)**: The northern long-eared bat, which is presently listed by the Federal government as "threatened", is expected to be reclassified by USFWS from "threatened" to "endangered" when the Final Rule for this species goes into effect on March 31, 2023. 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.

- **Red knot (*Calidris canutus rufa*)**: Red knot, which is Federally listed as a "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 and nesting locations in the arctic. The birds spend most of their time foraging along the waterline within the intertidal zone and are not known to occur at inland locations. Red knots utilize Connecticut's barrier beaches as a stopover point during spring migration from mid-April to the end of May, and then again during fall migration 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 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, which 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 proposed 115-kV transmission line route (including along or near the CT DOT corridor and UI's ROW to Ash Creek Substation) extends for approximately 4.8 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 along the CT DOT corridor / UI ROW to Ash Creek Substation and near the Project area generally support water-based recreational activities such as but not limited to fishing, boating, swimming and aesthetic appreciation. For example, Sasco Creek, Ash Creek, Mill River, Cedar Creek, and the Pequonnock River all support recreational uses. The following summarizes primary recreational use areas in the Project vicinity, by municipality (refer to also 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. Table 5-7 lists recreation and open space areas in Fairfield within 2,000 feet of the proposed Project area.

Table 5-7: Recreation and Open Space Areas near the Project Area in Fairfield

• 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

In addition, two parcels designated by the Town of Fairfield as conservation easement areas are immediately adjacent to the southern CT DOT corridor boundary. One of the conservation easement areas is located at 2082 Kings Highway and consists of approximately 0.3 acre of trees and shrubs with an underground stormwater control infrastructure. The other conservation easement area is located on the property at 21 Black Rock Road (adjacent to the Fairfield Metro Train Station) and consists of approximately 10.93 acres that is designated to promote conservation, open space, and public shoreline access in accordance with the provisions of the Fairfield Conservation Commission open space regulations and as regulated under Fairfield's Inland Wetland Permit No. 2003-08. This conservation easement area contains a wetland mitigation area, stormwater biofiltration basins, public access trail, and coastal meadows. Approximately 1.6 acres of UI's existing ROW between the CT DOT corridor and Ash Creek Substation (near Kenard Street) encompasses the southern portion of this conservation easement.

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. Table 5-8 lists the recreation and open space areas in the City of Bridgeport within 2,000 feet of the proposed Project area .

Table 5-8: Recreation and Open Space Areas near the Project Area in Bridgeport

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

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[54] 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 policies 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 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 the proposed rebuilt 115-kV transmission lines will be co-located along or near the CT DOT corridor, which has historically been used for both transportation and electricity transmission purposes.

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

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 5-9 and shown on the Volume 2 maps.

Table 5-9: 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
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

Community Facility Type/Name	Address	Distance from Proposed Project Area* (miles, direction)
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
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

Community Facility Type/Name	Address	Distance from Proposed Project Area* (miles, direction)
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	0,00, UI ROW crosses
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
Went Field	120 Wordin Avenue, Bridgeport	0.01, North
Windward Apartments Playground	Johnson Street, Bridgeport	0.01, Southeast
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 and are aligned 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. The bonnets and UI 115-kV transmission lines date principally to the 1960s, although 69-kV lines were installed on the catenary structures along the eastern portion of the Project area in the 1940s. A visually distinctive lattice tower, which also dates to the 1940s, straddles the MNR tracks at the Bridgeport Train Station. Lattice steel towers also support UI's double-circuit 115-kV lines along the 0.23-mile ROW between the CT DOT corridor and Ash Creek Substation. These structures are all established components of the visual environment in the Project area.

The visual environment adjacent to the railroad corridor varies but is generally characterized by a mix of industrial and commercial uses, the rail and highway transportation corridors, and some residential areas, including single-family homes and multi-story apartment or town house developments. The I-95 corridor, which is elevated in Bridgeport, also is a dominant landscape element, as is the I-95 bridge over the Pequonnock River and the I-95/State Route 25 interchange.

In addition to the I-95 and MNR corridor, the four MNR stations,[55] PSEG's Bridgeport Harbor Generating Station, and UI's existing substations are just a few more examples of prominent urban landscape features in the Project area. Some areas along and in the 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

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

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.

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. (Federally-designated cultural resources and landmarks in the Project vicinity are discussed in Section 5.7.)

Similarly, no CT DOT Scenic Land Strips[56] 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*. 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 Heritage's archives, and online data maintained by the City of Bridgeport and the Town of Fairfield regarding the locations and extents of LHDs.

[56] 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 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 includes some 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 within a municipality.

Appendix D includes Heritage's *Phase 1A Cultural Resources Assessment Survey* report. On September 23, 2022, Heritage submitted this report, along with a Project Notification Form, to the SHPO. In correspondence to Heritage/UI dated October 31, 2022, the SHPO reviewed and provided comments on the Phase 1A report and the Project. In response to the SHPO's comments, Heritage subsequently conducted further analyses of above ground historic resources and identified an approach for performing archaeological field investigations (Phase 1B) at certain proposed monopole locations. Correspondence between the SHPO and UI/Heritage is included in Appendix A. Heritage's additional analyses of historic resources in the Project vicinity are described in the supplemental report titled *Fairfield to Congress Railroad Transmission Line 115-kV Rebuild Project: Supplement to the Phase 1A Cultural Resources Assessment Survey* (February 2023), which is provided in Appendix D.

Section 5.7.1 provides a brief overview of the railroad history and reviews the results of Heritage's key findings, as presented in the September 2022 Phase 1A report, regarding the history of the Project area along and in the vicinity of the CT DOT railroad corridor and UI ROW to Ash Creek Substation, as well as known archaeological and historic resources near the Project area. Section 5.7.2 presents the results of Heritage's further review of historic resources within a greater distance from the Project transmission lines, as requested by the SHPO, and as described in detail in the supplement to the original Phase 1A report.

5.7.1 Phase 1A Summary

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 three historical period shipwrecks (Sites 15-2 and 15-3) that are submerged along the bank line of the Pequonnock River. However, the bank of the river has changed since these vessels sunk and the sites may now be buried under terrestrial soil. The underwater resources will not likely be disturbed by the Project.

Other archaeological and environmental data demonstrates that 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. However, 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 archaeological potential due to their association with the Southport Historic District (NRHP/SRHP/LHD) and the Railroad Avenue Industrial District (NRHP/SRHP). In its October 31, 2022 correspondence, the SHPO recommended that archaeological investigations of these 12 pole 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 completed during the Phase 1A investigation revealed that there are seven individually listed NRHP and SHRP properties, as well as 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 Railroad Westbound and Eastbound Stations (NRHP/SRHP)** are located at 96 Station Street and 100 Center Street in Fairfield, Connecticut; they include east bound station on the south side of the tracks and the west bound station on the north side of the tracks. Both stations were listed on the NRHP (and SRHP) in July of 1989, and they are contributing elements of the Southport Historic District (see below). The late nineteenth century Late Victorian style stations are considered significant in the areas of transportation and architecture. The building on the westbound side of the railway alignment is a wooden structure that was constructed in the salt-box style. The building situated on the eastbound side of the railway was constructed in 1884 to replace a depot that was destroyed by fire. The latter is typical of brick stations that were built at small town stops throughout the state.

- **Fairfield Railroad Stations (NRHP/SRHP)** include the eastbound station on the south side of the tracks and the westbound station on the opposite side. The two stations were listed on NRHP (and SRHP) in July of 1989. They are considered significant for their Late Victorian Stick/Eastlake architecture and for their contribution to railroad passenger service in Fairfield. The eastbound station is typical of utilitarian style brick stations at the time and housed a large waiting room, ticket counter, offices, rest rooms and baggage area. The westbound station was constructed in the 1890s as part of a rebuilding of the New York, New Haven and Hartford Railroad's main line. The station is a wood frame construction with Victorian style detailing.

- **David Perry House (NRHP/SRHP)** also known as the Seery-Bolster House, is a nineteenth century historical residence located at 531 Lafayette Street in Bridgeport. This property was listed on 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 to the north of the CT DOT corridor.

- **Barnum Museum (NRHP/SRHP)** also known as the Barnum Institute of Science and History, partially overlaps with the Bridgeport Downtown South Historic District. The building is located at 820 Main Street in Bridgeport and houses the museum collections. It was listed on the NRHP (and SRHP) in November of 1972. The museum is significant for its association with P.T. Barnum and for its architecture and contribution to urban planning.

- **United States Post Office-Bridgeport Main (NRHP/SRHP)** is located at 120 Middle Street in Bridgeport. It was listed on the NRHP in March of 1986 and is a contributing element of the Bridgeport Downtown North Historic District. This Moderne/Art Deco building was designed by architects Louis A. Simon (architect of the United States Treasury Department) and Charles Wellington Walker. Construction of the building was completed in 1934. The NRHP nomination forms notes that "the Bridgeport Post Office is a significant example of the Art Deco/Art Modern stylistic influences prominent during the late twenty's [sic] and thirty's [sic]. The post office is also significant for the art on its interior walls.

- **Connecticut Railway & Lighting Company Car-Barn (NRHP/SRHP)** 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 to the northwest of the CT DOT corridor, near UI's existing Congress Street Substation. However, this facility was demolished in 2008.

- **Pequonnock River Railroad Bridge (NRHP/SRHP)** is located at Grand Street and spans the Pequonnock River in Bridgeport. The bridge, which was constructed between 1897 and 1902, is considered significant for its engineering aspects. It 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.

- **Southport Historic District (NRHP/SRHP/LHD)** is a 225-acre area in the town of Fairfield, Connecticut bounded to the north by the Metro-North railroad tracks, to the south by the Mill River and Southport Harbor, to the west by Old South Road, and to the east by Rose Hill Road. This area includes properties on Church Street and along both sides of Rose Hill Road. A portion of the district was listed on the NRHP (and SRHP) in March of 1971; it was later designated as a LHD. The eastern boundary of the district was expanded in 1994 and extended again in 2007 to include buildings along Spruce Street. These two expansions are included on the SRHP. The district contains more than 150 contributing buildings designed in the Greek Revival, Romanesque, and Federal style architectural styles. The historic district is considered significant because it was the center of trade and commerce in the town of Fairfield in the 18th and 19th centuries.

- **Bridgeport Downtown South Historic District (NRHP/SRHP)** is a 27 acre late 19th century residential area located in the south-central portion of Bridgeport's central business district. It was listed on the NRHP (and SRHP) 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. Many of the structures are important examples of the work of nationally or locally prominent late nineteenth and early twentieth century architects, such as Cass Gilbert, Warren Briggs, Dennison and Hirons, Monks and Johnson, George Freeman, and Ernest G, Southey. Some notable contributing buildings include the Barnum Museum, the Sterling-Block-Bishop Arcade, and United Illuminating Company Building, all of which are individually listed on the NRHP/SRHP. The district also is significant because it encompasses 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 20th century urban-industrial and regional-government centers.

- **Bridgeport Downtown North Historic District (NRHP/SRHP)** is a 20 acre late 19th to mid-20th commercial district located in downtown Bridgeport. The district was listed on the NRHP (and SRHP) in November of 1987 and is 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 20th century urban-industrial and regional-government centers. This district is also significant because it encompasses a large number of substantially intact buildings that represent the development of a variety of popular 19th and early 20th century architectural styles, including the Italianate, Queen Anne, Richardsonian Romanesque, late Gothic Revival, Colonial Revival, Georgian Revival, Neoclassical, and Art Deco modes. Finally, the district is architecturally significant because a number of its buildings were designed by well-known 19th and 20th twentieth century architects.

- **Railroad Avenue Industrial District (NRHP/SRHP)** is a 50-acre industrial area on the western side of Bridgeport, Connecticut. It was listed on the NRHP (and SRHP) in September of 1985. It includes 11 late 19th and early 20th century factory complexes located along both sides of Railroad Avenue between Wordin and Fairfield Avenues. Most of the complexes have since been demolished due to urban renewal. The buildings were considered significant for their architecture (Criterion C) and for their contribution to the historical development of Bridgeport (Criterion A). Among the major Bridgeport manufacturers associated with these factory complexes are Bridgeport Organ, Wilmot and Hobbs, American Graphophone, Raybestos, Casco Manufacturing, Bryant Electric, and Harvey Hubell, Inc. The district's remaining buildings are also significant because they illustrate the typical factory architecture of the late 19th and early 20th centuries, with examples Victorian factories, relatively plain c. 1900 brick-pier mills, reinforced concrete buildings, and even c. 1930 structural steel/glass curtain wall construction.

- **Division Street Historic District (NRHP/SRHP)** is a 39-acre 19th century residential area located in Bridgeport's West Side-West End area. This district was listed on the NRHP (and SRHP) in June of 1982 and is significant for its Greek Revival, Gothic and Italianate style architecture. The district's buildings demonstrate the patterns of Bridgeport's growth in the second half of the last century and can be separated into three types of architecture types; early workers housing, Post Civil War mansions, and the Barnum-Sherwood Development. P.T. Barnum also established a residential development on the site of an old cemetery in the district. He was able to get legislation passed that approved the movement of the graves in the cemetery to another location.

- **Barnum-Palliser Historic District (NRHP/SRHP)** is a 5.9-acre late nineteenth century residential area bounded by Austin Street, Myrtle Avenue, Atlantic Street, and Park Avenue in Bridgeport. The area was originally developed by P.T. Barnum to provide housing for workers; it was listed on the NRHP (and SRHP) in December of 1982. Many of the houses in the district were designed by architects Palliser, Palliser & Co., and the area is significant for its Queen Anne, Stick/Eastlake, and Italianate style architecture. The district contains 33 residences and a brick schoolhouse. The NRHP nomination form states that the area is associated with "the real estate development aspect of the life of the important nineteenth century entertainer P.T. Barnum (Criterion B); is reflective of his relationship with and philanthropic attitude toward those of a less favored social class, an important late-nineteenth century trend (Criterion A) and is primarily the work of the nationally-known architectural firm of Palliser, Palliser & Company (Criterion C).

5.7.2 Supplemental Historic Resource Analyses

After reviewing the Phase 1A report, the SHPO requested that Heritage perform additional analyses of NRHP/SHRP and LHD properties within 0.5 mile (rather than 500 feet) of the Project corridor. The 0.5-mile study area distance is the same area of potential effect (APE-VE) used by the Federal Communications Commission in their *Nationwide Programmatic Agreement Regarding the Section 106 National Historic Preservation Act Review Process* for new cellular tower installations under 200 feet in height.

Accordingly, in late 2022-early 2023, Heritage conducted further research to identify NRHP/SRHP and LHD historic district and individually-listed properties within 0.5 mile of the proposed monopole locations.

A review of data on file with the SHPO revealed that a total of 780 previously recorded above ground historic resources are located within 0.5 mile of the Project corridor. The vast majority of the recorded resources are considered contributing elements of historic districts located within 0.5 miles of the Project corridor. There are a total of 23 historic districts (including those previously identified within 500 feet of the Project area). They consist of the following:

- Seven historic districts listed on the NRHP/SRHP that area also LHDs;
- 14 historic districts listed on the NRHP/SRHP;
- Two historic districts listed only on the SRHP; and
- Two historic districts listed on the SRHP that are also LHDs.

The recorded above ground historic resources located within 0.5 mile of the Project corridor also includes 22 individually-listed NRHP/SRHP properties, 12 individually-listed properties only on the SRHP, and one property that is listed on the NRHP that is also designated as a National Historic Landmark. These resources are described in the Supplemental Phase 1A report included in an Appendix D, and are illustrated on the Volume 2 maps:

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 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 5-10.[57]

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.

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

Table 5-10: 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, which extends through some areas that were historically used for railroad and other commercial and industrial purposes. As a result, UI conducted research and field investigations to determine if the proposed rebuilt 115-kV transmission line route could potentially extend through areas of soil and groundwater contamination. The results from the field studies and online environmental database queries suggest soil and groundwater conditions along and adjacent to portions of the railroad corridor are typical of highly developed urban/suburban areas characterized by a mix of historical and existing commercial and industrial uses and that contaminants in soils or groundwater could be encountered in some locations during Project construction.

For example, the Project route is adjacent to two properties that were historically used for manufacturing activities that resulted in soil and groundwater contamination. However, neither property is presently used for industrial purposes and both have undergone remediation pursuant to State and Federal requirements. These properties, both of which are located south of the CT DOT corridor in Fairfield, are:

- **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 concurrently with the construction of the train station and included the installation of a geosynthetic cap as an engineering control on portions of the property.

Other areas of soil or groundwater contamination from past commercial/industrial practices are likely present along or near portions of the Project route. 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 approximately 122 borings along the Project route, including at the sites of monopoles proposed for location near the Exide and Fairfield Metro properties. Currently, 71 of the borings, including soil sampling, have been completed. Samples were collected for analysis of the following:

- 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.
- Chlorinated Pesticides and Herbicides.

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 67 of the 71 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.

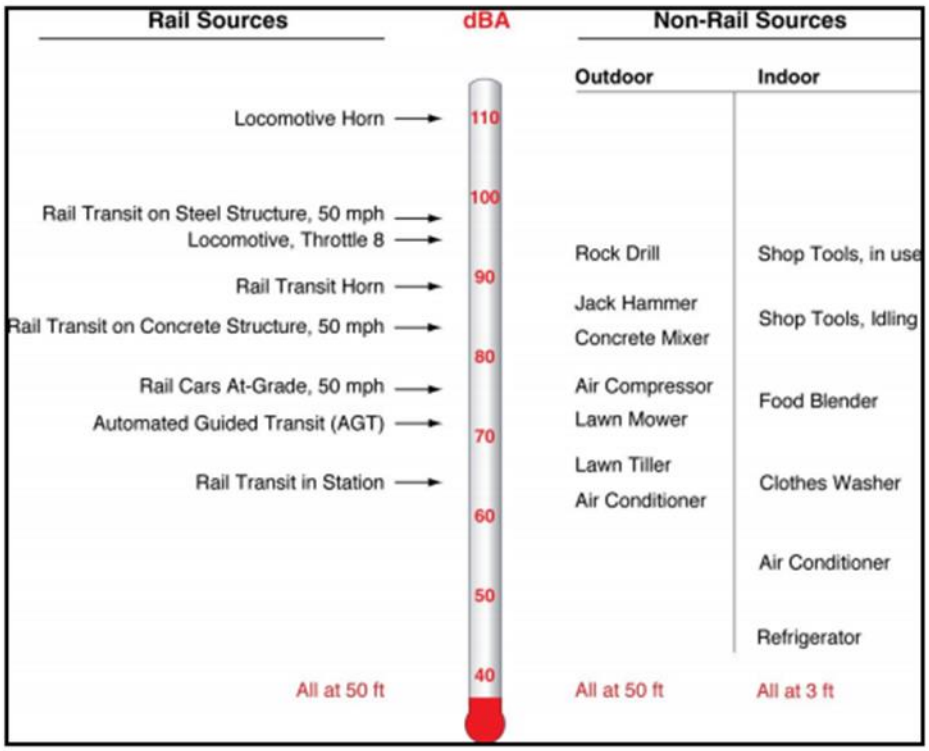
5.10.2 Noise

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.

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.

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)

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 5-11 lists the Connecticut noise zone standards, by emitter (source) and receptor (receiver) noise classification.

Table 5-11: 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. Moreover, the separation of the 115-kV lines and the railroad catenary structures will improve the resiliency of both of these critical infrastructure systems.

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 (while maintaining appropriate clearances). UI also will coordinate with CT DOT / MNR to schedule construction to avoid or minimize impacts to rail operations to the extent possible. In addition, UI will coordinate further with CT DEEP to develop measures to avoid or mitigate impacts to environmental resources, as well as with 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 the Project's engineering design is finalized and additional environmental investigations are performed.

Project plans also will be refined based on the input provided during the CSC process, the completion of other Federal and State agency reviews, and further 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 but not limited to 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 or earth work is performed, 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 that Project activities that cause vibration 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 local and State agencies.

Any excess soils or rock generated by from grading or structure foundation excavation will be either re-used onsite (after environmental characterization verifies that the soils are suitable) 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. UI's construction contractors will be required to implement and conform with 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. In this area, all four proposed monopoles will be aligned on undeveloped CT DOT property south of the MNR tracks and west of Westway Road. None of mapped Prime Farmland soils are currently used or zoned for agricultural purposes.

UI recognizes that soil disturbed by construction activities could be subject to erosion from wind or stormwater, and thus will develop a Project-specific SWPCP and will submit a Project registration under CT DEEP's General Permit DEEP-WPED-GP-015. 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 rebuild work, the sites effected by Project activities will be restored and permanently stabilized in accordance with CT DEEP's General Permit requirements and UI's SWPCP. 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. These methods will be included in UI's *Materials Management Plan*.

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 soil 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. All soil will be managed based on the results of testing performed by UI and others and as described in UI's *Materials Management Plan*.

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 restored and 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 direct loaded into the appropriate means of transportation to pre-determined and UI approved off-site management or disposal facility. Appropriate management methods and disposal facilities will be identified based on the results from testing or generator knowledge. The handling, manifesting, transport, and ultimate disposal of the soil material will be in accordance with applicable regulatory requirements.

As described in Section 5.9, UI identified two sites along the Project route where State or Federal remedial activities or clean-up programs have occurred. UI proposes construction activities within or near both of these properties and has identified general procedures for avoiding or minimizing impacts to the remediated areas of the properties. The proposed construction activities and mitigation measures for each site are discussed below:

- **Exide Site: Structures P673A, P675S, P676S and Associated Temporary Access Roads**. UI proposes to install three monopoles within the southern portion of the CT DOT corridor east of the 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, soil 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, P720S** 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 that proposed structures P714ES-1, P713WS-1, P719S, and P720S will be within the limits of the geomembrane cap. UI will coordinate with the property owner, CT DEEP, and the property's Licensed Environmental Professional (LEP) to plan the proposed construction such that it is compatible with the environmental controls present at the site and maintains the long- term integrity of the remedial solution in place at the site.

UI is in the process of coordinating with the owners of each of the above properties to determine the need for site-specific Materials Management Plans during Project construction activities.

It is possible that the proposed Project route may be located near other properties where contamination has been remediated or is in the process of being remediated. UI anticipates that such areas, if any will be identified as the Project planning and review process continues, along with UI's public outreach efforts. If such areas are identified, UI expects to coordinate with the property owner to determine if the Project will affect such areas and, if so, will implement and comply with applicable State and Federal requirements for managing materials to maintain compliance, assure public safety, and avoid or minimize potential environmental impacts.

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 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 or pre-approved dust suppressant 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 pre-approved off-site disposal facilities, 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.

In locations where pre-characterization of groundwater has not occurred and or UI and it's contractors cannot obtain a groundwater sample prior to construction, groundwater will be managed pursuant to applicable treatment requirements. All dewatering activities will be conducted in accordance with applicable local, State and/or Federal 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 26 new monopoles in 100-year floodplains and nine new monopoles (one of which – Structure 714WS-3 – will be installed within Ash Creek Substation to support OPGW only) 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

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 involving temporary construction matting or other temporary methods, are expected to be required to provide access across two watercourses (Ash Creek and watercourse WC-8), resulting in short-term impacts. In particular, along UI's ROW between the CT DOT corridor and Ash Creek Substation, a temporary work pad (consisting of timber mats or equivalent) may 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. Alternative methods of removing the lattice steel tower may include a temporary trestle-type bridge or the use of helicopters. The specific method for removing the lattice steel tower to minimize short-term impacts to Ash Creek will be identified in the D&M Plan.

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 timber (or equivalent) matting, to these two 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 impact estimation purposes.

In addition, UI anticipates that the construction of the transmission line segment between the New Pequonnock and Congress Street substations may involve work from a barge anchored near the west bank of the Pequonnock River. However, the barge would be used to facilitate the on-land Project construction and no in-water work would be required.

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 that may be 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. These plans will be included in the Project D&M Plan(s).

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 inland 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 inland [W-F and W-H] and one tidal [TW-I]) will result from the installation of construction work pads. No temporary access roads will be located in wetlands. 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	-	0.08	-	-	-
15/4	TW-I	-	0.03	-	-	-
18/5	TW-J	-	-	-	-	0.04*
Total Inland Wetland Impacts		**-**	**0.10**	**0.04**	**-**	**0.07**
Total Tidal Wetland Impacts		-	**0.03**	**-**	**-**	**0.05**
TOTAL WETLAND IMPACTS			**0.13**	**0.4**	**-**	**0.12**

*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 flood 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) is also 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.

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 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	26
12/4	Ash Creek	P704S	100-year	78
12/4	Ash Creek	P706S	100-year	105
13/4	Ash Creek	P708S	100-year	274
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 OPGW only	500-year	1
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	500-year	0**
20/5	Ash Creek	P737S	500-year	213
20/5	Ash Creek	P738N	500-year	134
20/5	Ash Creek	P739N	500-year	32
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	71
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	P779S	100-year	417
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, 26 new monopoles will be located in 100-year floodplains and an additional nine new monopoles will be located in 500-year floodplains. Permanent access roads to eight 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 26 monopoles that must unavoidably be placed in 100-year floodplains will displace approximately 4,100 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: 1,600 CF total impact
- Cedar Creek Harbor Floodplain: 330 CF total impact
- Pequonnock River Floodplain: 2,060 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, a total of approximately 6.5 acres of trees will have to be removed during Project construction. After the completion of construction, approximately 1 acre of the areas from which trees were cut will be allowed to revegetate naturally, including with trees. The remaining approximately 5.5 acres 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 necessarily an 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). Further, if appropriate, UI will consider the use of pollinator seed mixes for use in Project restoration; UI's restoration approach will be presented in the Project D&M Plan.

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. 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.

Further, to minimize potential construction impacts to 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), 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. More specifically, in the vicinity of Ash Creek, UI proposes to build a replacement platform to encourage future osprey nesting; the specific location of this platform has yet to be determined. UI has coordinated with CT DEEP regarding the peregrine falcon nesting location on the I-95 bridge over the Pequonnock River. Based on the location of work within the Project area, UI expects to be able to avoid impacts to this species.

6.4.3 Fisheries and Shellfish Resources

The Project is not expected to affect shellfish resources or 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. Based on review of data regarding shellfish lease areas, as well as consultations with the Connecticut Department of Agriculture, Bureau of Aquaculture (refer to Appendix A), no commercial shellfish beds are located near the Project area (specifically, near Ash Creek and the Pequonnock River). Further, the Project will not require work in Ash Creek that would cause sediment disturbance and transport to shellfish grounds located farther to the south.

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.

The Pequonnock River provides habitat for various fish species. The rebuilt 115-kV transmission lines will span approximately 1,300 feet of the western bank of the Pequonnock 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 and correspondence with CT DEEP, UI does not anticipate that the barge would have an impact on fisheries. Specifically, the CT DEEP Fisheries Division stated that the barge anchors (spuds) are not considered "in-water work" that would require special fisheries protection measures, such as time of year restrictions. CT DEEP also noted that any barge(s) used to support Project construction should be anchored in areas with sufficient water depth to avoid grounding during low tide; alternatively, the barge should be moved to deeper water during the ebbing tide so that the barge does not become grounded at any point. 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.

The CT DEEP Bureau of Fisheries also provided recommended mitigation measures, should Project construction work be required in the Pequonnock River. These recommendations (refer to Appendix A) include a prohibition on unconfined in-river work during the spring diadromous fish migration season (i.e., April 1 to June 30), the limitation of loud construction activities such as jack hammering, and the avoidance of bright lights directed onto the water's surface that could interfere with the fish migration. However, because the Project, as currently planned, will not involve any in-river work that would interfere with the fish migration, UI anticipates that the measures recommended to avoid impacts to the diadromous fish migration will not be necessary. UI will continue to consult with CT DEEP as planning for the Project continues and construction means and methods are determined.

In Ash Creek (near Ash Creek Substation), some in-water work (across intertidal mud flats) is expected to be required to remove the existing lattice structure that is located on a small rocky island near the southern bank of the creek. The removal of the lattice tower will potentially require temporary access across the mud flat. To minimize impacts to the creek habitat, the temporary work will be performed using best management practices and in accordance with the conditions of Federal and State regulatory approvals. Temporary erosion and sedimentation controls will be installed around the work area to avoid or minimize turbidity and the downstream transport of sediment; as a result, no impacts to shellfish areas located downstream of the lattice tower removal site are anticipated.

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 in the vicinity of the Project area, near the Pequonnock River. If Project construction in the vicinity of the nest occurs during the active breeding season, CT DEEP recommends work not be conducted 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 between April and July.

  Based on consultation with CT DEEP, UI conducted a field review to determine if any potential Project construction sites would be in the line-of-sight of the nest. After UI's field review, it was determined that no Project work that would potentially impact the Peregrine falcon will be conducted within 330 feet of the nest. UI does propose Project work within 660-feet of the nest; however, the field visit confirmed that none of the planned work is within the line-of-site of the peregrine falcon nest. UI provided the results of the field survey to CT DEEP and indicated that because Project-related impacts to the nesting peregrine falcon are not anticipated, a time of year restriction (April-July) for work within the Project area is not warranted. The CT DEEP concurred with this approach (refer to correspondence in Appendix A for further details).

- **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.** USFWS will reclassify the status of the northern-long eared bat from threatened to endangered on March 31, 2023. Based on 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 within the Project area is expected to be minimal . Considering the recent relisting of this species, UI expects to continue to coordinate further with USFWS and CT DEEP verify that Project activities will avoid impacts to northern long-eared bat.

- **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 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 New 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, including approximately 8.73 acres in Fairfield and 10.52 acres in Bridgeport (refer to Table 2-2 for a list of locations where permanent easement is expected to be required, and to the Volume 2 maps for illustrations of these areas). 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.

In Fairfield, UI proposes to acquire new permanent easements in two areas designated as conservation easements. One of the conservation easement areas is located on part of the 2082 Kings Highway parcel immediately adjacent to the CT DOT corridor. Due to wire clearance limitations within the CT DOT corridor, approximately 0.15 acres of new easement is proposed in the conservation easement area for proposed pole P708S and the associated transmission lines. In addition, UI proposes to acquire approximately 0.6 acre of permanent easement adjacent to the CT DOT corridor in the conservation easement area at the 21 Black Rock Road property (adjacent to the Fairfield Metro Train Station). UI currently has approximately 3.7 acres of easement for transmission lines and structures to the Ash Creek Substation. Four new single circuit poles (P713ES, P713ES-1, P714WS, and P714WS-1) are proposed to replace two existing double circuit towers.

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. Based on current Project plans, UI proposes to install one new monopole (Structure P696S) in Jennings Park near the southern CT DOT corridor boundary and to acquire any necessary permanent easement from the Town of Fairfield to accommodate clearance requirements for the rebuilt 115-kV lines. In Jennings Park, UI also proposes to establish a permanent access road on Town of Fairfield property.

This permanent access road would be aligned parallel to the CT DOT corridor boundary and would provide access to Structures P695S and P696S (refer to Volume 2, Attachment V.4, Map Sheet 10). 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 and Photo Simulations Report*, which is provided in Appendix C. This assessment incorporated a combination of three-dimensional computer modeling, field evaluations, and a review of various data sources to evaluate the visibility of the Project facilities from various locations and to provide photographic simulations of anticipated views of the rebuilt transmission lines.

The assessment includes viewshed analysis mapping, representative photographs depicting the existing visual environment in the Project area, and corresponding photo-simulations that portray scaled renderings of the proposed rebuilt 115-kV transmission line structures. Photographic locations 1 through 22 in the Appendix C report 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 in the vicinity of the railroad corridor. The simulations depict the proposed replacement monopoles and circuits, and the removal of the existing UI bonnets from the catenary structures and 115-kV facilities, as well as the removal of the lattice steel towers from the UI ROW to Ash Creek Substation and from above the railroad tracks at the Bridgeport Train Station.

The viewshed in the immediate vicinity of the Project will be altered in most areas. The proposed 115-kV transmission line monopoles will be aligned along the long-established railroad corridor and will typically

range in height from 100 feet to 140 feet above ground level, with the tallest monopole extending to 195 feet above ground level near the Bridgeport Metro North Train Station. An additional six approximately 100 to 115-foot-tall monopoles will replace three approximately 100-foot-tall double-circuit steel lattice towers along UI's 0.23-mile ROW between the railroad corridor and the Ash Creek Substation. In general, the new structures and transmission circuits will not introduce new prominent features, especially given the existing development and infrastructure associated with the CT DOT corridor, including the 80-foot to 120-foot-tall monopoles associated with the 1130 Line.

The viewshed maps in Appendix C demonstrate that while the zone of visibility associated with the Project will increase, the additional visibility will occur primarily on the margins of locations that have views of the existing development and infrastructure associated with the CT DOT corridor, including those over open water. The visibility of the existing UI infrastructure encompasses approximately 2,855 acres located within 1 mile of the existing UI facilities in the railroad corridor and ROW to Ash Creek Substation.[58] Current year-round visibility accounts for ±2,424 acres, with approximately 43% of these views occurring over open water. Seasonal visibility accounts for an additional ± 431 acres. Upon completion of the Project, the overall visibility is predicted to increase to approximately 3,530 acres.

It should be noted that the viewshed analysis for the Project is only comparing the existing and proposed conditions for those affected components of the Project, not the entirety of infrastructure within the CT DOT corridor. The isolation of subject removal and replacement facilities provides for a direct evaluation of the Project's visual effects on the environment. See the existing and proposed conditions viewshed maps in Appendix C.

The CT DOT corridor is an unmistakable landmark throughout the Project area. While the proposed monopoles are taller than the existing UI infrastructure being replaced, the increase in height allows for a greater separating distance between structures[59]. In several locations along the corridor, the Project's visual effects may be balanced or improved by the removal of bonnets and other supporting infrastructure from the railroad catenary structures. Photo 20 in Appendix C demonstrates how the reduction in quantity of existing vertical structures (i.e. the bonnets on the catenary structures) reduces the overall visual congestion along the corridor in this area. This effect may also occur in some residential areas that are located in close proximity to the CT DOT corridor, most of which have at least partial views of the existing railroad and

[58] An area incorporating a 1-mile radius surrounding the project corridor constitutes approximately 11,609 acres.

[59] The Project will result in the removal of UI infrastructure from 189 catenary support columns, as well as the removal of four lattice steel towers, six monopoles, and one W-flange structure (total of 200 removals), and the replacement of these existing support structures with 103 monopoles.

electrical infrastructure. In other similar locations where direct lines of sight exist at close distances the new poles may become more prominent features within the viewscape (see Photo 1 in Appendix C as an example). While the proposed modifications may alter the character of existing near views at distances of approximately 0.5-mile and beyond, the tops of the new structures and transmission circuits will not be as prominent, given the amount of intervening infrastructure common to the Project corridor.

As discussed herein, during UI's consultations with the SHPO, the agency requested additional viewshed mapping of historical resources beyond 500 feet from the Project corridor, extending the original study area to a 0.5 mile area on either side of the Project route. Based on the expanded study area, various additional historic resources were identified. The potential visual effects to historic resources are discussed in Section 6.8.

6.8 CULTURAL (ARCHAEOLOGICAL AND HISTORIC) RESOURCES

This section reviews the results of Heritage's Phase 1A survey (September 2022), discusses the SHPO's correspondence regarding the Phase 1A survey (October 31, 2022) and follow-up correspondence concerning further archaeological testing at certain locations (January 17, 2023), and summarizes the findings of the additional analyses of the expanded viewshed study area (to 0.5 mile), which were performed as requested by the SHPO to further assess the Project's potential visual effects on NRHP/SRHP districts, individually listed and contributing properties, and LHDs (Refer to Appendix A for correspondence between UI/Heritage and the SHPO and to Appendix D for copies of both the September 2022 Phase 1A report and the February 2023 Phase 1A supplemental report.)

6.8.1 Phase 1A Survey Results: Summary

The Phase IA survey completed by Heritage (refer to Appendix D for the full report) revealed that two archaeological sites are 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 recommended 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 recommended that a professional archaeologist be on site during construction to monitor any ground disturbing activities in these areas.

Heritage's Phase IA survey also determined that the Project would have direct impacts associated with 12 proposed monopoles that are will be located within the Southport Historic District/Southport NRHP/SRHP/LHD (P657S and P659S) and the Railroad Avenue Industrial District (P739N, P740N,

P742N, P743N, P744N, P745N, P745S, P746S, and P748S). Since these areas have the potential to yield cultural deposits associated with various occupations, Heritage recommended that archaeological monitoring of the locations of proposed Poles P657S, P659S, P739N, P740N, P742N, P743N, P744N, P745N, P745S, P746S, and P748S be conducted to determine if they contain intact archaeological deposits.

Viewshed analysis completed during the original Phase IA review which considered a search of area of 500 feet from the Project corridor, revealed that Project components will be visible from the Division Street Historic District, Barnum-Palliser Historic District, Bridgeport Downtown North Historic District, Bridgeport Downtown South Historic District, and Railroad Avenue Industrial District, and may represent an adverse effect to their viewsheds. Since these districts and of their contributing elements are listed on the NRHP/SRHP, Heritage recommended that UI work in consultation with the SHPO, as well as 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, Bridgeport Downtown South Historic District, and Railroad Avenue Industrial District.

6.8.2 Archaeological Resources

The Phase 1A report revealed that six previously recorded archaeological sites are located within 500 feet of the Project area: two in Fairfield and four in Bridgeport. Two of these sites are in close proximity to the Project area: Sites 15-2 and 15-3 in Bridgeport. While these two sites do not fall within areas where poles are proposed, they are situated within and close to proposed above ground Project work areas and portions of the sites may now be buried near the present-day riverbank. It is recommended that the riverbank areas be covered with timber matting during construction to avoid impacts to any potential below ground resources in these areas. If timber matting is not feasible, it is further recommended that a professional archaeologist be on site to monitor construction activities in the vicinity of Sites 15-2 and 15-3.

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 and the Railroad Avenue Industrial District. In the Phase 1A report, Heritage 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 around the pole locations during construction monitoring.

The SHPO reviewed the archaeological information presented in Heritage's Phase 1A report and in its October 31, 2022 correspondence and provided the following input regarding archaeological resources:

- **Archaeological Sites 15-2 and 15-3.** The SHPO concurred with Heritage's recommendation that timber matting should be used during construction in these areas containing Sites 15-2 and 15-3 to avoid impact to them, and if not possible, a professional archaeologist should be on site for any planned excavation activities between proposed monopoles P775S and 779S.

- **Archaeologically Sensitive Areas.** The SHPO concurred that locations of proposed monopoles P657S, P659P, P739N, P740N, P742N, P743N, P744N, P744EN, P745N, P745S, P746S, and P748S may retain the potential to yield cultural deposits due to their association with the Southport Historic District (NRHP/SRHP/LHD) and the Railroad Avenue Industrial District (NRHP/SRHP). Whereas Heritage recommended archaeological monitoring during construction at these location, the SHPO recommended a Phase 1B professional cultural resources assessment and reconnaissance survey.

Subsequently, UI and Heritage determined that traditional Phase 1B investigations (involving hand shovel testing) would not be feasible at the 12 monopole locations due to factors such as the presence of non-native fill, buried utilities, pavement, and gravel, as well as the potential for deeply buried cultural deposits. Consequently, UI/Heritage proposed that archaeological monitoring be performed at the monopole locations instead of shovel testing, and that the monitoring include a combination of vacuum soil removal of the upper layers non-native fill pavement and gravel followed by a review of the underlying soils for the presence of archaeological deposits using appropriate heavy equipment. This monitoring is planned to be performed prior to or during the initial stages of Project construction. The SHPO concurred with this Phase 1B approach; refer to the SHPO January 17, 2023 correspondence (Appendix A).

In addition, although unlikely given the past modifications to the railroad corridor and vicinity and the planned performance of the pre-construction archaeological monitoring, 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 to be followed in the event that any unanticipated cultural resource discoveries are made during construction.

6.8.3 Historic Resources: Viewshed Analyses and NRHP/SRHP/LHD Properties

Viewshed analyses completed during Heritage's Phase 1A survey, as well as the supplemental research performed after the initial the Phase IA report, revealed that Project components may be visible from the historic districts and properties outlined below. Since all of these districts and individually listed properties,

as well as many of their contributing elements are listed on the NRHP or SRHP or both, or are part of a LHD, it is recommended that UI work in consultation with the SHPO, as well as any other approved stakeholders, to offset the visual impacts to them. The summaries below apply to the above ground resources that may have viewsheds affected by the Project's rebuilt transmission facilities.

The following summary presents information first regarding the historic resources that are within 500 feet of the Project area and then describes the historic resources within 0.5 mile of the Project area.

Results of the Initial Phase 1A Viewshed Analysis (500 feet)

Based on the viewshed analysis of the Project components conducted during the original Phase 1A assessment survey, 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 located within 500 feet of the Project corridor, including the Southport Historic District (NRHP/SRHP/LHD), Railroad Avenue Industrial District (NRHP/SRHP), Division Street Historic District (NRHP/SRHP), Barnum-Palliser Historic District (NRHP/SRHP), Bridgeport Downtown North Historic District (NRHP/SRHP), and Bridgeport Downtown South Historic District (NRHP/SRHP). Specifically, to support the rebuilt 115-kV lines, monopoles in the viewsheds of the NRHP/SRHP/LHDs referenced above are proposed be approximately 100 to 135 feet tall.

In addition, there are seven recorded locations that contain individually-listed NRHP/SRHP properties within 500 feet of the Project corridor that also will have their viewsheds altered as a result of new monopoles. They include the Southport Eastbound and Westbound Stations, Fairfield Railroad Stations, David Perry House, Barnum Museum, United States Post Office-Bridgeport Main, and Pequonnock River Bridge. It should be noted that, while the Connecticut Railway and Light Company Barn remains listed on the NRHP and SRHP, it has been demolished and will not be impacted by the Project.

In its October 31, 2022 correspondence, the SHPO recognized the potential indirect visual effects on the historic resources within 500 feet of the Project corridor as identified in the Phase 1A assessment survey report and determined that mitigation would be required to offset the indirect visual effects on the NRHP/SRHP properties. Further, the SHPO noted that there are properties within the Project area that may be eligible for listing on either the National or State registers, along with properties within historic districts that may be considered eligible for individual listing. Thus, the SHPO recommended that the study area for visual impacts be expanded from 500 feet from the Project corridor to 0.5 mile to further assess potential

indirect visual effects to above ground historic structures and districts, consistent with Federal review processes under the National Historic Preservation Act.

Further, the SHPO determined that of the NRHP/SRHP resources identified in the Phase 1A assessment survey report, 12 will be visually impacted by the Project and that the MNR corridor also is considered eligible for listing on the NRHP/SRHP. As a result, the SHPO found that the Project will have an adverse effect on historic resources and requested that UI continue to consult with the SHPO regarding mitigation.

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

Results of Expanded 0.5-Mile Study Area Analyses

Based on the expanded viewshed analysis, Heritage determined that the Project – specifically views of the monopole structures for the rebuilt 115-kV lines – may result in indirect visual effects on portions of 14 additional NRHP/SRHP/LHDs and some of their contributing elements that are located outside of the 500 foot buffer searched during the Phase IA investigation but within 0.5 mile of the Project corridor (refer to Table 6-5). Specifically, to support the rebuilt 115-kV lines, monopoles in the viewsheds of these NRHP/SRHP/LHD structures are proposed be approximately 100 to 135 feet tall.

Table 6-5 Additional NRHP/SRHP/LHD Districts within 0.5 Mile of the Project Corridor

City/Town	NR/SR District	Property Type (NRHP/SRHP/LHD)
Fairfield	Fairfield Historic District	NRHP/SRHP/LHD
Bridgeport	Marina Park Local Historic District	NRHP/SRHP/LHD
Bridgeport	Bassickville Historic District	NRHP/SRHP
Bridgeport	East Bridgeport Historic District	NRHP/SRHP
Bridgeport	East Main Street Historic District	NRHP/SRHP
Bridgeport	Golden Hill Historic District	NRHP/SRHP
Bridgeport	Seaside Park Historic District	NRHP/SRHP
Bridgeport	Seaside Village Historic District	NRHP/SRHP
Bridgeport	Sterling Hill Historic District	NRHP/SRHP
Bridgeport	William D. Bishop Cottage Development Historic District	NRHP/SRHP
Fairfield	Mill Plain State Register Historic District	SRHP
Fairfield	Sasco Hill State Historic District	SRHP
Bridgeport	Pembroke City Local Historic District	SRHP /LHD
Fairfield	Old Post Road Local Historic District	SRHP /LHD

In addition, there are 10 properties listed on both the NRHP and SRHP, five properties individually-listed on SRHP, and a single property that is listed on the NRHP that is also designated as a National Historic Landmark (NHL) located outside of the 500 foot buffer searched during the Phase IA assessment survey but within 0.5 mile of the Project corridor (refer to Table 6-6). These additional properties are situated outside of historic districts and within 0.5 mile of the Project corridor and may have their viewsheds altered as a result of new monopoles.

Table 6-6 Additional Individually listed NRHP/SRHP/NHL Properties within 0.5 Mile of the Project Corridor

City/Town	Name	Address	Type/Use	NR/SR/NHL
Bridgeport	Palace and Majestic Theaters	1315-1357 Main Street	Commercial	NRHP/SRHP
Bridgeport	Seaside Institute	299 Lafayette Avenue	School	NRHP/SRHP
Bridgeport	Cassidy House	691 Ellsworth St	Residential	NRHP/SRHP
Bridgeport	West End Congregation (Achavath Achim Synagogue)	725 Hancock Avenue	Religious	NRHP/SRHP
Bridgeport	Fairfield County Courthouse	172 Golden Hill Street	Municipal	NRHP/SRHP
Bridgeport	Sterling Block - Bishop Arcade	1-35 Post Office Arcade	Commercial	NRHP/SRHP
Bridgeport	Bridgeport Main Post Office (U.S. Post Office)	120 Middle Street at Golden Hill Street	Commercial	NRHP/SRHP
Fairfield	Southport Railroad Stations (East-Bound Station)	96 Station Street	Municipal	NRHP/SRHP
Fairfield	Fairfield Railroad Station East	Carter Henry Drive	Municipal	NRHP/SRHP
Fairfield	Fairfield Railroad Station West	Carter Henry Drive	Municipal	NRHP/SRHP
Fairfield	Birdcraft Sanctuary	314 Unquowa Road	Museum/Conservation Area	NRHP/SRHP/NHL
Bridgeport	Captain John Brooks, Sr. House	199 Pembroke Street	Residential	SRHP
Bridgeport	Harris Memorial Church (Berean Church)	262 East Main Street	Religious	SRHP
Bridgeport	Maloney's Café	33 Cannon Street	Commercial	SRHP
Fairfield	Sea Lodge	1313 Pequot Avenue	Recreational	SRHP
Fairfield	Powder House	230 Unquowa Road	Storage	SRHP

UI plans to work in consultation with the SHPO, as well as any other approved stakeholders, to develop mitigation options to offset the visual impacts of construction to the historic districts and individually-listed listed properties in Tables 6-5 and 6-6.

NRHP/SRHP/LHD Districts/Areas within 0.5 Mile of the Project Corridor

A total of 10 NRHP/SRHP historic districts (one in Fairfield and nine in Bridgeport) are located outside the original 500 foot search radius described in the Phase 1A assessment survey report but within 0.5 mile of the Project corridor and within the viewshed prepared by APT. The SHPO considers any district listed on

the NRHP to also be automatically listed on SRHP. In addition, certain of the NRHP/SRHP districts listed below also are identified as LHDs by the Town Fairfield or the City of Bridgeport.

Fairfield

- **Fairfield Historic District (NRHP/SHRP/LHD-District).** The Fairfield Historic District encompasses 75 buildings representing various architectural styles bordering the Old Post Road to Turner Street and southeast/northeast of Town Hall on both sides of Beach Road. The dates of the contributing buildings in this district range from the pre-Revolutionary War era through the 1890s. The Fairfield Historic District was added to the NRHP (and the SRHP) on March 24, 1971, due to its significance in architecture, education, military history, and political context. It was later designated as a LHD by the Town of Fairfield.

Bridgeport

- **Marina Park Historic District (NRHP/SRHP/LHD-District).** The Marina Park Historic District is located in the southern end of Bridgeport and was listed on the NRHP (and SRHP) in April of 1982. It is significant for the work of architect George Longstaff, who designed and planned Marina Park. Architectural styles within this district include Queen Anne, Edwardian, International Style and Shingle Style. This district has been characterized as "the last uncompromised concentration of monumental late nineteenth century domestic architecture in Bridgeport". It is also significant for its association with P.T. Barnum who founded Barnum & Bailey Circus and played a role in the development of the Marina Park Historic District.

- **Bassickville Historic District (NRHP/SRHP-District).** The Bassickville Historic District consists of 38 contributing buildings, and it encompasses property laid out in the 1883 for rental housing known as "Bassickville." Of the contributing buildings, 31 are identical single-family cottages constructed in the stick style built between 1883 and 1885 as rental properties. The remaining buildings include a 20th century colonial revival style duplex and a brick commercial complex. While demolition and later infilling have changed the original appearance of the Bassickville development, many of the cottages remain in their original form or have only undergone minor changes. The Bassickville Historic District was added to the NRHP (and SRHP) on September 8, 1987 due to its significance as a cohesive and preserved late 19th century housing development.

- **East Bridgeport Historic District (NRHP/SRHP-District).** The East Bridgeport Historic District encompasses 25 city blocks surrounding a central square. It contains 260 contributing buildings that were a part of a Victorian era planned residential and industrial community. The buildings falls into four major categories. The first consist of Industrialists' houses dating from 1860 to the 1880s and constructed in the Italianate or Queen Anne style. Second are houses for artisans, tradesman, and factory supervisors that consisted of single or double family dwellings. The third category is housing for the labor class, which included brick row houses and four family tenements, as well as smaller single and double houses. Finally, there are the industrial buildings in the district and supporting infrastructure, including four churches. The district was added to the NRHP (and SRHP) on April 25, 1978 for 19th century architecture, community planning and industry.

- **East Main Street Historic District (NRHP/SRHP-District).** The East Main Street Historic District consists of a collection of 36 buildings. The district derives its character from the aesthetic of it streetscape, consisting of closely spaced, stylish brick and wood framed buildings erected between 1855 and 1920 in the Italianate architectural style. Other styles exemplified in the district include Second Empire, Queen Anne, Georgian, and Neoclassical Revival, as well as eclectic Victorian architecture. The district was added to the NRHP (and SRHP) on February 21, 1985 for its significance in architecture, art, commerce, and local history.

- **Golden Hill Historic District (NRHP/SRHP-District).** The Golden Park Historic District is located on and around the crest of Golden Hill in the northwestern portion of the central business district in Bridgeport. It encompasses 16 contributing buildings situated on approximately 100-acres of land. The contributing structures are exemplary of architecture built between the 1890s and 1930s. Architectural styles represented in the district include Italianate, Queen Anne, Colonial Revival, Tudor Revival, Gothic Revival, and Neoclassical. The district was added to the NRHP (and SRHP) on July 20, 1987 for its architectural significance and association with the locally important Lyon Family.

- **Seaside Park Historic District (NRHP/SHRP-District**). Seaside Park is located along the Long Island Sound in Bridgeport. The park is a crescent-shaped stretch of shoreline and encompasses the buildings historically associated with Seaside Park. The park can be divided into three sections, both visually and historically. The eastern section, developed between 1865 and 1879, functioned as the original park. The central section of the park encompasses a flat and open area that was added in 1884. Finally, the western section of the park was developed from reclaimed marshland between 1895 and 1918. The buildings situated within the park include a recreation hall built in 1918, stables, Black Rock Lighthouse, an octagonal stone tower, and the brick foundation remains of a mid-19th century dwelling. The original eastern section of the park was likely designed by Fredrick Law Olmstead or heavily influenced by examples of his work. The park was added to the NRHP (and SRHP) on April 30, 1982 for its significance in architecture, community planning, engineering, and landscape architecture during the nineteenth century.

- **Seaside Village Historic District (NRHP/SRHP-District).** The Seaside Village Historic District is an historic enclave in the southwestern section of Bridgeport. It is representative of a World War I housing complex (1916 to 1920) built by the Bridgeport Housing Company. It consists of 58 one-and-a-half story and two-and-a-half story structures that contain 200 single family units, arranged in rows and clusters. The brick structures have slate roofs and are representative of Neo-Classical and Colonial Revival styles. The district is representative of the efforts of the U.S Housing Administration to provide emergency housing for workers producing war-related goods. It was added to the NRHP (and SRHP) on August 13, 1990 for its significance in community planning and development, social history, and architecture.

- **Sterling Hill Historic District (NRHP/SRHP-District).** The Sterling Hill Historic District encompasses a two-block area of 19thcentury residences in Bridgeport. The district occupies a portion of the northern slope of Golden Hill and an 80-foot ridge around the city's downtown area. The steep slope on which the district is situated gives it a distinctive character, with many of its structures constructed on small stone wall terraces. The district contains 41 contributing buildings that represent three significant time periods, pre-civil war (16 buildings), post-civil war (19 buildings), and products of the gentrification movement (six buildings). The district includes

examples of Italian villa, Italianate, Gothic, Greek Revival, Romanesque, and federal architectural styles. The Sterling Hill district was added to the NRHP (and SRHP) in April of 1992 for its significance in Architecture and ethnic/European heritage from 1822 to 1915.

- **William D. Bishop Cottage Development Historic District (NRHP/SRHP-District).** The William D. Bishop Cottage Development District is a residential area located in the southern end of Bridgeport. It consists of a collection of 35 small wood cottages that were part of a planned workers' development constructed by Bishop Realty in 1880. The cottages consist mostly of one-and-a-half story Carpenter's Gothic-style structures built in 1880 and 1881. There are also six other residential buildings in the district built in the Greek Revival, Italianate, Queen Anne, and Brick Row styles. This historic district was added to the NRHP (and SRHP) on June 28, 1882 for its significance in 19th century architecture. It is one of Bridgeport's first planned tract developments to provide housing for lower-incomes workers.

Individually-Listed NRHP/SRHP Properties within 0.5 Mile of the Project Corridor

The following includes overviews of additional individually listed NRHP/SRHP properties that are located outside of the original Phase IA assessment survey 500-foot search area but within 0.5 mile of the Project corridor and within the viewshed are prepared by APT. It should be noted that any property that is listed individually on the NRHP is also considered to be automatically listed on the SRHP by the SHPO. These properties may also include those designated as NHLs.

Fairfield

- **Birdcraft Sanctuary (NRHP/SRHP/NHL)**
  The Birdcraft Museum and Sanctuary is located at 314 Unquowa Road in Fairfield. It contains five contributing features within a conservation area. They include the entrance gate, museum building, a bungalow, a chimney, and the landscape of the sanctuary. The Birdcraft Sanctuary was established in 1914 by the Audubon Society. The museum, bungalow, and a lake were also constructed in 1914. The museum and sanctuary is not only listed on the NHRP (and SRHP) but was designated as a NHL. The Birdcraft Museum and Sanctuary is significant for its affiliation with Mabel Osgood Wright, who revived the national Audubon movement and established the foundation for its current success. It was here that she originated the concept of "bird scaping," where the landscape was developed to encourage and support the ecology and habitat of birds. The sanctuary is also significant for its contribution to conservation efforts, both historically and presently.

Bridgeport

- **Fairfield County Courthouse (NRHP/SRHP-Property).** The Fairfield County Courthouse is located at 172 Golden Hill Street in Bridgeport. It was built in 1888 in the Richardsonian Romanesque architectural style and was designed by architect Warren R. Briggs. It exemplifies the qualities of this architectural style in its exterior façade and interior elements. The building was added to the NRHP (and SRHP) on January 21, 1982 for its significance with the Richardsonian Romanesque architectural style, a prominent locally based architect, and role the building has played in politics and government throughout its history.

- **Palace and Majestic Theaters (NRHP/SRHP-Property).** The Palace and Majestic Theaters are located at 1315-1357 Main Street. Built between 1921 and 1922, they were designed to exemplify the romantic architectural style of Italian Renaissance Revival. The interiors of the theaters embody this style through the use of plush carpets, gilded mirrored glass, gold leaf, chandeliers, medallions, paneling, and painted ceilings. The Palace theater seats up to 3,700 people, while the Majestic Theater seats 2,600 people. The two theaters were added to the NRHP (and SRHP) on December 13, 1978 for their association with architectural and cultural significance of the early twentieth century.

- **Sterling Block & Bishop Arcade (NRHP/SRHP-Property).** The Sterling Block & Bishop Arcade is located at 993-1005 Main Street and 1-35 Post Office Arcade in Bridgeport. This block is the oldest major commercial block surviving in the central business district of the city. It consists of a combination of a Greek Revival business area and a Victorian Gothic shopping mall. The northernly section of the building block dates from 1841 and originally operated as a hotel called the Sterling House. The southern section of the building block was added in 1850. The structures underwent remodeling and renovation in 1879 and 1889. These buildings remain one of the strongest 19th century statements in the downtown area of continued use. The Sterling Block & Bishop Arcade were listed on the NRHP (and SRHP) on December 20, 1978 for their significance related to architecture, commerce, and engineering.

- **Cassidy House (NRHP/SRHP Property).** The Cassidy House is located at 691 Ellsworth Street. Built in 1849 by John Plumb, this residence is a two-story wood framed Italianate style building. The structure has a shallow pitch hip roof sporting board boxed eaves and a veranda. The veranda is an example of fine scrollwork and bracketing. The Cassidy House is the only documented building in the City of Bridgeport of this time period. It was listed on the NRHP (and SRHP) on October 17, 2011 for its significance in architecture.

- **West End Congregation (NRHP/SRHP Property).** The West End Congregation has also been known as the Achavath Achim Synagogue, the Iglesia Christiana El Bueno Pastor, and the Good Shepherd Christian Church. It Is located at 725 Hancock Avenue and was originally built in 1926 Colonial Revival style. It was designed by local architect Leonard Asheim who was employed by the E.&F. Construction Company. The church was originally built as a Synagogue and is considered a rare example in Bridgeport of a church being designed in the Colonial Revival style during a time where Gothic Revival was favored. The West End Congregation was listed on the NRHP (and SRHP) on April 10, 1995 for its architectural significance.

- **Seaside Institute (NRHP/SRHP Property).** The Seaside Institute, also known as Bridgeport Herald Building, is located at 299 Lafayette Avenue in Bridgeport. Designed by architect Warren R. Briggs, it was built in 1887 for the female employees of the Warner Brother Corset Factory. The building has a square plan and is two-stories high with a raised basement and attic. A turret is located on the corner of the building; it is made of brick and has brownstone and terracotta decorations. The building has a hipped roof with two projecting gables. The Seaside Institute is representative of the philanthropic ideals and relationship between employers and employees in the 19th century. The building is considered an excellent example of an eclectic design influenced by the Richardsonian Romanesque style. The Seaside Institute was added to the NRHP (and SRHP) on June 14, 1982, due to its significance in architecture, education, and social history.

SRHP Districts Within 0.5 Mile of the Project Corridor

There are two SRHP districts, neither of which are listed on the NRHP, located in Fairfield within 0.5 mile of the Project and are situated within the viewshed:

- **Mill Plain Historic District (SRHP District).** The Mill Plain historic district is bounded on the northwest by Mill River, and on the southwest by the properties facing Unquowa Road, and the southernly portion of Sturges Road; it is situated north of the Connecticut Turnpike. The properties included within this district were considered eligible for inclusion on the SRHP and the district was listed in the SRHP 1975. There are no details on file at the SHPO regarding the nature of the district other than a map, which suggests it includes approximately 100 property parcels of land.

- **The Sasco Hill Historic District (SRHP-District).** The Sasco Hill State Historic District extends eastward from the eastern bank of Southport Harbor to Sasco Hill Road and northward to the harbor It encompassed numerous lots along the local roads, as well as a golf course between the harbor and Sasco Hill Beach. The historic district nomination form identified a single extant structure dating from before 1800 (c. 1790) within the district, seven buildings dating from between 1800 and 1900, and many constructed between ca., 1916 and 1930. The buildings from the latter period are generally typical of the of early twentieth-century summer mansion that were constructed following the establishment of the golf course as the Country Club of Fairfield, which was constructed between 1914 and 1921 (Country Club 2015). In contrast, the handful of 19th century buildings likely represent earlier efforts to farm this stretch of land.

Individually Listed SRHP Properties within 0.5 Mile of the Project Corridor

As listed in Table 6-7, five individually-listed SRHP properties (two in Fairfield and three in Bridgeport) are located within 0.5 mile of the Project corridor and within the anticipated viewshed of the Project. The individually-listed SHRP properties include a single residential structure, one commercial structure, a religious property, a recreational facility, and one structure related to storage. The buildings vary in age and architectural styles, dating from the eighteenth century through the twentieth centuries.

Table 6-7: SRHP Properties (Individually Listed) within 0.5 Mile of the Project

Municipality	Property Name	Address	Type
Bridgeport			
	Harris Memorial Church (Berean Church)	262 East Main Street	Religious
	Captain John Brooks Sr. House	199 Pembroke Street	Residential
	Maloney's Café	33 Cannon Street	Commercial
Fairfield			
	Sea Lodge House	1313 Pequot Avenue	Recreational
	Powder House	230 Unquowa Road	Storage

Local Historic Districts within 0.5 Mile of the Project Corridor

Two LHDs (one in Fairfield and one in Bridgeport), as summarized below, are located outside of the original Phase IA 500-foot search area but are within 0.5 mile of the Project corridor and the viewshed area.

Fairfield

- **Old Post Road Historic District (LHD-District).** The Old Post Road Historic District (LHD) is an 18th to 19th century district. It is significant for its pre-Revolutionary Was era homes, as well as buildings characterized by the Victorian, Second Empire, and Romanesque styles of architecture. The Old Post Road Historic District (LHD) includes portions of the original four squares that comprise the town of Fairfield. The Town Hall and the Town Green are the central point of the LHD. According to the town's website, the district includes 205 through 370 Beach Road; 90 through 110 Belmont Street; 85 through 1047 Old Post Road, and 131 South Benson Road. This district has not been assessed applying the NHRP criteria for evaluation 36 CFR 60.4 [a-d]).

Bridgeport

- **Pembroke City Historic District (LHD-District).** The Pembroke City Historic District (LHD) includes the following streets in Bridgeport: William Street, Harriet Street, Artic St, Maple Street, Clarence Street, Crescent Avenue, Park Street, and Washington Park. This area was recognized in 1979 by the Bridgeport Historic District Commission; its boundaries partially overlap with the NRHP-listed East Bridgeport Historic District (NRHP/SRHP) described above. The Pembroke City Historic District (LHD) consists of residential houses dating from the Victorian period. They range in style from brick row houses dating from 1851 and 1890 to tenement housing dating from the 1880s, as well as single family homes in the Italianate and Queen Anne style dating from the 1860s. The district is considered important for its architecture and is seen as a continuation of the Victorian planned community represented by the East Bridgeport Historic District. This district has not been assessed applying the NHRP criteria for evaluation 36 CFR 60.4 [a-d]).

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 will also 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 will also 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 the 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-kV lines located on top of the railroad catenary structures between the start of the Project in southwestern Fairfield at Catenary Structure B648 and Congress Street Substation in Bridgeport as well as in areas adjoining the CT DOT corridor. In addition, Exponent evaluated EMF levels along the 0.23-mile existing UI ROW between the CT DOT corridor and Ash Creek Substation, where the three existing lattice steel towers will be replaced with single-circuit monopoles, in sets of two.

Exponent also modeled the expected EMF levels during the operation of the 115-kV lines as proposed to be rebuilt – that is - on single-circuit vertical monopoles located along the south side of the railroad tracks in most of Fairfield and on a combination of single- and double-circuit monopoles located along the rest of the Project route, with all monopoles principally along or near the CT DOT-owned corridor or – in the case of the short UI ROW to Ash Creek Substation – within the existing and proposed expanded ROW.

Based on these analyses, all calculated EMF levels associated with the Project will be far below those recommended limits for the general public in international health-based standards. Attachment E presents Exponent's detailed EMF report, which is summarized below.

7.1 OVERVIEW

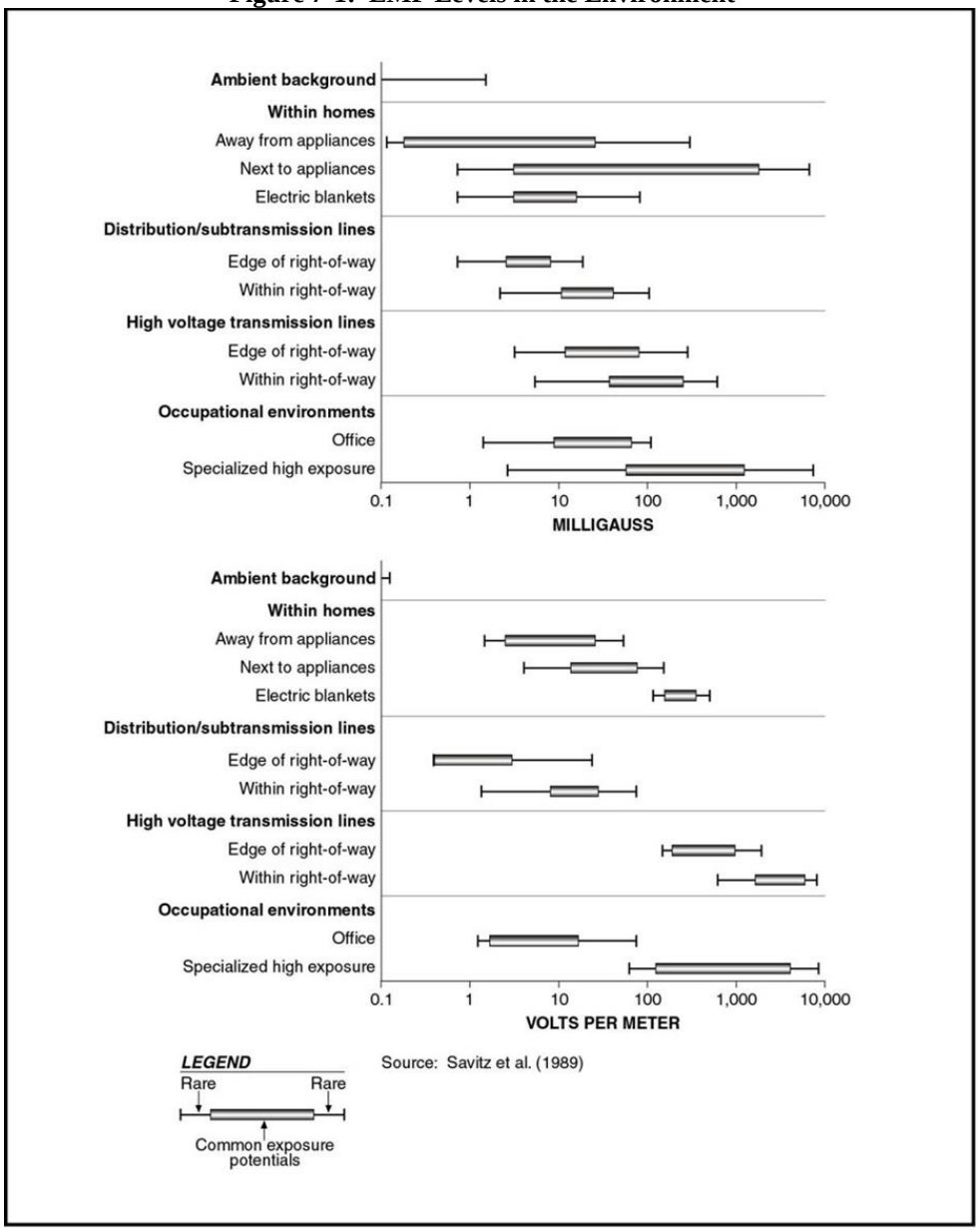
EMF surrounds anything that generates, transmits, or uses electricity. As a result, people living in modern communities are surrounded by various sources of EMF on a daily basis. Magnetic fields and electric fields are described as follows:

- ***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 depicts typical EMF levels in residential and occupational environments, as well as on or at the edges of transmission line ROWs.

Figure 7-1: EMF Levels in the Environment[60]



[60] Savitz DA, Pearce NE, Poole C. 1989. Methodological issues in the epidemiology of electromagnetic fields and cancer. Epidemiol Rev 11:59-78.

7.2 EMF MODELING

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 UI's 115-kV transmission lines along the Project route. EMF levels from these 18 modeling cross sections were evaluated at a height of 1 m above ground (in accordance with standard industry practices (e.g., IEEE Standards C95.3.1-2010 and 644-2019) and the CSC (CSC BMP 2014, Section A, pg. 6).

The 18 segments are broadly categorized into five groups as illustrated in Figure 7-2 and described below.[61]

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 and eight bonnets 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 three existing double-circuit lattice structures (supporting two 115-kV lines) will be replaced with single-circuit vertical monopole structures, separating each 115-kV line.

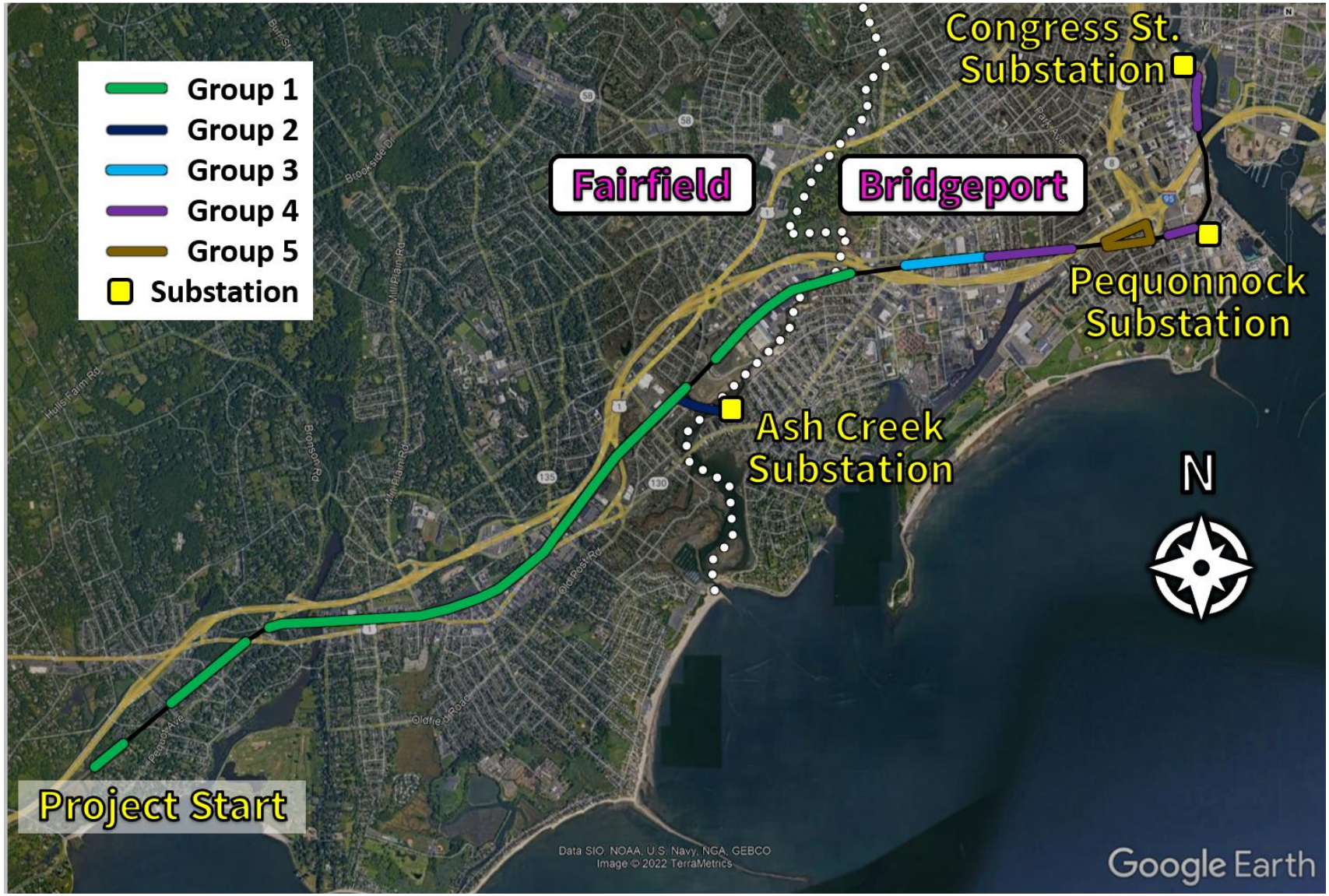
Group 3 Represents a very short portion of the route in Bridgeport where the two transmission lines (circuits on the north and south side of the CT DOT corridor), which are currently constructed on bonnets on the railroad catenary structures, will be rebuilt on double-circuit monopoles on the *north* 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.

[61] 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.

In addition to the 18 modeling cross sections, at two locations along the proposed Project route (one in Fairfield and one in Bridgeport), the rebuilt 115-kV lines, as presently designed, would be near recently constructed and now occupied multi-story apartment buildings. These multi-story apartment buildings are constructed very close to the edge of the existing CT DOT corridor or proposed UI easement and present a situation where apartment residents will have ready access to locations significantly above ground level in relatively close proximity to the Project transmission lines. As a result, UI requested that Exponent evaluate magnetic-field levels at the relevant heights of the respective apartment buildings in addition to the standard assessment height of 1 m (3.28 ft) above ground as required by the CSC (CSC BMP 2014, Section A, pg. 6).

Modeling of magnetic-field levels at the two apartment buildings was performed using the same algorithms as in the standard modeling approach. However, instead of evaluating magnetic-field levels only at a height of 1 m (3.28 feet) above ground, modeling at the apartment buildings included assessment heights from ground level up to 150 feet above ground (well above the tops of the apartment buildings).

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)[62] for obtaining accurate field measurements at power line frequencies and calibrated by EMDEX, LLC, using methods like those described in IEEE Standard 644-2019.[63] The measurements were taken and are reported as the root mean square value of the field in accordance with IEEE Standard C95.3-2021[64] 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

[62] 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.

[63] IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines (IEEE Std. 644, New York: IEEE, 2019.

[64] 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.

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 had a similar maximum recorded level, but overall were generally lower than on the CT DOT corridor.

The average measured magnetic field in these areas (outside the CT DOT corridor) varied from approximately 0.5 mG to 25 mG (primarily due to sources other than the UI transmission lines), and all electric-field levels were all less than 0.2 kV/m. Higher EMF levels were most often measured nearest to the transmission lines (or near distribution lines located outside of the CT DOT corridor) 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 lines from 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. Additional evaluation of magnetic-field levels in each of the five modeled groups are described in greater detail below.

7.3.2 Summary of Calculated EMF Levels, by Group

The following summarizes the calculated EMF levels in each of the five groups.

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 or near the southern portion of the CT DOT corridor will result in increased EMF levels to the south. EMF levels on the north side of the CT DOT corridor (where UI's existing transmission line is supported principally on monopoles) will either decrease or not significantly increase compared to existing levels.

However, along the south side of the CT DOT corridor, 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 edge, the maximum increase in post-project EMF levels compared to existing levels is approximately 5.3 mG or less and 0.1 kV/m or less.

Group 2 (paired single-circuit monopoles crossing Ash Creek):
EMF levels also were calculated to increase at the edges of the UI 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 edge, the maximum increase in post-Project EMF levels compared to existing levels is approximately 4 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 edge, the maximum increase is 0.4 mG or less. The electric field is calculated to not change on the north side of the CT DOT corridor and to decrease by up to 0.3 kV/m on the south side of the CT DOT corridor.

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 on double-circuit monopoles located along the southern portion of the CT DOT corridor. As a result, the rebuilt 115-kV lines will result in an 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 0.1 to 1.5 mG) compared to existing levels; electric field levels are calculated to increase by <0.1 kV/m 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 that 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 the other transmission line to parallel South Frontage Road, north of the CT DOT corridor, will result in a decrease in the EMF levels on the CT DOT corridor, but increased EMF levels along the new easements.

North of the CT DOT corridor, between the new proposed permanent UI easement along South Frontage Road and the CT DOT corridor, EMF levels are calculated to increase as a result of the Project due to the relocation of the transmission lines to monopole structures up to several hundred feet from the existing catenary structures. In the area between the proposed new easement and the CT DOT corridor, there are two buildings (a separate assessment for which is provided in Section 7.3.6). Additionally, the north side of the new proposed north UI easement abuts I-95, separating the proposed transmission line structures from any future development by over 250 feet.

South of the CT DOT corridor, EMF levels along Railroad Avenue are calculated to increase as a result of the Project. The calculated EMF decreases rapidly with distance, falling to less than 7.3 mG at 100 feet south of the proposed southern UI easement edges. Additionally, with the exception of the newly-constructed apartment complex on the south side of the CT DOT corridor / Railroad Avenue at this location (a separate assessment for which is provided in Sections 7.3.4 and 7.3.5), there are no identified residences or community facilities within 200 feet of the new UI easement.

7.3.3 Magnetic-Field Levels at Apartment Building in Fairfield

The apartment building adjacent to the south side of the CT DOT corridor in Fairfield (78 Unquowa Place, near new structures P689S-690S; refer to Mapsheet 9 on the 1"=100' maps in Volume 2) is approximately

63 feet tall and although the conductors of the currently-proposed transmission line will be approximately 2 feet closer to the apartment building horizontally, the vertical clearance above the building will be more than 37 feet greater. The net result of this change is that magnetic field levels at the front edge of the building (closest to the transmission lines) are calculated to decrease at all levels of the building except at the roof.

At average loading and a height of 45 feet above ground, the existing magnetic field is calculated to be the highest. This corresponds to the height of the existing conductors (which are between 42 and 48 feet) and the magnetic field is calculated to decrease from 129 mG to 39 mG for the proposed configuration. At the roof of the building, magnetic-field levels are calculated to increase from 80 to 101 mG at the front edge of the building. Similar to all other locations along the Project route, magnetic-field levels decrease rapidly with distance and, at the back end of the building, magnetic field levels are calculated to be less than 3 mG before or after the proposed Project.

7.3.4 Magnetic-Field Levels at Apartment Complex in Bridgeport

The apartment complex in Bridgeport (i.e., the Windward Apartments) is located south of the CT DOT corridor along Railroad Avenue, within the block bounded by Park Avenue, Johnson Street, and Columbia Street. The complex consists of several recently-constructed and proposed buildings, as well as a playground (refer to section 7.3.5). The complex is near proposed structures P758S-759S (refer to Mapsheets 24 and 25 on the 1"=100' maps in Volume 2).

Most of the existing and proposed buildings in the apartment complex range from about 50 to 400 feet from the proposed rebuilt 115-kV transmission line; however, one building is less than 10 feet (horizontally) from the proposed line. This apartment building, which is approximately 55 feet tall, is adjacent to Railroad Avenue. Compared to the existing 115-kV line on the railroad catenary structures, the conductors of the rebuilt transmission line, as currently proposed, will be approximately 30 feet closer to the apartment building horizontally; however, the vertical clearance above the building will be more than 30 feet greater.[65]

The net result of the Project, as proposed, is that magnetic field levels at the front edge of the building (which is closest to the transmission line), up to a height of about 35 feet above ground, are calculated to increase by approximately 5 mG or less compared to existing levels. At 45 feet above ground, the magnetic-

[65] Also of importance in this area is the presence of an electric distribution line (with conductors at a height of approximately 30 feet above ground) and the underground 345-kV Middletown-Norwalk transmission line, which is buried approximately 3 feet beneath the road, about 30 feet from the front edge of the building. This means that at ground level (and the standard evaluation height of 1 m [3.28 feet] above ground), the magnetic-field level will be primarily determined by these two existing sources.

field levels are calculated to increase from approximately 49 to 75 mG; at the building roof. magnetic-field levels are calculated to increase from about 48 mG to 140 mG. However, similar to all other locations along the proposed rebuild transmission line route, magnetic-field levels decrease rapidly with distance and at the back (southern) end of the apartment building, magnetic field levels are calculated to be less than 5 mG before or after the proposed Project.

7.3.5 Magnetic-Field Levels at Playground Within the Apartment Complex in Bridgeport

At the new apartment complex in Bridgeport, an outdoor playground was constructed along the south side of Railroad Avenue, a few hundred feet to the west of the apartment building. As a result of the Project, magnetic-field levels at the playground are calculated to increase slightly - by approximately 1.3 to 3.2 mG (depending on location on the playground). Before or after the Project, magnetic-field levels will be about 6.5 mG or less. These calculated values are within the range of existing magnetic-field field levels measured near this location, which ranged from 2.6 to 97 mG (with an average of 11 mG).

7.3.6 Magnetic-Field Levels at Residential Areas North of the CT DOT Corridor (Bridgeport)

East of the I-95 crossing near Park Avenue and Railroad Avenue in Bridgeport, the MNR tracks are elevated and the CT DOT corridor is too narrow to accommodate the rebuilt 115-kV lines. In this area, UI proposes to remove the 1130 Line from the northern catenary structures and rebuild the line on single-circuit monopoles, to be located on a new UI permanent easement along South Frontage Road (just south of I-95) and Myrtle Avenue (near the State Route 8/25 ramp).

The new UI easement would extend between proposed monopoles P756N and P760N. In this area, there is one residence (along West Avenue between the CT DOT corridor and the proposed UI easement) where the magnetic field level is calculated to increase by approximately 13 to 17 mG (depending on location within the residence). Also in this area, there is one additional building located at the intersection of West Avenue and Railroad Avenue that is used for both residential and commercial purposes where the magnetic field level is calculated to decrease by approximately 3 mG or increase by up to approximately 5 mG (depending upon location within the building).

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.[66] 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.[67]

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		
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 no-cost and low-cost technologies and

[66] 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.

[67] 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.

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. In addition, the Project 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 will rebuild the 115-kV facilities on monopole structures that will be located closer to the edge of or outside of the CT DOT corridor, in order to maintain minimum clearance requirements from the existing MNR lines and infrastructure. Therefore, 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.

- **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 locations, EMF levels will decrease on the CT DOT corridor. Additionally, all EMF levels decrease rapidly with distance such that within 100 feet (30 m) of the new UI easement, the maximum increase compared to existing levels is approximately 6.9 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.

Magnetic-field levels at readily accessible locations above ground adjacent the CT DOT corridor or proposed UI easement boundary in Fairfield and Bridgeport also were calculated, at two apartment buildings. At the apartment building in Fairfield, magnetic field-levels were calculated to generally decrease at the side of the building closest to the CT DOT corridor as a result of the Project (except at the roof of the building). At the apartment building in Bridgeport, magnetic-field levels were calculated to increase at the side of the building closest to the proposed new UI easement, with the largest increases at heights of 45 feet or more above ground. UI is continuing to evaluate alternative configurations of the rebuilt lines at these locations (refer also to Section 9.5).

In summary, the calculated EMF levels resulting from the Project (including those above ground at the two recently-constructed apartment buildings adjacent the proposed Project route) will be far below 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, SHPO, USACE, USFWS, and FAA (among others), as well as with officials from Fairfield, Bridgeport, and Westport.

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, as well as during regulatory processes such as the Council's. 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 regularly with CT DOT and MNR. 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.

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	Pre-application meeting completed. 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, and December 8, 2022	Formal interagency consultation will be completed in conjunction with USACE Permit
US Coast Guard	Notification	Anticipated notification prior to construction	Expected to be performed during the D&M Plan preparation time frame
National Marine Fisheries Service	Consultation regarding work in tidal waters	Research performed using online data; formal consultation pending	Formal interagency consultation will be completed in conjunction with USACE Permit
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 during construction
STATE			
CSC	Municipal Consultation Filing Application for a 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 20, 2022 Quarter 1, 2023 2024	Complete Application submitted 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 License for Activities in Tidal Waters General Permit for Minor Coastal Structures (DEEP-OLIPS-GP-2015-01) Installation of an Osprey Platform and Perch Pole	Expected filing prior to construction Same as above Same as above	Ongoing Ongoing Ongoing

Agency	Potential Permit/Approval Required / Activity Regulated	Application Submitted or Consultation (Date)	Status
• 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. Further consultation requests to be submitted as necessary prior to Project construction	Determination response letter from CT DEEP received January 28, 2022
• 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	2024	Pending
• Bureau of Natural Resources, Wildlife Division	Osprey & Peregrine Falcon Consultation	Consultation in process	Response letter dated January 27, 2023 regarding Peregrine Falcon
• Bureau of Natural Resources, Fisheries Division	Consultation regarding diadromous fish species in Pequonnock River, Ash Creek	January 27, 2023	Mitigation measures provided if in-water work in the river is required.
• Coastal Management Program	Will be considered with any CT DEEP LWRD permit	Prior to construction	Pending
CT PURA	Approval of method and manner of transmission line construction and energization per CGS Section 16-243	Anticipated filing 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).	Prior to construction	
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. Supplement to the Phase 1A report February 13, 2023	SHPO response to Phase IA received 10/31/2022. Supplemental correspondence in January 2023
CT Department of Agriculture, Bureau of Aquaculture	Consultation regarding work in tidal waters potentially supporting shellfish	Email consultation January 27, 2023	Email received February 3, 2023

8.2 MUNICIPAL, PUBLIC, AND OTHER CONSULTATIONS

As part of the Project planning process, UI met with officials from Fairfield and Bridgeport numerous times, and conducted a formal municipal consultation process, pursuant to the Council's pre-application requirements (Conn. Gen. Stat. §16-50*l*). Additional details regarding these consultations are provided below.

Municipal Outreach: General

The Council's requirements specify that applicants intending to apply for a Certificate from the Council consult with potentially affected municipalities at least 60 days prior to the Application filing date. Accordingly, on October 20.2022, UI submitted a Municipal Consultation Filing (MCF) to the municipal officials of Fairfield, Bridgeport, and Westport.[68]

The MCF included a description of the Project, as well as information concerning the public need, alternatives considered, expected construction methods and schedule, potential environmental effects and mitigation measures, and EMF analyses. The MCF provided a formal mechanism both for informing the public and elected officials about the proposed Project and for soliciting comments on the Project from local leadership and the interested public.

However, UI's Project outreach efforts to both municipal officials and the public commenced more than a year prior to the MCF filing and continued during and beyond the 60-day MCF review period. UI expects to continue a pro-active approach toward public and municipal outreach throughout the Project. UI's overall public outreach efforts to date are summarized in Tables 8-2 and 8-3 (included at the end of this section) and are described below.

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 the proposed Project designs). UI also participates in a quarterly utility coordination call with Bridgeport regarding various UI projects within the City and at each meeting the Project is discussed.

[68] Pursuant to Conn. Gen. Stat. §16-50*l*(e), UI provided the MCF to the Town of Westport because the western portion of the Project is within 2,500 feet of the Fairfield-Westport boundary. No Project construction will be performed in Westport.

In addition to meeting with municipal officials, UI pro-actively implemented various outreach methods to inform the general public about the proposed Project. The following outreach methods have been and will continue to be used:

- In July 2021, UI sent a mailing to all abutters and to Fairfield and Bridgeport. The mailing consisted of a letter describing the Project generally, including contact information, a link to UI's Railroad Project website, and a Project Fact sheet.

- UI created a website - www.UIRailroadTLineUpgrades.com - to provide information to the communities about this Project specifically and about UI's suite of railroad rebuild projects in general. The website includes a map of the Project location, along with a "Find Your Home" feature. The website also contains a video that describes the UI railroad projects, as well as a Project Overview video for this Project and a video with instructions regarding how to navigate the Project's Virtual Open House, described below.

- UI created and distributed Project informational cards to all Project field personnel. The cards are designed for UI personnel to give to any customers encountered during the Project field surveys who had questions about the Project. This card directs the interested public to the UI Outreach hotline for additional information, as well as to the Project website.

- In February 2023, UI mailed billing inserts to all customers in Fairfield and Bridgeport. The inserts in the February bills provide details of the Project, the UI Outreach email and hotline number, and the specific Project URL. It also included a Spanish translation.

- UI created a Virtual Open House site specifically for the Project. This Virtual Open House, which is accessed via the Project website, went live in mid-January 2023. Recognizing potential concerns about accessibility and holding public gatherings after COVID, the Virtual Open House was designed to mirror the format of an in-person open house. It includes a graphic of the typical open house set up and a video to guide participants through the Open House exhibits, which include information regarding the Project (overview video), CSC process, Frequently Asked Questions (FAQs) and responses, Project Overview and Engineering, and Environmental and Community. The Virtual Open House also features a registration with a place to include any comments or questions regarding the Project. In addition, UI offered two Zoom appointment sessions in January 2023 to allow the public to ask specific questions or provide comments to UI Project representatives.

- On January 7, 2023, UI mailed a large postcard to Project abutters. The mailing included a description of the Project and an invitation to the Project Virtual Open House. The letter also included UI's Outreach email address and Project Hotline telephone number.

- On January 3, 2023, UI mailed a large postcard to Project abutters and interested parties in Fairfield with an invitation to the Public Informational Meeting to be held at the Fairfield Public Library on January 11, 2023. The Fairfield Selectwoman also included a notice about the meeting in her weekly newsletter the week prior to the meeting. Ads also were placed in the *Fairfield Citizen*.

- On January 11, 2023, UI (with participation from the Town of Fairfield) held a Public Informational Meeting at the Fairfield Public Library. Eight residents/business owners attended; comments included viewshed concerns, business access, and general inquiries.

- In addition to the postcard mailing, UI used its Facebook and Twitter accounts to notify customers about the Project, Public Informational Meetings. and the Virtual Open House.[69] Fairfield also posted the notification for the Public Informational Meeting on its Facebook page and website.

- During the week of January 15, 2023, UI placed ads inviting the public to the Virtual Open House and Project website in local newspapers (e.g., the *Connecticut Post* and the *Fairfield Citizen*).

- During the week of January 10, 2023, UI placed ads in the *Connecticut Post* inviting people to a Public Informational Meeting, to be held on January 31, 2023 in conjunction with the City of Bridgeport.

- On January 31, 2023, UI (with participation from the City of Bridgeport) held a Public Informational Meeting at the Margaret Morton Government Center. Eight residents and representatives of businesses and organizations attended the meeting, at which UI provided a Project briefing. UI responded to questions about vegetation management, traffic plans, and construction.

CSC Municipal Consultation Filing Process and Public Comments

During the formal 60-day MCF consultation period, UI offered to meet with each municipality's chief elected official or designated representative(s) to review the proposed Project and MCF, as well as to present an overview of the Council's siting process and the methods available for the municipalities to provide input in that process. Accordingly, UI met with representatives of the Town of Westport on November 29, 2022, the City of Bridgeport on November 30, 2022, and the Town of Fairfield on December 11, 2022. The Town of Westport had no comments apart from their support of the Project. The Town of Fairfield and the City of Bridgeport had no additional comments apart from their support of the project.

UI also met with several interested parties, business owners, and groups or associations in the Project area, including representatives of the Ash Creek Conservation Association, Pequot Library, Bridgeport Housing Authority, and Bridgeport-Port Jefferson Ferry. The purposes of the consultations was to discuss the Project need, scope, and anticipated schedule. UI encouraged the groups to submit any comments about the proposed Project as part of the CSC process. As the Project moves forward (including throughout the construction process), UI will continue pro-active outreach efforts with CT DOT, MNR, other stakeholders, the municipalities, and affected property owners.

[69] The Virtual Open House was publicized for two weeks (January 15 – 31, 2023); however, the information will remain available during the entire time that the UI Project-specific website is active.

Table 8-2: Summary of Municipal Outreach Regarding the Project

Stakeholder Group	Date of Meeting or Event	Purpose of Meeting or Event
POST-MCF MUNICIPAL OUTREACH		
City of Bridgeport – Lynn Haig, Director of Planning; Bill Coleman, Director of Development; Jon Urquidi, City Engineer.	November 30, 2022	Discuss MCF and Project route particularly on poles on City property. Ongoing. Also soliciting any feedback from Tom Gill and Mayor Ganim
Town of Fairfield – Selectwoman Kupchick; Emmeline Harrigan, Tom Bremer, Saray Neafsey, William Hurley, Eileen Flora, Mark Barnhart, & Jeff Minder.	December 12, 2022	Discuss MCF and address City concerns about vegetation and discuss any wetland activities
Town of Westport – Selectwoman Tooker, Peter Ratkiewich, Fotios Koskinas, Tom Kiely	November 29, 2022	Provide Project Overview, discussed MCF process.
City of Bridgeport – Jon Urquidi, Angel DePara, Lynn Haig, Bill Coleman	Re-occurring monthly utility coordination meetings beginning December 20, 2020	Provide Project Overview, discussed MCF process
Town of Fairfield, Tim Bishop, Director, Conservation Department	January 3, 2023	Discuss potential impacts to conservation areas and water resources
PRE-MCF MUNICIPAL CONTACTS		
City of Bridgeport, Town of Fairfield, Town of Westport	July 2021	First class mailing of letter and fact sheet. Overview of Project – need and scope.
City of Bridgeport		
	June 24, 2021	Webex to provide a Project overview, scope, need, and timeline
	August 19, 2021	Webex to discuss Railroad Avenue traffic concerns with City Engineer and Traffic Planner
	September 2, 2021	Webex to discuss several Project route considerations
	October 6, 2021	Webex to discuss Project (summary and high-level overview)
	March 24, 2022	Frank Reynolds of UI provided a Project overview to Mayor Joe Ganim
	May 9, 2022	Met with City staff to discuss all UI projects in Bridgeport also provided a Project overview
	September 16, 2022	Discussion of the “Sliver by the River” parcel with advisory Council
	Bi-monthly utility meetings	Discuss status of the Project and other UI/Southern Connecticut Gas projects in Bridgeport

Stakeholder Group	Date of Meeting or Event	Purpose of Meeting or Event
Town of Fairfield		
	July 13, 2021	Initial in-person meeting with Selectwoman Kupchick and staff to present Project overview, scope, need, and time table
	August 24, 2021	Environmental meeting with Conservation and Wetlands staff
	September 13, 2021	In-person meeting with Selectwoman Kupchick to discuss Project updates based upon the feedback from the Town
	October 14, 2021	Project status (overview), design of monopoles at train stations, vegetation removal
	September 19, 2022	Discuss vegetation management along Project route

Table 8-3: Summary of Public Outreach Regarding the Project

Stakeholder Group	Date of Communication	Type and Purpose of Outreach
Abutters to the Project area Fairfield, Bridgeport, Westport.	July 2021	First class mailing included a letter and Fact sheet detailing the Project overview, scope, and need
All UI customers	Q2 2022	A website was developed to provide information on all the UI Railroad Transmission Line Upgrade Projects with a focus on the Fairfield to Congress Project. Website includes videos, timelines, construction information, and methods for contacting UI Outreach.
Virtual Public Open House	January 15-31, 2023	A virtual public open house was created on the UI Railroad Project site. This site includes information about the Project, the CSC process, and ways to contact the UI Outreach team, as well as an area for viewers to input an address to determine if their property is near the Project area.
UI customers in Project Municipalities	January 2023	Invitation to the Virtual Open House was placed in the *Connecticut Post* and *Fairfield Citizen*.
All UI Customers	January, 2023	Posts were made about the Virtual Open House and Project information on UI's Facebook and Twitter sites.
Customers and Project abutters in Fairfield	January 11, 2023	A Public Informational Meeting was held on January 11, 2023. A notice was published in the Fairfield Citizen.
Customers and Project abutters in Bridgeport	January 31, 2023	A Public Informational Meeting was held on January 31, 2023. A notice was published in the Connecticut Post.
Customers in Project area	Q2 2021 - 2023	Field cards, Project info sheets, and FAQs were created.
UI customers in Fairfield	January 3, 2023	A large postcard was mailed to Project abutters in the Town of Fairfield to invite them to a Public Informational Meeting at the Fairfield Library
UI customers in Bridgeport	January 9, 2023	A large postcard was mailed to Project abutters in the Town of Bridgeport to invite them to a Public Informational Meeting at the Margaret Morton Government Center

9. ALTERNATIVES

Based on UI's engineering analyses, environmental resource evaluations, and constructability reviews, 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.

The Project was selected as a result of an iterative process whereby UI first evaluated the structural condition of the portions of the railroad catenary structures and UI infrastructure that support UI's existing 115-kV lines and then identified and analyzed a range of alternatives for upgrading the lines. These alternatives included overhead transmission line rebuilds both on, and independent of, the existing railroad catenary/bonnet structures, underground 115-kV cable alignments, and the "No Action" alternative (that is, leaving the existing lines as is). 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.[70]

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,

[70] 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; and 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 as necessary to reconfigure the 115-kV connections to the new substation. In August 2022, the CSC approved UI's application for the Milvon to West River 115-kV Railroad Upgrade Project (Docket No. 508) for rebuilding its 115-kV lines along 9.5 miles of the CT DOT corridor in New Haven County. UI expects to commence the Milvon to West River project rebuild in Q3 2023.

or constructability issues. Section 9.3 describes the primary design alternatives considered prior to UI's identification of the proposed Project presented in this Application, while Section 9.4 reviews configuration variations examined to minimize impacts in site-specific locations of the proposed rebuilt 115-kV transmission line 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 or to modify the transmission lines 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 or not implementing any upgrades to the lines (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) that would involve rebuilding the 115-kV facilities either along an entirely new ROW (underground or overhead) or underground along the existing CT DOT corridor. 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 and cost. In addition to the impacts associated with rebuilding the 115-kV lines, any of these alternatives would require UI construction 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 of the three alternatives, along with the rationale for UI's decision to eliminate each 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, all other catenary structures in Bridgeport, and any other structures (e.g., steel lattice towers) that support portions of the lines. UI determined that this alternative would not be feasible, for the reasons summarized below.

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, New Pequonnock, and Congress Street substations. In the Project area, there are no existing linear corridors (other than the CT DOT corridor) that would provide space for such a new overhead transmission line ROW.

As a result, 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/industrial 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 would be cost-prohibitive. Moreover, a new ROW alternative would not be consistent with Federal policy that advocates the colocation of linear corridors to the extent practical.

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 impacts, constructability issues, and / or 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 at least 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[71] and the CSC's life cycle studies[72] 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 in terms of general environmental impacts and permit requirements.

The most recent CSC study (*Life-Cycle 2023*, issued January 5, 2023) 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 $21 million/mile for underground vs. $4.3 million/mile for overhead). The average annual costs to operate and maintain underground lines (approximately $22,937/circuit mile) was also determined to be greater than similar costs for an overhead circuit (approximately $29,636/mile).[73]

To evaluate potential for undergrounding the existing 115-kV lines to be rebuilt for this Project, 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 both the CT DOT railroad corridor and the Project area in general.[74] UI also drew upon the cost analyses that it conducted when evaluating underground options for the Milvon to West River Railroad Transmission Line 115-kV Rebuild Project (CSC Docket 508; refer to UI Late-Filed Exhibit dated June 6, 2022).

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 underground alternative would not be consistent with CT DOT policies, which do not allow longitudinal underground utility occupancy within the railroad corridor. Moreover, an underground cable system within the corridor would pose potential conflicts with CT DOT's future efforts to improve customer service on the New Haven Line;

[71] 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).

[72] 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.

[73] The CSC's Life Cycle 2023 report reflects costs over prior years and current dollars at that time (not adjusted to 2023).

[74] Based on a preliminary assessment of ampacity needs for these circuits, UI anticipates that an atypical installation of two 3,500 kcmil cables per phase would be needed with additional separation between the circuits in the duct bank to account for mutual heating. The data presented in the 2023 Life Cycle report is understood to represent typical installations (i.e., single conductor per phase).

planned improvements include increasing train speeds and, as such, adding supporting infrastructure like catenary structures, track sidings, bridge spans, and wayside equipment.

Moreover, for this Project, even if CT DOT would allow linear 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 the owners of properties adjacent to the railroad corridor to install the cable system or would have to align the cable system within road ROWs near the CT DOT corridor (if space is available within the roads, given the density of existing underground utilities such as stormwater, water, sewer, and gas lines). Further, in areas where the railroad spans roads or watercourses (e.g., Mill River, Ash Creek), 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, at added cost.

As part of the CSC's proceeding regarding UI's Milvon to West River Railroad Transmission Line 115-kV Rebuild Project (CSC Docket No. 508), UI also considered, but eliminated, an underground 115-kV cable alternative within the railroad corridor. As part of Docket No. 508, CT DOT submitted comments to the CSC, reproduced below, regarding that "all underground alternative":

> 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)

During UI's ongoing coordination with CT DOT about this Project, UI raised the issue of potentially aligning the rebuilt 115-kV lines longitudinally within the Fairfield-Congress railroad corridor (where space was available). CT DOT reviewed this "all underground alternative" and indicated that the agency's comments submitted in Docket No. 508 also are equally applicable to this Project.

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

significantly more costly than any overhead 115-kV rebuild option, UI eliminated this alternative from consideration.

Underground 115-kV Lines within Public Road ROWs

UI identified and initially 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 115-kV 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, as well as to the overhead lines near the New Pequonnock Substation. The cable system would consist of single- or double-circuits, depending on location.

The primary objective of the underground route analysis was to determine if the rebuilt 115-kV lines could be installed underground, cost-effectively and without having to acquire extensive new easements outside of public road ROWs. When considering potential underground in-road ROWs for the 115-kV lines, UI took into consideration the alignment of the 345-kV Middletown to Norwalk XLPE cables,[75] which extend east-to-west beneath roads generally near the CT DOT corridor in both Fairfield and Bridgeport. UI determined that an underground 115-kV cable system could not be located in the immediate vicinity of these 345-kV cables, due to the potential for mutual heating that could adversely affect the ratings on one or both of the transmission lines. To avoid potential mutual heating issues, the 345-kV and 115-kV cables would have to be separated by an estimated 10-12 feet.

In the general Project area, the 345-kV cables are situated beneath U.S. Route 1 (Post Road) and Fairfield Avenue, among other roads. UI concluded that none of the roads along the 345-kV cable route are wide enough to allow the required separation between the transmission lines. As a result, the 115-kV cables would have to be located outside of the road ROWs, on private property. Given the density of adjacent urban and suburban developments, UI eliminated from consideration any 115-kV cable routes within the same roads as the Middletown-Norwalk lines.

Figure 9-1 provides an aerial overview of the potential location of the underground route that UI identified, taking into consideration the location of the 345-kV cables. This route is described below.

[75] The Middletown-Norwalk 345-kV lines were installed in the mid-2000s (CSC Docket No. 272).

In general, any in-road cable alignment would be longer than the proposed overhead line configuration along the railroad corridor because there are no roads that provide a direct path from Catenary Structure B648S to Congress Street Substation. As a result, as illustrated on Figure 9-1, the underground 115-kV cable system (consisting of single- or double-circuits, depending on location) would have to be routed along numerous State and local roads and would extend for short distances across private/public property to reach the road network.

For example, in Fairfield, the segment of the CT DOT railroad corridor between Sasco Creek and Westway Road (catenary structures B648S to B654S) is not near any roads and is bordered by residential properties to the south. Because CT DOT does not permit linear occupancy of underground utilities within the railroad corridor, the underground cable for the 1430 Line would have to extend east from an overhead-underground transition at Catenary Structure B648S onto private properties south of and adjacent to the CT DOT corridor. Such an alignment would cross the back yards of homes on South Gate Lane between Catenary Structure B648S and Westway Road.

Along Westway Road, the underground cable route would extend south before turning east onto Pequot Avenue and following Pequot Avenue, diverging first south on Center Street and then east on Harbor Road. After crossing under the Mill River, the cable route would turn south onto Sasco Hill Road and then traverse east/northeast following Oldfield Road, Old Post Road, Kings Highway, and Ardmore Street to the existing UI easement, crossing Ash Creek for an underground connection at Ash Creek Substation.

From Ash Creek Substation, the underground cable system for the 91001-2 Line would re-cross Ash Creek and extend beneath the MNR tracks before turning east on Kings Highway and then following Kings Highway to Commerce Drive and State Street. The underground cable system would then follow various local roads from State Street to the intersection of Howard and Railroad avenues (to connect to the Resco Substation tap via an underground-overhead transition structure). East of the Resco Tap, the cable route would follow Railroad Avenue east to the New Pequonnock Substation.

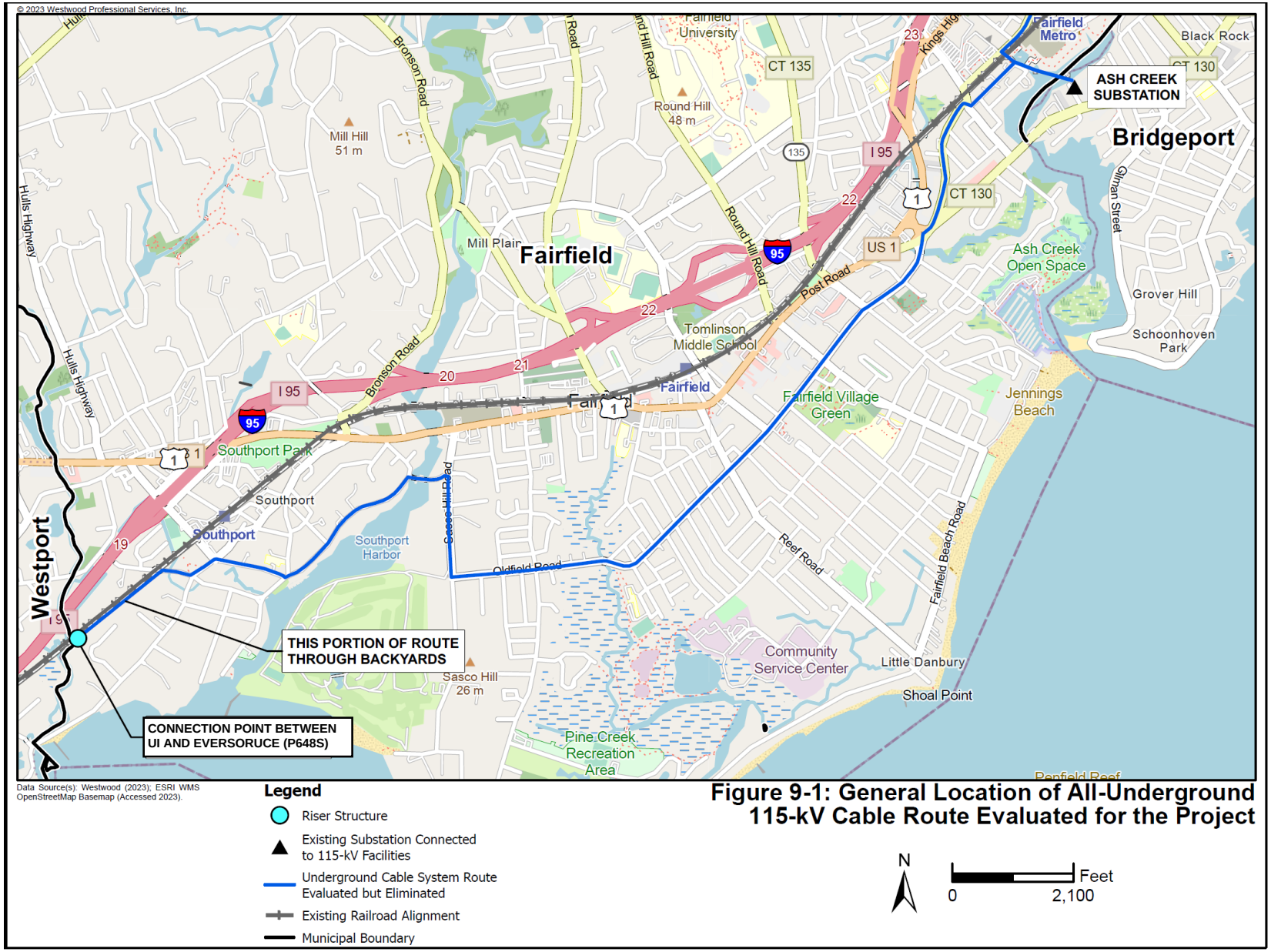


Figure 9-1: General Location of All-Underground 115-kV Cable Route Evaluated for the Project

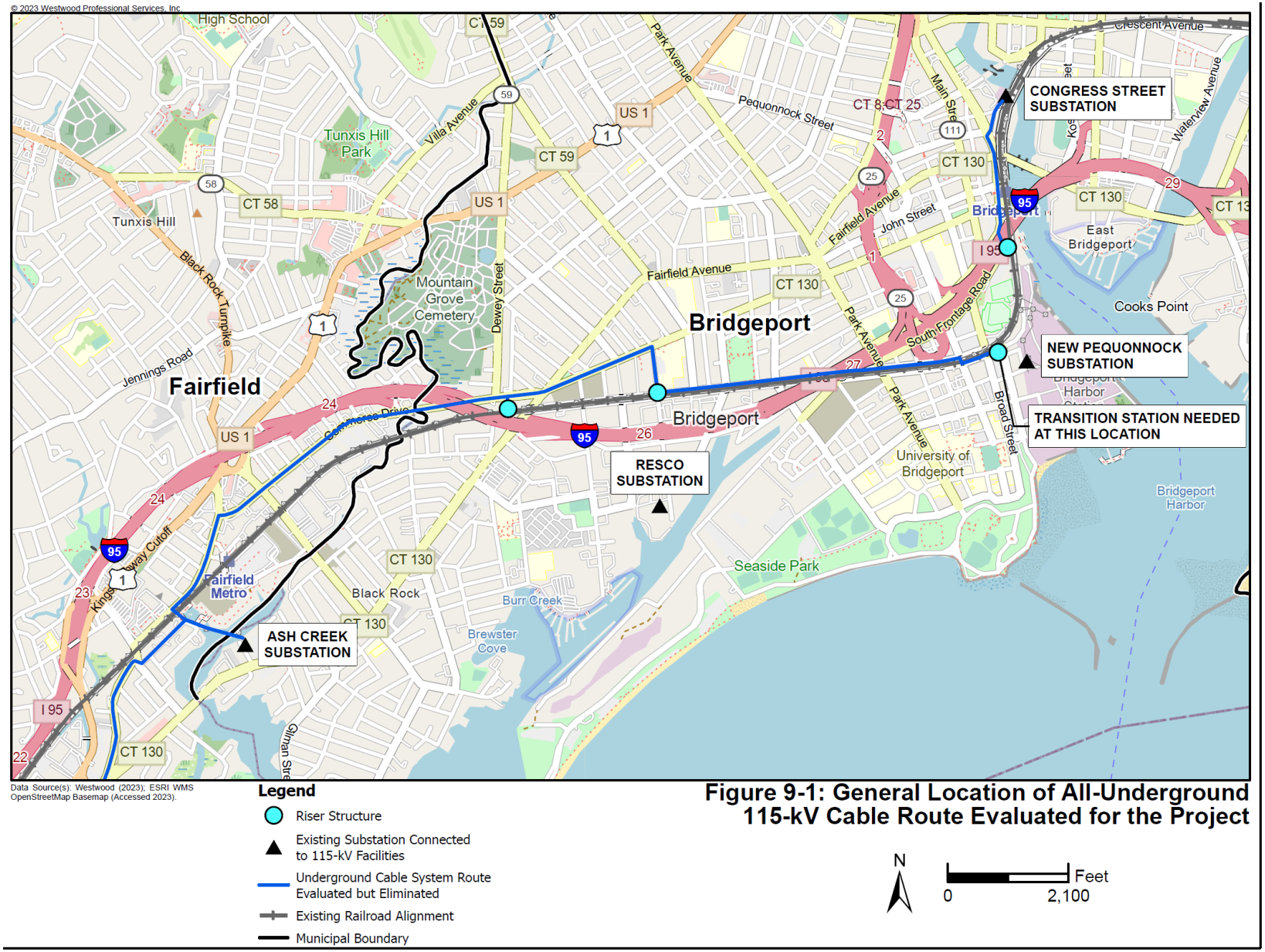


Figure 9-1: General Location of All-Underground 115-kV Cable Route Evaluated for the Project

For the purposes of this analysis, UI assumed that the 115-kV lines located on the railroad catenary structures near the existing Pequonnock Substation would already be rebuilt in an overhead configuration and connected to the New Pequonnock Substation, as detailed in UI's Pequonnock Substation Rebuild Project (CSC Docket 483). Therefore, this underground cable 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 UI's two 115-kV circuits to the east and west of the New Pequonnock Substation.

Specifically, west of the New Pequonnock Substation, 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. As illustrated on Figure 9-1, overhead-to-underground transition structures would also have to be situated along the railroad corridor east of the New Pequonnock Substation, the underground 115-kV cables would extend directly north to Congress Street Substation, aligned primarily under the southbound lane of Water Street.[76]

In addition to the in-road construction that would be required to install the cable system, trenchless crossings, involving HDD or an equivalent method, would be required to extend the cable system beneath Mill River and Ash Creek (two crossings). 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. Alternatively, UI would have to relocate segments of other existing buried utilities. UI's existing Ash Creek and Congress Street substations also would have to be modified to accommodate the 115-kV underground line entries.

In general, any underground transmission cable system alignment predominantly along roads within the Fairfield-Bridgeport Project area would face constraints because of the number of underground utilities that already occupy space beneath the State and local road network. Examples include subsurface potable water, underground electric, sanitary sewer, natural gas, and stormwater collection systems. 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, or UI would have to relocate certain third-party utilities, at added cost. Moreover, underground cable system construction in areas where subsurface utility density is high

[76] The Middletown-Norwalk 345-kV line is located beneath the northbound lane of Water Street.

requires considerable time because work must progress slowly to carefully excavate around the other utilities.

Further, because no roads provide a straight-line route between Catenary Structure B648S and Congress Street Substation, UI estimated that the underground cable route would be a minimum of approximately 10 miles long (about 2.5 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 a combination of new single-circuit and double-circuit monopoles, depending on the existing configuration of the 115-kV lines along the railroad corridor. For example, single-circuit monopoles would be installed to support the 115-kV lines that are presently located on the south catenary structures (Fairfield and western Bridgeport). Double-circuit monopoles would be used 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 one side of CT DOT property.

- Alternative 2: Rebuild all the 115-kV lines to be removed from the railroad catenary structures on single-circuit monopoles. The new monopoles would be located within or near both sides of the CT DOT corridor, depending on location.

- Alternative 3: In Fairfield and Bridgeport, where the southern 115-kV circuit is supported on the railroad catenary structures and in Bridgeport, where both 115-kV circuits are supported on the railroad catenary structures, make structural modifications to the catenary structures / bonnets to allow the continued support of the other circuits. In addition, in Bridgeport where both circuits are supported by the railroad catenary support structures, rebuild one 115-kV circuit on new single-circuit monopoles.

- 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.

These four alternatives are discussed further in Sections 9.3.1 and 9.3.2.

In addition, UI also evaluated the feasibility of using or modifying the existing 1130 Line (located along the north side of the CT DOT corridor between catenary structures B648 in Fairfield and B737 in Bridgeport) to also support (in a double-circuit configuration) the 115-kV lines to be removed from the southern catenary structures along this 5.1-mile segment of the CT DOT corridor. This 1130 Line modification alternative is discussed in Section 9.3.3.

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 UI 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 Alternatives 1 and 2 (Hybrid)

After eliminating Alternatives 3 and 4, as well as underground options, UI conducted further engineering evaluations of Alternatives 1 and 2. Ultimately, UI determined that a hybrid of the two alternatives was preferred, because of system concerns under certain operating conditions causing issues on the cables out of the New Pequonnock Substation.

Specifically, UI selected Alternative 1 with (new single-circuit monopoles on the south side of the railroad corridor between Catenary Structure B648 and P737N in Bridgeport, and mostly double-circuit monopoles

from P737N to the east, including between New Pequonnock and Congress Street substations. However, for a short (approximately 0.5-mile) segment west of the New Pequonnock Substation, UI determined that separating the double-circuit lines installing the 115-kV lines on single-circuit monopoles – one north and one south of the CT DOT corridor – would be preferable. In selecting this alternative, UI's 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 on either side of 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
- Construction period (schedule).

9.3.3 1130 Line Modification Alternatives: Eliminated from Consideration

An approximately 5.1-mile portion of the 1130 Line, which was installed in the early 1990s, is located within the CT DOT corridor, north of the MNR tracks. In this area, the 1130 Line is supported on 86 monopoles, as well as eight bonnets on top of the railroad catenary support columns.

Along the same portion of the CT DOT corridor, UI's existing 1430 Line (from Catenary Structure B648S to the Ash Creek Substation) and 91001-2 Line (from the Ash Creek Substation to Catenary Structure 737) are positioned on the southern catenary structures. UI investigated the feasibility of two options for rebuilding these two southern 115-kV circuits along the north side of the railroad tracks:

- Modify the existing 1130 Line to also support the southern 115-kV lines, in a double-circuit configuration; or
- Remove the existing 1130 Line facilities (monopoles and bonnets/UI infrastructure) and install larger monopoles to support both the 1130 Line and the southern 115-kV lines in a double-circuit configuration.

Neither of these options is viable. The existing 1130 Line monopoles and foundations are not designed to support a double-circuit structure configuration and cannot be modified to do so. Specifically, the existing

monopoles do not have additional mounting brackets on the pole that would allow the attachment of arms to support an additional 115-kV line. Moreover, approximately 50% of the existing 1130 Line monopoles are in a delta configuration, with two wires on south (toward the MNR tracks) and one on the north; as a result, there is no physical space for additional attachments to accommodate another 115-kV line.

UI could rebuild the 1130 Line in its entirety (from between catenary structures 648 and 737); however, compared to the proposed Project, this alternative would be significantly more expensive and would result in impacts to environmental resources along both sides of the CT DOT corridor. Moreover, the existing 1130 Line does not have any asset condition issues and does not require modification to maintain the reliability of UI's transmission system. In addition, the 1130 Line and the 1430 Line connect to Eversource's system at the Fairfield-Westport border. In Westport, the 1430 Line connects to Eversource's Sasco Creek Substation, which is located south of the CT DOT corridor. Rebuilding the 1430 Line in a double-circuit configuration with the 1130 Line north of the MNR tracks would pose potential issues regarding the connections to the Eversource system, including to Sasco Creek Substation, and would require coordination with Eversource.

In order to rebuild the 1130 Line in a double-circuit configuration with the 1430 and 91001-2 lines, extensive construction would be required along the north side of the CT DOT corridor, both to remove the existing 1130 Line facilities and to install the new double-circuit infrastructure. The new double-circuit monopoles would be approximately 20 feet taller than the existing monopoles.

To keep the new double-circuit monopoles within the CT DOT corridor (i.e., in line with the existing monopoles) and thus to avoid or minimize the amount of new UI easement required on private property, the 1130 Line would have to be taken out of service during the construction period. Alternatively, to avoid an extensive outage, the double-circuit monopoles would have to be offset to the north of the existing 1130 Line structures, likely outside the CT DOT corridor (which in this area varies in width from 5 to 100 feet north of the MNR tracks) and therefore requiring the acquisition of new UI easement on private properties.

The construction process would be extensive, complex, and costly, involving not only the installation of the double-circuit monopoles, conductors, and OPGW, but also the removal of the existing 1130 Line facilities (86 monopoles and foundations, eight bonnets) north of the MNR tracks and the removal of the 115-kV lines from the southern catenary support columns. Environmental resources would be affected as a result of the construction on both sides of the CT DOT corridor.

The cost of this alternative would also be significantly higher than the proposed Project. In particular, compared to the proposed Project, additional costs would be incurred for removing the 86 monopoles and foundations (up to 3 feet below grade) and eight bonnets; procuring and installing the larger monopoles and foundations required to handle the loads of two circuits rather than one; new conductor/OPGW, hardware, insulators for a second circuit; for matting and access road/work pad installation on both sides of the railroad tracks; and the extra cost for two 115-kV line spans of the MNR tracks.

9.4 SITE-SPECIFIC ROUTE AND CONFIGURATION VARIATIONS INCLUDED IN THE PROJECT DESIGN

After initially selecting the preferred solution for rebuilding the 115-kV transmission lines between Catenary Structure B648S and Congress Street Substation, UI performed more detailed engineering and other analyses. The purpose of these analyses was to further refine the Project design, taking into consideration the placement and configuration of the new monopoles and the results of field investigations.

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 the 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 of 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. Option 1 also incorporates into the Project design the four existing 115-kV monopoles already in place to support the lines across I-95. Two of the existing monopoles support the 1130 Line over I-95 on the north side of the railroad tracks, while the other two support the 91001-1 Line on the south side of the railroad tracks. This option also will minimize the number of transmission line spans over the CT DOT corridor/MNR tracks.
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 ROUTE AND CONFIGURATION OPTIONS: EMF MITIGATION

As described in Section 7, at two locations along the proposed Project route, the rebuilt 115-kV lines, as presently designed, would be in close proximity to recently constructed and now occupied multi-story apartment buildings. These include:

- A three-story apartment building that is situating directly adjacent to the CT DOT corridor and the 1430 Line in Fairfield (78 Unquowa Place, near new structures P689S-690S; refer to Mapsheet 9 on the 1"=100' maps in Volume 2). Existing Catenary Structure B689S and UI's 1430 Line infrastructure atop the southern catenary support column directly abut this building.

- An apartment building and an associated outdoor playground, which are part of the Windward Apartments complex located south of the CT DOT corridor and Railroad Avenue in Bridgeport (between Railroad Avenue and Johnson Street, near proposed new structures P758S-759S; refer to Mapsheets 24 and 25 on the 1"=100' maps in Volume 2). In this area, UI's proposed design would align the 91001-1 Line in a single-circuit configuration along a new proposed easement south of Railroad Avenue (and the elevated CT DOT corridor / MNR tracks), near the apartment building and outdoor playground. (The rebuilt 1130 Line would be situated along a new permanent easement to the north of the CT DOT corridor.)

Based on the findings of detailed modeling performed in late 2022 – early 2023 to identify and evaluate the EMF levels associated with the operation of the rebuilt lines, UI determined that at these two locations, the magnetic fields from the rebuilt lines, although still well below established health guidelines, would be substantially greater than the levels that would be common in other areas along the Project route.[77]

As a result, UI elected to pro-actively identify and evaluate potential options for reducing magnetic field levels in the vicinity of these two apartment buildings. UI is in the process of performing this alternatives analysis, as summarized in Sections 9.5.1 and 9.5.2. In general, the options currently being evaluated at both locations include, but may not be limited to, modifications to the heights of the transmission line structures in the vicinity of the buildings, as well as changes to structure davit arm design and conductor phase spacing. In the vicinity of the Bridgeport apartment complex, a route variation is also being studied.

9.5.1 Apartment Building in Fairfield

In order to minimize future EMF levels at the rooftop level of the apartment building, UI will evaluate the option of increasing the proposed transmission line structure heights in this area. If the surrounding landscape allows, proposed pole locations may also be slightly shifted to increase the distance from the apartment building, effectively lowering the EMF levels from the values indicated in Section 7.3.3.

[77] Section 7 and the EMF report (Appendix E) provide detailed information regarding the EMF levels that would result near these apartment buildings and the playground from the development of the proposed Project as currently planned.

9.5.2 Apartment Complex in Bridgeport

In the vicinity of the Bridgeport apartment complex, the Project design, as currently proposed, would remove the existing 91001-1 Line from the southern catenary support columns and rebuild the line on single-circuit monopoles, along a new proposed easement south of Railroad Avenue, close to the playground and the recently-constructed apartment building west of the intersection of Railroad and Park avenues. UI also currently proposes to remove the other 115-kV line (the 1130 Line) from the northern railroad catenary support structures and rebuild it on single-circuit monopoles, within a new permanent easement, north of the CT DOT corridor, near I-95 and the State Route 8/25 interchange ramp.

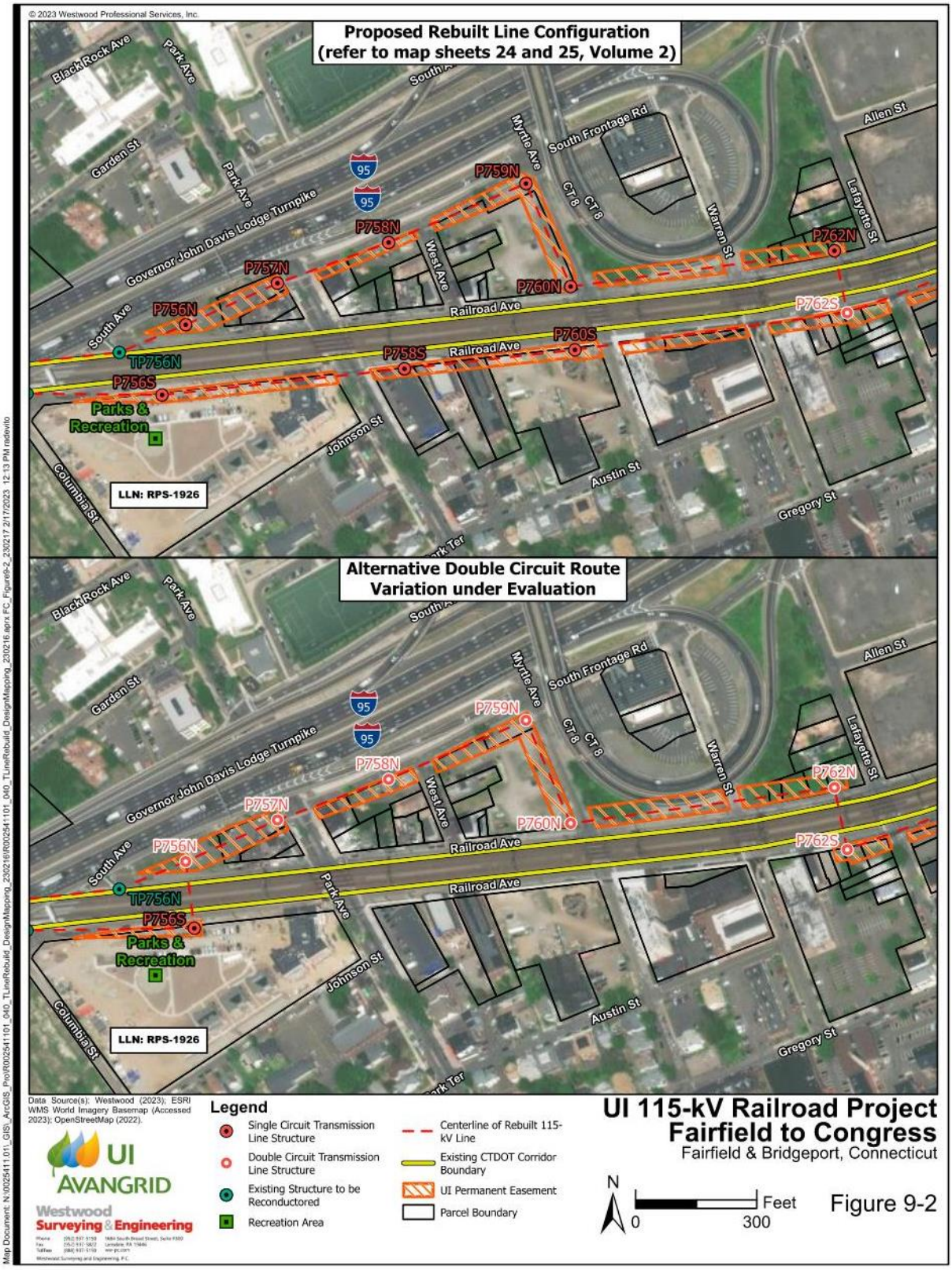
In this area, UI is evaluating the viability of a potential route variation that would realign the single-circuit 91001-1 Line to the north of the CT DOT corridor, configuring the 91001-1 and 1130 lines on double-circuit monopoles along the already-proposed alignment for the rebuilt 1130 Line. Under this configuration option, the 91001-1 and 1130 lines would extend across I-95 on either side of the CT DOT corridor, supported on UI's existing single-circuit monopoles, as currently proposed.

East of the I-95 crossing, at proposed monopole P756S, the 91001-1 Line would extend north, spanning the CT DOT corridor / MNR tracks to proposed monopole P756N, which would be redesigned in a double-circuit configuration to support both the 91001-1 and 1130 lines. The two 115-kV lines would continue in a double-circuit configuration from P756N to P762N, where the lines would cross to the south side of the CT DOT corridor.

Figure 9-2 (top) illustrates the location of the 115-kV lines as currently planned, as well as the potential route variation (bottom) that UI is studying in the vicinity of the Bridgeport apartment building complex.

Under this option, proposed monopoles P758S and 760S would be eliminated and no single-circuit 115-kV line would be located near the apartment building complex along the south side of the CT DOT corridor. However, to accommodate the double-circuit configuration, UI would have to acquire additional permanent easement to maintain required clearances to the conductors. In addition, a billboard presently located near proposed Structure P758N would have to be spanned or eliminated. Further, between proposed Structures P760N and P762N, a small (approximately 50 foot longitudinal) portion of the rebuilt 115-kV conductors may extend above a travel lane on the State Route 8/25 ramp to I-95.

Figure 9-2: Proposed 115-kV Rebuild Route and Potential Route Variation: Bridgeport



9.6 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*.[78]

- **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.

[78] Federal Power Commission, Order No. 414, Appendix A, Docket No. R-365 (November 27, 1970).

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)
CF:	Cubic feet
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
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)

Acronym	Description
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
NOAA:	National Oceanic and Atmospheric Administration
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:	Plan 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 and UI ROW between the railroad corridor and Ash Creek Substation
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
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)