

The United Illuminating Company  
180 Marsh Hill Road  
Orange, CT 06477



A UIL HOLDINGS COMPANY

April 15, 2016

Chairman Stein  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051

Dear Chairman Stein:

Enclosed please find an original plus fifteen (15) copies of The United Illuminating Company's ("UI") petition to the Connecticut Siting Council requesting a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is necessary for the proposed modifications to UI's Pootatuck Substation, referred to as the proposed Pootatuck Ring Bus Expansion Project (the "Project"). The Project will include the modifications to the substation and related adjacent transmission lines to allow the interconnection of a new 115 kilovolt (kV) source to the facility.

Prior to the submittal of this Petition, UI representatives presented the Project to the City of Shelton. Pursuant to Conn. Agencies Regs. § 16-50j-40, all required parties, including the appropriate municipal and governmental agencies and officials and all abutting property owners, are being notified contemporaneously with this submittal.

Should you have any questions, please contact me at (203) 499-2864.

A check in the amount of \$625 for the required filing fee is also attached.

Very truly yours,

A handwritten signature in black ink, appearing to read 'J. Morrissey', written in a cursive style.

James R. Morrissey  
Attorney  
UIL Holdings Corporation

Enclosures

**PETITION TO THE  
CONNECTICUT SITING COUNCIL FOR DECLARATORY RULING**

*for*

**MODIFICATIONS  
TO THE  
POOTATUCK SUBSTATION**

**City of Shelton, Connecticut**

*Submitted By:*

**THE UNITED ILLUMINATING COMPANY**

**April 15, 2016**

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

PETITION OF THE UNITED ILLUMINATING : PETITION NO. \_\_\_\_\_  
COMPANY FOR A DECLARATORY RULING THAT NO :  
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY :  
AND PUBLIC NEED IS REQUIRED FOR :  
MODIFICATIONS TO THE POOTATUCK SUBSTATION :  
IN THE CITY OF SHELTON, CONNECTICUT :

APRIL 15, 2016

**PETITION FOR DECLARATORY RULING**

Pursuant to Conn. Gen. Stat. §§ 4-176(a) and 16-50k and Conn. Agencies Regs. §§ 16-50j-39 through 16-50j-40, The United Illuminating Company (“UI” or the “Company”) hereby petitions the Connecticut Siting Council (the “Council”) for a Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required pursuant to Conn. Gen. Stat. §16-50k for the proposed modifications to UI’s existing Pootatuck Substation hereinafter described. UI submits that a Certificate is not required because the proposed modifications will not have a substantial adverse environmental effect.

**PURPOSE OF THE PROJECT**

As part of the continuing effort to maintain and improve the reliability of the electric transmission system in southwestern Connecticut (“SWCT”), The United Illuminating Company (“UI” or “the Company”) proposes to reconfigure its existing Pootatuck Substation, a 115 kilovolt (“kV”) to 13.8 kV distribution substation located in the City of Shelton, Fairfield County, Connecticut (refer to Figure 1), in order to add another 115 kV source and 115 kV capacitor bank. Referred to as the Pootatuck Ring Bus Expansion Project (“Project”), the proposed modifications will include the addition of equipment within the existing substation fence to accommodate a second 115 kV transmission line loop through the substation, as well as the installation of two new steel monopole structures to be located within an existing Eversource Energy (“ES”) right-of-way (“ROW”) that extends across UI property adjacent to the substation. The two new steel monopole structures are required to loop the existing ES 115 kV transmission line into the substation. UI will install the two steel monopoles; upon completion of the Project, UI will transfer ownership to ES.

**Figure 1: Existing Pootatuck Substation, City of Shelton**



Source: Visibility Analysis, Pootatuck Substation (March 2016)

The need for the proposed Project was identified by the SWCT Working Group, which included members from UI, ES, and the Independent System Operator–New England (“ISO-NE”). The results of the SWCT Working Group’s analyses were published in the *SWCT 2022 Needs Assessment* study (2014). *This Needs Assessment* found numerous reliability violations (thermal and voltage) throughout the 115 kV corridor between Devon and Frost Bridge substations in the Naugatuck Valley sub-area of SWCT. ISO-NE’s *SWCT Area Transmission 2022 Solutions Study Report* (February 2015) identified and evaluated several solutions to address these reliability issues. The *Solutions Study* found this Project to be a necessary part of the final suite of recommended system upgrades required to mitigate the identified transmission reliability needs in the Naugatuck Valley area.

### **PROPOSED MODIFICATIONS**

Within Pootatuck Substation, UI proposes to expand the existing transmission bus to allow for two additional 115 kV line connections and one additional 30 Megavolt-ampere reactive (“MVAR”) 115 kV capacitor bank and associated equipment connected to the high voltage bus. Three 115 kV

gas circuit breakers (“GCBs”) will be added, along with associated disconnect switches and potential devices to complete the bus reconfiguration from a single tie breaker arrangement to a four-breaker ring bus. A fourth 115 kV GCB will be installed as part of the 115 kV capacitor bank. Because Pootatuck Substation (which was placed into service in 2015) was designed with future expansion(s) in mind, limited site work will be required for the proposed Project. Further, all of the substation modifications will be accommodated within the existing substation perimeter fence.

To loop ES’s 115 kV line (designated currently as the 1570 Line) into the substation, modifications will be performed both within the substation yard and along the adjacent ES ROW. After the loop into the substation is completed, the 1570 Line will be re-designated by different ES line numbers (new line numbers 1056 and 1483, extending north and south from the substation, respectively). For the Project, the following activities will be performed:

- 1) The 115 kV transmission bus will be expanded into an additional bay; this expansion will be accommodated within the western portion of the existing substation yard.
- 2) The 1056 (“1570N”) Line will be terminated on an H-frame structure on the northern end of the newly-constructed bay, while the 1483 (“1570S”) Line will be terminated on the southern end of the newly constructed bay.
- 3) To interconnect the 1056 and 1483 lines to the substation, two new steel monopole structures will be installed within the existing ES ROW. UI will construct these two monopoles, as well as the line attachments and connections to the substation. The design and construction of the line loop-in will be similar to the existing interconnection of the 1560 and 1241 lines (formerly the 1560 Line) to Pootatuck Substation.
- 4) Within the substation yard, new foundations will be required for the additional 115 kV bus support structures, GCBs, and capacitor bank. New foundations will also be required for the installation of the new steel monopole structures within the ES ROW in the southwest and northwest corners of the UI property.
- 5) Conduit installations within the substation yard will also be required to facilitate connection of the new equipment.

Figure 2 provides a computer rendering of the proposed Project modifications.

**Figure 2: Visual Rendering of Proposed Pootatuck Substation Modifications**



Source: Visibility Analysis, Pootatuck Substation (March 2016)

## **DISCUSSION**

The ISO-NE *SWCT 2022 Needs Assessment* study (2014) determined the need for the Project. While the proposed Project will constitute “modifications” to the existing Pootatuck Substation and ES’s 1570 Line, there will be no substantial adverse environmental impact associated with the proposed Project, for the following reasons:

- All work will be performed entirely on properties already dedicated to utility use (that is, within the UI-owned Pootatuck Substation property or on the ES ROW). No additional easements or other property rights will be required.
- The Project will have no adverse effects on wetlands, watercourses, or vernal pools. Additionally, the Company anticipates no adverse impact to listed species or cultural resources.
- The Project will not substantially or adversely affect the visual character of the surrounding area because the proposed modifications will represent only incremental changes to the existing substation and 115 kV transmission line facilities.
- Electric and magnetic field (“EMF”) levels will remain in compliance with the Council’s EMF best management practices.

- The Project will not have any effect on the noise environment.

Based on the Project characteristics summarized above and detailed in the attached *Supplemental Technical Report*, UI respectfully submits that the proposed Project will not have a substantial adverse environmental impact and thus does not warrant submission of a full Certificate Application to the Council. Accordingly, UI requests that the Council declare that the proposed Project will not have a substantial adverse environmental effect and, therefore, that no Certificate of Environmental Compatibility and Public Need is required.

The name, title, address and telephone number of the person to whom correspondence and communication in regard to this petition are to be addressed is:

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Very truly yours,

THE UNITED ILLUMINATING COMPANY

By: \_\_\_\_\_

James R. Morrissey

## **CERTIFICATION**

This is to certify that on this 15th day of April, 2016, an original and fifteen (15) copies of the foregoing was delivered by hand to the Connecticut Siting Council, 10 Franklin Square, New Britain, CT, and one (1) copy was delivered via U.S. mail, postage prepaid, to the chief elected official of the municipality in which the proposed facility shall be constructed, and notice this filing was sent to all known property abutters, in accordance with § 16-50j-40 of the Regulations of Connecticut State Agencies.

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James R. Morrissey

# **POOTATUCK SUBSTATION RING BUS EXPANSION PROJECT**

**SUPPLEMENTAL TECHNICAL REPORT**

**IN SUPPORT OF THE**

**PETITION FOR A DECLARATORY RULING**

**April 2016**



**A UIL HOLDINGS COMPANY**

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- Attachment A – Engineering Drawings
- Attachment B – Agency Correspondence
- Attachment C – All Points Visibility Analysis
- Attachment D – Heritage Cultural Resource Review and Study
- Attachment E – Exponent EMF
- Attachment F – Notice Letters and Abutters Map

## **EXECUTIVE SUMMARY**

To improve the reliability of the electric transmission system in southwestern Connecticut (“SWCT”), the United Illuminating Company (“UI” or “the Company”) proposes to modify its existing Pootatuck Substation, a 115 kilovolt (“kV”) to 13.8 kV distribution substation located at 14 Old Stratford Road in the City of Shelton, Fairfield County. The Pootatuck Substation is presently connected to two Eversource Energy (“ES”) 115 kV transmission lines. The proposed modifications, referred to as the Pootatuck Substation Ring Bus Expansion Project (“Project”), which will be located entirely within the existing substation fence line or on an adjacent ES overhead transmission line right-of-way (“ROW”), will interconnect another 115 kV source to the station. For the Project, UI proposes to:

- Expand the substation’s existing single tie breaker arrangement into a four-breaker ring bus.
- Loop ES’s existing 1570 Line (which is located within the adjacent ROW but presently bypasses the substation) into the station.
- Install a new 115 kV capacitor bank and related equipment required for the new line interconnections.
- Add two new steel monopole structures within the ES ROW as required to separate the existing 115 kV transmission line for the loop into the substation.

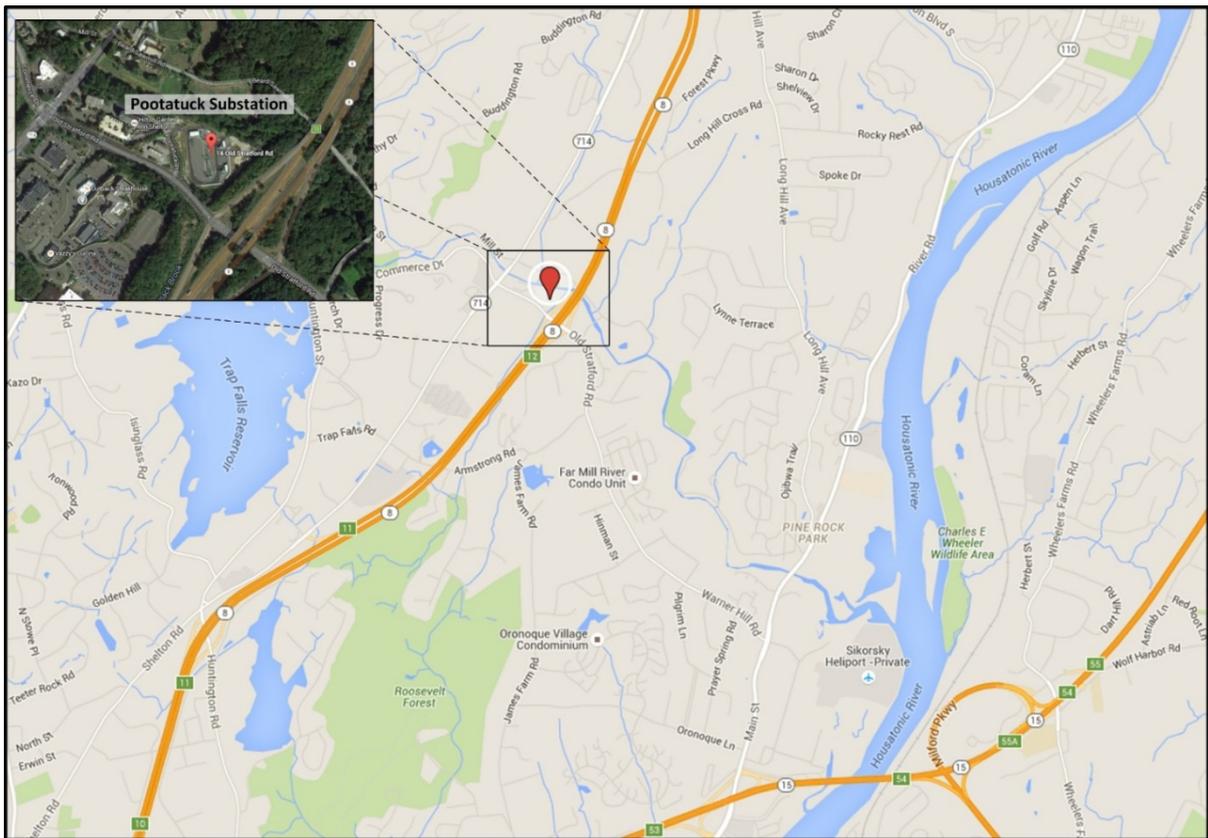
The Project will not result in any substantial adverse environmental impacts for the following reasons:

1. All new substation equipment will be installed within the developed fence line, and limited site work will be required.
2. The two new steel monopole structures will be situated in upland areas within ES’s ROW.
3. Any staging areas required for the Project will be situated within the substation fence, on ES’s ROW, or otherwise on UI’s 6-acre property within which the substation is located.
4. The proposed modifications will be in upland areas and will not affect any wetlands, watercourses, vernal pools, historic or archaeological sites, or any other environmentally sensitive areas. The Far Mill River forms the northern border of UI’s Pootatuck Substation property; appropriate erosion and sedimentation control measures will be implemented to avoid potential indirect impacts to this watercourse.
5. The visual character of the substation will not be adversely affected. The new equipment will be visually similar to the existing equipment and will not detrimentally affect the overall visual character of the site.
6. Electric and magnetic field (“EMF”) levels will remain in compliance with the Connecticut Siting Council’s EMF best management practices.
7. Noise levels due to the substation expansion are predicted to be within local daytime and nighttime requirements.

## A. PROJECT BACKGROUND AND NEED

As part of the continuing effort to maintain and improve the reliability of the electric transmission system in southwestern Connecticut (“SWCT”)<sup>1</sup>, The United Illuminating Company (“UI” or “the Company”) proposes to expand and reconfigure its existing Pootatuck Substation (located in the City of Shelton, Fairfield County, Connecticut; refer to Figure A-1) to accommodate a second 115 kV transmission line looped through the substation. The proposed substation and associated 115 kV transmission line structure additions, referred to as the Pootatuck Ring Bus Expansion Project (“the Project”), will assist in mitigating reliability issues in the Frost Bridge - Naugatuck Valley sub-area of SWCT.

**Figure A-1: Location of Pootatuck Substation**



Source: Google (March 2016)

<sup>1</sup> For electrical transmission system planning purposes, the large SWCT region is divided into five sub-areas, including the Frost Bridge – Naugatuck Valley sub-area within which Pootatuck Substation is located.

The need for the proposed Project was identified by the Independent System Operator – New England (“ISO-NE”) in its *SWCT 2022 Needs Assessment* study (2014)<sup>2</sup>, which determined that the 115 kV transmission equipment in the Frost Bridge - Naugatuck Valley sub-area, as well as other sub-areas of SWCT, are exposed to the risks of low voltage and overload conditions. ISO-NE’s *SWCT Area Transmission 2022 Solutions Study Report* (February 2015) identified and evaluated several solution alternatives to address these reliability issues. The solutions study found this proposed Project to be a necessary part of the final suite of recommended system upgrades required to mitigate the identified transmission reliability needs in the Naugatuck Valley sub-area.

In particular, along with other projects identified by ISO-NE, the Project will help mitigate reliability issues associated with several contingencies in the southern portion of the Frost Bridge - Naugatuck Valley sub-area, by providing both thermal and voltage support for critical area contingencies. At present, numerous contingencies create conditions under which UI’s 115 kV lines and/or buses are subject to overloads, as well as voltage collapse conditions.

The Pootatuck Substation is presently interconnected to two ES transmission lines:

- The 1560 Line from Derby Junction (located to the north); and
- The 1241 Line from UI’s Trap Falls Substation (located to the south).

The Project will assist in resolving the existing reliability (thermal and voltage) issues with respect to the 115 kV transmission system in the Naugatuck Valley sub-area by adding a new 115 kV source to the substation, as well as by installing a 30 MVAR<sup>3</sup> capacitor bank. For the Project, ES’s existing 1570 Line, which extends along the same ROW as the 1560/1241 lines but currently bypasses Pootatuck Substation, will be reconfigured to loop into and out of the substation.

To complete the loop-in of the 1570 Line, the substation’s existing single breaker bus configuration will be expanded and reconfigured into a four-breaker ring bus.

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<sup>2</sup> The *Needs Assessment* study was prepared by the SWCT Working Group, comprised of representatives of ISO-NE, UI, and ES.

<sup>3</sup> This capacitor bank will be designed to be expandable to a 50 MVAR bank to accommodate future needs.

After the existing 1570 Line is reconfigured to loop into and out of Pootatuck Substation, the line will be re-designated, with separate line numbers for the portions of the line to the north and south of the substation, as follows:

- The existing portion of the 1570 Line North (“1570N”) from Pootatuck Substation north to Derby Junction, Beacon Falls Substation, and Indian Well Substation will be renumbered as the 1056 Line.
- The existing portion of the 1570 Line South (“1570S”) from Pootatuck Substation to Devon Station will be renumbered as the 1483 Line.

## **B. TECHNICAL DESCRIPTION**

### **B.1. EXISTING FACILITY**

Pootatuck Substation (“the Site”) is a 115 kV to 13.8 kV distribution substation located at 14 Old Stratford Road in the southeastern portion of the City of Shelton. The substation, which was approved by the Connecticut Siting Council (“Council”) in Docket No. 433 and subsequently placed into service in 2015, is situated on approximately 2 acres of a 6-acre UI-owned property. The UI property, which is zoned OPD (Office Park Development) and as a Special Development Area (SDA)<sup>4</sup>, is bordered to the east by State Route 8, to the south by Old Stratford Road, to the west by Pootatuck Place, and to the north by the Far Mill River. Existing access to the substation from Pootatuck Place is located at the northwest corner of the property. An ES easement, occupied by three 115 kV lines (i.e., the 1560/1241, 1580, and 1570 lines), extends north-south across the UI property, abutting the substation Site on the west

The existing Pootatuck Substation is designed as a two terminal, single tie breaker configuration, with an allowance for expansion up to a six-terminal, breaker and one half configuration. The initial site layout, yard size, equipment, and fence locations were planned to accommodate potential future expansions.

The primary overhead 115 kV facilities at Pootatuck Substation consist of a combination of low-profile rigid tubular bus, overhead strain bus, and associated steel support structures.<sup>5</sup> Two existing 115 kV overhead lines currently enter the substation from the northwest and southwest corners of the

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<sup>4</sup> City of Shelton, CT Zoning Map, November 2011.

<sup>5</sup> Refer to Table B-1, located at the end of Section B.2, for a list of the existing substation structures and heights, compared to the proposed Project modifications.

Site and terminate to H-frame structures within the substation yard. A single 115 kV gas circuit breaker (“GCB”) is located in the middle position of the existing bus bay. Two 30/40/50 mega volt ampere (“MVA”) station transformers are connected through rigid tubular bus on either side of the existing GCB and are used to step down to 13.8kV distribution level voltages and serve load to area customers.

Adjacent to each 30/40/50 MVA station transformer on the east side of the substation are steel pre-fabricated enclosures, which house the 15 kV metalclad switchgear equipment used to segment and protect the individual distribution circuits. These distribution circuits exit the substation underground. An additional pre-fabricated enclosure, which is located in the northwest corner of the yard, houses the substation control, relaying, and station service equipment.

Figure B-1 provides an aerial view of the existing Pootatuck Substation.

**Figure B-1: Existing Pootatuck Substation**



Source: Visibility Analysis, Pootatuck Substation (March 2016)

## B.2. PROPOSED MODIFICATIONS

UI proposes modifications both within the existing Pootatuck Substation yard and along the ES ROW adjacent to the substation. Figure B-2 provides a computer rendering of the Pootatuck Substation with the proposed Project modifications. Attachment A includes engineering drawings of the proposed Project modifications.

**Figure B-2: Visual Rendering of Pootatuck Substation with Proposed Project Modifications**



Source: Visibility Analysis, Pootatuck Substation (March 2016)

Specifically, UI proposes to expand the existing transmission bus to allow for two additional 115 kV line connections and one additional 30 Megavolt-ampere reactive (“MVAR”) 115 kV capacitor bank and associated equipment connections to the high voltage bus. Three 115 kV GCBs will be added, along with associated disconnect switches and potential devices to complete the bus reconfiguration from a single tie breaker arrangement to a four-breaker ring bus. A fourth 115 kV GCB will be installed as part of the 115 kV capacitor bank. The proposed bus modifications, capacitor bank installation, and line interconnections will be accommodated within the existing substation yard and are compatible with the pre-existing provisions made for future substation expansion.

The 115 kV transmission bus will be expanded into an additional bay; this expansion will be accommodated within the western portion of the existing substation yard. The 1056 (1570N) Line will be terminated on an H-frame structure on the northern end of the newly-constructed bay, while the 1483 (1570S) Line will be terminated on the southern end of the newly constructed bay, where a new steel monopole structure will be installed.

To interconnect the 1056 and 1483 lines to the substation, two new steel monopole structures will be installed within the existing ES ROW. UI will construct these two steel monopoles (see heights below), as well as the line attachments and connections to the substation.

Table B-1 lists the proposed and existing structure heights, and descriptions. As this table indicates, the proposed Project structures will be generally similar in height and appearance to the existing structures within the substation yard and on the ES ROW.

**Table B-1: Existing and Proposed Structure Heights and Descriptions: Pootatuck Substation and Adjacent ES ROW\*\***

<b>1056 Line (1570N)</b>	<b>Height (feet)</b>	<b>Description</b>	<b>Type</b>	<b>Location</b>
1342	81'	Existing	Lattice	ES ROW
1342A	70'	Existing	Monopole	ES ROW
1342B	80'	New	Monopole	ES ROW

<b>1483 Line (1570S)</b>	<b>Height (feet)</b>	<b>Description</b>	<b>Type</b>	<b>Location</b>
1341	81'	Existing	Lattice	ES ROW
1341A	95'	Existing	Monopole	ES ROW
1341B	95'	New	Monopole	ES ROW

<b>Yard Structures</b>	<b>Height (feet)</b>	<b>Description</b>	<b>Type</b>	<b>Location</b>
STR. A	70'	Existing (1241)	Monopole	Pootatuck Substation Yard
STR. B	65'	Existing (1560)	Monopole	Pootatuck Substation Yard
STR. C	70'	New (1483)	Monopole	Pootatuck Substation Yard
YS 28	60'	New (1056)	H-Frame	Pootatuck Substation Yard
YS 28	60'	New (1483)	H-Frame	Pootatuck Substation Yard
YS13	55'	Existing	Lightning Masts	Pootatuck Substation Yard

\*\*For locations of structures, by structure number as referenced above, refer to the Attachment A engineering drawings.

The design and construction of the line loop-in will be similar to the existing interconnection of the 1560 and 1241 lines (formerly the 1560 Line) to Pootatuck Substation.

Because Pootatuck Substation was designed with future expansion(s) in mind, limited site work will be required for the proposed Project. A portion of the asphalt driveway within the substation fence line will be removed to make room for the 115 kV capacitor bank. However, the substation's perimeter fence will not have to be expanded to accommodate the Project modifications.

Within the substation yard, new foundations will be required for the additional 115 kV bus support structures, monopole, GCBs, and capacitor bank. New foundations will also be required for the installation of the new steel monopole structures within the ES ROW in the southwest and northwest corners of the UI property. In addition, to connect the new equipment within the substation yard, buried conduits will be installed. However, no major trenching or topographic modifications (e.g., grading, filling) are expected to be required for the Project.

No lightning masts will be installed as part of the Project; however, finials will be installed on top of the two new H-frame structures in the substation yard. Similarly, the proposed Project modifications will not require any upgrades to the existing substation security measures or any major changes to the existing stormwater management system. However, some low-level task and area lighting will be added.

## **C. CONSTRUCTION**

### **C.1. CONSTRUCTION PROCEDURES**

The Project will be constructed in accordance with UI engineering and construction specifications, established industry practices, and any conditions of the decision issued by the Council.

### **C.2. CONSTRUCTION SEQUENCE AND ACTIVITIES**

UI will construct the Project in several stages, some overlapping in time. Certain work activities and sequences may vary, based on factors such as site-specific conditions, the final Project design, the availability of transmission line outages and regulatory approval requirements.

**Pre-construction activities will include the following:**

- Survey and stake the property lines, ROW boundaries, and proposed structure locations.
- Install erosion and sedimentation control measures, as appropriate.

**Construction activities will include the following:**

- Mobilize field construction.
- Install temporary chain link fence around construction trailers and work areas.
- Construct work pads in ROW and install monopole drilled pier foundations.
- Perform site activities, including the relocation of stormwater drainage facilities and aggregate removal to prepare for foundation installation.
- Install substation drilled pier foundations.
- Excavate and install slab and spread footing foundations.
- Excavate and install raceway and stingers to existing ground grid.
- Install new high voltage yard equipment and associated bus, conductor, and fittings.
- Install relay and control panels, and control cable.
- Erect transmission line monopole structures.
- Cut-in existing 1570 Line to the two new terminal positions.
- Commission and energize new equipment.
- Perform minor asphalt paving work and install bollards.
- Complete site restoration activities.
- Remove temporary erosion and sedimentation control measures after site stabilization has been achieved.

No blasting will be required for construction. Excavating and grading will be minimal, and will be performed only as needed for stormwater facility relocation and for installation of materials for the new equipment.

The construction of the Project is expected to require the use of equipment such as pickup trucks, bucket trucks, front loaders, reel trailers, bulldozers, cranes, forklifts, side booms and dump trucks.

### **C.3. CONSTRUCTION SCHEDULE**

The construction and testing of the new equipment are expected to occur over an eight-to-nine month period commencing in March 2017. An in-service date of November 2017 is anticipated.

In general, construction hours will be scheduled from 7:00 AM to 5:00 PM, Monday through Friday, although certain critical tasks will require extended work hours. Site preparation, including minor grading and installation of foundations, will take place during the initial three months of construction and will involve the use of excavators and construction vehicles. The installation and testing of substation equipment will take approximately five to six months.

### **D. ENVIRONMENTAL EFFECTS**

The environmental impacts from the Project will be minimal and limited principally to the construction phase. The Project, which will be located on upland properties already dedicated to utility use, has been designed and will be constructed to avoid impacts to environmental and cultural resources. To further minimize the potential for environmental impacts, UI will require its construction contractor to implement mitigation measures, such as the installation and maintenance of erosion and sediment controls, and management of Connecticut regulated waste (i.e., soil and groundwater). UI has performed the necessary environmental due diligence regarding the Project and is confident the proposed modifications will not result in negative impact to the environment.

#### **D.1. SURFACE AND STORMWATER MANAGEMENT DURING CONSTRUCTION ACTIVITIES**

The construction of the proposed Project will result, in total, in the disturbance of less than 1 acre. As a result, the Project will not meet the threshold criteria for registration with the Connecticut Department of Energy and Environmental Protection (“DEEP”) under the *General Permit for the Discharge of Stormwater and Remediation Wastewaters from Construction Activities* (“DEEP-WPED-GP-015”). However, Project construction will incorporate standard best management practices for surface and stormwater management and will conform to the applicable procedures in DEEP’s *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* when performing all Project related ground disturbing activities.

Erosion and sedimentation controls will be installed as appropriate. For the duration of the Project (i.e., until stabilization), all such erosion and sediment controls will be maintained and monitored by

UI's on-site contractor. UI personnel also will inspect these control measures. After the Project modifications are installed, all areas disturbed by construction will be restored to pre-construction conditions to the extent practical and then permanently stabilized using rock, asphalt or re-vegetation.

## **D.2. INLAND WETLANDS, WATERCOURSES, VERNAL POOL, FLOODPLAINS AND OTHER REGULATED AREAS**

The proposed Project will be located within upland areas and will not impact wetlands, watercourses, vernal pools or floodplains. The closest water resources to the Project are the Far Mill River, which forms the northern boundary of the UI property, and Black Brook, which is located to the east near State Route 8. Neither of these resources directly abuts site-specific areas that will be affected by Project modifications. During construction, UI will install and maintain silt fence (or equivalent), as necessary, to avoid the potential for sedimentation into these water resources.

In conjunction with the development of the existing Pootatuck Substation, UI preserved and established a conservation easement along the Far Mill River riparian corridor that forms the northern boundary of its 6-acre property. The proposed Project will have a minor effect on a small upland portion of this existing 1.1-acre Conservation Area, which is located adjacent to the Far Mill River on both the ES ROW and UI's property.

For the proposed Project, UI anticipates that approximately 0.02 acre of upland area, located within the ES ROW but within the Conservation Area, will be unavoidably affected. Impacts to this portion of the Conservation Area will result from the construction activities (i.e., vegetation removal, work pad installation, structure and conductor work) required to install the new transmission line structure located northwest of the substation (Structure 1342B in Attachment A). The new transmission structure is required to allow the 115 kV line to loop into the substation. After the transmission structure installation and conductor work is completed, UI will restore the affected areas of the ES ROW (including the portion of the ROW within the Conservation Area) to the extent practical. Because the Conservation Area was established in conjunction with UI's regulatory approvals for the existing Pootatuck Substation, UI consulted the U.S. Army Corps of Engineers ("ACOE"), CT DEEP, and the U.S. Environmental Protection Agency ("EPA") regarding any permitting or compliance obligations for the proposed Project. Based on the review of UI's proposed construction activities, the ACOE, DEEP, and EPA determined on March 15, 2016 that no additional permits or registrations would be needed for this activity or other future activities within the existing ES ROW. Correspondence from these agencies is included in Attachment B.

### **D.3. SOIL AND GROUNDWATER**

On September 28 and October 16, 2015, UI assessed both soil and groundwater conditions at the Pootatuck Substation. Results were compared to the DEEP *Remediation Standard Regulations* to determine management techniques.

Based on these analyses of the soil, all material generated during construction will be transported off site and disposed of at an approved offsite facility, in accordance with Connecticut solid waste regulations. Any spoils that are temporarily stockpiled on-site (prior to off-site transport) will be covered with polypropylene (plastic) and corralled with straw waddles, hay bales, or silt fence (or equivalent).

In addition, based on the groundwater analysis, all water will be treated prior to the discharge. Due to the requirements for the management of groundwater, UI will apply to DEEP for one of the following registrations:

- 1) *General Permit for the Discharge of Groundwater Wastewater Directly to a Sanitary Sewer* (entitled DEP-WD-GP-007); or
- 2) *General Permit for the Discharge of Groundwater Wastewater Directly to Surface Water* (entitled DEP-PED-GP-020).

UI will also work with the Shelton Water Pollution Control Authority to obtain any necessary municipal discharge permits.

### **D.4. VEGETATION**

As the initial step in Project construction, UI will assess the need to perform minor cutting, trimming, and removal of certain vegetation around the proposed work areas. If cutting, trimming, or removal of vegetation is required to support the Project, UI will adhere to its *Line Clearance & Vegetation Management Specification*.

However, certain project activities commencing outside of the substation may be required and additional vegetation may need to be cut or removed in order to install the proposed electrical assets with the necessary clearances.

No pesticides or herbicides will be used on the Project to clear vegetation.

After the installation of Project facilities, as part of restoration, in areas outside the substation fence that are not otherwise paved or graveled, UI will promote revegetation by seeding and mulching (as appropriate) areas affected by the Project. Also as needed, UI will plant vegetation to provide visual screening.

#### **D.5. VISUAL**

UI retained All-Points Technology Corporation (“All-Points”) to perform a visual analysis of the proposed Project area. Attachment C includes All-Points’ before (existing conditions) and after (with the proposed Project modifications) photographs and visual simulations of the Pootatuck Substation, the ES ROW, and vicinity.

Based on the results of the visual simulations, All-Points concluded that the proposed Project facilities will not adversely affect the overall visual character of the Site and surrounding areas. In general, the effects of the proposed Project will represent incremental modifications to views of the Site, which is screened in part by vegetation and is located in an area of mixed commercial uses, adjacent to both Old Stratford Road and State Route 8.

#### **D.6. NOISE AND AIR QUALITY**

The construction of the Project will result in temporary and highly localized (to the Site and immediate vicinity) increases in fugitive dust and noise levels attendant with typical civil construction activities. Pootatuck Substation is located in a mixed commercial use area where noise levels are presently influenced by traffic on State Route 8 and Old Stratford Road. Further, construction work will be scheduled principally during the daytime, when human noise sensitivity to noise is less than at night.

#### **D.7. CONNECTICUT NATURAL DIVERSITY DATABASE**

Based on a review of the DEEP’s Natural Diversity Database (“NDDB”) for listed State and Federal species and significant natural communities, the proposed Project is not located within the mapped habitat of any listed species.

## **D.8. CULTURAL REVIEW AND STUDY**

In January 2016, UI retained Heritage Consultants, Inc. (“Heritage”) to perform a Cultural Resource Review and Study of the proposed Project, including the identification of recorded archaeological and historic sites and an assessment of the potential for as-yet undiscovered sites in the Project area. Heritage’s report is included in Attachment D.

Based on this evaluation, Heritage determined that, due to the location of the proposed Project modifications in areas previously disturbed by past land use developments, the Project will not have an adverse effect on cultural resources.

In addition to the Heritage report, UI also submitted a “Project Review Form” to the State Historic Preservation Office (“SHPO”) on January 15, 2016 (refer to Attachment B). To date, UI has not received correspondence from SHPO regarding the Project. UI will keep the Council apprised of any developments in the SHPO review process.

## **E. ELECTRIC AND MAGNETIC FIELDS**

To assess the potential effects of the proposed Project on electric and magnetic fields (“EMF”), UI retained Exponent, Incorporated (“Exponent”) to model the EMF levels associated with the existing and proposed configurations of the Pootatuck Substation and existing 115 kV transmission lines. Exponent’s report is provided in Attachment E; the following summarizes the key findings of the Exponent report.

The effect of the new line terminations and equipment on existing magnetic-field levels was evaluated by modeling magnetic fields for pre- and post-Project conditions as recommended by the Council’s *EMF Best Management Practices*. For the pre-Project conditions, the loading was calculated for the in-service year of 2016 and later in 2023, but without the effect of the proposed substation equipment on the transmission system. Pre-project magnetic fields were also measured around the substation on January 22, 2016.

The post-Project condition uses loadings calculated in the same years, but with the Project in operation, and includes magnetic-field contributions from new equipment and transmission-line terminations. In each condition, two load cases were studied, corresponding to 2023 annual average load and 2016 annual peak load. Project effects on electric field levels were not calculated because of

the voltage of new or modified facilities at the substation will not be changed and because of the shielding provided by the metal fence enclosing the substation.

The results of the modeling demonstrate that Project-related changes in the calculated magnetic field are greatest on the west side of the substation, where conductors from the new north and south 115 kV transmission lines turn to enter Pootatuck Substation. Near the southwest corner of the substation yard, the calculated magnetic field increases from 33 milligauss (“mG”) (pre-Project) to 47 mG (post-Project) beneath the conductors of the new south transmission line.

At the northwest corner of the substation yard, the calculated magnetic field is 26 mG beneath the conductors of the north transmission line. Between these two locations, where one span of the existing 115 kV transmission line is removed, the calculated magnetic field decreases by approximately 4 mG. At the property line near the southwest corner of the substation yard, the calculated magnetic field increases from 20 mG (pre-Project) to 50 mG (post-Project) beneath the conductors of the new south transmission line. Near the northwest corner of the property, the calculated magnetic field beneath the new north transmission line increases to 53 mG, compared to 42 mG in the existing case.

The increase or decrease of magnetic fields along the western side of the property falls off rapidly with distance from the new 115 kV terminations. At 100-300 feet from the substation fence, for instance, the measured magnetic-field levels from distribution sources are greater than the calculated contribution from transmission-line sources or substation equipment.

A Project-related increase in the calculated magnetic field on the north side of the substation yard is due to the increased loading of existing transmission lines with the proposed ring bus in service. The calculated magnetic field levels beneath the conductors of the existing transmission line increase from 32 mG to 41 mG for existing and proposed loading cases, respectively.

The highest measured electric field modeled outside the substation fence is 0.33 kilovolts/meter (“kV/m”), on the north side of the Pootatuck Substation beneath the conductors of the existing 115 kV transmission line. Away from overhead 115 kV transmission line conductors, measured electric fields were low, below 0.08 kV/m. The lower measured values of the electric field at these locations are attributable to the low profile of equipment within the Pootatuck Substation, and to shielding of the electric field by the substation fence and surrounding vegetation.

In summary, the proposed Project will not appreciably alter electric field levels around the Pootatuck Substation property. Changes to magnetic field levels are associated with relocation of transmission lines and increased loading on the lines north of the substation.

**F. MUNICIPAL AND COMMUNITY OUTREACH**

As a part of the Project planning process, UI consulted with the City of Shelton on several occasions. On December 2, 2015, UI representatives met with Mayor Mark Lauretti to discuss the proposed modifications to the Pootatuck Substation. Subsequently, on February 10, 2016, UI met again with Mayor Lauretti to present visual renderings of the Project. UI delivered presentation boards of the renderings to Mayor Lauretti per his request. Offers of further outreach and/or presentations to additional City representatives were declined at this meeting. UI placed a phone call to Mayor Lauretti's office on April 1 to advise that UI would be filing the Petition in mid-April.

UI also provided notice of the proposed Project to abutters of the Project Site. Attachment F includes a list of the abutters notified, along with a map identifying the abutters properties.

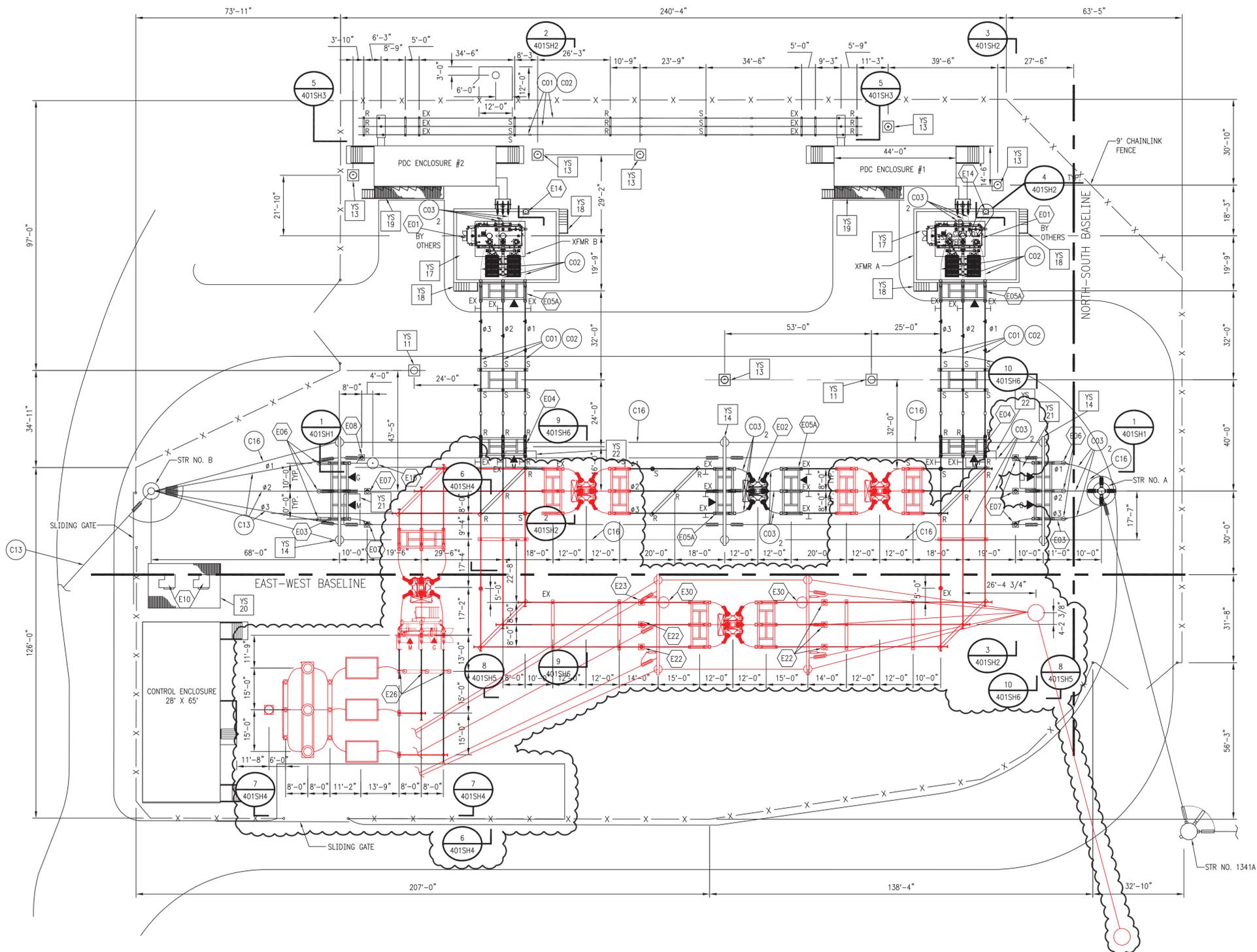
**G. CONCLUSION**

Based on the foregoing, UI respectfully submits that the Project will not have a substantial adverse environmental effect and, therefore, does not require a Certificate of Environmental Compatibility and Public Need pursuant to Conn. Gen. Stat. § 16-50k(a).

**Attachment A**

**Engineering Drawings**





- LEGEND**
- BUS CONNECTION OR JOINT
  - MOBILE TRANSFORMER TAP
  - BUS SUPPORT
  - R RIGID (FIXED) BUS CONNECTION
  - S SLIP BUS CONNECTION
  - EX EXPANSION BUS CONNECTION
  - ⊕ COUPLING CAPACITOR VOLTAGE TRANSFORMER
  - ⊕ BUS GROUNDING STUD
  - ⊕ YARD LIGHTING MAST
  - ⊕ LIGHTNING MAST
  - ⊕ SURGE ARRESTER
  - M DISCONNECT SWITCH MOTOR OPERATOR
  - G GROUNDING SWITCH MANUAL OPERATOR
  - ▶ DISCONNECT SWITCH MANUAL OPERATOR
  - E# SUBSTATION ELECTRIC OPERATIONS EQUIPMENT, E# INDICATES ITEM NO. ON THE SUBSTATION BILL OF MATERIALS.
  - YS# MAJOR SUBSTATION STRUCTURAL COMPONENTS OR ASSEMBLY, YS# INDICATES ITEM NO. ON THE SUBSTATION BILL OF MATERIALS.

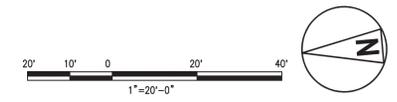
⊕ AREAS BACKCIRCLED IN THIS DRAWING INDICATE WORK ASSOCIATED WITH RING BUS PROJECT 189770

# PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

DOES NOT CONTAIN CRITICAL ENERGY INFRASTRUCTURE INFORMATION

<b>BLACK &amp; VEATCH</b> Building a world of difference®		PROJECT NO. 189770	
B 11/16/2015	ISSUED FOR BID-PROJECT 189770-RING BUS PROJECT	TDP/CRE	BLH ZRM MAV
A 10/09/2015	ISSUED FOR UI 30% REVIEW-PROJECT 189770-RING BUS PROJECT	TDP	JDG ZRM MAV
No	Date	Revision	By Chkd. Engr. Supr.



<b>BLACK &amp; VEATCH</b> Building a world of difference®		PROJECT # 178262	
DESIGNER	JOB	DRAWN	JDB
CHECKED	SAB	DATE	08/29/2013
No	Date	Revision	By Chkd. Engr. Supr.
2	10/2015	RING BUS PROJECT	TDP - ZRM MAV
1	07/31/2015	POOTATUCK SUBSTATION PROJECT / CTR PROJECT #178262	BJF - DCP ALL

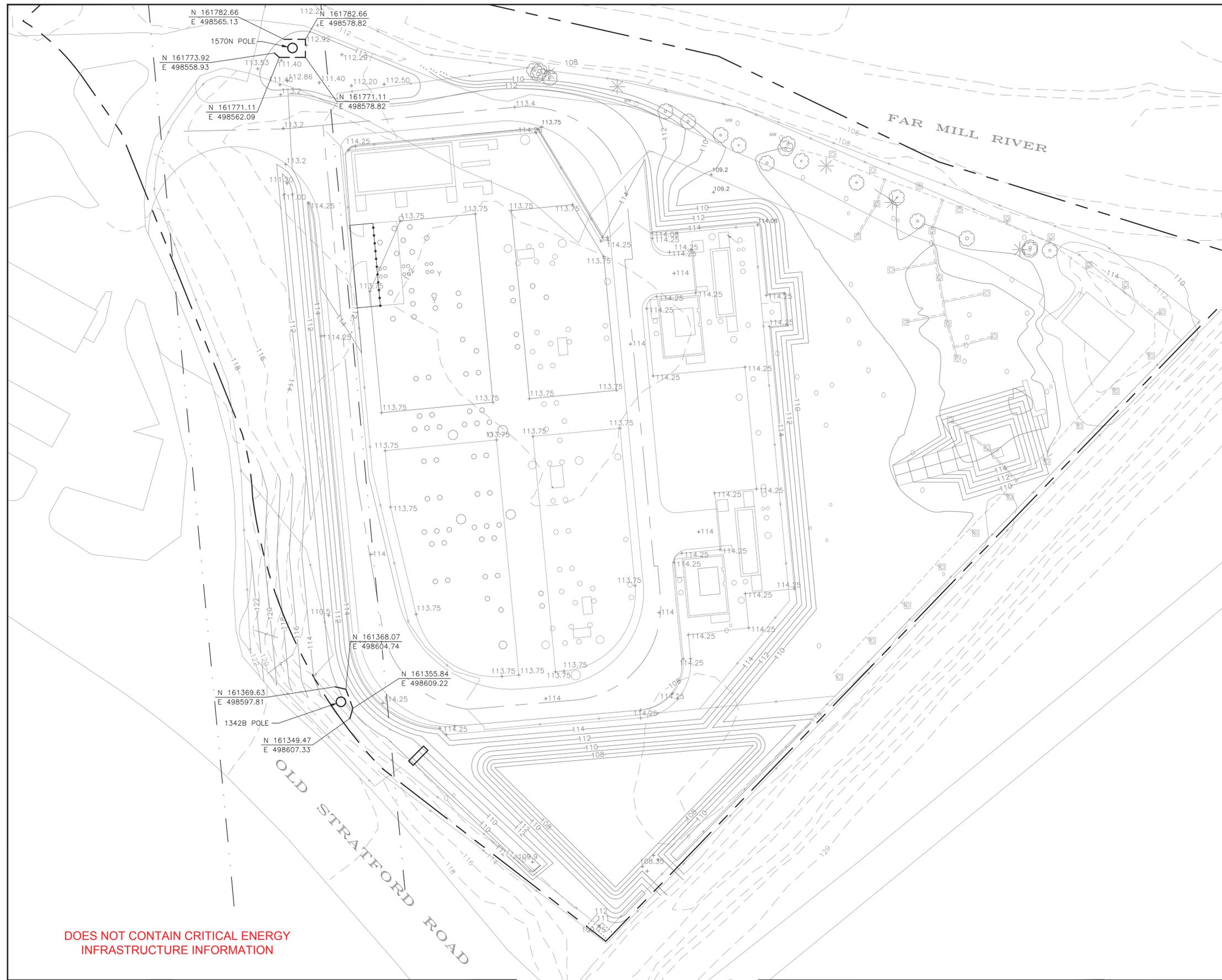
**ui**  
The United Illuminating Company

Drawn	Date 2/1/2012	Scale: 1" = 20'
Chkd.	Design Engr.	Design Supv.

SUBSTATION ARRANGEMENT PLAN		
POOTATUCK SUBSTATION		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
	091825	25252-400

GENERAL NOTES

1. SEE DWG 25252-003A FOR GENERAL NOTES, KEY PLAN AND ABBREVIATIONS.
2. SEE DWG 25252-008A FOR EROSION CONTROL DETAILS.
3. FIELD LOCATE BY BVCI FIELD CONSTRUCTION MANAGER. SEE DWG 25252-008A FOR DETAILS.



LEGEND

- FILTREXX - GROSOXX
- RIPRAP
- INLET PROTECTION
- WEIGHTED SEDIMENT FILTER TUBE
- SILT FENCE

REFERENCE DRAWINGS

- GRADING & DRAINAGE PLAN 25252-003A
- CATCH BASIN SCHEDULE & DETAILS 25252-007A
- EROSION CONTROL DETAILS 25252-008A
- ROADS AND PARKING PLAN 25252-016A

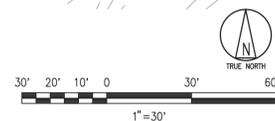
DOES NOT CONTAIN CRITICAL ENERGY  
INFRASTRUCTURE INFORMATION

**PRELIMINARY**

NOT TO BE USED FOR CONSTRUCTION

<b>BLACK &amp; VEATCH</b> Building a world of difference®							
DESIGNER	SMR	DRAWN	JDL				
CHECKED	-	DATE					
PROJECT #	178262						
NO	DATE	REVISION	DRN	CHKD	DESN	SUPR.	
C	02/19/2016	ISSUED FOR BIDS-		JTG	SMR	MAV	
B	11/16/2015	ISSUED FOR BIDS-PROJECT 189770-RING BUS ADDITION		RRH	SMR	MAV	
A	10/09/2015	ISSUED FOR UI 30% REVIEW-PROJECT 189770-RING BUS ADDITION		JDL	SMR	MAV	

**NEW DRAWING**



No	Date	Revision	By	Chkd.	Engr.	Supv.
1	10/2015	POOTATUCK RING BUS	JDL	-	SMR	ALL



EROSION CONTROL - SITE PLAN		
POOTATUCK SUBSTATION		
CAD FILE NAME	SEQUENCE No.	DRAWING NUMBER
		25252-006A

Drawn	JDL	Date	-	Scale:	1:30
Chkd.	-	Design Engr.	SMR	Design Supv.	-

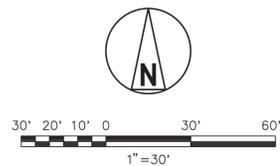


DOES NOT CONTAIN CRITICAL ENERGY INFRASTRUCTURE INFORMATION

**PRELIMINARY**

NOT TO BE USED FOR CONSTRUCTION

<b>BLACK &amp; VEATCH</b> Building a world of difference®									
DESIGNER	SMR	DRAWN	MEM						
CHECKED	-	DATE	-						
PROJECT #	189602								
NO	DATE	REVISION	DRN	CHKD	DES	SUPR.			
A	03/01/2016	ISSUE FOR CSC APPLICATION - PROJECT 189770 - RING BUS PROJECT	MEM	-	SMR	-			



No	Date	Revision	By	Chkd.	Engr.	Supv.			
1	03/2016	POOTATUCK RING BUS PROJECT	MEM	-	SMR	-			



TRANSMISSION LINE - SITE AREA OF DISTURBANCE  
FOOTATUCK SUBSTATION

Drawn	-	Date	02/16/2016	Scale:	1"=30'
Chkd.	-	Design Engr.	-	Design Supv.	-
CAD FILE NAME	-	SEQUENCE No.	-	DRAWING NUMBER	25252-002A

**Attachment B**  
**Agency Correspondence**

**From:** Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
**Sent:** Tuesday, March 08, 2016 5:29 PM  
**To:** Hoskins, Douglas; Shawn Crosbie  
**Cc:** 'Margason, Nathan'  
**Subject:** RE: Question

Thanks, Doug.

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
978-318-8494

-----Original Message-----

From: Hoskins, Douglas [mailto:Douglas.Hoskins@ct.gov]  
Sent: Tuesday, March 08, 2016 4:53 PM  
To: 'Shawn Crosbie' <shawn.crosbie@uinet.com>; Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>  
Subject: [EXTERNAL] RE: Question  
Importance: Low

We have no issue with this revision. I just need to type up a formal letter for our director to sign.

Doug Hoskins  
Environmental Analyst III  
Environmental Analysis Section  
Inland Water Resources Division  
Water Protection and Land Reuse  
Connecticut Department of Energy and Environmental Protection  
79 Elm Street, Hartford, CT 06106-5127  
P: 860.424-4192 douglas.hoskins@ct.gov

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Conserving, improving and protecting our natural resources and environment;  
Ensuring a clean, affordable, reliable, and sustainable energy supply.

-----Original Message-----

From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]  
Sent: Monday, March 07, 2016 10:22 AM

Attachment B1 - Agency Correspondence - ACOE.CT DEEP Review Approval

To: Lee, Susan K NAE; Hoskins, Douglas

Cc: 'Margason, Nathan'

Subject: RE: Question

Susan/Doug:

Please see below for UI's answers.

1) What is a "Ring Bus"?

Answer: This is an arrangement is within a transmission substation yard which the bus (bus = electrical component within the substation which carries electricity between equipment) is used as a closed loop extension of the sectionalized breaker (breaker = allows the disconnection and connection of electricity within the substation to the grid) between two open bus ends. The ring bus provides greater reliability and allows for flexible operation.

2) What is the need for the new pole? Is it to replace/augment the nearby existing pole?

Answer: The new pole will be used to re-align the existing transmission line into the Pootatuck Substation. The new pole is not being proposed to take the place or augment the existing pole.

3) I don't have final plans handy, but were they going to remove the asphalt from within the conservation easement and restore?

Answer: UI does not anticipate to remove or damage any of the existing asphalt.

In addition to the above information UI does intend to perform the necessary restoration such as but not limited to the replanting of existing vegetation, planting new (trees, shrubs, etc.), seeding, mulching and grading in order to stabilize and restore the construction areas affected on the Pootatuck Ring Bus Project.

I hope the above information was helpful. Please do not hesitate to give me a call with any questions.

Sincerely,

Shawn C. Crosbie  
Environmental Analyst  
UIL Holdings Corporation  
180 Marsh Hill Rd.  
Orange, CT 06477  
(O)203-926-4595  
(M)203-915-2573

-----Original Message-----

From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]

Sent: Friday, March 04, 2016 5:10 PM

To: Hoskins, Douglas; Shawn Crosbie

Cc: 'Margason, Nathan'

Subject: RE: Question

Hi Doug -

1. here's my guess on the ring bus - I surmise that it's some electrical connections of wires that is arranged in a circular configuration?

Attachment B1 - Agency Correspondence - ACOE.CT DEEP Review Approval

2. The need for the new pole is to interconnect from Eversource to substation to UI lines. the other pole 1342A a new pole that was constructed as shown on the original permit plan.

3. I attached the original project plans from file #NAE-2012-443 and also the amendment. Re-planting did occur for construction of structure 1342A.

The original project plans do not appear to call out removal of the paved areas within the CE area.

I did ask Shawn about the paved area within the CE area. he noted that it is parking area associated with the remediation activity onsite.

hope this helps.

Shawn- please explain further/clarify, as necessary.

Thanks

Susan.

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
978-318-8494

-----Original Message-----

From: Hoskins, Douglas [mailto:Douglas.Hoskins@ct.gov]

Sent: Friday, March 04, 2016 2:06 PM

To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>

Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>

Subject: [EXTERNAL] RE: Question

Importance: Low

Hi Susan:

A few questions:

What is a "Ring Bus"? This is a Transmission Substation arrangement which the bus (bus = electrical component within the substation, group of conductors carrying electricity within the substation) forma a closed loop with section connected by circuit breakers. This provides greater reliability and allows for flexible operation

What is the need for the new pole? Is it to replace/augment the nearby existing pole? The new pole is used to re-align the existing transmission line into the Pootatuck Substation versus the existing line condition bypassing the substation.

I don't have final plans handy, but were they going to remove the asphalt from within the conservation easement and restore? UI does not currently intend to remove or damage

Thanks for checking in.

Doug Hoskins  
Environmental Analyst III  
Environmental Analysis Section  
Inland Water Resources Division

Attachment B1 - Agency Correspondence - ACOE.CT DEEP Review Approval

Water Protection and Land Reuse  
Connecticut Department of Energy and Environmental Protection  
79 Elm Street, Hartford, CT 06106-5127  
P: 860.424-4192 douglas.hoskins@ct.gov

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-----Original Message-----

From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]  
Sent: Thursday, March 03, 2016 5:53 PM  
To: Margason, Nathan; Hoskins, Douglas  
Subject: FW: Question

hi Nate, Doug - FYI.

#NAE-2012-443 (UI Pootatuck Substation, Shelton, CT)

UI requests a single monopole structure to be installed in a non-jurisdictional area within the limits of the Conservation Easement (CE) area. the CE area mitigation was required in the permit.

The proposed single structure is located within the limits of the Eversource ROW which aligns through the westerly limit of the CE area and directly adjacent to the westerly edge of the UI substation property.

The area disturbed by this construction activity within the CE area will be replanted again with low-growing tree/shrub species.

the permanent impact from the pole is 30 SF and within the Eversource ROW limits.

The Corps does not propose to request additional ILF mitigation.

any comment?

Thanks

Susan

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
978-318-8494

-----Original Message-----

From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]

Attachment B1 - Agency Correspondence - ACOE.CT DEEP Review Approval

Sent: Thursday, March 03, 2016 10:58 AM

To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>

Subject: [EXTERNAL] RE: Question

Susan:

Please see the attached site plan for the Pootatuck Ring Bus Project:

- 1) Existing T-Line Pole location,
- 2) Proposed T-Line Pole location,
- 3) Temporary and permanent impacts within the "Conservation Area,"

The total disturbance, both temporary (~1,179 square feet) and permanent (~30 square feet) from the proposed activity is within the "Conservation Area" is ~1,209 square feet.

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**From:** Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
**Sent:** Wednesday, March 09, 2016 2:13 PM  
**To:** Margason, Nathan; Shawn Crosbie  
**Cc:** Hoskins, Douglas  
**Subject:** RE: Question

Nate - your email response is sufficient.  
thanks  
Susan

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
978-318-8494

-----Original Message-----

From: Margason, Nathan [mailto:Margason.Nathan@epa.gov]  
Sent: Wednesday, March 09, 2016 10:41 AM  
To: Shawn Crosbie <shawn.crosbie@uinet.com>; Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
Cc: Hoskins, Douglas <Douglas.Hoskins@ct.gov>  
Subject: [EXTERNAL] Re: Question

My email comments should be sufficient, but I'd be happy to fill out a project comment form if Susan thinks it's necessary.

Nate

Nathan Margason  
US Environmental Protection Agency  
Wetlands Protection Unit  
5 Post Office Square  
Suite 100 (OEP06-3)  
Boston, MA 02109

P: 617-918-1172  
E: margason.nathan@epa.gov

---

From: Shawn Crosbie <shawn.crosbie@uinet.com>  
Sent: Wednesday, March 9, 2016 10:27 AM  
To: Lee, Susan K NAE  
Cc: Hoskins, Douglas; Margason, Nathan  
Subject: Re: Question

Attachment B2 - Agency Correspondence - ACOE.EPA Review Approval

Susan/Doug

Thank you for your input. I greatly appreciate the dialogue here, not to mention the outcome. One other question I have is, does UI also need a memo from the EPA or can we proceed forward on the design and construction with just the sign off from ACOE and DEEP?

Please feel free to give me a call with any further questions 860-904-8551.

Shawn C Crosbie

Sent from my iPhone

> On Mar 8, 2016, at 5:28 PM, Lee, Susan K NAE <Susan.K.Lee@usace.army.mil> wrote:

>

> Thanks, Doug.

>

>

> Susan K. Lee

> Project Manager

> USACE - New England District

> Regulatory Division

> 696 Virginia Rd

> Concord, MA 01742-2751

> 978-318-8494

>

> -----Original Message-----

> From: Hoskins, Douglas [mailto:Douglas.Hoskins@ct.gov]

> Sent: Tuesday, March 08, 2016 4:53 PM

> To: 'Shawn Crosbie' <shawn.crosbie@uinet.com>; Lee, Susan K NAE

> <Susan.K.Lee@usace.army.mil>

> Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>

> Subject: [EXTERNAL] RE: Question

> Importance: Low

>

> We have no issue with this revision. I just need to type up a formal letter for our director to sign.

>

> Doug Hoskins

> Environmental Analyst III

> Environmental Analysis Section

> Inland Water Resources Division

> Water Protection and Land Reuse

> Connecticut Department of Energy and Environmental Protection

> 79 Elm Street, Hartford, CT 06106-5127

> P: 860.424-4192 douglas.hoskins@ct.gov

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> Conserving, improving and protecting our natural resources and

> environment; Ensuring a clean, affordable, reliable, and sustainable energy supply.

Attachment B2 - Agency Correspondence - ACOE.EPA Review Approval

>  
>  
>  
> -----Original Message-----  
> From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]  
> Sent: Monday, March 07, 2016 10:22 AM  
> To: Lee, Susan K NAE; Hoskins, Douglas  
> Cc: 'Margason, Nathan'  
> Subject: RE: Question  
>  
> Susan/Doug:  
>  
> Please see below for UI's answers.  
>  
> 1) What is a "Ring Bus"?  
> Answer: This is an arrangement is within a transmission substation yard which the bus (bus = electrical component within the substation which carries electricity between equipment) is used as a closed loop extension of the sectionalized breaker (breaker = allows the disconnection and connection of electricity within the substation to the grid) between two open bus ends. The ring bus provides greater reliability and allows for flexible operation.  
>  
> 2) What is the need for the new pole? Is it to replace/augment the nearby existing pole?  
> Answer: The new pole will be used to re-align the existing transmission line into the Pootatuck Substation. The new pole is not being proposed to take the place or augment the existing pole.  
>  
> 3) I don't have final plans handy, but were they going to remove the asphalt from within the conservation easement and restore?  
> Answer: UI does not anticipate to remove or damage any of the existing asphalt.  
>  
> In addition to the above information UI does intend to perform the necessary restoration such as but not limited to the replanting of existing vegetation, planting new (trees, shrubs, etc.), seeding, mulching and grading in order to stabilize and restore the construction areas affected on the Pootatuck Ring Bus Project.  
>  
> I hope the above information was helpful. Please do not hesitate to give me a call with any questions.  
>  
> Sincerely,  
>  
> Shawn C. Crosbie  
> Environmental Analyst  
> UIL Holdings Corporation  
> 180 Marsh Hill Rd.  
> Orange, CT 06477  
> (O)203-926-4595  
> (M)203-915-2573  
>  
>  
> -----Original Message-----  
> From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]  
> Sent: Friday, March 04, 2016 5:10 PM  
> To: Hoskins, Douglas; Shawn Crosbie  
> Cc: 'Margason, Nathan'  
> Subject: RE: Question  
>

## Attachment B2 - Agency Correspondence - ACOE.EPA Review Approval

> Hi Doug -

>

> 1. here's my guess on the ring bus - I surmise that it's some electrical connections of wires that is arranged in a circular configuration?

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> 3. I attached the original project plans from file #NAE-2012-443 and also the amendment. Re-planting did occur for construction of structure 1342A.

> The original project plans do not appear to call out removal of the paved areas within the CE area.

> I did ask Shawn about the paved area within the CE area. he noted that it is parking area associated with the remediation activity onsite.

>

> hope this helps.

>

> Shawn- please explain further/clarify, as necessary.

> Thanks

> Susan.

>

> Susan K. Lee

> Project Manager

> USACE - New England District

> Regulatory Division

> 696 Virginia Rd

> Concord, MA 01742-2751

> 978-318-8494

>

>

> -----Original Message-----

> From: Hoskins, Douglas [mailto:Douglas.Hoskins@ct.gov]

> Sent: Friday, March 04, 2016 2:06 PM

> To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>

> Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>

> Subject: [EXTERNAL] RE: Question

> Importance: Low

>

> Hi Susan:

>

> A few questions:

>

> What is a "Ring Bus"? This is a Transmission Substation arrangement

> which the bus (bus = electrical component within the substation, group

> of conductors carrying electricity within the substation) form a

> closed loop with section connected by circuit breakers. This provides

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> What is the need for the new pole? Is it to replace/augment the nearby existing pole? The new pole is used to re-align the existing transmission line into the Pootatuck Substation versus the existing line condition bypassing the substation.

>

> I don't have final plans handy, but were they going to remove the

> asphalt from within the conservation easement and restore? UI does not

Attachment B2 - Agency Correspondence - ACOE.EPA Review Approval

> currently intend to remove or damage  
>  
> Thanks for checking in.  
>  
> Doug Hoskins  
> Environmental Analyst III  
> Environmental Analysis Section  
> Inland Water Resources Division  
> Water Protection and Land Reuse  
> Connecticut Department of Energy and Environmental Protection  
> 79 Elm Street, Hartford, CT 06106-5127  
> P: 860.424-4192 douglas.hoskins@ct.gov  
>  
>  
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> BlockedBlockedwww.ct.gov/deep  
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> Conserving, improving and protecting our natural resources and environment; Ensuring a clean, affordable, reliable, and sustainable energy supply.  
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> From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]  
> Sent: Thursday, March 03, 2016 5:53 PM  
> To: Margason, Nathan; Hoskins, Douglas  
> Subject: FW: Question  
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> hi Nate, Doug - FYI.  
>  
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>  
> UI requests a single monopole structure to be installed in a non-jurisdictional area within the limits of the Conservation Easement (CE) area. the CE area mitigation was required in the permit.  
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> The proposed single structure is located within the limits of the Eversource ROW which aligns through the westerly limit of the CE area and directly adjacent to the westerly edge of the UI substation property.  
>  
> The area disturbed by this construction activity within the CE area will be replanted again with low-growing tree/shrub species.  
>  
> the permanent impact from the pole is 30 SF and within the Eversource ROW limits.  
>  
> The Corps does not propose to request additional ILF mitigation.  
>  
> any comment?  
> Thanks  
> Susan  
>  
> Susan K. Lee  
> Project Manager  
> USACE - New England District

Attachment B2 - Agency Correspondence - ACOE.EPA Review Approval

> Regulatory Division  
> 696 Virginia Rd  
> Concord, MA 01742-2751  
> 978-318-8494

>  
>  
> -----Original Message-----

> From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]  
> Sent: Thursday, March 03, 2016 10:58 AM  
> To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
> Subject: [EXTERNAL] RE: Question

>  
> Susan:  
>  
> Please see the attached site plan for the Pootatuck Ring Bus Project:

>  
> 1) Existing T-Line Pole location,  
> 2) Proposed T-Line Pole location,  
> 3) Temporary and permanent impacts within the "Conservation Area,"

>  
> The total disturbance, both temporary (~1,179 square feet) and permanent (~30 square feet) from the proposed activity is within the "Conservation Area" is ~1,209 square feet.

>  
>  
>  
> Disclaimer This e-mail, and any attached file(s), is intended solely for the use of the individual or entity to whom this e-mail is addressed and may contain information that is privileged, confidential or exempt from disclosure. If you are not one of the named recipient(s) or otherwise have reason to believe that you have received this message in error, please notify the sender and delete this message immediately from any computer. Any other use, retention, dissemination, retransmission, printing or copying of this e-mail or its contents (including any attached files) is strictly prohibited.

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## Attachment B3 - Agency Correspondence - ACOE Review Approval

---

**From:** Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
**Sent:** Tuesday, March 15, 2016 2:03 PM  
**To:** Shawn Crosbie  
**Cc:** Hoskins, Douglas; Margason, Nathan  
**Subject:** RE: Question

Shawn - for the record.

1. Proposed pole 1570N and construction access for construction of 1570N are not located in federal jurisdictional areas. No permit is required from the Corps for this activity.
2. The Corps acknowledges that proposed pole 1570N is within the limits of the conservation area, and that the vegetated areas disturbed by construction of pole 1570N will be restored/re-planted with appropriate native tree and shrub species once construction of pole 1570N is completed.

Thank you for providing notification of the proposed activity affecting the conservation area.

Susan

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
978-318-8494

-----Original Message-----

From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]  
Sent: Wednesday, March 09, 2016 10:28 AM  
To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
Cc: Hoskins, Douglas <Douglas.Hoskins@ct.gov>; Margason, Nathan <Margason.Nathan@epa.gov>  
Subject: [EXTERNAL] Re: Question

Susan/Doug

Thank you for your input. I greatly appreciate the dialogue here, not to mention the outcome. One other question I have is, does UI also need a memo from the EPA or can we proceed forward on the design and construction with just the sign off from ACOE and DEEP?

Please feel free to give me a call with any further questions 860-904-8551.

Shawn C Crosbie

Sent from my iPhone

> On Mar 8, 2016, at 5:28 PM, Lee, Susan K NAE <Susan.K.Lee@usace.army.mil> wrote:

Attachment B3 - Agency Correspondence - ACOE Review Approval

>  
> Thanks, Doug.  
>  
>  
> Susan K. Lee  
> Project Manager  
> USACE - New England District  
> Regulatory Division  
> 696 Virginia Rd  
> Concord, MA 01742-2751  
> 978-318-8494  
>  
> -----Original Message-----  
> From: Hoskins, Douglas [mailto:Douglas.Hoskins@ct.gov]  
> Sent: Tuesday, March 08, 2016 4:53 PM  
> To: 'Shawn Crosbie' <shawn.crosbie@uinet.com>; Lee, Susan K NAE  
> <Susan.K.Lee@usace.army.mil>  
> Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>  
> Subject: [EXTERNAL] RE: Question  
> Importance: Low  
>  
> We have no issue with this revision. I just need to type up a formal letter for our director to sign.  
>  
> Doug Hoskins  
> Environmental Analyst III  
> Environmental Analysis Section  
> Inland Water Resources Division  
> Water Protection and Land Reuse  
> Connecticut Department of Energy and Environmental Protection  
> 79 Elm Street, Hartford, CT 06106-5127  
> P: 860.424-4192 douglas.hoskins@ct.gov  
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>  
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> -----Original Message-----  
> From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]  
> Sent: Monday, March 07, 2016 10:22 AM  
> To: Lee, Susan K NAE; Hoskins, Douglas  
> Cc: 'Margason, Nathan'  
> Subject: RE: Question  
>  
> Susan/Doug:  
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> Please see below for UI's answers.  
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## Attachment B3 - Agency Correspondence - ACOE Review Approval

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> 3) I don't have final plans handy, but were they going to remove the asphalt from within the conservation easement and restore?

> Answer: UI does not anticipate to remove or damage any of the existing asphalt.

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> In addition to the above information UI does intend to perform the necessary restoration such as but not limited to the replanting of existing vegetation, planting new (trees, shrubs, etc.), seeding, mulching and grading in order to stabilize and restore the construction areas affected on the Pootatuck Ring Bus Project.

>

> I hope the above information was helpful. Please do not hesitate to give me a call with any questions.

>

> Sincerely,

>

> Shawn C. Crosbie  
> Environmental Analyst  
> UIL Holdings Corporation  
> 180 Marsh Hill Rd.  
> Orange, CT 06477  
> (O)203-926-4595  
> (M)203-915-2573

>

>

> -----Original Message-----

> From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]

> Sent: Friday, March 04, 2016 5:10 PM

> To: Hoskins, Douglas; Shawn Crosbie

> Cc: 'Margason, Nathan'

> Subject: RE: Question

>

> Hi Doug -

>

> 1. here's my guess on the ring bus - I surmise that it's some electrical connections of wires that is arranged in a circular configuration?

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> I did ask Shawn about the paved area within the CE area. he noted that it is parking area associated with the remediation activity onsite.

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## Attachment B3 - Agency Correspondence - ACOE Review Approval

> hope this helps.  
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> Shawn- please explain further/clarify, as necessary.  
> Thanks  
> Susan.  
>  
> Susan K. Lee  
> Project Manager  
> USACE - New England District  
> Regulatory Division  
> 696 Virginia Rd  
> Concord, MA 01742-2751  
> 978-318-8494  
>  
>  
> -----Original Message-----  
> From: Hoskins, Douglas [mailto:Douglas.Hoskins@ct.gov]  
> Sent: Friday, March 04, 2016 2:06 PM  
> To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
> Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>  
> Subject: [EXTERNAL] RE: Question  
> Importance: Low  
>  
> Hi Susan:  
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> A few questions:  
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> Thanks for checking in.  
>  
> Doug Hoskins  
> Environmental Analyst III  
> Environmental Analysis Section  
> Inland Water Resources Division  
> Water Protection and Land Reuse  
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> 79 Elm Street, Hartford, CT 06106-5127  
> P: 860.424-4192 douglas.hoskins@ct.gov  
>  
>

## Attachment B3 - Agency Correspondence - ACOE Review Approval

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> -----Original Message-----  
> From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]  
> Sent: Thursday, March 03, 2016 5:53 PM  
> To: Margason, Nathan; Hoskins, Douglas  
> Subject: FW: Question  
>  
> hi Nate, Doug - FYI.  
>  
> #NAE-2012-443 (UI Pootatuck Substation, Shelton, CT)  
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> The proposed single structure is located within the limits of the Eversource ROW which aligns through the westerly limit of the CE area and directly adjacent to the westerly edge of the UI substation property.  
>  
> The area disturbed by this construction activity within the CE area will be replanted again with low-growing tree/shrub species.  
>  
> the permanent impact from the pole is 30 SF and within the Eversource ROW limits.  
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> The Corps does not propose to request additional ILF mitigation.  
>  
> any comment?  
> Thanks  
> Susan  
>  
> Susan K. Lee  
> Project Manager  
> USACE - New England District  
> Regulatory Division  
> 696 Virginia Rd  
> Concord, MA 01742-2751  
> 978-318-8494  
>  
>  
> -----Original Message-----  
> From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]  
> Sent: Thursday, March 03, 2016 10:58 AM  
> To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
> Subject: [EXTERNAL] RE: Question  
>  
> Susan:  
>

### Attachment B3 - Agency Correspondence - ACOE Review Approval

> Please see the attached site plan for the Pootatuck Ring Bus Project:

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> 1) Existing T-Line Pole location,

> 2) Proposed T-Line Pole location,

> 3) Temporary and permanent impacts within the "Conservation Area,"

>

> The total disturbance, both temporary (~1,179 square feet) and permanent (~30 square feet) from the proposed activity is within the "Conservation Area" is ~1,209 square feet.

>

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Attachment B4 - Agency Correspondence - ACOE Review Approval

---

**From:** Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
**Sent:** Tuesday, March 15, 2016 2:26 PM  
**To:** Shawn Crosbie  
**Cc:** Margason, Nathan; Hoskins, Douglas  
**Subject:** RE: Question

Shawn-

The Corps acknowledges your construction schedule provided below, and proposed schedule for restoration of vegetated areas disturbed within the conservation area.  
please update us, as necessary.

Susan

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
978-318-8494

-----Original Message-----

From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]  
Sent: Tuesday, March 15, 2016 8:35 AM  
To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
Subject: [EXTERNAL] RE: Question

Susan:

Based on our current (extremely high level) schedule it looks as though civil (drilling of piers) would be completed in April of 2017 and electrical (conductor tie-in) completed in October 2017. Therefore, I would say the earliest restoration could be performed would be sometime in Nov of 2017. That being said and knowing how the weather fluctuates in New England at that time of year, along with the possibility of the plantings not taking in Nov., I would ask that the ACOE, EPA and/or DEEP be amendable to having the project come back in late April to early May to perform restoration. As a precaution and stabilization measure UI can keep in place (and monitor) erosion and sediment controls until restoration has begun or is completed.

Once again thank you for your assistance on this and please feel free to give me a call with any questions or concerns.

Sincerely,

Shawn C. Crosbie  
Environmental Analyst  
UIL Holdings Corporation  
180 Marsh Hill Rd.  
Orange, CT 06477

Attachment B4 - Agency Correspondence - ACOE Review Approval

(O)203-926-4595

(M)203-915-2573

-----Original Message-----

From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]

Sent: Thursday, March 10, 2016 11:43 AM

To: Shawn Crosbie

Subject: RE: Question

Shawn - your answer to item 3. below - do you have a planting plan/schedule available for the disturbed area within the conservation easement?

Thanks

Susan

Susan K. Lee

Project Manager

USACE - New England District

Regulatory Division

696 Virginia Rd

Concord, MA 01742-2751

978-318-8494

-----Original Message-----

From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]

Sent: Monday, March 07, 2016 10:22 AM

To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>; Hoskins, Douglas <Douglas.Hoskins@ct.gov>

Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>

Subject: [EXTERNAL] RE: Question

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Answer: This is an arrangement is within a transmission substation yard which the bus (bus = electrical component within the substation which carries electricity between equipment) is used as a closed loop extension of the sectionalized breaker (breaker = allows the disconnection and connection of electricity within the substation to the grid) between two open bus ends. The ring bus provides greater reliability and allows for flexible operation.

2) What is the need for the new pole? Is it to replace/augment the nearby existing pole?

Answer: The new pole will be used to re-align the existing transmission line into the Pootatuck Substation. The new pole is not being proposed to take the place or augment the existing pole.

3) I don't have final plans handy, but were they going to remove the asphalt from within the conservation easement and restore?

Answer: UI does not anticipate to remove or damage any of the existing asphalt.

## Attachment B4 - Agency Correspondence - ACOE Review Approval

In addition to the above information UI does intend to perform the necessary restoration such as but not limited to the replanting of existing vegetation, planting new (trees, shrubs, etc.), seeding, mulching and grading in order to stabilize and restore the construction areas affected on the Pootatuck Ring Bus Project.

I hope the above information was helpful. Please do not hesitate to give me a call with any questions.

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Shawn C. Crosbie  
Environmental Analyst  
UIL Holdings Corporation  
180 Marsh Hill Rd.  
Orange, CT 06477  
(O)203-926-4595  
(M)203-915-2573

-----Original Message-----

From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]  
Sent: Friday, March 04, 2016 5:10 PM  
To: Hoskins, Douglas; Shawn Crosbie  
Cc: 'Margason, Nathan'  
Subject: RE: Question

Hi Doug -

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hope this helps.

Shawn- please explain further/clarify, as necessary.

Thanks

Susan.

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
978-318-8494

## Attachment B4 - Agency Correspondence - ACOE Review Approval

-----Original Message-----

From: Hoskins, Douglas [mailto:Douglas.Hoskins@ct.gov]  
Sent: Friday, March 04, 2016 2:06 PM  
To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>  
Cc: 'Margason, Nathan' <Margason.Nathan@epa.gov>  
Subject: [EXTERNAL] RE: Question  
Importance: Low

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Thanks for checking in.

Doug Hoskins  
Environmental Analyst III  
Environmental Analysis Section  
Inland Water Resources Division  
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79 Elm Street, Hartford, CT 06106-5127  
P: 860.424-4192 douglas.hoskins@ct.gov

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Conserving, improving and protecting our natural resources and environment; Ensuring a clean, affordable, reliable, and sustainable energy supply.

-----Original Message-----

From: Lee, Susan K NAE [mailto:Susan.K.Lee@usace.army.mil]  
Sent: Thursday, March 03, 2016 5:53 PM  
To: Margason, Nathan; Hoskins, Douglas  
Subject: FW: Question

hi Nate, Doug - FYI.

#NAE-2012-443 (UI Pootatuck Substation, Shelton, CT)

## Attachment B4 - Agency Correspondence - ACOE Review Approval

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any comment?

Thanks

Susan

Susan K. Lee  
Project Manager  
USACE - New England District  
Regulatory Division  
696 Virginia Rd  
Concord, MA 01742-2751  
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From: Shawn Crosbie [mailto:shawn.crosbie@uinet.com]

Sent: Thursday, March 03, 2016 10:58 AM

To: Lee, Susan K NAE <Susan.K.Lee@usace.army.mil>

Subject: [EXTERNAL] RE: Question

Susan:

Please see the attached site plan for the Pootatuck Ring Bus Project:

- 1) Existing T-Line Pole location,
- 2) Proposed T-Line Pole location,
- 3) Temporary and permanent impacts within the "Conservation Area,"

The total disturbance, both temporary (~1,179 square feet) and permanent (~30 square feet) from the proposed activity is within the "Conservation Area" is ~1,209 square feet.

Disclaimer This e-mail, and any attached file(s), is intended solely for the use of the individual or entity to whom this e-mail is addressed and may contain information that is privileged, confidential or exempt from disclosure. If you are not one of the named recipient(s) or otherwise have reason to believe that you have received this message in error, please notify the sender and delete this message immediately from any computer. Any other use, retention, dissemination, retransmission, printing or copying of this e-mail or its contents (including any attached files) is strictly prohibited.

## Attachment B4 - Agency Correspondence - ACOE Review Approval

Disclaimer This e-mail, and any attached file(s), is intended solely for the use of the individual or entity to whom this e-mail is addressed and may contain information that is privileged, confidential or exempt from disclosure. If you are not one of the named recipient(s) or otherwise have reason to believe that you have received this message in error, please notify the sender and delete this message immediately from any computer. Any other use, retention, dissemination, retransmission, printing or copying of this e-mail or its contents (including any attached files) is strictly prohibited.



Connecticut Department of

**ENERGY &  
ENVIRONMENTAL  
PROTECTION**

79 Elm Street • Hartford, CT 06106-5127

[www.ct.gov/deep](http://www.ct.gov/deep)

Affirmative Action/Equal Opportunity Employer

Robert DeSista, Chief  
Regulatory and Enforcement Branch  
U.S. Army Corps of Engineers  
New England District  
696 Virginia Road  
Concord, MA 01742-2751

The United Illuminating Company  
180 Marsh Hill Road  
Orange, CT 06477  
Attn: Bohdan Katrecsko

Re: Request for Technical Plan Revision  
United Illuminating Company  
PGP-201303485 (NAE-2012-443)  
Shelton

Dear Mr. Desista & Mr. Katrecsko:

I am in receipt Susan Lee's March 3, 2016 email to Doug Hoskins of my staff informing him that United Illuminating (UI) had requested a change to approved plans as authorized by the above referenced authorization. Specifically, they would like to install a "T-line" pole in uplands within a designated Conservation Easement area (CE). As reported by UI, impacts with the CE would be 30 square feet (s.f.) permanent and 1170 s.f. temporary. UI indicates the pole is necessary to "re-align the existing transmission line into the Pootatuck Substation".

The request is hereby approved provided proper erosion and sedimentation controls are installed and maintained at the project area and all temporary impact within the CE are vegetatively restored.

If you have any questions or need additional information, please contact Doug Hoskins at 860-424-4192, [douglas.hoskins@ct.gov](mailto:douglas.hoskins@ct.gov). Any correspondence submitted regarding this project should be directed to Doug Hoskins at the Inland Water Resources Division and should reference the application number PGP-201303485.

3/15/2016  
Date

  
Cheryl A. Chase, Director  
Inland Water Resources Division  
Bureau of Water Protection and Land Reuse

PGP-201303485

Town of Shelton

Page 2 of 2

CC:DH

cc:

B. Katrecsko, United Illuminating, [bohdan/katreczko@uinet.com](mailto:bohdan/katreczko@uinet.com)

N. Margason, U.S. Environmental Protection Agency, [Margason.Nathan@epa.gov](mailto:Margason.Nathan@epa.gov)

S. Lee, Army Corps, [Susan.K.Lee@usace.army.mil](mailto:Susan.K.Lee@usace.army.mil)

S. Reitz, Black & Veatch, [reitzsm@bv.com](mailto:reitzsm@bv.com)

S. Crosbie, United Illuminating, [shawn.crosbie@uinet.com](mailto:shawn.crosbie@uinet.com)

B. Gilmore, DEEP IWRD (email only)

J. Caiola, DEEP IWRD (email only)



JAN 15 2016

State Historic Preservation Office

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

PROJECT REVIEW COVER FORM

1. This information relates to a previously submitted project.

You do not need to complete the rest of the form if you have been previously issued a SHPO Project Number. Please attach information to this form and submit

SHPO Project Number \_\_\_\_\_  
(Not all previously submitted projects will have project numbers)

Project Address \_\_\_\_\_  
(Street Address and City or Town)

2. This is a new Project.

If you have checked this box, it is necessary to complete ALL entries on this form.

Project Name Pootatuck Ring Bus Project - Shelton Substation

Project Location 14 Old Stratford Road, Shelton, Connecticut  
Include street number, street name, and or Route Number. If no street address exists give closest intersection.

City or Town Shelton, Connecticut  
In addition to the village or hamlet name (if appropriate), the municipality must be included here.

County Fairfield  
If the undertaking includes multiple addresses, please attach a list to this form.

Date of Construction (for existing structures) \_\_\_\_\_

PROJECT DESCRIPTION SUMMARY (include full description in attachment):

United Illuminating plans to expand its existing substation along its western and northern property boundaries located at 14 Old Stratford Rd., Shelton, CT

TYPE OF REVIEW REQUESTED

a. Does this undertaking involve funding or permit approval from a State or Federal Agency?

Yes  No

Agency Name/Contact  
CT SHPO

Type of Permit/Approval

State	Federal
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

b. Have you consulted the SHPO and UCONN Dodd Center files to determine the presence or absence of previously identified cultural resources within or adjacent to the project area?

Yes	No
<input checked="" type="checkbox"/>	<input type="checkbox"/>

If yes:  
Was the project site wholly or partially located within an identified archeologically sensitive area?

<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	-------------------------------------

Does the project site involve or is it substantially contiguous to a property listed or recommended for listing in the CT State or National Registers of Historic Places?

<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	-------------------------------------

Does the project involve the rehabilitation, renovation, relocation, demolition or addition to any building or structure that is 50 years old or older?

<input type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------	-------------------------------------



## State Historic Preservation Office

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

## PROJECT REVIEW COVER FORM

**The Historic Preservation Review Process in Connecticut** Cultural Resource Review under the National Historic Preservation Act – Section 106 <http://www.achp.gov/106summary.html> involves providing technical guidance and professional advice on the potential impact of publicly funded, assisted, licensed or permitted projects on the state's historic, architectural and archaeological resources. This responsibility of the State Historic Preservation Office (SHPO) is discharged in two steps: (1) identification of significant historic, architectural and archaeological resources; and (2) advisory assistance to promote compatibility between new development and preservation of the state's cultural heritage.

Project review is conducted in two stages. First, the SHPO assesses affected properties to determine whether or not they are listed or eligible for listing in the Connecticut State or National Registers of Historic Places. If so, it is deemed "historic" and worthy of protection and the second stage of review is undertaken. The project is reviewed to evaluate its impact on the properties significant materials and character. Where adverse effects are identified, alternatives are explored to avoid, or reduce project impacts; where this is unsuccessful, mitigation measures are developed and formal agreement documents are prepared stipulating these measures. For more information and guidance, please see our website at: <http://www.cultureandtourism.org/cct/cwp/view.asp?a=3933&q=293820>

**ALL PROJECTS SUBMITTED FOR REVIEW MUST INCLUDE THE FOLLOWING MATERIALS\*:**

**PROJECT DESCRIPTION** Please attach a full description of the work that will be undertaken as a result of this project. Portions of environmental statements or project applications may be included. The project boundary of the project should be clearly defined\*\*

**PROJECT MAP** This should include the precise location of the project – preferably a clear color image showing the nearest streets or roadways as well as all portions of the project. Tax maps, Sanborn maps and USGS quadrangle maps are all acceptable, but Bing and Google Earth are also accepted if the information provided is clear and well labeled. The project boundary should be clearly defined on the map and affected legal parcels should be identified.

**PHOTOGRAPHS** Clear, current images of the property should be submitted. Black and white photocopies will not be accepted. Include images of the areas where the proposed work will take place. May require: exterior elevations, detailed photos of elements to be repaired/replaced (windows, doors, porches, etc.) All photos should be clearly labeled.

For Existing Structures	Yes	N/A	Comments	
Property Card	<input type="checkbox"/>	<input type="checkbox"/>		
For New Construction	Yes	N/A	Comments	
Project plans or limits of construction (if available)	<input type="checkbox"/>	<input type="checkbox"/>		
If project is located in a Historic District include renderings or elevation drawings of the proposed structure	<input type="checkbox"/>	<input type="checkbox"/>		
Soils Maps <a href="http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm">http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm</a>	<input type="checkbox"/>	<input type="checkbox"/>		
Historic Maps <a href="http://magic.lib.uconn.edu/">http://magic.lib.uconn.edu/</a>	<input type="checkbox"/>	<input type="checkbox"/>		
For non-building-related projects (dams, culverts, bridge repair, etc)	Yes	N/S	Comments	
Property Card	<input type="checkbox"/>	<input type="checkbox"/>		
Soils Map (see above)	<input type="checkbox"/>	<input type="checkbox"/>		
Historic Maps (see above)	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<b>STAFF REVIEW AREA</b>	Above	Date	Below	Date
<b>Indicate date of Review and Initials of Reviewer</b>				

**PROJECT CONTACT**

Name Mr. Shawn Crosbie Title Environmental Analyst  
 Firm/Agency The United Illuminating Company  
 Address 180 Marsh Hill Road  
 City Orange State CT Zip 06477  
 Phone 203.926.4595 Cell 203.915.2573 Fax \_\_\_\_\_  
 Email shawn.crosbie@uinet.com

\*Note that the SHPO's ability to complete a timely project review depends largely on the quality of the materials submitted

\*\* Please be sure to include the project name and location on *each page* of your submission.



State Historic Preservation Office

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PROJECT REVIEW COVER FORM

SHPO USE ONLY

Based on our review of the information provided to the State Historic Preservation Office, it is our opinion that:

- No historic properties will be affected by this project. No further review is requested.  
*Pootatuck Ring Bus Project - Shelton Substation*
- This project will cause no adverse effects to the following historic properties. No further review is requested:

This project will cause no adverse effects to the following historic properties, conditional upon the stipulations included in the attached letter:

Additional information is required to complete our review of this project. Please see the attached letter with our requests and recommendations.

This project will adversely affect historic properties as it is currently designed or proposed. Please see the attached letter for further details and guidance.

*Catherine Labadia*  
Catherine Labadia  
Deputy State Historic Preservation Officer

*3/17/16*

Date



**Attachment C**

**All Points Visibility Analysis**



# VISIBILITY ANALYSIS

## PROPOSED FACILITY MODIFICATIONS POOTATUCK SUBSTATION SHELTON, CONNECTICUT



Prepared for:

The United Illuminating Company  
180 Marsh Hill Road  
Orange CT 06477

Prepared by:

All-Points Technology Corporation, P.C.  
3 Saddlebrook Drive  
Killingworth, CT 06419

FEBRUARY 2016

## **Project Introduction**

The United Illuminating Company ("UIC") proposes to modify its existing Pootatuck Substation located at 14 Old Stratford Road in Shelton, Connecticut (the "Site"). At the request of UIC, All-Points Technology Corporation, P.C. ("APT") prepared this Visibility Analysis to evaluate potential views associated with the proposed modifications.

### **Site Description and Project Setting**

The 5.9+ acre Site is currently developed with the existing Pootatuck Substation and an existing overhead transmission corridor which extends generally north to south through the western portion of the Site. The Site is surrounded by Old Stratford Road to the south, Pootatuck Place to the west, the Farmill River (and beyond, Beard Sawmill Road) to the north and Route 8 (including access/egress ramps) to the east.

The Project consists of the installation of new electrical equipment and support infrastructure, including new buswork extending to heights of approximately 55 feet above grade. In addition, two (2) new steel monopoles will be installed outside the Substation on its north and south sides. These new support structures will rise to heights of 80 and 95 feet above grade.

Land use within the vicinity of the Site consists primarily of commercial/retail development along Old Stratford Road and Bridgeport Avenue (to the west beyond Pootatuck Place), the electrical transmission corridor and scattered residences to the north/northeast along Beard Sawmill Road, and the Route 8 transportation corridor to the east.

Topography in the Site vicinity is generally characterized as relatively level in the immediate area of the Site, which sits in a shallow valley associated with the Farmill River, with gently rolling to somewhat steep hills rising in all directions. The tree cover within the vicinity of the Site consists mainly of mixed deciduous hardwood species with an average canopy height of 50 feet.

## **Methodology**

APT used the combination of a predictive computer model and in-field analysis to evaluate the visibility associated with the proposed facility. The predictive model provides a measurable assessment of potential visibility in the vicinity of the Site, including private properties and other areas inaccessible for direct observations. The in-field analyses included a Site visit and reconnaissance of publicly-accessible locations to record existing conditions and provide photographic documentation. A description of the procedures used in the analysis is provided below.

## Computer Modeling

To conduct this assessment, a predictive computer model was developed specifically for this project using TerrSet, an image analysis program developed by Clark Labs at Clark University, to provide an estimation of potential visibility. The predictive model incorporates Project-specific data, including the site location, its ground elevation and the proposed facility component heights, as well as the surrounding topography, existing vegetation, and structures (which are the primary features that can block direct lines of sight).

Information used in the model included lidar<sup>1</sup>-based digital elevation data and customized land use data layers developed specifically for this analysis. Lidar is a remote-sensing technology that develops elevation data in meters by measuring the time it takes for laser light to return from the surface to the instrument's sensors. The varying reflectivity of objects also means that the returns can be classified based on the characteristics of the reflected light, normally into categories such as "bare earth," "vegetation," "road," or "building." The system is also designed to capture many more data points than older radar-based systems. Thus, lidar-based digital elevation models ("DEM"s) have a much finer resolution and can also identify the different features of the landscape at the time that it was captured.

Viewshed analysis using lidar data provide a much more detailed view of the potential obstacles (especially trees and buildings), and therefore the viewshed modeling produces results with many smaller areas of visibility than those produced by using radar-based DEMs. Its precision makes lidar a superior source of data, but at present it is only available for limited areas of the state. The viewshed results are also checked against the most current aerial photographs in case significant changes (a new housing development, for example) have occurred since the time the lidar data was captured.

The lidar-based DEM created for this analysis represents topographic information for the state of Connecticut that was derived through the spatial interpolation of airborne lidar-based data collected in the years 2007 through 2012 and has a horizontal resolution of approximately two (2) feet. In addition, multiple land use data layers were created from the Natural Resources Conservation Service (through the USDA) aerial photography (1-foot resolution, flown in 2014) using the image processing tools. Terrset develops light reflective classes defined by statistical analysis of individual pixels, which are then grouped based on common reflective values such that distinctions can be made automatically between deciduous and coniferous tree species, as well as grassland, impervious surface areas, surface water and other distinct land use features.

With these data inputs, the model was then queried to: determine where at least the top of the two (2) proposed new transmission structures might be seen. The results of the analysis are intended to provide a representation of those areas where portions of the facility **may** potentially be visible

---

<sup>1</sup> Lidar (a word invented to mean "light radar") may also be referred to as LiDAR, an acronym for Light Detection and Ranging. It is a technology that utilized lasers to determine the distance to an object or surface. Lidar is similar to radar, but incorporates laser pulses rather than sound waves. It measures the time delay between transmission and reflection of the laser pulse.

to the human eye without the aid of magnification, based on a viewer eye-height of five (5) feet above the ground and the combination of intervening topography, trees and other vegetation, and structures. Once the data layers were entered, image processing tools were applied and overlaid onto USGS topographic base maps and aerial photographs to achieve an estimate of locations where the modified facility components might be visible.

## **In-Field Activities**

To supplement and substantiate the results of the computer modeling efforts, APT completed in-field verification activities consisting of vehicular and pedestrian reconnaissance and photo-documentation. Information obtained from the field reconnaissance was subsequently incorporated into the computer model to refine the visibility map.

### **Field Reconnaissance**

APT visited the Site and conducted field reconnaissance on January 6, 2016 and February 4, 2016. These events included both a pedestrian reconnaissance of the immediate Site vicinity and a drive-by inspection of the local and State roads within the vicinity of the Site.

### **Photographic Documentation**

During the field reconnaissance, APT photo-documented conditions from areas surrounding the existing Substation. Photographs were obtained from several vantage points to document the view towards the Site. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") equipment technology.

Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens. APT uses a standard focal length of 50mm, presenting a consistent field of view throughout the document.

## **Photographs and Renderings**

Photographic renderings were generated to portray scaled representations of those portions of the modified Substation that would be visible from nearby locations. Photographs and renderings are provided in the attachment to this report. Using field data, site plan information and 3-dimension (3D) modeling software, spatially referenced models of the site area and Substation were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo renderings were then created using a combination of images generated in the 3D model and photo-rendering software programs.

## Visibility Analysis Results

The results of our analysis are graphically displayed on the View Shed Maps provided in the attachment to this report. The visual character of the modified Substation will not detrimentally affect the overall visual character of the Site.

The primary portions of the modified Substation are lower structures associated with buswork, with the tallest equipment extending upwards of approximately 55 feet above the ground. Existing vegetation surrounding the Site on two sides (north and east) would obscure large portions of the Substation, even when the leaves are off the deciduous trees. The proposed modifications would be limited to the west side of the Substation and Site. Views of the fenced Substation to the west and south area limited to the immediate abutting locations, including the commercial development along Pootatuck Place and Old Stratford Road.

The tallest structures proposed for the modifications are the two (2) new transmission structures (80 and 95 feet tall). The tops of these structures may be visible year-round above the trees from some locations within a total area of approximately 36 acres; primarily within 1,500 feet of the Site, with the exception of the existing transmission corridor to the north, where vegetative clearings would allow direct views upwards to a quarter-mile and a bit beyond.

Seasonally, when the leaves are off the trees, views may extend to some locations over an additional 56± acres. The proposed new structures would create views that are similar to what is seen today.

Views to east are significantly shielded by the elevated Route 8 transportation corridor, where limited views of the tallest structures would be seen intermittently by passing motorists in the immediate area of Exit 12, near the Site. Similarly, the tops of the proposed transmission structures would be visible above the trees and from portions of Old Stratford Road as it extends southeastward approximately 1,500 feet beyond Route 8. Views to the south are limited to portions of the parking lot at the Split rock Plaza Center, which although significantly elevated above the Site, is separated visually by either dense tree cover or the cut of the hill itself.

Additional areas have the potential to offer some views of the Substation through the trees during "leaf-off" conditions. Most of this seasonal visibility appears limited to within approximately 1,500 feet of the proposed Substation. Taller structures may be seen through the trees from up to approximately 500 feet beyond those areas where year-round visibility is anticipated.

In general, year-round views of the Substation and associated structures are limited to a modest geographic footprint by the combination of the site sitting in a shallow valley, the relatively short heights of the majority of the infrastructure and the intervening development and vegetation. The addition of the two (2) new transmission support structures will not be significant intrusions because numerous similar structures exist in the immediate area today.

The results of this analysis demonstrate that the proposed modifications to the Pootatuck Substation will not have an undue adverse visual effect on the surrounding environment.

## Limitations

The viewshed maps presented in the attachment to this report depict areas where the proposed facility expansion may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of five (5) feet above the ground and intervening topography. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating 2014 aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the facility is likely to be seen.

The simulations provide a representation of the facility under similar settings as those encountered during the time of the reconnaissance. Views of the facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on January 6, 2016 included partly to mostly cloudy skies; on February 4, 2016, the skies were mostly sunny. The photo-simulations presented in this report provide an accurate portrayal of the proposed facility modifications under comparable conditions.

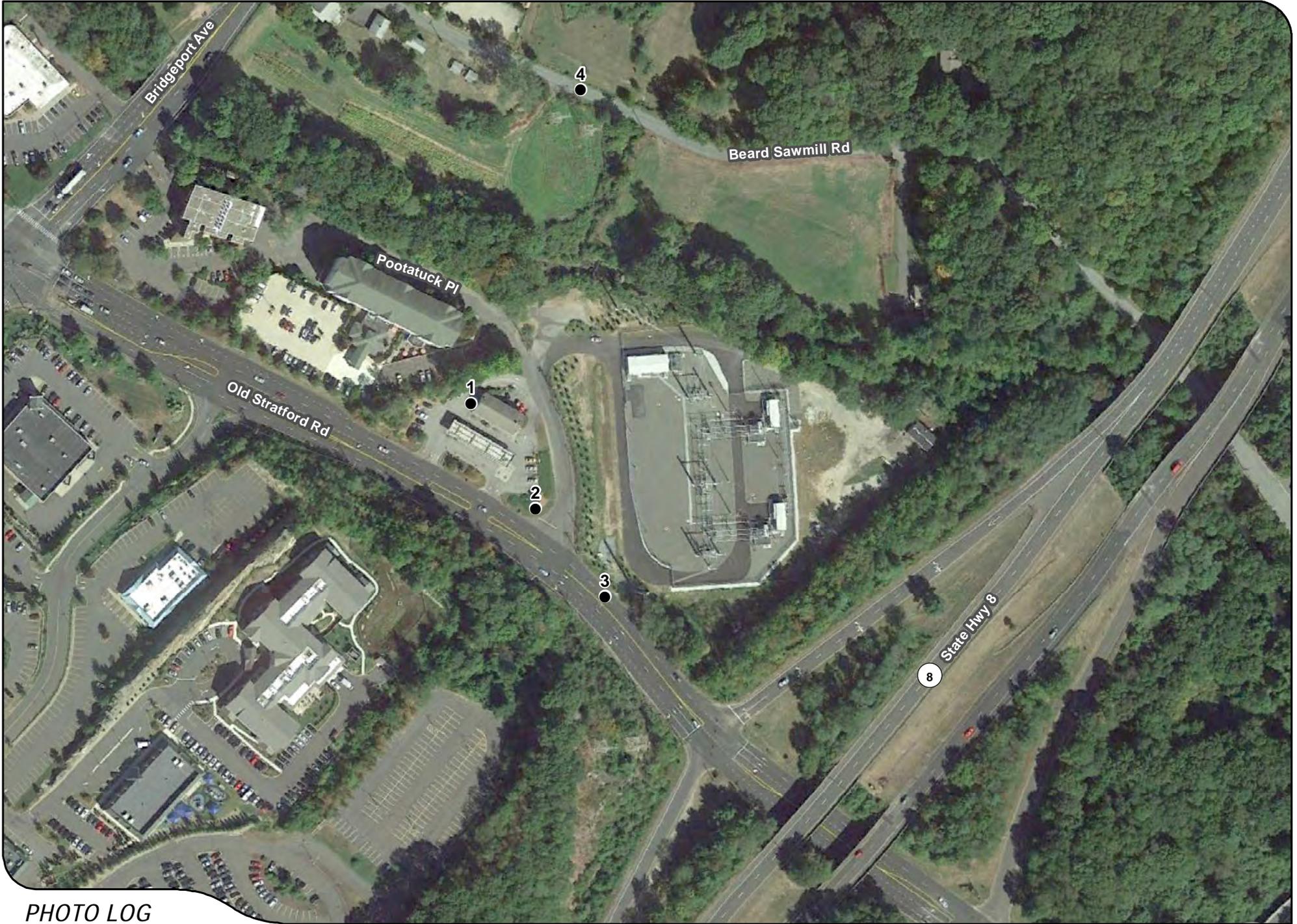
## **ATTACHMENTS**



**EXISTING**



**PROPOSED**

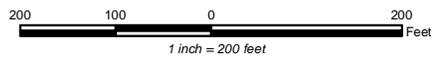


**PHOTO LOG**

*Legend*

- Photo Location

**POOTATUCK SUBSTATION**





**EXISTING**

PHOTO

1

LOCATION

**DUNKIN DONUTS ADJACENT TO HOST PROPERTY**

ORIENTATION

**EAST**



**PROPOSED**

PHOTO

1

LOCATION

**DUNKIN DONUTS ADJACENT TO HOST PROPERTY**

ORIENTATION

**EAST**



**EXISTING**

PHOTO

2

LOCATION

**BP GAS STATION PARKING LOT**

ORIENTATION

**EAST**



**PROPOSED**

PHOTO

2

LOCATION

**BP GAS STATION PARKING LOT**

ORIENTATION

**EAST**



**EXISTING**

PHOTO

3

LOCATION

**OLD STRATFORD ROAD**

ORIENTATION

**NORTH**



**PROPOSED**

PHOTO

3

LOCATION

**OLD STRATFORD ROAD**

ORIENTATION

**NORTH**



**EXISTING**

PHOTO

4

LOCATION

**BEARD SAWMILL ROAD**

ORIENTATION

**SOUTH**



**PROPOSED**

PHOTO

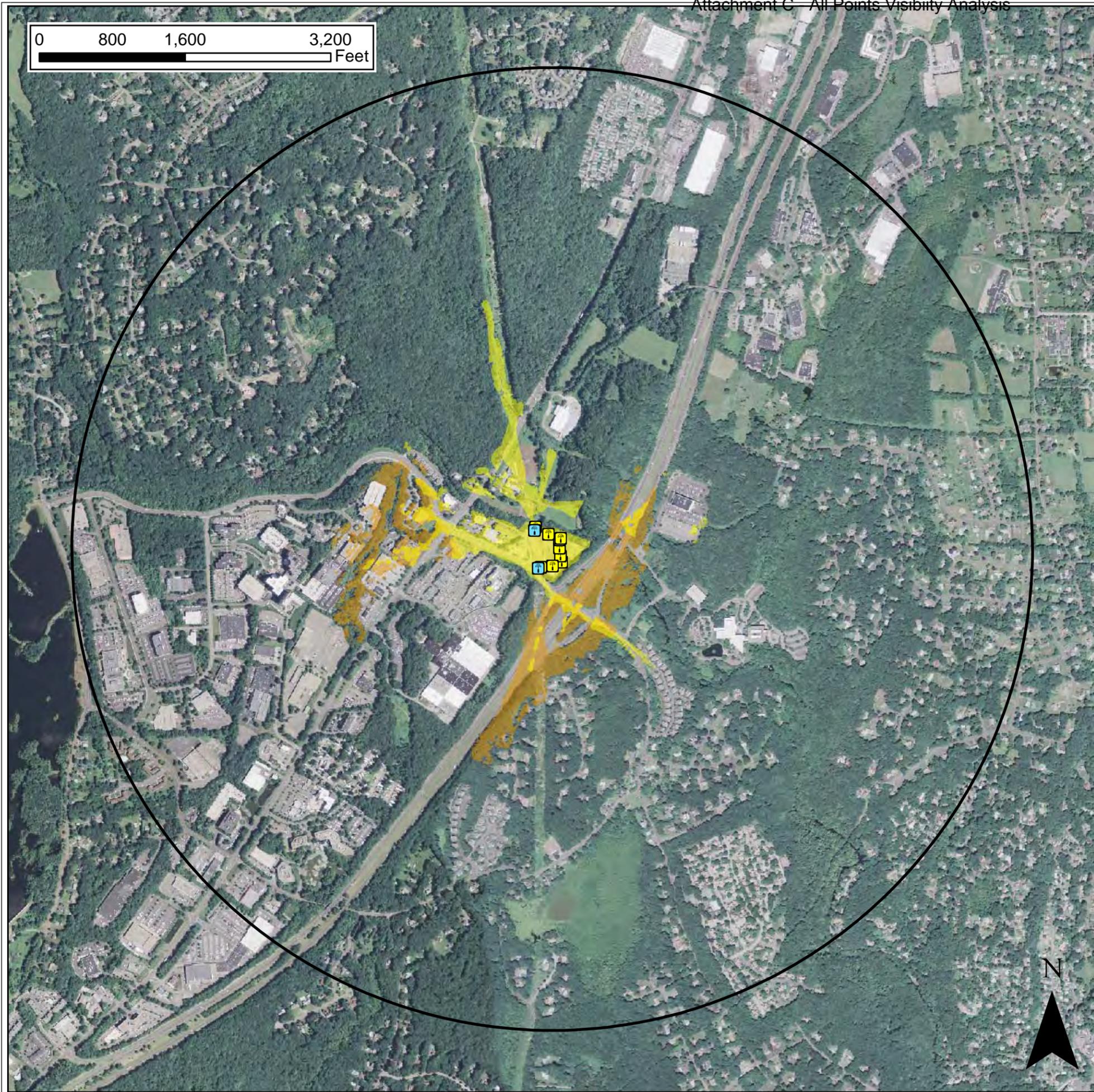
4

LOCATION

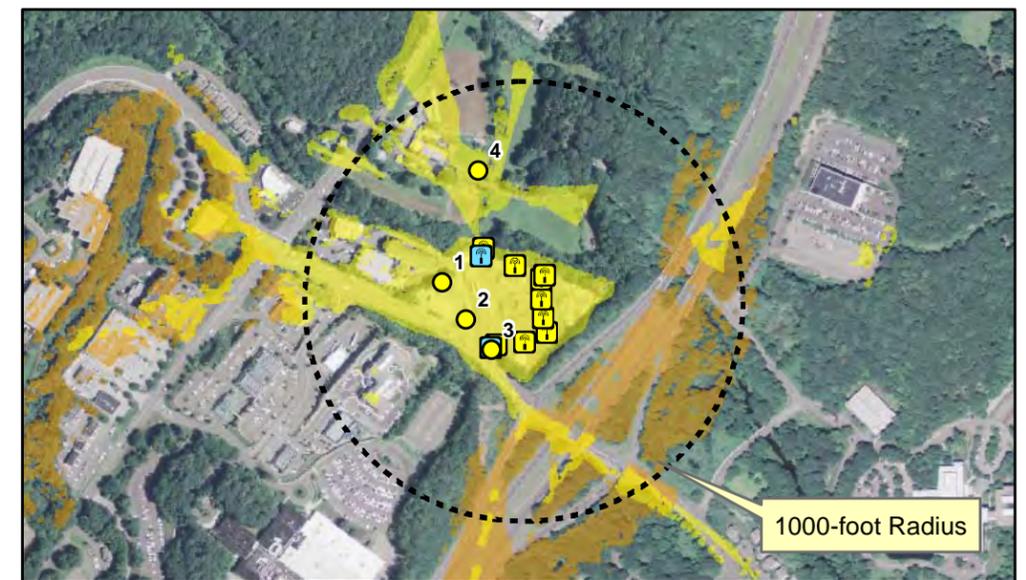
**BEARD SAWMILL ROAD**

ORIENTATION

**SOUTH**



0 800 1,600 3,200 Feet



**Viewshed Map – Aerial Base**  
 Proposed Substation Modifications  
 14 Old Stratford Road, Shelton, CT

**NOTES**

- Viewshed analysis conducted using Clark University's TerrSet.
- Areas of potential visibility are calculated based on facility location and height, Study Area topography, and Study Area vegetation.
- Proposed new structure heights are 80 and 95 feet AGL.
- Average forest canopy height is derived from lidar data.
- Study area encompasses a one-mile radius and includes 2,010 acres of land.

**DATA SOURCES**

- Digital elevation model (DEM) derived from lidar data obtained from NOAA which has a raster resolution of 0.3 m and horizontal accuracy of 1 meter or less.
- Forest areas are quantified with TerrSet (Clark University) image processing from 2014 NRCS/NAIP digital orthophotos with 1-foot pixel resolution (obtained from NRCS).
- Town Boundary data obtained from state GIS sources.

**Legend**

-  New Structures
-  Existing Structures
-  Photo Locations
-  Predicted Seasonal Visibility (36 Acres)
-  Predicted Year-Round Visibility (56 Acres)
-  1-Mile Area Surrounding Site



**Location**



**Viewshed Map – Topo Base**  
 Proposed Substation Modifications  
 14 Old Stratford Road, Shelton, CT

**NOTES**

- Viewshed analysis conducted using Clark University's TerrSet.
- Areas of potential visibility are calculated based on facility location and height, Study Area topography, and Study Area vegetation.
- Proposed new structure heights are 80 and 95 feet AGL.
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- Town Boundary data obtained from state GIS sources.

**Legend**

-  New Structures
-  Existing Structures
-  Photo Locations
-  Predicted Seasonal Visibility (36 Acres)
-  Predicted Year-Round Visibility (56 Acres)
-  1-Mile Area Surrounding Site



**Location**

**Attachment D**

**Heritage Cultural Resource Review and Study**



**State Historic Preservation Office**

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

**PROJECT REVIEW COVER FORM**

**1. This information relates to a previously submitted project.**

You do not need to complete the rest of the form if you have been previously issued a SHPO Project Number. Please attach information to this form and submit.

SHPO Project Number \_\_\_\_\_  
 (Not all previously submitted projects will have project numbers)

Project Address Intersection of Stratford Avenue and Honeyspot Road in Stratford, Connecticut  
 (Street Address and City or Town)

**2. This is a new Project.**

If you have checked this box, it is necessary to complete ALL entries on this form .

Project Name Pootatuck Ring Bus Project - Shelton Substation

Project Location 14 Old Stratford Road, Shelton, Connecticut  
 Include street number, street name, and or Route Number. If no street address exists give closest intersection.

City or Town Shelton, Connecticut  
 In addition to the village or hamlet name (if appropriate), the municipality must be included here.

County Fairfield  
 If the undertaking includes multiple addresses, please attach a list to this form.

Date of Construction (for existing structures) \_\_\_\_\_

**PROJECT DESCRIPTION SUMMARY (include full description in attachment):**

United Illuminating plans to expand its existing substation along its western and northern property boundaries located at 14 Old Stratford Rd., Shelton, CT

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**TYPE OF REVIEW REQUESTED**

a. Does this undertaking involve funding or permit approval from a State or Federal Agency?

Yes  No

Agency Name/Contact	Type of Permit/Approval	State	Federal
<u>CT SHPO</u>	_____	<input checked="" type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>

b. Have you consulted the SHPO and UCONN Dodd Center files to determine the presence or absence of previously identified cultural resources within or adjacent to the project area?

Yes  No

If yes:  
 Was the project site wholly or partially located within an identified archeologically sensitive area?  Yes  No

Does the project site involve or is it substantially contiguous to a property listed or recommended for listing in the CT State or National Registers of Historic Places?  Yes  No

Does the project involve the rehabilitation, renovation, relocation, demolition or addition to any building or structure that is 50 years old or older?  Yes  No

**State Historic Preservation Office**

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

**PROJECT REVIEW COVER FORM**

**The Historic Preservation Review Process in Connecticut** Cultural Resource Review under the National Historic Preservation Act – Section 106 <http://www.achp.gov/106summary.html> involves providing technical guidance and professional advice on the potential impact of publicly funded, assisted, licensed or permitted projects on the state's historic, architectural and archaeological resources. This responsibility of the State Historic Preservation Office (SHPO) is discharged in two steps: (1) identification of significant historic, architectural and archaeological resources; and (2) advisory assistance to promote compatibility between new development and preservation of the state's cultural heritage.

Project review is conducted in two stages. First, the SHPO assesses affected properties to determine whether or not they are listed or eligible for listing in the Connecticut State or National Registers of Historic Places. If so, it is deemed "historic" and worthy of protection and the second stage of review is undertaken. The project is reviewed to evaluate its impact on the properties significant materials and character. Where adverse effects are identified, alternatives are explored to avoid, or reduce project impacts; where this is unsuccessful, mitigation measures are developed and formal agreement documents are prepared stipulating these measures. For more information and guidance, please see our website at: <http://www.cultureandtourism.org/cct/cwp/view.asp?a=3933&q=293820>

**ALL PROJECTS SUBMITTED FOR REVIEW MUST INCLUDE THE FOLLOWING MATERIALS\*:**

- PROJECT DESCRIPTION** Please attach a full description of the work that will be undertaken as a result of this project. Portions of environmental statements or project applications may be included. The project boundary of the project should be clearly defined\*\*
- PROJECT MAP** This should include the precise location of the project – preferably a clear color image showing the nearest streets or roadways as well as all portions of the project. Tax maps, Sanborn maps and USGS quadrangle maps are all acceptable, but Bing and Google Earth are also accepted if the information provided is clear and well labeled. The project boundary should be clearly defined on the map and affected legal parcels should be identified.
- PHOTOGRAPHS** Clear, current images of the property should be submitted. Black and white photocopies will not be accepted. Include images of the areas where the proposed work will take place. May require: exterior elevations, detailed photos of elements to be repaired/replaced (windows, doors, porches, etc.) All photos should be clearly labeled.

For Existing Structures	Yes	N/A	Comments
Property Card	<input type="checkbox"/>	<input type="checkbox"/>	
For New Construction	Yes	N/A	Comments
Project plans or limits of construction (if available)	<input type="checkbox"/>	<input type="checkbox"/>	
If project is located in a Historic District include renderings or elevation drawings of the proposed structure	<input type="checkbox"/>	<input type="checkbox"/>	
Soils Maps <a href="http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm">http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm</a>	<input type="checkbox"/>	<input type="checkbox"/>	
Historic Maps <a href="http://magic.lib.uconn.edu/">http://magic.lib.uconn.edu/</a>	<input type="checkbox"/>	<input type="checkbox"/>	
For non-building-related projects (dams, culverts, bridge repair, etc)	Yes	N/S	Comments
Property Card	<input type="checkbox"/>	<input type="checkbox"/>	
Soils Map (see above)	<input type="checkbox"/>	<input type="checkbox"/>	
Historic Maps (see above)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>STAFF REVIEW AREA</b>	Above	Date	Below
<b>Indicate date of Review and Initials of Reviewer</b>			

**PROJECT CONTACT**

Name Mr. Shawn Crosbie Title Environmental Analyst  
 Firm/Agency The United Illuminating Company  
 Address 180 Marsh Hill Road  
 City Orange State CT Zip 06477  
 Phone 203.926.4595 Cell 203.915.2573 Fax \_\_\_\_\_  
 Email shawn.crosbie@uinet.com

\*Note that the SHPO's ability to complete a timely project review depends largely on the quality of the materials submitted.  
 \*\* Please be sure to include the project name and location on *each page* of your submission.



State Historic Preservation Office

One Constitution Plaza | Hartford, CT 06103 | 860.256.2800 | Cultureandtourism.org

PROJECT REVIEW COVER FORM

SHPO USE ONLY

Based on our review of the information provided to the State Historic Preservation Office, it is our opinion that:

- No historic properties will be affected by this project. No further review is requested.
- This project will cause no adverse effects to the following historic properties. No further review is requested:
- This project will cause no adverse effects to the following historic properties, conditional upon the stipulations included in the attached letter:
- Additional information is required to complete our review of this project. Please see the attached letter with our requests and recommendations.
- This project will adversely affect historic properties as it is currently designed or proposed. Please see the attached letter for further details and guidance.

---

Daniel T. Forrest  
Deputy State Historic Preservation Officer

Date



## *INTEGRATED HISTORIC PRESERVATION PLANNING*

January 12, 2016

Mr. Shawn C. Crosbie  
Environmental Analyst  
UIL Holdings Corporation  
180 Marsh Hill Rd.  
Orange, Connecticut 06477

**RE: Cultural Resources Review of the Pootatuck Ring Bus Project; a Proposed Substation at 14 Old Stratford Road in Shelton, Connecticut**

Mr. Crosbie:

Heritage Consultants, LLC, is pleased to have this opportunity to provide United Illuminating with the following cultural resources review of a parcel of land in Shelton, Connecticut associated with the Pootatuck Ring Bus Project. The proposed project area is located at 14 Old Stratford Road and it will be development site of an electrical substation operated by United Illuminating (Figure 1). The current project entailed completion of an existing conditions cultural resources summary based on the examination of cultural resources data obtained from the Connecticut State Historic Preservation Office, as well as GIS data, including historical mapping, aerial photographs, and topographic quadrangles, maintained by Heritage Consultants, LLC. This investigation is based upon project location information provided to Heritage Consultants, LLC by United Illuminating. The objectives of this study were to gather and present data regarding previously identified cultural resources situated within 0.8 km (0.5 mi) of the proposed substation location and to investigate the Area of Potential Effect (APE) in terms of its natural and historical characteristics so that the need for completing additional cultural resources investigations could be evaluated.

Figures 2, an excerpt from an 1856 map of Shelton, Connecticut, shows that the proposed project parcel lies adjacent to the southern bankline of the Farmill River. This image also indicates that while the project area itself appears to not have been settled, a well-developed roads system and a moderate amount of residences and commercial buildings existed in this portion of Shelton by the middle of the nineteenth century. Figure 3, an excerpt from a map dating from 1868, indicates that while some of the ownership of the buildings in the area has changed, the proposed project area itself remained unoccupied. Based on the nature of the project parcel and its location adjacent to the Farmill River, it is likely that it was used for agricultural production during the historic era. A review of Figure 4, an aerial image dating from 1934, confirms the interpretation of the historic maps in that it depicts the proposed project parcel as an open area that was clearly used for farming. Figure 5, an aerial image from 1951, shows that while the area around the proposed project parcel had been allowed to revert to secondary forest the APE remained as an open agricultural field. Figures 6, an aerial image taken in 1970, shows that a major change within the confines of the APE had taken place. That change was the construction of large building had been built on the project parcel sometime between 1951 and 1970. The subsequent aerial image, Figure 7, was taken in 1990, and it shows the same large building on the project parcel, as well as a section of Route 8 that was

## Attachment D - Heritage Cultural Review and Study

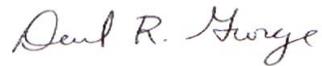
Shawn Crosbie  
January 12, 2016  
Page 2

constructed in 1972 (<http://www.kurumi.com/roads/ct/ct8.html>). This image also shows that another large facility to the southwest of the proposed substation location had been erected by 1990. Finally, Figure 8, a 2014 aerial image shows the APE in its essentially modern condition. This aerial photo indicates that the large building on the property has been razed and that the entirety of the project parcel has recently been bulldozed.

A review of previously recorded cultural resources on file with the Connecticut State Historic Preservation Office revealed that no archaeological sites or National Register of Historic Places properties are located within 0.8 km (0.5 mi) of the proposed substation location (Figures 9 and 10). Figure 9 also indicates that much of the proposed project area also has been surveyed for cultural resources in the past. The prior investigation of the area was conducted in 1977 by Connecticut Archaeological Survey (CAS) as part of the then-proposed upgrades to the Shelton wastewater system. According to the report submitted by CAS (1977; Abstract) the portion of the survey included shovel testing in “areas presumed to be high in archaeological resources,” including near the Farmill River. CAS also reported that no archaeological resources were identified during the survey.

As a result of the recent building demolition and subsequent bulldozing, the proposed project has sustained severe disturbance in the past. It is the professional opinion of Heritage Consultants, LLC that the APE retains little, if any, potential to yield intact cultural deposits. Thus, no additional archaeological research is recommended prior to construction of the proposed substation. If you have any questions regarding this Technical Memorandum, or if we may be of additional assistance with this or any other projects you may have, please do not hesitate to call us at 860-667-3001 or email us [info@heritage-consultants.com](mailto:info@heritage-consultants.com). We are at your service.

Sincerely,



David R. George, M.A., R.P.A.

## Attachment D - Heritage Cultural Review and Study

Shawn Crosbie  
January 12, 2016  
Page 3

### References Cited

#### Connecticut Archaeological Survey

1977 *An Archaeological Survey of the Shelton Wastewater Project*. Report submitted to C.E. Maguire, Inc.

#### Connecticut Roads: Route 8

2016 *Route 8: History*. <http://www.kurumi.com/roads/ct/ct8.html>.



Figure 1. Excerpt from recent USGS topographic quadrangle map depicting the proposed project area in Shelton, Connecticut.

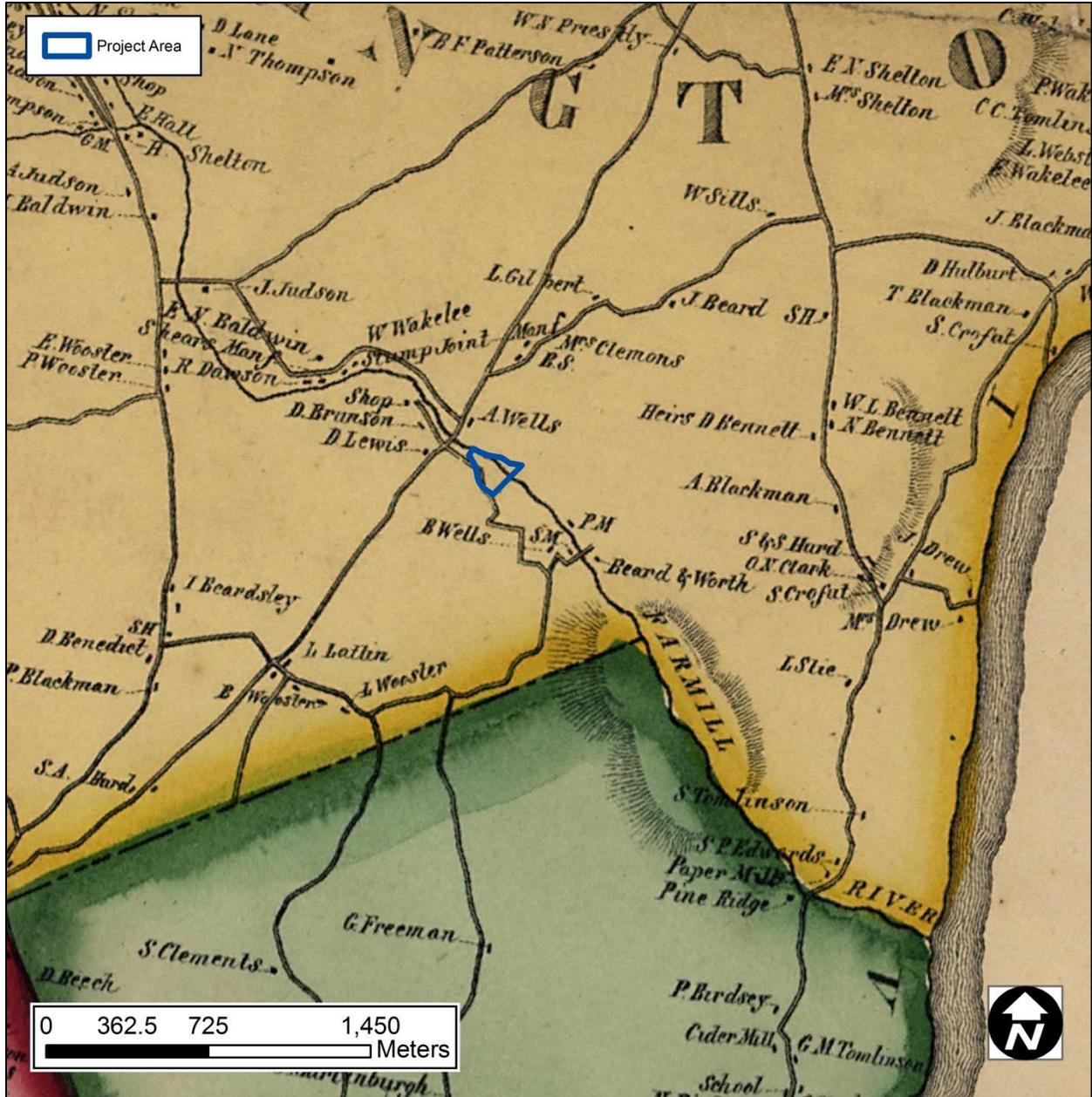


Figure 2. Excerpt from a 1856 historic map depicting the proposed project area in Shelton, Connecticut.

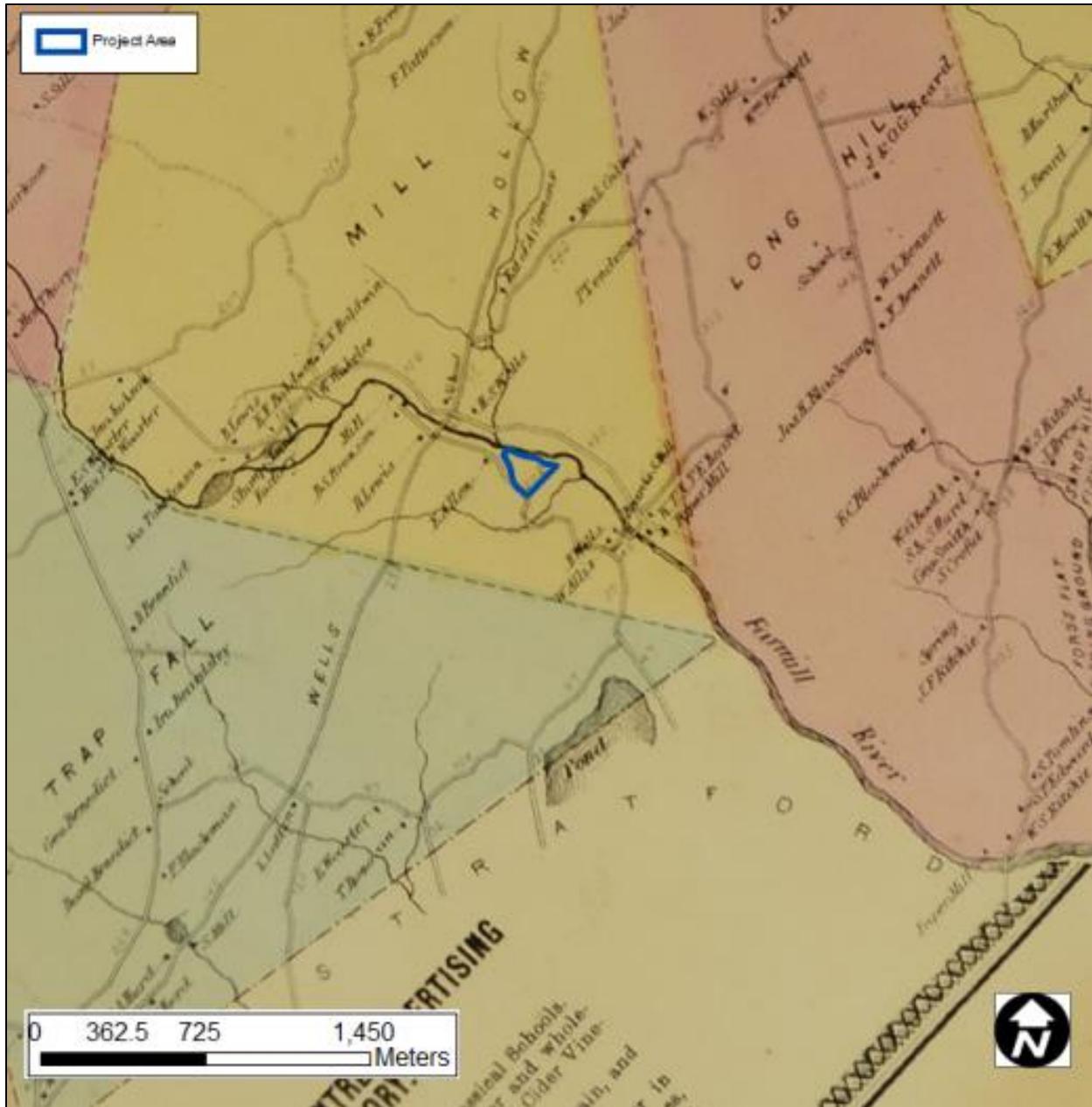


Figure 3. Excerpt from an 1868 historic map depicting the proposed project area in Shelton, Connecticut.



Figure 4. Excerpt from a 1934 aerial image depicting the proposed project area in Shelton, Connecticut.

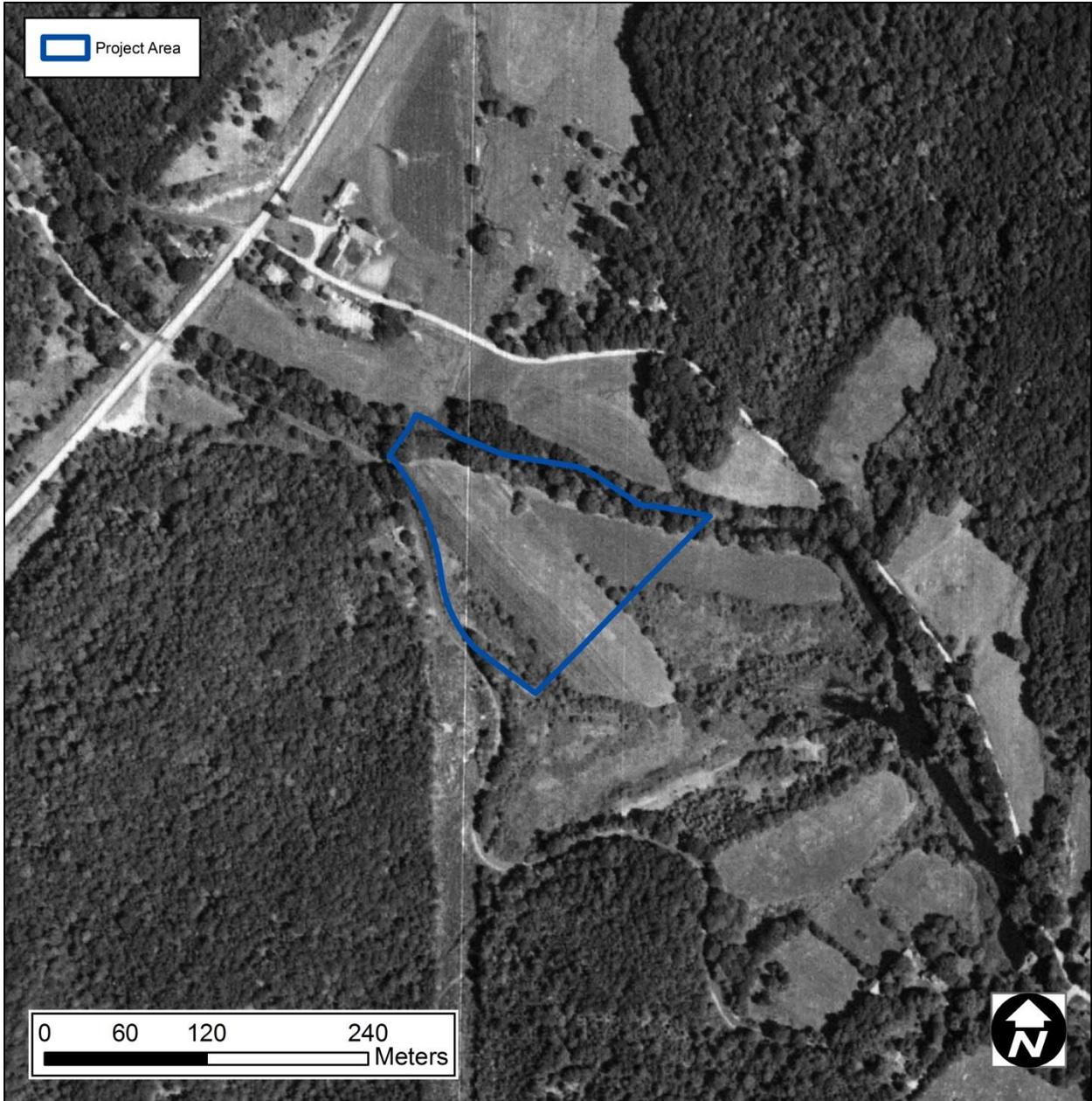


Figure 5. Excerpt from a 1951 aerial image depicting the proposed project area in Shelton, Connecticut.

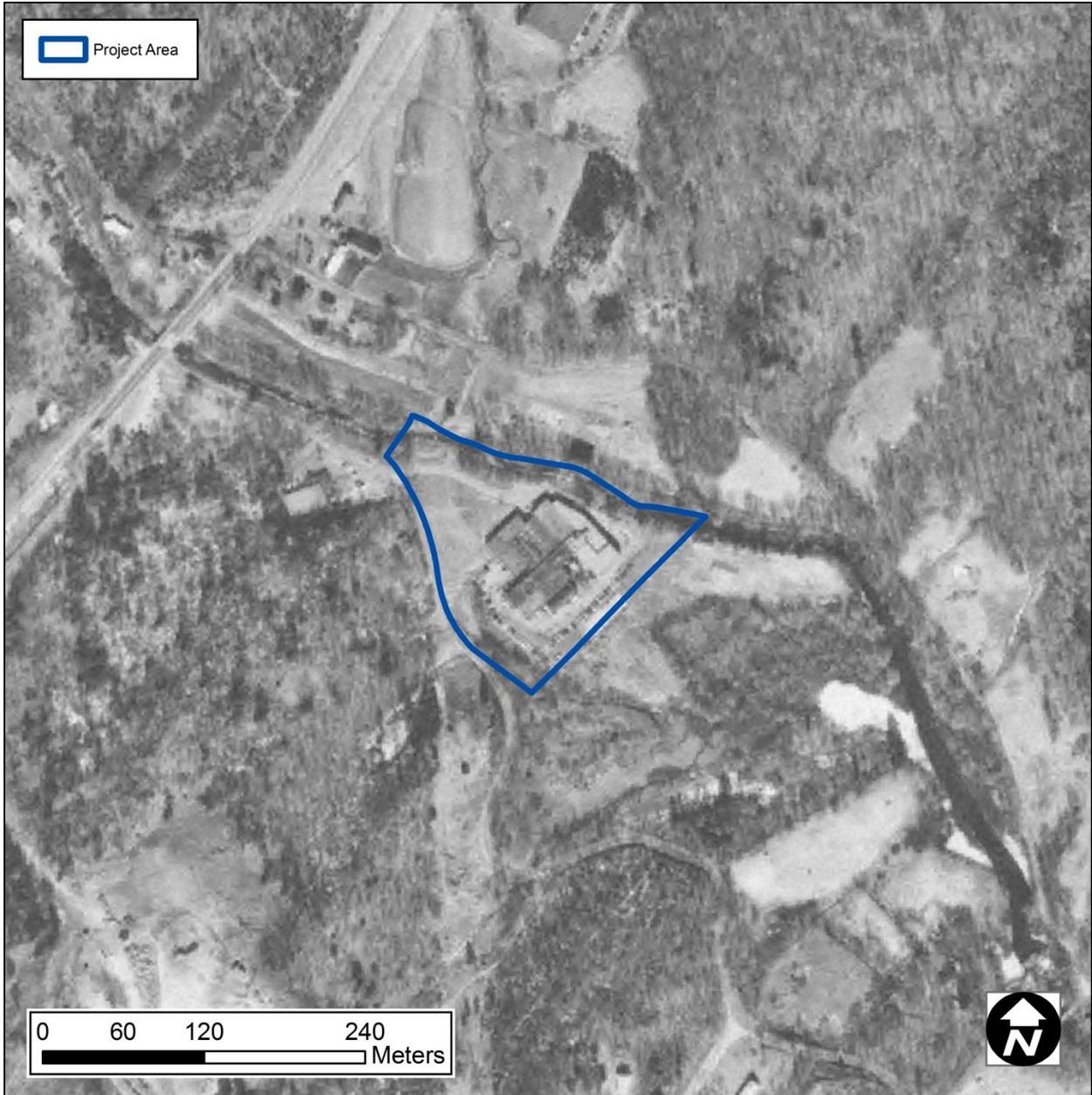


Figure 6. Excerpt from a 1970 aerial image depicting the proposed project area in Shelton, Connecticut.



Figure 7. Excerpt from a 1990 aerial image depicting the proposed project area in Shelton, Connecticut.



Figure 8. Excerpt from a 2014 aerial image depicting the proposed project area in Shelton, Connecticut.

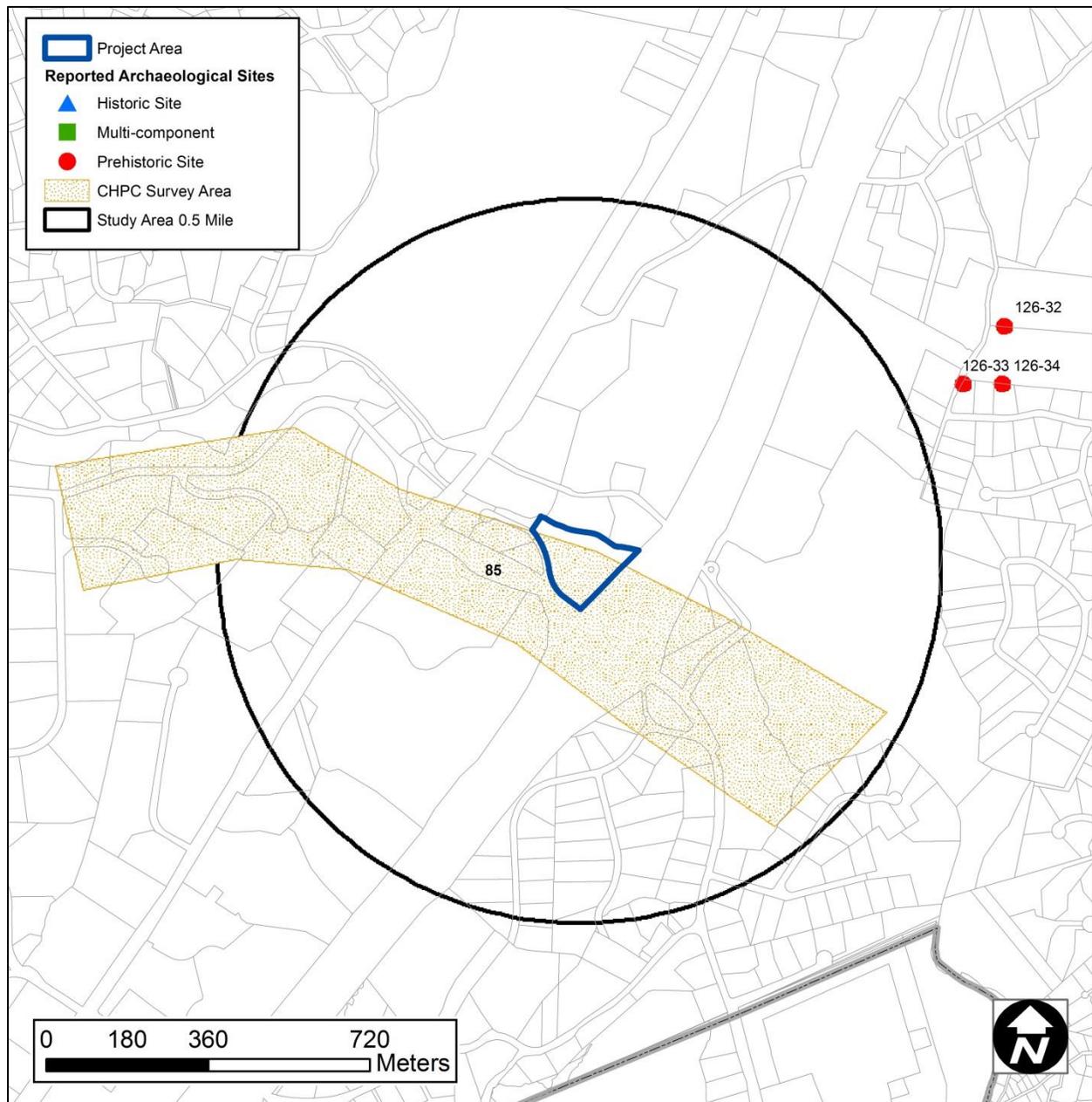


Figure 9. Digital map depicting the locations of previously recorded archaeological sites in the vicinity of the proposed project area in Shelton, Connecticut.

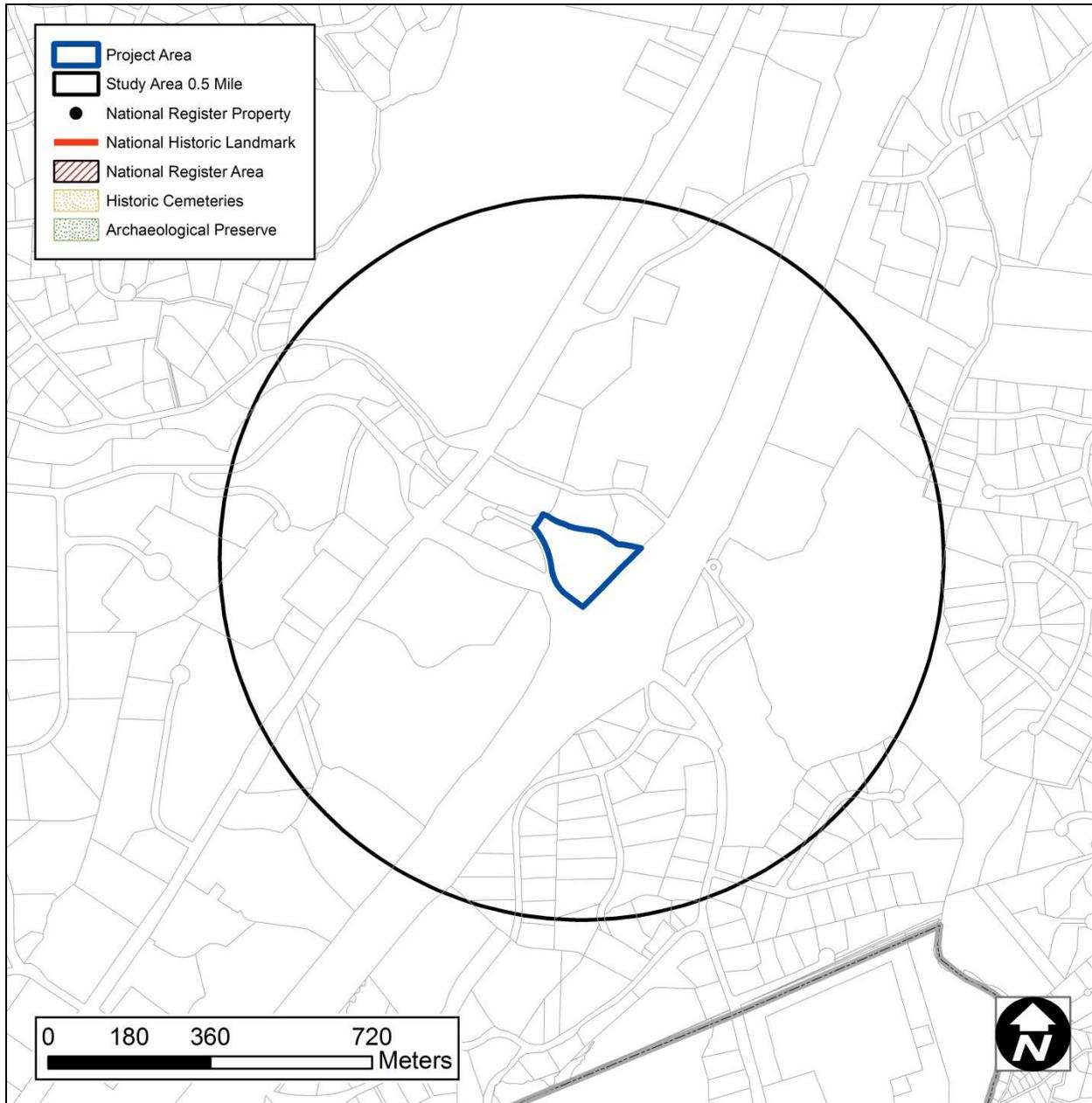


Figure 10. Digital map depicting the locations of previously National Register of Historic Places properties in the vicinity of the proposed project area in Shelton, Connecticut.

**Attachment E**  
**Exponent EMF Study**



**Electric and Magnetic  
Field Assessment:  
Pootatuck 115- kV Ring  
Bus Expansion and  
Capacitor Bank Addition  
Project**



**Electric and Magnetic Field  
Assessment:  
Pootatuck 115- kV Ring Bus  
Expansion and Capacitor  
Bank Addition Project**

Prepared for

The United Illuminating Company  
180 Marsh Hill Rd.  
Orange, CT 06477

Prepared by

Exponent  
420 Lexington Ave.  
Suite 1740  
New York, NY 10170

February 18, 2016

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## Notice

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At the request of The United Illuminating Company, Exponent modeled the electric and magnetic field associated with the ring-bus expansion and capacitor-bank addition at the Pootatuck Substation in Shelton, Connecticut. This report summarizes work performed to date and presents the findings resulting from that work. In the analysis, we have relied on geometry, material data, usage conditions, specifications, and various other types of information provided by the client. The United Illuminating Company has confirmed to Exponent that the summary of data provided to Exponent contained herein is not subject to Critical Energy Infrastructure Information (CEII) restrictions. We cannot verify the correctness of this input data, and rely on the client for the data's accuracy. Although Exponent has exercised usual and customary care in the conduct of this analysis, the responsibility for the design and operation of the project remains fully with the client.

The findings presented herein are made to a reasonable degree of engineering and scientific certainty. Exponent reserves the right to supplement this report and to expand or modify opinions based on review of additional material as it becomes available, through any additional work, or review of additional work performed by others.

The scope of services performed during this investigation may not adequately address the needs of other users of this report, and any re-use of this report or its findings, conclusions, or recommendations presented herein are at the sole risk of the user. The opinions and comments formulated during this assessment are based on observations and information available at the time of the investigation. No guarantee or warranty as to future life or performance of any reviewed condition is expressed or implied.

## Executive Summary

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As part of the Pootatuck 115- kV Ring Bus Expansion and Capacitor Bank Addition Project (the “Project” or “Pootatuck Expansion”), the United Illuminating Company (UI) proposes expansion of the existing tie bus and installation of a 30 MVAR capacitor bank at the Pootatuck Substation in Shelton, Connecticut. The existing Pootatuck Substation is adjacent to a Connecticut Light & Power (CL&P) transmission line easement, and the western edge of the substation is within CL&P’s existing right-of-way (“ROW”). Two existing transmission lines (north and south) terminate at the substation in the existing configuration. In the proposed configuration, one existing 115-kV transmission line on the ROW will be segmented into two new transmission lines (north and south) terminating at the Pootatuck Substation.

The effect of the new line terminations and equipment on existing magnetic-field levels was evaluated by modeling magnetic fields for pre- and post-Project conditions as recommended by the Connecticut Siting Council’s EMF Best Management Practices. For the pre-Project conditions, the loading was calculated for the in-service year of 2016 – and later in 2023 – but without the effect of the proposed substation equipment on the transmission system. Pre-project magnetic fields were also measured around the substation on January 22, 2016. The post-Project condition uses loadings calculated in the same years but with the Project in operation, and includes magnetic-field contributions from new equipment and transmission-line terminations. In each condition, two load cases were studied, corresponding to 2023 annual average load and 2016 annual peak load. Project effects on electric field levels were not calculated because of the voltage of new or modified facilities at the substation will not be changed and because of the shielding provided by the metal fence enclosing the substation.

The modeling shows that Project-related changes in the calculated magnetic field are greatest on the west side of the substation, where conductors from the new north and south transmission-lines turn to enter the Pootatuck Substation. Near the southwest corner of the substation yard, the calculated magnetic field increases from 33 mG (pre-Project) to 47 mG (post-Project) beneath the conductors of the new south transmission line. At the northwest corner of the substation yard, the calculated magnetic field is 26 mG beneath the conductors of the north transmission line. Between these two locations, where one span of the existing 115 kV transmission line is removed, the calculated magnetic field decreases by approximately 4 mG. At the property line near the southwest corner of the substation yard, the calculated magnetic field increases from 20 mG (pre-Project) to 50 mG (post-Project) beneath the conductors of the new south transmission line. Near the northwest corner of the property, the calculated magnetic field beneath the new north transmission line increases to 53 mG, compared to 42 mG in the existing case.

The increase or decrease of magnetic fields along the western side of the property falls off rapidly with distance from the new 115 kV terminations. At 100-300 feet from the substation fence, for instance, the measured magnetic-field levels from distribution sources are greater than the calculated contribution from transmission-line sources or substation equipment.

## Attachment E - Exponent EMF

A project-related increase in the calculated magnetic field on the north side of the substation yard is due to the increased loading of existing transmission lines with the proposed ring bus in service. The calculated magnetic field levels beneath the conductors of the existing transmission line increase from 32 mG to 41 mG for existing and proposed loading cases, respectively.

The highest measured electric field modeled outside the substation fence is 0.33 kV/m, on the north side of the Pootatuck Substation beneath the conductors of the existing 115-kV transmission line. Away from overhead 115-kV transmission-line conductors, measured electric fields were low, below 0.08 kV/m. The lower measured values of the electric field at these locations are attributable to the low profile of equipment within the Pootatuck Substation, and to shielding of the electric field by the substation fence and surrounding vegetation.

In summary, the proposed project will not appreciably alter electric field levels around the Pootatuck substation property and changes to magnetic field levels are associated with relocation of transmission lines and increased loading on the lines north of the substation.

## Existing and Proposed Configurations

---

The existing yard of the Pootatuck Substation is located on a two-acre portion of UI's six-acre property at 14 Old Stratford Road in the City of Shelton. The six-acre property is bounded to the east by State Route 8, to the south by Old Stratford Road, to the west by Pootatuck Place, and to the north by the Far Mill River. *See* the plan view of the site in Figure 1. A Connecticut Light and Power Company ("CL&P") easement, occupied by 115 kV overhead transmission lines, extends across the western portion of the property. The existing Pootatuck Substation is located on the western portion of the property, adjacent to the CL&P transmission line easement. The western edge of the site is within the CL&P existing 110-foot transmission line right-of-way ("ROW").

A schematic diagram of the existing Pootatuck Substation is depicted in Figure 2. An existing tie breaker connects the terminal buses of Line "A" south and Line "A" north. Two existing 115-kV transmission lines, designated Line "A" south and Line "A" north, terminate on the tie bus. As shown in Figure 2, transformer "A" connects to the tie bus south of the tie breaker, and transformer "B" connects to the tie bus north of the tie breaker.

As part of the Pootatuck 115-kV Ring Bus Expansion and Capacitor Bank Addition Project (the "Pootatuck Expansion") the existing tie bus will be extended to a ring-bus configuration having two new circuit positions. In the proposed configuration, the existing 115-kV Transmission Line "B" will be segmented into two transmission lines, Transmission Line "B" North and "B" South, terminating at the substation. In addition, a 30-MVAR capacitor bank will be installed on the terminal bus of Transmission Line "B" North.

New equipment to be installed within the existing substation fence includes:

- Two tubular steel H-frame takeoff structures terminating the conductors of proposed Transmission Lines "B" North and "B" South";
- Three 115-kV gas circuit breakers and interconnecting rigid aluminum bus work of the ring-bus scheme;
- One steel monopole dead-end structure (#C) supporting the conductors of Transmission Line "B" South that will be approximately 70 feet tall;
- one 30-MVAR three-phase capacitor bank having an ungrounded wye configuration;
- one circuit switcher allowing the 30-MVAR capacitor bank to be switched into and out of the 115-kV transmission system;
- one 115-kV gas circuit breaker connecting the capacitor banks to the terminal bus of Transmission Line "B" North; and
- one reactor per phase of the capacitor bank.

In addition to the new equipment inside the substation fence, UI also proposes construction of two new single-pole tubular steel dead-end structures (#1341B and #1342B) as part of the Pootatuck Expansion. Structures #1341B and #1342B will be approximately 90 feet and 80 feet

## Attachment E - Exponent EMF

tall, respectively, and will be located within CL&P's existing transmission line ROW. No additional ROW will be required.

From the new single pole tubular steel dead-end structure (#1341B) in CL&P's ROW, the south segment of Transmission Line "B" will be routed east for approximately 110 feet to the single pole tubular steel structure (labeled "C" in Figure 1), and then routed north to the south takeoff structure. Likewise, the north segment of Transmission Line "B" will be routed from the north takeoff structure, span approximately 290 feet northwest to the new dead-end structure #1342B, and reconnect to CL&P's existing transmission line.

Transmission Lines "B" North and South will transition from a vertical configuration to a horizontal configuration as the lines approach the Project's takeoff structures. The transmission lines will then descend to the Project's bus work at adjacent circuit positions within the ring bus. The total length of the re-routed transmission lines between new monopoles #1341B and #1342B is approximately 480 feet.

The existing transformers and distribution circuits will not be modified as part of the Pootatuck Expansion. The distribution circuit get-away from the substation is installed in two PVC underground duct lines from the substation property; one exiting directly onto Old Stratford Road and the other proceeding along Pootatuck Place to Old Stratford Road. The duct lines extend northwest on Old Stratford Road approximately 1,150 feet to Bridgeport Avenue and southeast on Old Stratford Road approximately 800 feet to the east of the State Route 8 where they tie in with UI's existing distribution facilities.

The Pootatuck Substation is surrounded by commercial areas, with some residences located on the north side of Far Mill River. The nearest proposed equipment is approximately 650 feet away from the closest dwelling to the northeast, and approximately 170 feet away from the closest commercial building to the west.

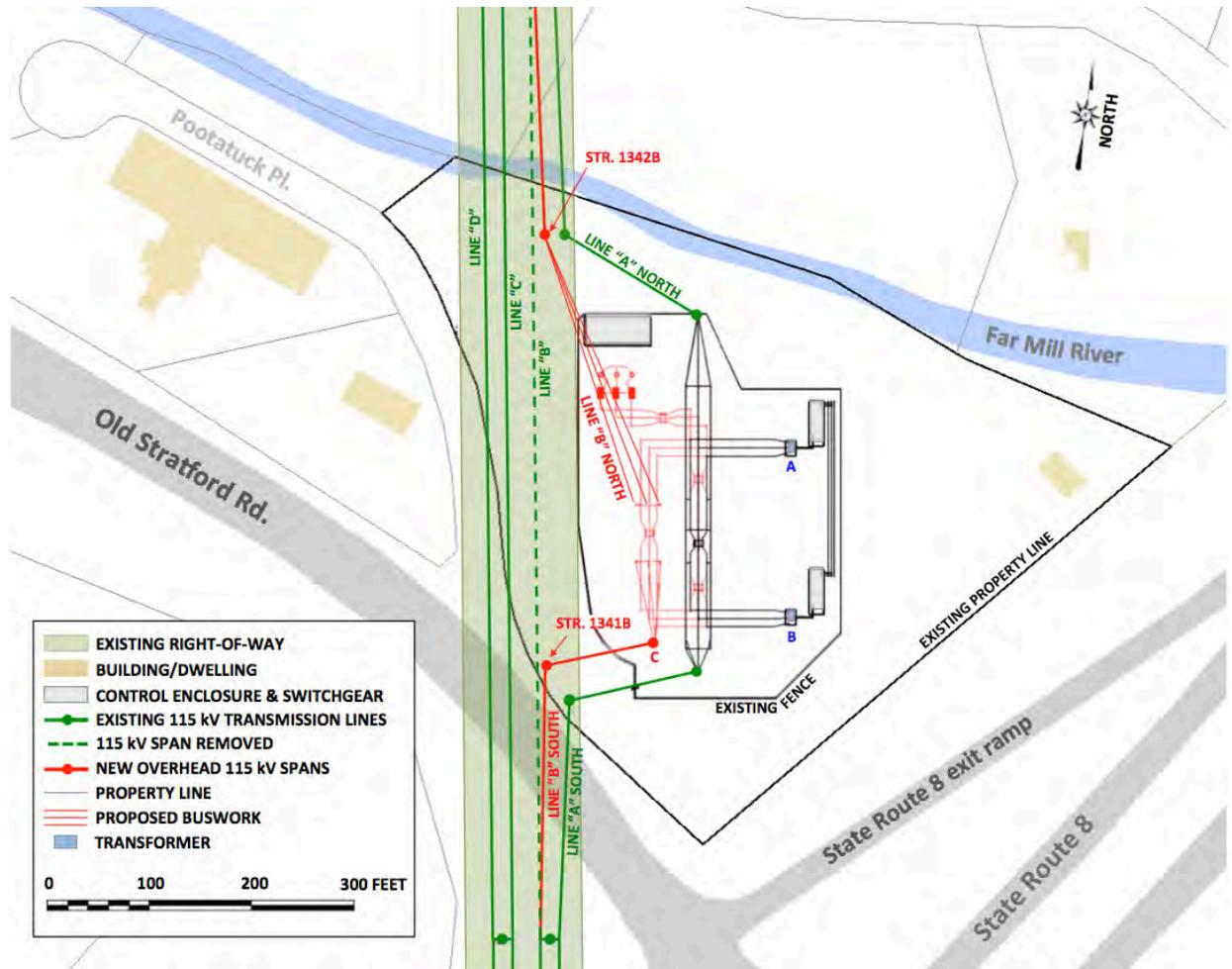


Figure 1. Plan view of the existing and proposed configurations of the Pootatuck Substation.

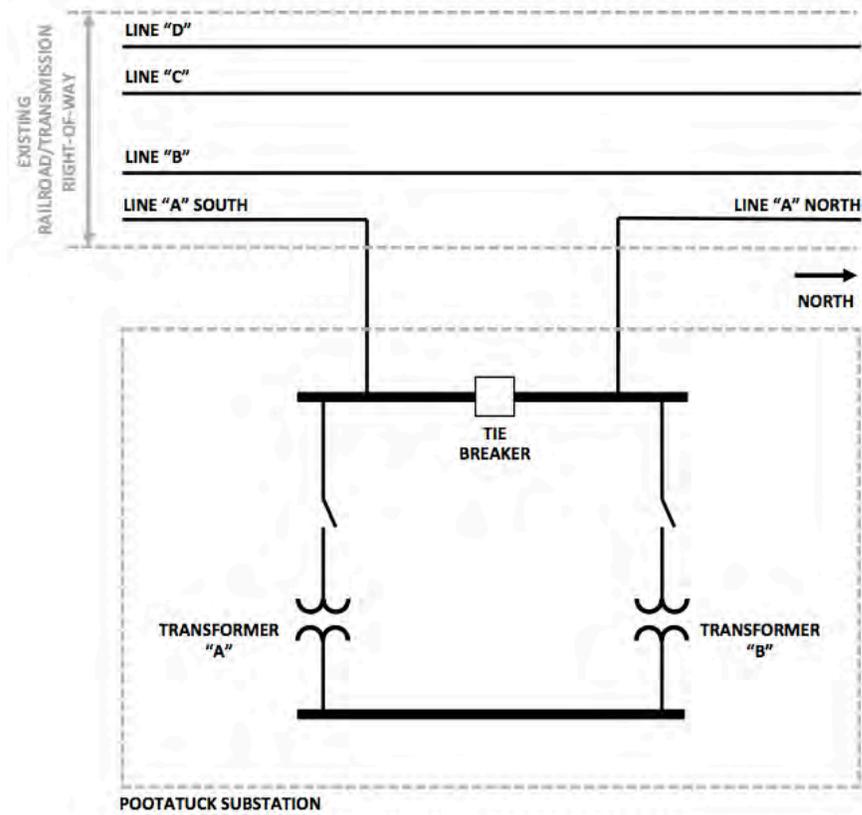


Figure 2. 115-kV transmission system diagram showing the existing Transmission Lines "A" and "B" terminating at the Pootatuck Substation. The reference direction of current flow on the overhead transmission lines is to the north.

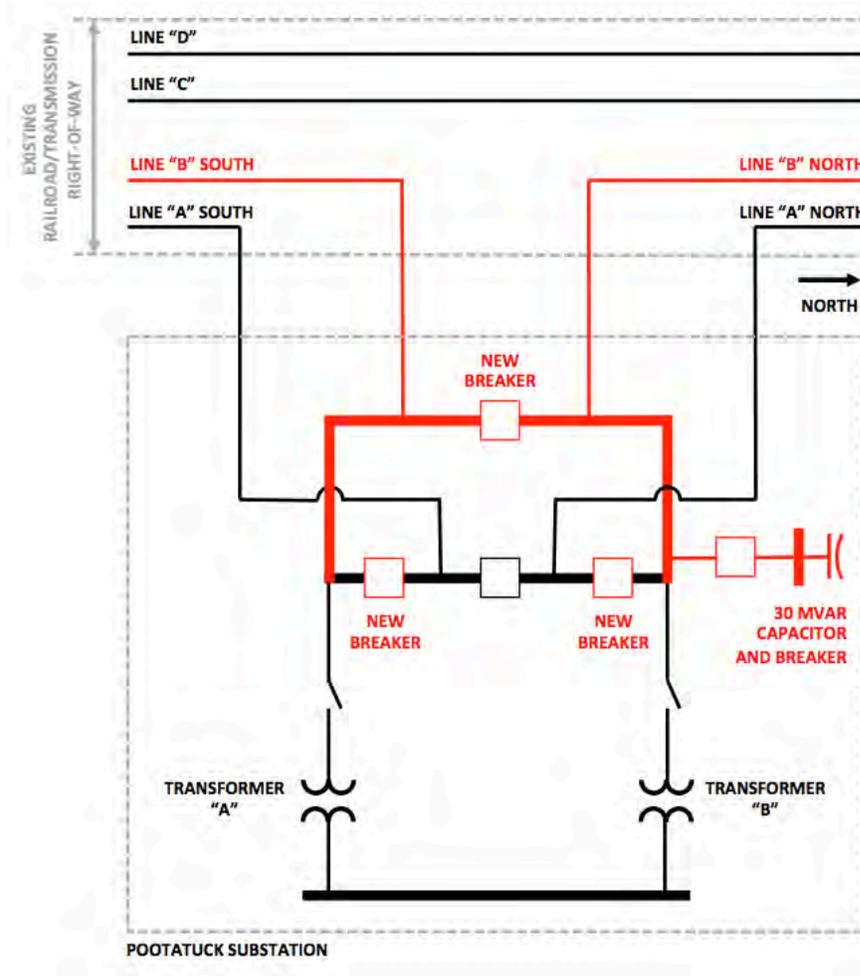


Figure 3. 115-kV transmission system diagram showing the proposed ring bus, transmission-line terminations, and capacitor bank in relation to existing lines and equipment.

In addition to calculations of magnetic field around the property line and fence of the Pootatuck Substation, Exponent calculated the magnetic field along six profiles directed outward toward adjoining properties as shown in Figure 4.

- Profile 1** starts at the existing substation fence nearest substation Transformer “A”, and heads east toward the State Route 8 exit ramp
- Profile 2** starts at the existing substation fence nearest substation Transformer “A” and proceeds east
- Profile 3** runs north from a point 60 feet west of the northeast corner of the substation yard
- Profile 4** begins 50 feet north of the existing control enclosure and proceeds west across Pootatuck Place
- Profile 5** runs west, across Pootatuck Place, from a point 175 feet south of the northwest corner of the substation yard

**Profile 6** runs northwest across Pootatuck Place, parallel to Old Stratford Rd.

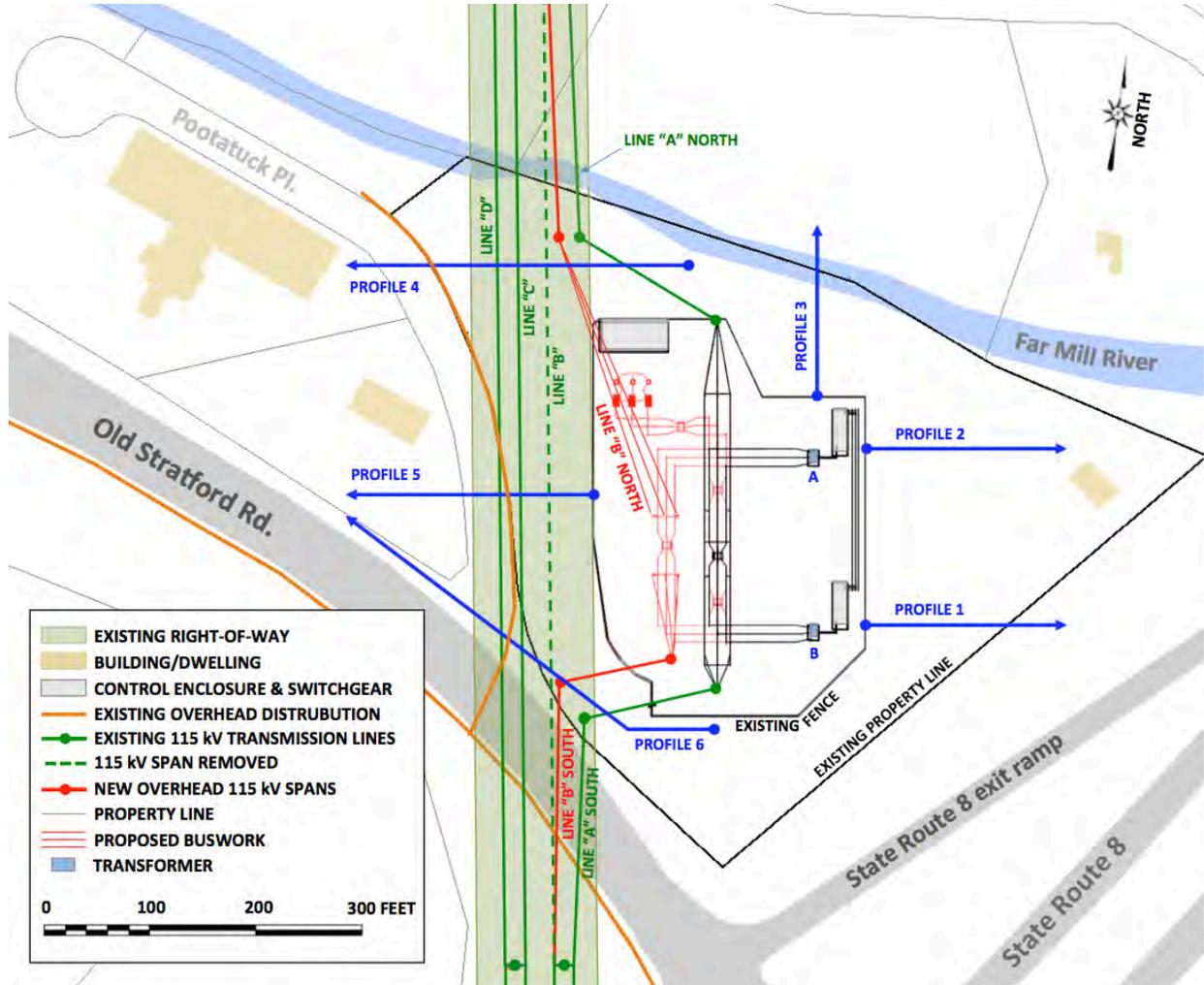


Figure 4. Plan view of 14 Old Stratford Road, showing the existing substation fence and the location of calculated profiles.

## Methods

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### Measurements

In order to characterize EMF levels for the existing configuration of the Pootatuck Substation, magnetic and electric fields were measured outside the existing substation fence on January 22, 2016. The measurements were taken at a height of 1 meter (3.28 feet) above ground in accordance with the standard methods for measuring near power lines (IEEE Std. 644-1994a). Both electric and magnetic fields were expressed as the total field computed as the resultant of field vectors measured along vertical, transverse, and longitudinal axes.<sup>1</sup> The electric field was measured in units of kilovolts per meter (kV/m) with a single-axis field sensor and meter manufactured by Enertech Consultants. The magnetic field was measured in units of milligauss (mG) by orthogonally-mounted sensing coils whose output was logged by a digital recording meter (EMDEX II) manufactured by Enertech Consultants. These instruments meet the Institute of Electrical and Electronics Engineers (IEEE) instrumentation standard for obtaining accurate field measurements at power line frequencies (IEEE Std.1308-1994b). The meters were calibrated by the manufacturer by methods like those described in IEEE Std. 644-1994a.

Magnetic fields from distribution sources were measured on the southern and western perimeter of the substation property along Old Stratford Road and Pootatuck Place, and are described further in the Results section, below.

### Magnetic Field Modeling

Exponent modeled EMF levels associated with the existing and proposed configurations of the Pootatuck Substation and adjacent 115-kV transmission lines using SUBCALC. SUBCALC, which is part of the Enertech EMF Workbench Suite, models the magnetic fields in and around substation equipment, accounting for the three-dimensional arrangement of breakers, transformers, reactors, capacitors, bus work, and transmission lines.

Two SUBCALC models were constructed using the substation plan and profile data, and accounting for the grade south of Old Stratford Road. The inputs to the program include data regarding voltage, current flow, circuit phasing, and conductor configurations, which were provided by UI.

The first SUBCALC model was used to calculate magnetic fields for the existing configuration of the Pootatuck Substation (Figure 5). The second SUBCALC model includes the proposed take-off structures, capacitors, reactors, breakers and bus work on the west side of the yard (Figure 6). Based on these two models, changes in the calculated magnetic fields associated

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<sup>1</sup> The resultant magnetic field is the Euclidian norm (square root of the sum of the squares) of the component magnetic-field vectors calculated along vertical, transverse, and longitudinal axes.magnitudes. Root mean square refers to the common mathematical method of defining the effective voltage, current, or field of an AC system.

## Attachment E - Exponent EMF

with the operation of the Project are provided in the Results section, below. Project-related changes in the calculated magnetic-field levels are provided for average-load conditions in 2023 and peak-load conditions in 2016. The average and peak transmission-line loadings provided by UI were used to establish currents in both SUBCALC models, and calculate magnetic fields along the perimeter of the substation yard, along the property line of 14 Old Stratford Road, and along Profiles 1-6. Along each profile and perimeter, magnetic-field levels were calculated at 1 meter (3.28 feet) above ground as the root mean square value of the field in accordance with IEEE Std. C95.3.1-2010 and IEEE Std. 644-1994. Calculated magnetic-field levels are reported as resultant quantities in units of milligauss (mG).<sup>2</sup>

South of Old Stratford Road, the elevation of CL&P's easement increases by 55 feet. This change in elevation affects the height of conductors in the 950-foot span running north-south, immediately west of the Pootatuck Substation. To account for the height of these conductors above the yard grade, the height of the transmission-line structures south of Old Stratford Road was increased by 55 feet in the SUBCALC models.

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<sup>2</sup> The resultant magnetic field is the Euclidian norm (square root of the sum of the squares) of the component magnetic-field vectors calculated along vertical, transverse, and longitudinal axes.

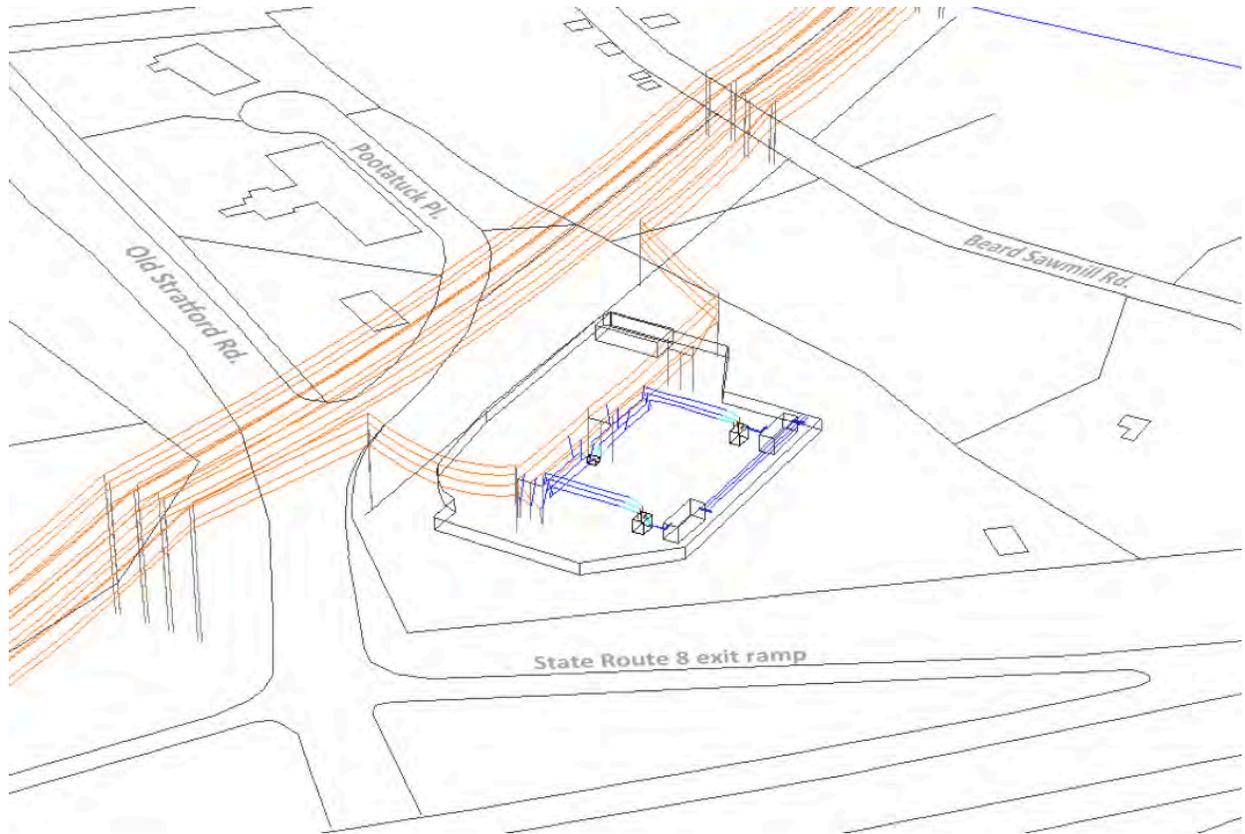


Figure 5. Overview of the three-dimensional SUBCALC model used to calculate magnetic fields for the existing configuration of the Pootatuck Substation.

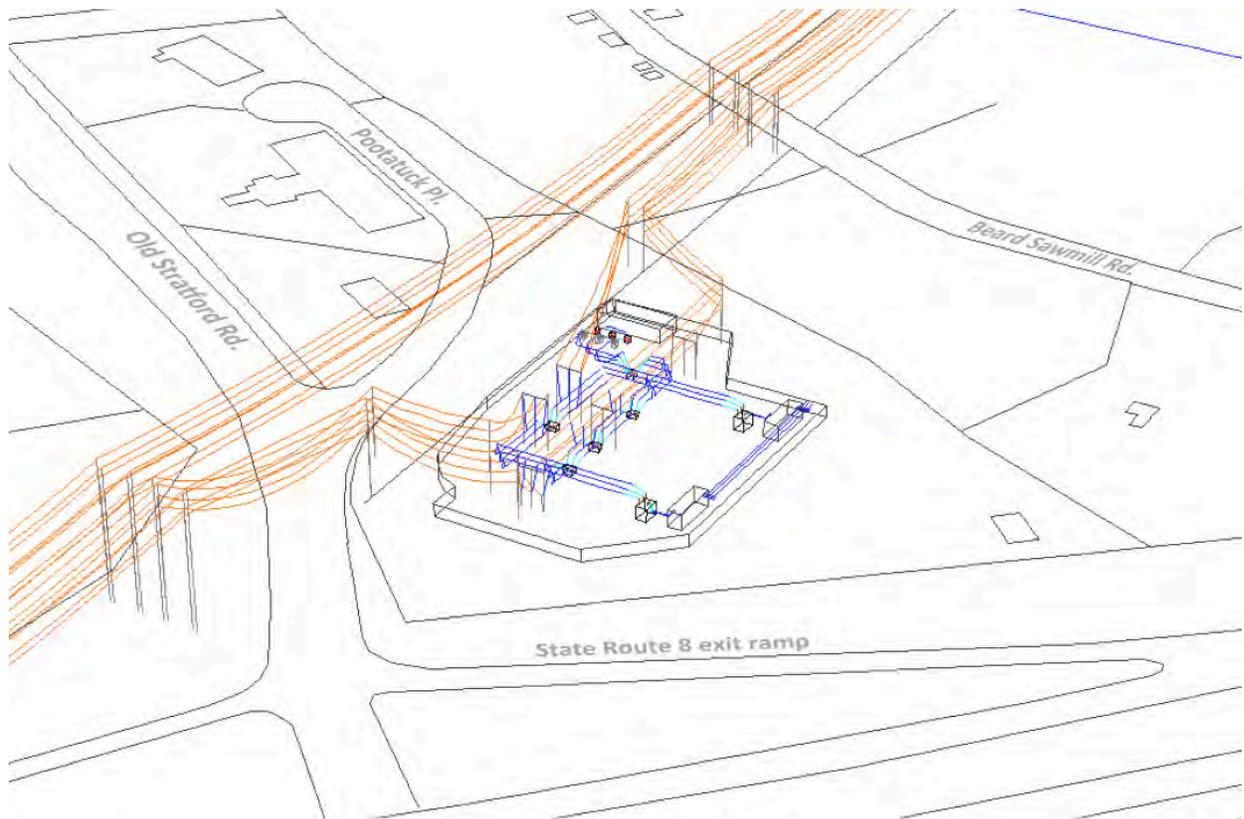


Figure 6. Overview of the three-dimensional SUBCALC model used to calculate magnetic fields for the proposed configuration of the Pootatuck Substation.

## Loading

UI Transmission Planning provided the pre- and post-Project loadings for the 115-kV transmission lines and transformers involved in the Pootatuck 115 kV Ring Bus Expansion and Capacitor Bank Addition Project. UI selected dispatches in such a way as to maximize current transmission-line flows in the corridor adjacent to the Pootatuck Substation. This method of maximizing the loading of the lines on the transmission corridor was chosen since it yielded the highest estimate of Project-related changes in the load through the Pootatuck Substation. The current flows used for modeling are summarized in a table available from Exponent upon a request consistent with CEII restrictions.

The Connecticut Siting Council (CSC) Electric and Magnetic Best Management Practices to provide line loadings for “calculations of MF for pre-project and post-project conditions, under 1) peak load conditions at the time of the application filing, and 2) projected seasonal maximum 24-hour average current load on the line anticipated within five years after the line is placed into operation.” (p. 6)<sup>3</sup> In the loading data provided by UI Transmission Planning, the term

<sup>3</sup> Connecticut Siting Council. *Electric and Magnetic Fields Best Management Practices For the Construction of Electric Transmission Lines in Connecticut*. Revised on February 20, 2014.

“seasonal maximum 24-hour average” load level was replaced by the term “average daily peak.” In this report, “average load” refers to this case.

For the peak-load analysis, UI modeled the system to reflect the topology of New England’s transmission system in the year 2016. The peak load analysis includes area 115-kV capacitor banks online for voltage support. In addition, the 2023 study year was used to model the average daily peak load levels to satisfy the CSC requirement for calculating EMF based on loading data within a five-year horizon. The average daily peak load cases simulated a shoulder load scenario, and no 115-kV capacitor banks were online in this scenario since voltages were sufficient without additional reactive support. In order to determine the scenario with the highest line loadings, generation dispatches were chosen that caused the highest projected flows in the Project-area transmission corridor. Dispatch 3 was selected for the average-load case, and Dispatch 2 was selected for the peak-load case.

In the loading conditions provided by UI Transmission Planning for this report, the greatest current flows pre- and post-Project are on Transmission Line “A” North. The projected increase in flow on this line is approximately 25% for both average- and peak-load conditions. Conversely, the loading of Transmission Line “A” South decreases by approximately 27% for the average-load conditions only. In the average-load scenario, the *total* loading on transmission lines in the CL&P transmission corridor remains the same (within 1%), and hence the *proportion* of the total loading on Transmission Line “A” North increases with operation of the Project. This circumstance reflects the flow of power from Transmission Line “B” South to Transmission Line “A” north, as a result of their interconnection in the proposed ring bus.

In peak-load conditions, the loading on transformers at the Pootatuck Substation – and generally throughout the Southwestern Connecticut system – will be increased. Compared to average-load conditions, however, the loading on each transmission line was *less* for peak-load conditions, with the exception of Transmission Line “A” South. As a result, the calculated magnetic fields for peak-load conditions are generally less than for average-load conditions, as described further in the Results section.

## Results and Discussion

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Figure 7 depicts the calculated and measured magnetic-field levels along the existing fence line of the Pootatuck Substation. The magnetic field was modeled for an average-load condition in 2023, with only existing equipment in service (“existing” profile) and with operation of the Project (“proposed” case). The calculated profiles begin at the northwest corner of the substation fence, and proceed clockwise around the yard. The x-axis of Figure 7 is labeled with the cumulative distance along the fence. The highest calculated magnetic field is beneath the conductors of the overhead circuits where they pass above the substation fence. On the north side of the substation, beneath the conductors of Transmission Line “A” North, calculated magnetic fields are 32 mG and 41 mG for existing and proposed cases, respectively, for average-load conditions. Likewise, at the southwest corner of the substation yard, beneath the conductors of Transmission Line “B” South, the calculated magnetic field is 47 mG for the proposed case and average load. The measured magnetic field levels are lower than the modeled existing magnetic field levels because at the time of the measurements the line and substation loads happened to be well below more typical average values.

Comparing the existing and proposed configurations of the Pootatuck Substation in Figure 7, Project-related changes in the calculated magnetic field are principally due to repositioned conductors of Transmission Line “B.” On the west side of the Pootatuck Substation in the existing configuration, the centerline of Transmission Line “B” runs parallel to the western fence of the Pootatuck Substation at a distance of approximately 40 feet. The calculated magnetic field along the western substation fence ranges between 9 and 17 mG, and is highest at the point of maximum sag of the Transmission Line “B” conductors. In the proposed configuration, Transmission Line “B” is segmented into north and south segments and the span parallel to the western substation fence is removed. *See* Figure 1. Overhead conductors from the new Transmission Lines “B” North and “B” South pass over the substation fence at a 35-40 foot elevation, near the southwestern and northwestern corners of the yard. The calculated magnetic fields at these locations are 47 mG and 26 mG, respectively. On the west side of the substation and between the new terminal spans of Transmission Lines “B” North and “B” South, the calculated magnetic field decreases by approximately 4 mG.

Project-related changes in the calculated magnetic field in Figure 7 also are attributed to the increased proportion of load carried by Transmission Line “A” North with the proposed ring bus in service. Under average-load conditions, the aggregate load of transmission lines on the CL&P corridor remains the same (within 1%) in the existing and proposed cases. In the loading conditions provided by UI Transmission Planning for this report, however, post-Project flows on Transmission Line “A” North increase by approximately 25% for both average- and peak-load conditions. As a result, calculated magnetic field levels beneath the conductors of Transmission Line “A” North increase from 32 mG to 41 mG for existing and proposed cases, respectively.

Figure 7 also depicts the magnetic field measured along the substation fence. The measured magnetic fields are lower than the calculated values beneath the conductors of the overhead transmission circuits. This observation corresponds to the lower loading of the 115-kV

## Attachment E - Exponent EMF

transmission lines at the time of the measurements, which were 23% percent or less of the loading included in the SUBCALC model.

Figure 8 depicts the calculated magnetic-field levels around the perimeter of the six-acre property at 14 Old Stratford Road for average-load conditions. The x-axis of Figure 8 is labeled with the cumulative distance along the property line, starting at Pootatuck Place and proceeding clockwise through the northwest, northeast, and south corners of the property. Comparing the results for the existing and proposed configurations of the Pootatuck Substation, calculated magnetic fields are within 2 mG at the east side of the property. The effect of the new interconnections is discernible along Pootatuck Place and the northwest corner of the property.

Closest to Structure 1341B, where the conductors of Transmission Lines “A” South and “B” South turn east to pass over the substation fence, the calculated magnetic field is 50 mG for the proposed case. In the existing case, only the conductors of Transmission Line “A” South turn east into the substation yard, and the calculated magnetic field is correspondingly less (20 mG). Near the northwest corner of the property, the conductors of Transmission Lines “A” North and “B” North are closer together in the proposed case compared to the existing case. The calculated magnetic field beneath these conductors increases to 53 mG, compared to 42 mG in the existing case. Midway between Structure 1341B and 1342B, where the existing span of Transmission Line “B” is removed, the calculated magnetic field decreases from 16 mG to 5 mG for average-load conditions.

Figure 9 depicts the calculated magnetic-field levels on the same path as Figure 8, but for peak-load conditions in 2016. Since the loading of transmission lines was generally *less* for peak-load conditions, the calculated magnetic-field levels in Figure 9 are lower than in Figure 8. Near structure 1341B, the calculated magnetic field increases from 18 mG (existing case) to 25 mG (proposed case) at the property line. Beneath the transmission-line conductors at the northwest corner of the property, the calculated magnetic field is approximately 40 mG, both pre- and post-Project.

Figures 10-15 depict the calculated and measured magnetic field levels along Profiles 1-6 for average-load conditions in 2023. Table 1 summarizes calculated magnetic-field levels at several distances along the profile. Table 2 likewise summarizes calculated magnetic-field levels for Profiles 1-6 under peak-load conditions.

Comparing the existing and proposed magnetic-field levels on the east side of the Pootatuck Substation (Profiles 1 and 2, *see* Figure 10 and Figure 11), the calculated magnetic field increases by 0.6 - 1.2 mG at the substation fence. This increase can be attributed to the increased loading of bus work and take-off conductors for Transmission Line “A” North. Calculated magnetic fields fall off rapidly with distance along Profiles 1 and 2, and are below 1.3 mG at a distance of 100 feet from the substation fence. At the eastern edge of the 14 Old Stratford Rd property, calculated magnetic fields are quite low, 0.3 mG or lower at a distance of 300 feet from the substation fence for both average- and peak-load cases.

Proceeding north from the fence of the Pootatuck Substation along Profile 3 (Figure 12), calculated magnetic fields for the proposed case are somewhat higher compared to the existing

case. This change is due to the increased proportion of load carried by Transmission Line “A” North after operation of the Project. At the substation fence, near the existing take-off structure and steel monopole supporting the conductors Transmission Line “A” North, the calculated magnetic field increases from 6.7 mG (existing case) to 9.7 mG (proposed case) for average-load conditions. 300 feet north of the Pootatuck Substation along Profile 3, the reporting location for magnetic fields in Table 1 and Table 2 is approximately 210 feet east of the CL&P ROW edge. Comparing existing and proposed modeling cases at this location, calculated magnetic fields are within 0.2 mG. This result shows that the redistribution of load on the CL&P corridor has only a small effect on the calculated magnetic fields at distances of 200 feet or more beyond the ROW edge.

Comparing the existing and proposed magnetic-field levels on the west side of the Pootatuck Substation (Profiles 4-6, *see* Figures 13-15), the changes in calculated levels reflect the segmenting of Transmission Line “B” and new conductor terminations on the proposed ring bus. In Figure 14, for instance, the existing Profile 5 reaches a maximum value of 25 mG at a distance of 40 feet west of the substation fence, beneath the conductors of Transmission Line “B.” With the removal of this span in the proposed case, the calculated magnetic-field levels decrease at all distances along Profile 5 compared to the existing case. In Profiles 4 and 6, conversely, the calculated magnetic fields increase beneath the conductors of Transmission Lines “B” South and “B” North as they approach new take-off structures within the substation fence.

Considering the *measured* magnetic field levels along Profiles 4-6, all three profiles indicate the presence of magnetic fields from distribution sources that were not included in the substation model. These sources include (1) underground duct lines from the substation property; one exiting directly onto Old Stratford Road the other proceeding along Pootatuck Place to Old Stratford Road; (2) overhead distribution sources on the east side of Pootatuck Place and the south side of Old Stratford Road; and (3) overhead service conductors crossing Pootatuck Place. In order to characterize changes in the transmission interconnections at the Pootatuck Substation, none of these distribution sources were included in the SUBCALC models. At 100-300 feet from the substation fence, notably, the measured magnetic-field levels from unmodeled distribution sources are greater than the calculated contribution from transmission-line and substation equipment sources. The measurements in Profiles 4-6 also confirm that the Transmission Lines “C” and “D” are de-energized and/or lightly loaded.

Figure 16 depicts the location of electric-field measurements recorded on January 22, 2016. Measured electric-field values in three orthogonal axes are summarized in Table 3, along with calculated resultant quantities. The highest measured electric field (0.33 kV/m) was recorded beneath the conductors of the Transmission Line “A” North, near to the location of proposed structure 1342B. Away from overhead 115-kV transmission-line conductors, measured electric fields were low, below 0.08 kV/m. The lower measured values of the electric field at these locations are attributable to the low profile of equipment within the Pootatuck Substation, and to shielding of the electric field by the substation fence and surrounding vegetation.

**Table 1. Summary of calculated magnetic fields (mG) for Profiles 1-6 for average load conditions in 2023**

Profile	Heading	Modeling condition	Distance from proposed substation perimeter (ft)			
			0	100	200	300
1	east	Pre-Project	3.6	1.0	0.5	0.3
		Post-Project	4.2	1.1	0.5	0.3
2	east	Pre-Project	3.9	1.0	0.5	0.3
		Post-Project	5.0	1.2	0.5	0.3
3	north	Pre-Project	6.9	4.5	2.9	2.3
		Post-Project	9.7	5.7	3.4	2.5
4	west	Pre-Project	15.4	22.8	22.5	†3.4
		Post-Project	19.8	37.2	12	†2.3
5	west	Pre-Project	14.9	†10.4	2.3	1.0
		Post-Project	12.3	†3.0	0.9	0.5
6	northwest	Pre-Project	8.8	24.9	†13.0	†4.8
		Post-Project	9.6	30.9	†23.7	†2.9

† Distribution circuits (not modeled) present at this location

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**Table 2. Summary of calculated magnetic fields (mG) for Profiles 1-6 for peak load conditions in 2016**

Profile	Heading	Modeling condition	Distance from proposed substation perimeter (ft)			
			0	100	200	300
1	east	Pre-Project	3.5	0.9	0.4	0.2
		Post-Project	4.3	1.1	0.5	0.2
2	east	Pre-Project	3.9	0.9	0.4	0.2
		Post-Project	4.9	1.1	0.5	0.2
3	north	Pre-Project	5.5	3.6	2.4	1.9
		Post-Project	7.9	4.5	2.6	2.0
4	west	Pre-Project	12.1	17.5	20.9	†3.1
		Post-Project	15.9	29.5	9.4	†1.6
5	west	Pre-Project	13.8	†9.9	2.1	0.9
		Post-Project	9.2	†2.5	0.7	0.4
6	northwest	Pre-Project	7.6	21.5	†12.3	†4.5
		Post-Project	9.0	26.9	†13.1	†2.0

† Distribution circuits (not modeled) present at this location

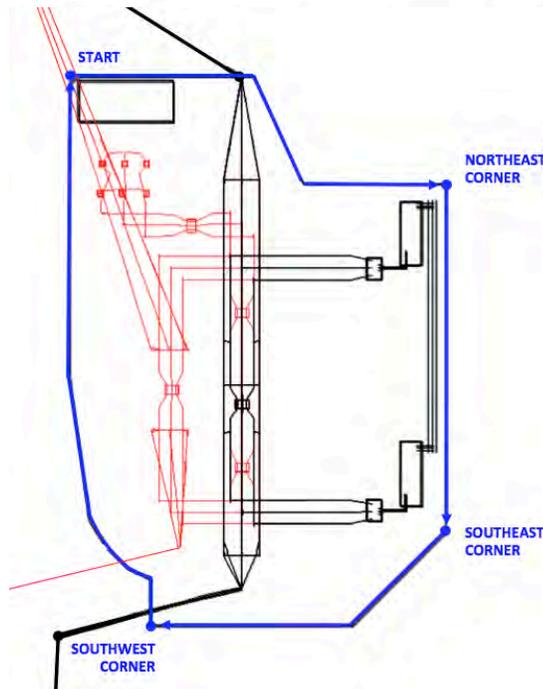
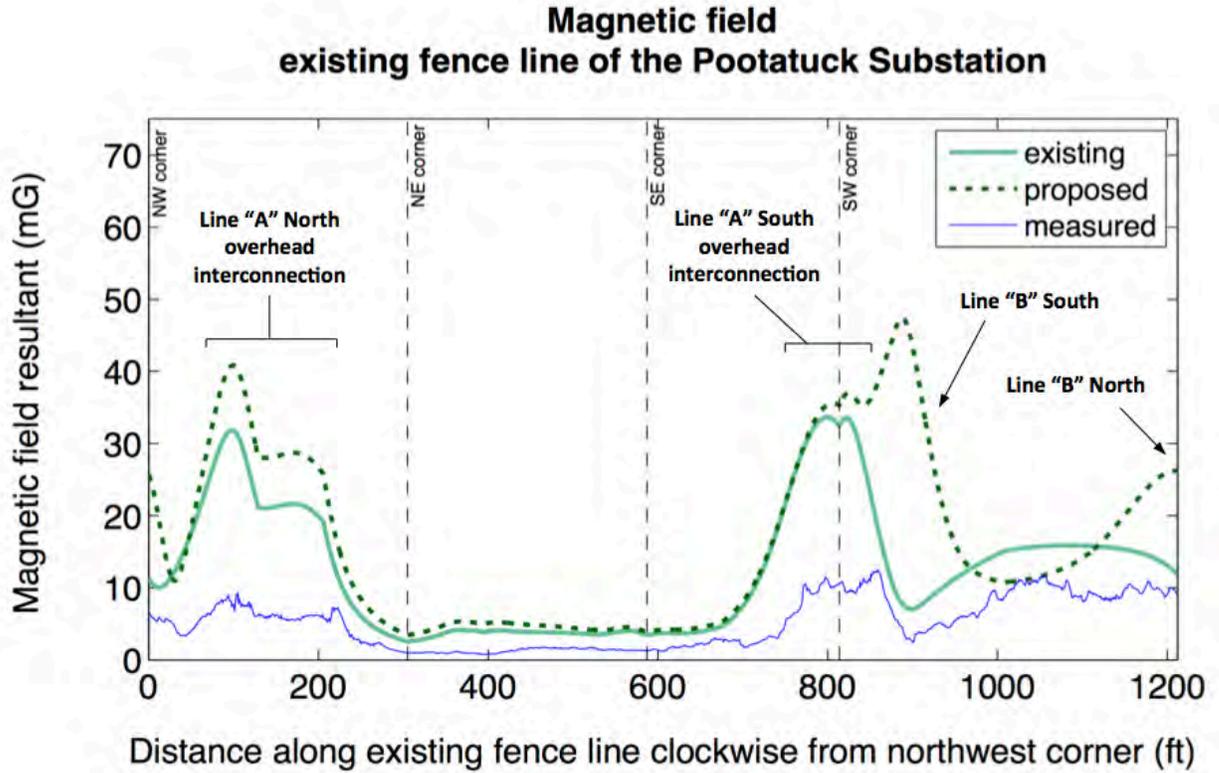


Figure 7. Measured magnetic-field levels around fence line of the Pootatuck Substation and calculated magnetic field levels for average-load conditions in the year 2023. The profile begins at the southwest corner of the substation, and proceeds counter clockwise along the south, west, north, and east sides of the yard.

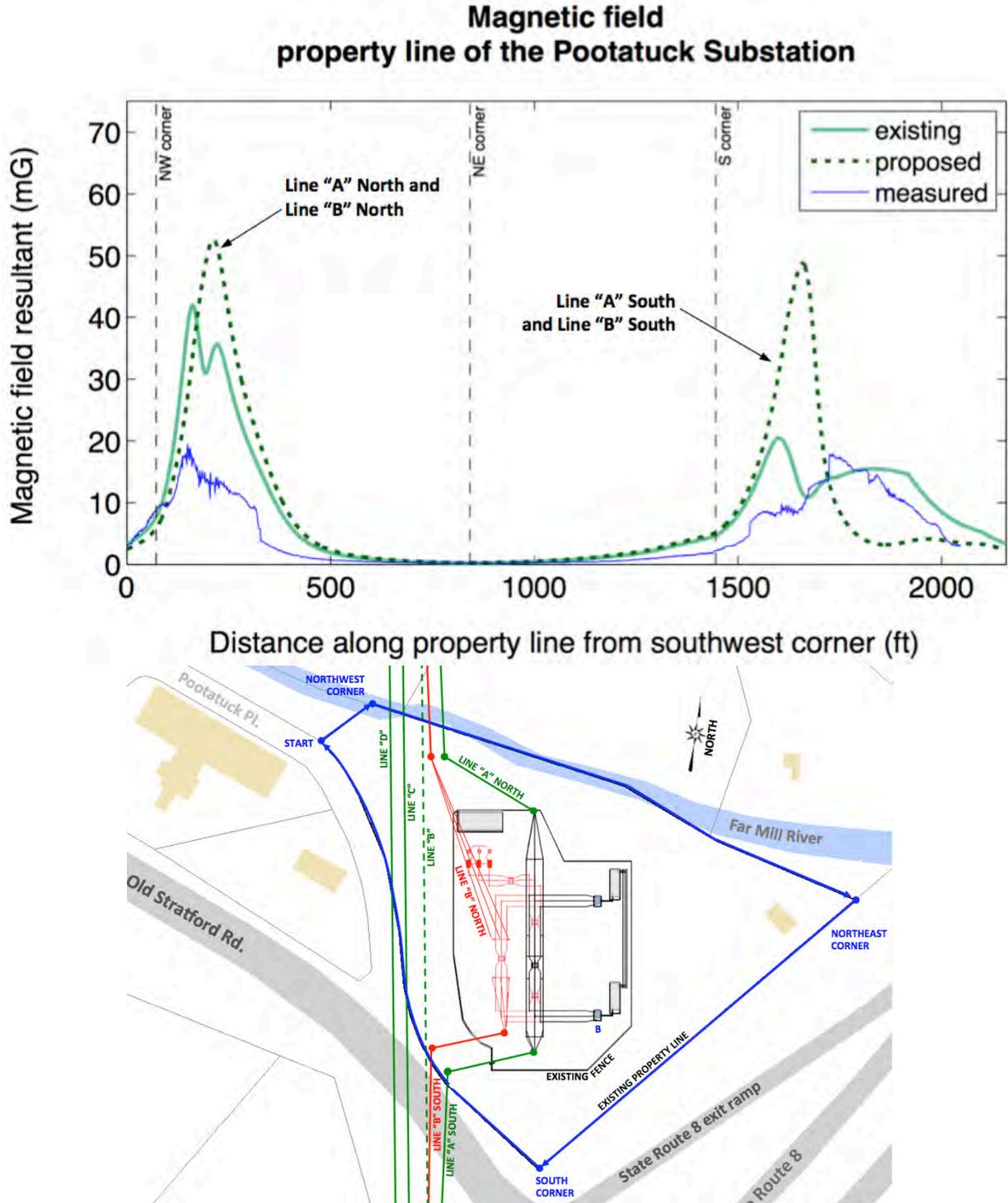


Figure 8. Calculated and measured magnetic-field levels around the property line of 14 Old Stratford Road for average-load conditions in the year 2023.

The profile begins at the north side of Pootatuck Place near northwest corner of the property, and proceeds clockwise along the property line.

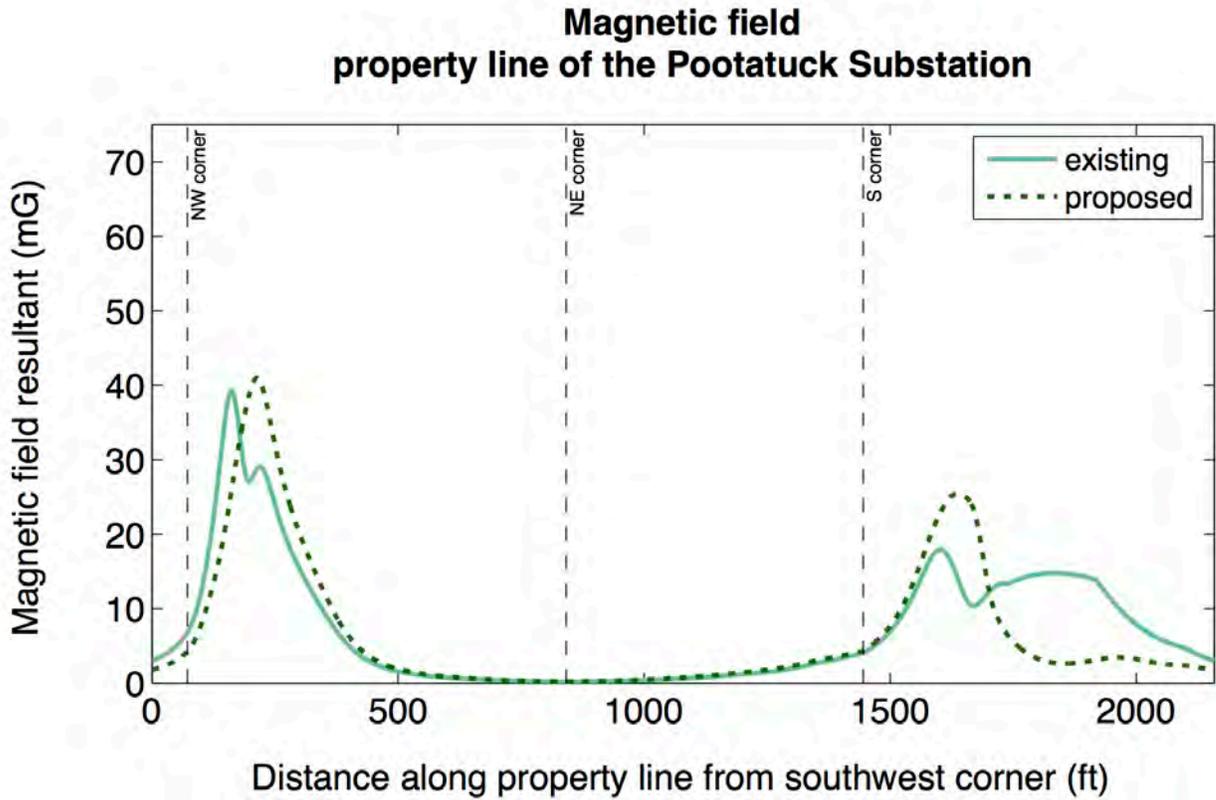


Figure 9. Calculated magnetic-field profiles around the property line of 14 Old Stratford Road for peak-load conditions in the year 2016.

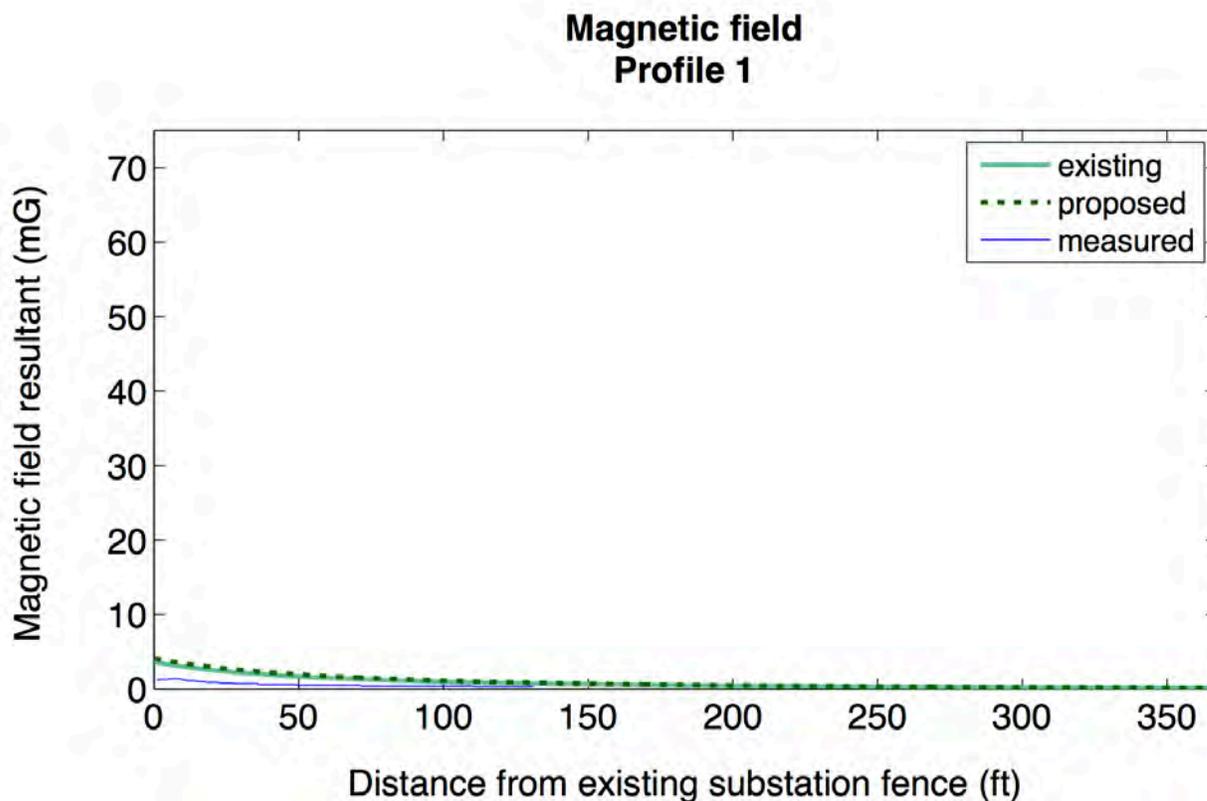


Figure 10. Calculated and measured magnetic-field levels along Profile 1.

The calculated magnetic-field levels are for existing and proposed configurations of the Pootatuck Substation under average-load conditions in 2023. Measured magnetic fields reflect loading of existing substation equipment and transmission lines on January 22, 2016.

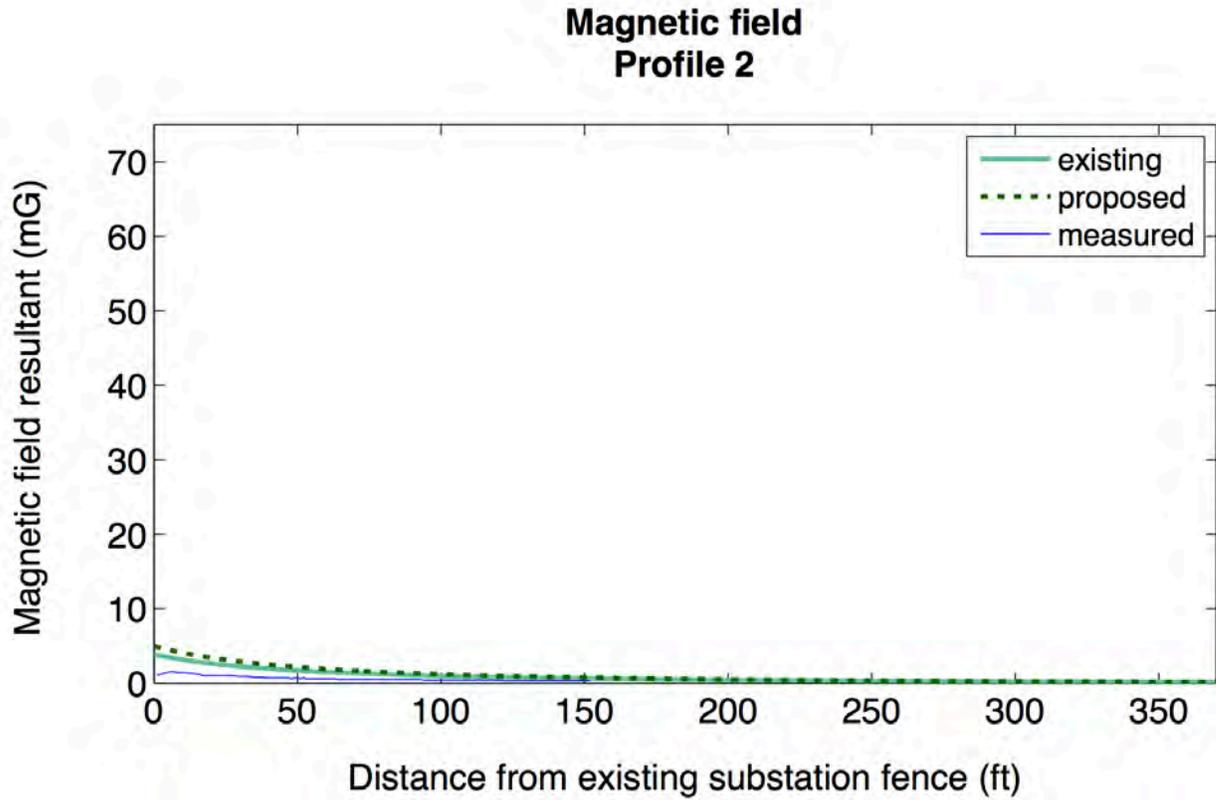


Figure 11. Calculated and measured magnetic-field levels along Profile 2.

The calculated magnetic-field levels are for existing and proposed configurations of the Pootatuck Substation under average-load conditions in 2023. Measured magnetic fields reflect loading of existing substation equipment and transmission lines on January 22, 2016.

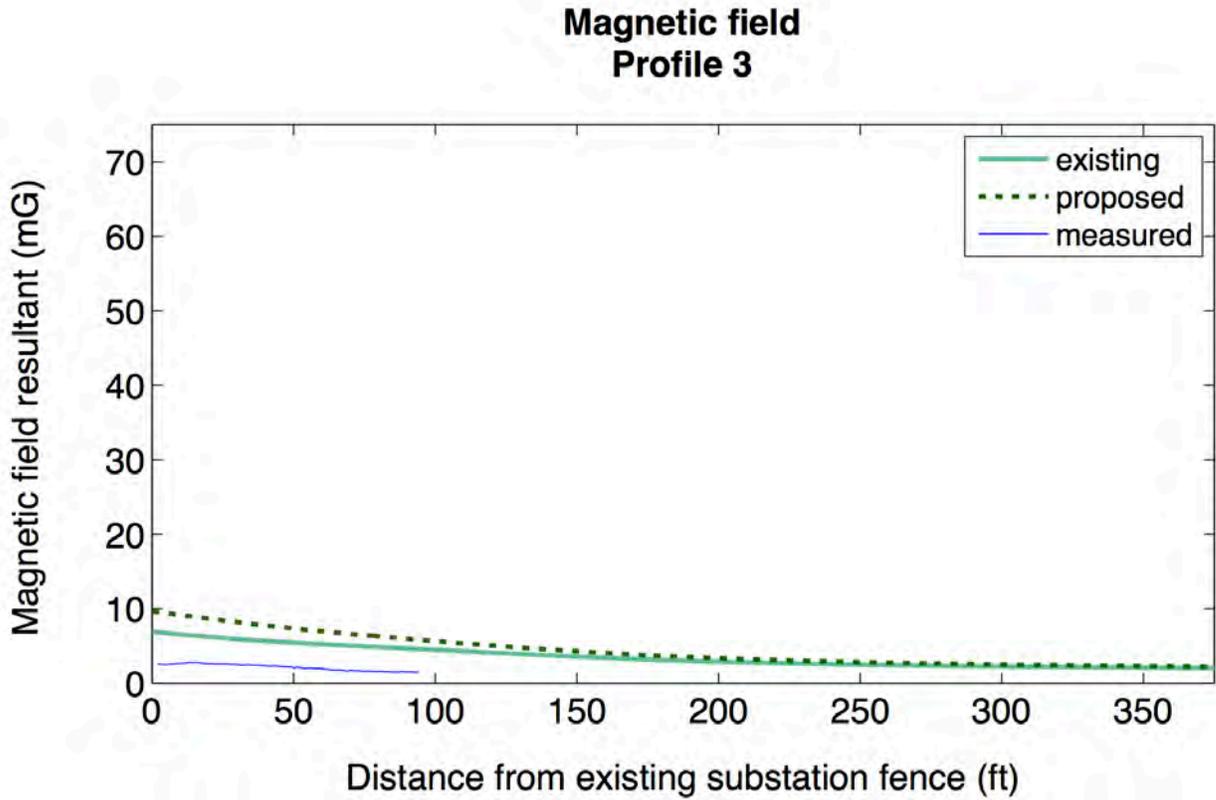


Figure 12. Calculated and measured magnetic-field levels along Profile 3.

The calculated magnetic-field levels are for existing and proposed configurations of the Pootatuck Substation under average-load conditions in 2023. Measured magnetic fields reflect loading of existing substation equipment and transmission lines on January 22, 2016.

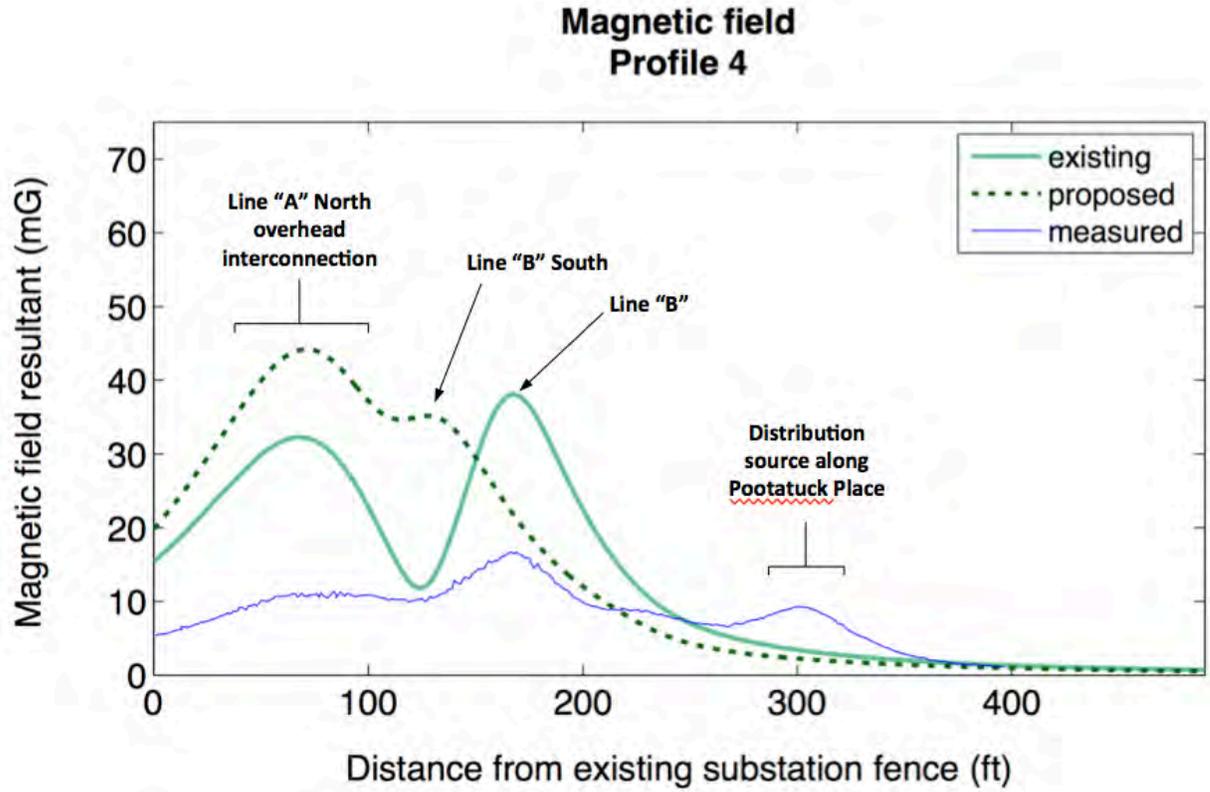


Figure 13. Calculated and measured magnetic-field levels along Profile 4.

The calculated magnetic-field levels are for existing and proposed configurations of the Pootatuck Substation under average-load conditions in 2023. Measured magnetic fields reflect loading of existing substation equipment and transmission lines on January 22, 2016.

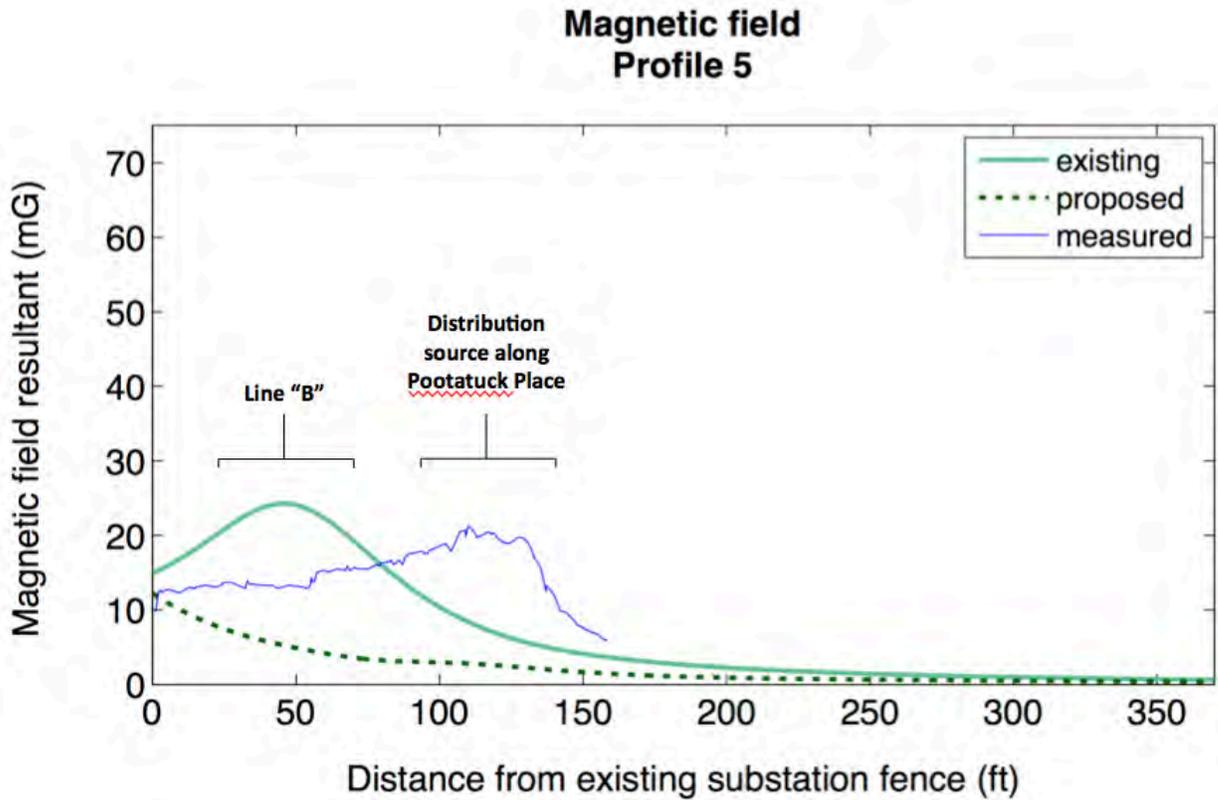


Figure 14. Calculated and measured magnetic-field levels along Profile 5.

The calculated magnetic-field levels are for existing and proposed configurations of the Pootatuck Substation under average-load conditions in 2023. Measured magnetic fields reflect loading of existing substation equipment and transmission lines on January 22, 2016.

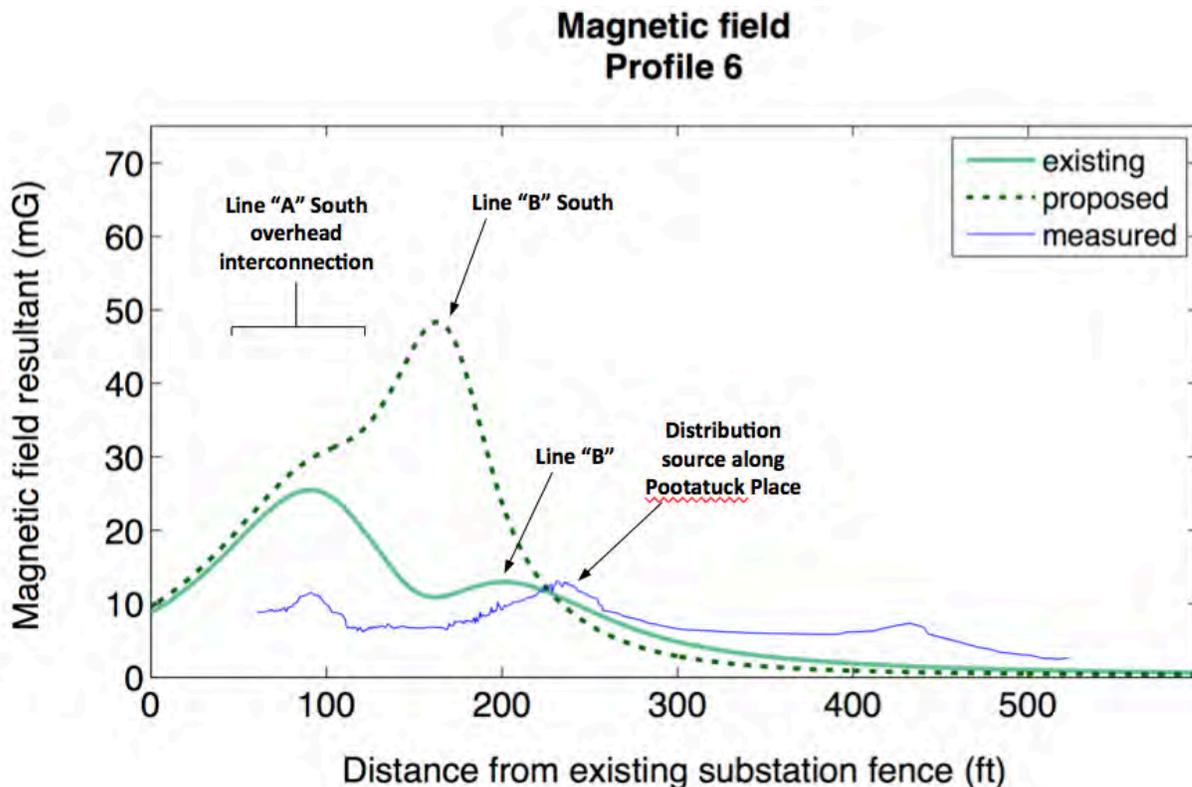


Figure 15. Calculated and measured magnetic-field levels along Profile 6.

The calculated magnetic-field levels are for existing and proposed configurations of the Pootatuck Substation under average-load conditions in 2023. Measured magnetic fields reflect loading of existing substation equipment and transmission lines on January 22, 2016.

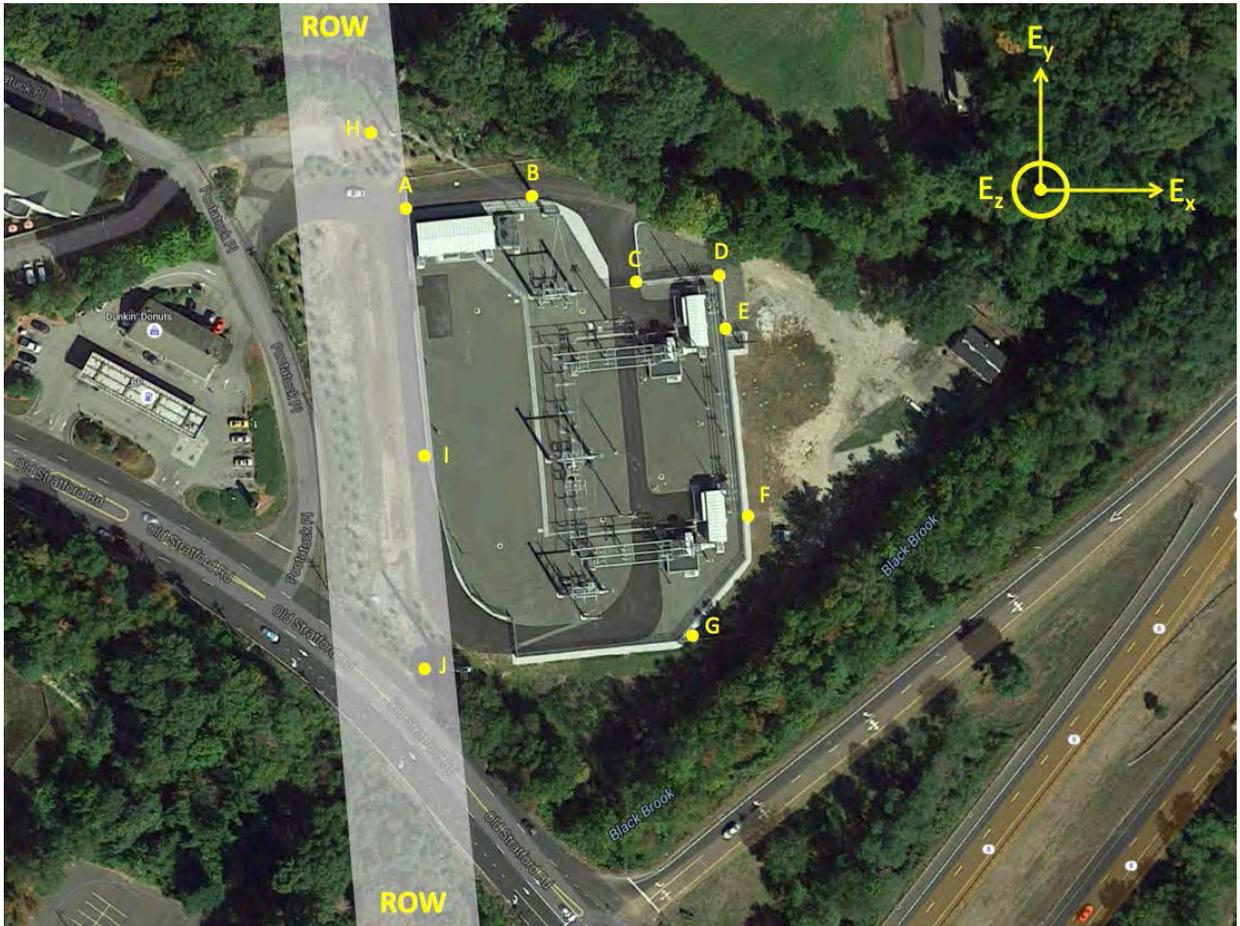


Figure 16. Location of electric field-measurements.

**Table 3. Summary of measured electric fields**

Location (Figure 23)	Electric field (kV/m)			Resultant
	$E_x$ East-West	$E_y$ North-South	$E_z$ Vertical	
A	0.01	0.02	0.04	0.05
B	0.07	0.04	0.29	0.30
C	0.01	0.02	0.04	0.04
D	0.01	0.01	0.02	0.02
E	0.03	0.02	0.06	0.07
F	0.02	0.01	0.02	0.03
G	0.01	0.00	0.03	0.03
H	0.12	0.14	0.27	0.33
I	0.08	0.00	0.12	0.14
J	0.10	0.04	0.29	0.31

**Attachment F**

**Signed Notice Letters and Abutters Map**



The United Illuminating Company  
180 Marsh Hill Road  
Orange, CT 06477

April 15, 2016

The Honorable Mark A. Lauretti, Mayor  
City Hall, Room 202  
54 Hill Street  
Shelton, CT 06484

Dear Mayor Lauretti:

The United Illuminating Company (“UI”) has filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) for a determination that no Certificate of Environmental Compatibility and Public Need is required for the proposed modifications to UI’s Pootatuck Substation Project. The project will include the installation of one 115 kV 30 MVAR capacitor bank and associated equipment at the facility.

A copy of the petition is enclosed for your information. Should you wish to comment or express concerns about the Project, please do so by sending the comments/concerns to:

Attorney Melanie Bachman  
Acting Executive Director/Staff Attorney  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051  
Email: [siting.council@ct.gov](mailto:siting.council@ct.gov)

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at <https://theplanahead.uinet.com>.

Sincerely,

A handwritten signature in black ink, appearing to read 'Richard J. Reed'.

Richard J. Reed  
VP Engineering & Project Excellence

Enclosures





The United Illuminating Company  
180 Marsh Hill Road  
Orange, CT 06477

April 15, 2016

Dear Property Owner:

The purpose of this letter is to notify you that The United Illuminating Company (“UI”) is filing a petition with the Connecticut Siting Council (“Council”), proposing modifications to UI’s Pootatuck Substation. The project will include the installation of one (1) 115 kV 30 MVAR capacitor bank and associated equipment at the facility.

The need for the proposed Project was identified by the southwest Connecticut (“SWCT”) Working Group, which included members from UI, ES (“Eversource”), and the Independent System Operator–New England (“ISO-NE”). This Needs Assessment found numerous reliability concerns (thermal and voltage) throughout the 115 kV corridor between Devon and Frost Bridge substations in the Naugatuck Valley sub-area of SWCT.

UI is required to notify town(s) and abutting property owners of its proposed activity and that town officials and abutting property owners be given 30 days to comment or express concerns to the Council. With this letter, UI is providing notice to you of its filing with the Council. You have 30 days from the date of this letter to send any comments or concerns to the Council at the following address:

Attorney Melanie Bachman  
Acting Executive Director/Staff Attorney  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, CT 06051  
Email: [siting.council@ct.gov](mailto:siting.council@ct.gov)

Please do not hesitate to also contact Samantha Marone at 203-499-3824 if you have any questions regarding the Petition or the proposed work. You may also feel free to view information on our Projects at <https://theplanahead.uinet.com>.

Sincerely,

A handwritten signature in black ink, appearing to read 'Richard J. Reed'.

Richard J. Reed  
VP Engineering & Project Excellence



## Attachment F3 - Pootatuck Substation - Adjacent Owners updated as of 3-14-2016

<u>Owner ID</u>	<u>Address</u>	<u>Parcel ID</u>	<u>Owner Name</u>	<u>Mailing Address</u>	<u>Note</u>
1	Beard Sawmill Road	Map 29 Lot 2	City of Shelton	54 Hill Street, Shelton CT 06484	Lower Rt. 8 Pump Station
2	Beard Sawmill Road	Map 29 Lot 3	Royal B. Wells, Est. of Lovisa Wells	34 Blueberry Lane, Shelton CT 06484	vacant land
3	656 Bridgeport Avenue	Map 39 Lot 16	Edith B. and Nathaniel S. Wells	same	residential home
4	Old Stratford Road	Map 29 Lot 7	Edith B. and Nathaniel S. Wells	656 Bridgeport Avenue, Shelton CT 06484	vacant land
5	680 Bridgeport Avenue	Map 29 Lot 4	680 Bridgeport Avenue LLC	same	office building
6	25 Old Stratford Road	Map 29 Lot 5	Lixi Hospitality Shelton LLC	270 West Route 59, Nanuet NY 10954	hotel
7	18 Old Stratford Road	Map 29 Lot 6	Welkin Inc.	34 Blueberry Lane, Shelton CT 06484	Gas Station/Dunkin Donuts
UI	14 Old Stratford Road	Map 29 Lot 8	The United Illuminating Company	Annette Potasz 180 Marsh Hill Road Orange, CT 06477	subject

Attachment F4 - Pootatuck Substation Abutters-aerial-tax



Attachment F4 - Pootatuck Substation Abutters-aerial-tax  
Pootatuck Substation Abutters – tax map

