



**GREATER HARTFORD-CENTRAL CONNECTICUT  
RELIABILITY PROJECT**

**DEVELOPMENT AND MANAGEMENT PLAN  
for  
NEW 115-kV TRANSMISSION LINE – UNDERGROUND  
SEGMENT**

**(Town of Newington and City of Hartford, Hartford County, Connecticut)**

**VOLUME 1-UG**

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*Prepared by:*

The Connecticut Light and Power Company doing business as Eversource Energy

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## 1. INTRODUCTION

### 1.1 PROJECT OVERVIEW AND PURPOSE OF THE DEVELOPMENT AND MANAGEMENT (D&M) PLAN

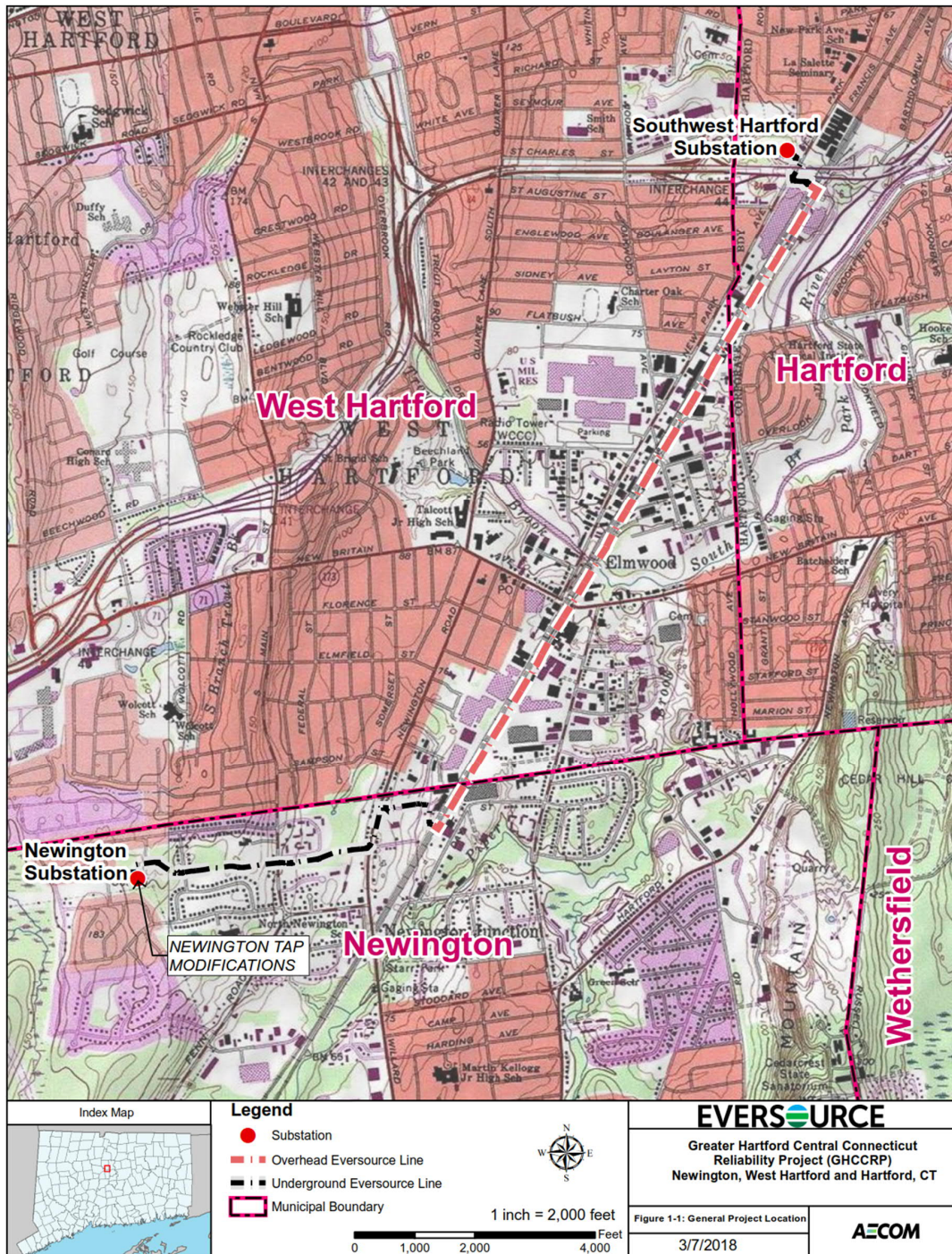
To improve the reliability of the electric transmission system in the Greater Hartford and central Connecticut area, the Connecticut Light and Power Company doing business as Eversource Energy (Eversource or the Company) will construct, operate, and maintain a new 115-kilovolt (kV) transmission line and make related improvements to the two existing substations and an existing 115-kV line tap into one of the substations. The work will be located within Hartford County. These improvements, referred to collectively as the Greater Hartford-Central Connecticut Reliability Project (GHCCRP or Project; refer to Figure 1-1), will consist of the following:

- A new approximately 3.7-mile 115-kV transmission line (designated by Eversource as the 1346 Line), consisting of both overhead and underground segments, which will extend between Eversource's existing Newington Substation in the Town of Newington, through the Town of West Hartford, to Eversource's existing Southwest Hartford Substation in the City of Hartford. The new transmission line will be aligned almost entirely along existing linear corridors, including an Eversource distribution line right-of-way (ROW), an Amtrak Railroad ROW, and state and local road ROWs. Approximately 2.4 miles of the new transmission line will be in an overhead configuration, while approximately 1.3 miles (consisting of a 1.16-mile segment in the Town of Newington and a 0.17-mile segment in the City of Hartford) will be underground.
- Modifications to both Newington and Southwest Hartford substations, including the expansion of each substation's fenced area by approximately 0.3 acre, to connect the new 115-kV line to the transmission system.
- Reconfiguration and reconductoring of a short (0.01-mile) section of the existing overhead 115-kV 1783 Line that connects to an existing terminal structure at Newington Substation. This short 115-kV line segment is referred to as the Newington Tap.

On June 7, 2017, Eversource submitted to the Connecticut Siting Council (Council or CSC) an Application for a Certificate of Environmental Compatibility and Public Need for the Project (Council Docket No. 474). After a public comment meeting, evidentiary hearing, and technical reviews, the Council approved the Project on February 2, 2018. Condition No. 2 of the Council's Decision and Order approving the Project requires that Eversource prepare a Development and Management (D&M) Plan for the Project, in compliance with Sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies (RCSA; *Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements*).

Eversource elected to prepare three D&M Plans: one for the substations and Newington Tap modifications, and two for the 115-kV transmission line (one for the overhead line segment and one for the underground line segment). This D&M Plan addresses all construction activities for the underground segment of the new 115-kV transmission line.

Figure 1-1: Greater Hartford-Central Connecticut Reliability Project Location Map





## 1.2 UNDERGROUND TRANSMISSION LINE SEGMENT: LOCATION AND GENERAL DESCRIPTION

As illustrated on Figure 1-1, the new 115-kV transmission line (i.e., the 1346 Line) will include two segments of underground cable: one in the Town of Newington (1.16 miles) and one in the City of Hartford (0.17 mile). These underground segments will connect to Newington and Southwest Hartford substations, respectively, as well as to the 2.4-mile overhead transmission line segment along the Amtrak ROW<sup>1</sup>. As summarized below and detailed in subsequent sections of this D&M Plan, the underground cable segment will be installed beneath both paved and non-paved surfaces:

- ***Southern - Underground Route Segment: Newington.*** This 1.16-mile underground segment will extend from Newington Substation east/northeast to the Amtrak ROW. For approximately 0.81 mile between Newington Substation and State Route 173 (Willard Avenue), the underground cable will be located on Eversource's property and within an existing Eversource ROW. This ROW is presently occupied by five 23-kV distribution circuits, including one underground circuit and four overhead circuits supported, in a double-circuit configuration, on two sets of approximately 40-foot-tall wood poles. Near the existing distribution circuits, Eversource manages the ROW in low-growth vegetation consistent with utility use; however, outside of these areas, the ROW is not maintained and is characterized by a variety of vegetation types, including mature trees. An Eversource distribution switching station is located on Eversource property adjacent to and west of State Route 173; the new 115-kV cable will extend beneath the southern portion of this station.

From the intersection of the Eversource ROW, the cable will extend east across State Route 173 and then will traverse north for approximately 0.14 mile within the state road ROW to Shepard Drive<sup>2</sup>, a town road. From there, the cable will extend for approximately 0.21 mile east to the Amtrak ROW, first aligned along the south side of Shepard Drive before traversing beneath a small unnamed tributary to Piper Brook and then across a paved and graveled parking area for Shepard Steel, a privately-owned, industrial use property. The underground cable segment will terminate at a new transition structure to be located on the Shepard Steel property, west of and adjacent to the Amtrak ROW. At the new transition structure, the 115-kV line will switch to an overhead configuration.

- ***Northern - Underground Route Segment: Hartford.*** This 0.17-mile underground segment will extend from a new transition structure located at the north end of the overhead line segment to Southwest Hartford Substation. From the new transition structure located on commercial property adjacent to Amtrak ROW, the underground cable will extend west for approximately 0.1 mile across the lawn area adjacent to the paved parking lot for the Bow Tie Cinema (a multiplex movie theater), which is situated directly south of Interstate 84 (I-84), and then will turn north along New Park Avenue (a City of Hartford road), crossing beneath I-84, to Southwest Hartford Substation.

The underground transmission line segment will consist of a single-circuit, solid dielectric cross-linked polyethylene (XLPE) cable. The XLPE cable will be installed within polyvinyl chloride (PVC) conduits

<sup>1</sup> A separate D&M Plan covers construction of the overhead portion of the new 1346 Line.

<sup>2</sup> From the intersection with the Eversource ROW and State Route 173, the cable route will extend diagonally beneath the state road and then will be aligned along the east side of the state ROW, within the unpaved road shoulder.

that will be encased in a concrete duct bank. Along the southern underground segment, three pre-cast splice vaults also will be installed. These splice vaults are required both to interconnect the cable (which will be pulled into the PVC conduits in sections) and to provide access to the underground cable for maintenance. Two of the splice vaults will be buried within Eversource property and the third will be located within the Town of Newington Shepard Drive ROW. No splice vaults are required along the short underground segment in Hartford. The splice vaults will be buried inline and adjacent to the underground cable and will be backfilled to reach a grade equal to adjacent surface grade. Each vault will include two manhole covers at the soil or roadway surface to allow for future access for maintenance and operation of the transmission line.

### 1.3 ORGANIZATION OF THE D&M PLAN

This D&M Plan consists of two volumes:

- **Volume 1-UG** includes specific information relevant to the 1.33-mile underground portion of the 115-kV line. The main text of Volume 1-UG (Sections 1 through 7) includes information and procedures that are pertinent to the underground cable segment, including regulatory requirements, construction procedures for cable system installation both in paved and non-paved areas, special construction protocols and procedures (including plans to avoid or minimize impacts to soils, water resources, and air quality, as well as to manage traffic), construction schedule and work hours, public outreach, and glossary of terms.

Table 1-1 summarizes each of the Council's D&M Plan requirements, pursuant to RCSA Sections 16-50j-60 through 16-50j-62. Table 1-2 identifies the requirements pertaining to the underground cable segment as contained in the Council's Decision and Order for the Project. For each D&M Plan requirement, Tables 1-1 and 1-2 either identify the location in this D&M Plan where the requirement is addressed or state why the requirement is not relevant to the cable segment. Appendices to Volume 1-UG include maps and drawings, including cross-sections (XSs) of the underground line segment (Appendix A), as well as resource-specific information, best management practices (BMPs), and impact avoidance or mitigation procedures (Appendix B) relevant to the underground cable segment.

- **Volume 2** includes approvals, plans, and BMPs pertinent to all Project construction activities, including both the underground and overhead segments of the new 115-kV transmission line and the modifications at Newington and Southwest Hartford substations and Newington Tap. In particular, Volume 2 includes:
  - Eversource's procedures for environmental compliance and notifications to the Council during the development of the Project, as required by the Council's regulations and Project-specific conditions (Attachments A.1 through A.3).
  - Wetlands and Watercourses Impact Summary Table for the Project (Attachment B).
  - Spill Prevention and Control Plan (Attachment C).
  - Snow Removal and De-Icing Procedures (Attachment D).
  - Eversource's *Best Management Practices Manual for Massachusetts and Connecticut (Construction and Maintenance Environmental Requirements), September 2016* (BMP Manual; Attachment E).

- Post-Construction Electric & Magnetic Field Measurement Plan (Attachment F).

**Table 1-1**  
**D&M Plan Directory**  
**Greater Hartford-Central Connecticut Reliability Project:**  
**New 115-kV Transmission Line – Underground Segment**  
(Compliance with RCSA Sections 16-50j-60, -61 and -62, as amended through September 7, 2012)

<b>RCSA Section</b>	<b>Description</b>	<b>D&amp;M Plan (Section Reference, as Applicable)</b>
<b>16-50j-60</b>	<b>Requirements for a D&amp;M Plan</b>	
(a)	<b>Purpose.</b> The Council may require the preparation of full or partial D&M Plans for proposed energy facilities, modifications to existing energy facilities, or where the preparation of such a plan would help significantly in balancing the need for adequate and reliable utility services at the lowest reasonable cost to consumers with the need to protect the environment and the ecology of the state.	This D&M Plan applies to the construction of the underground segment of the new 115-kV transmission line.
(b)	<b>When required.</b> A partial or full D&M plan shall be prepared in accordance with this regulation and shall include the information described in RCSA Sections 16-50j-61 to 16-50j-62, inclusive, for any proposed energy facility for which the Council issues a certificate of environmental compatibility and public need, except where the Council provides otherwise at the time it issues the certificate. Relevant information in the Council’s record may be referenced.	This D&M Plan includes all information applicable to the construction of the underground segment of the new 115-kV transmission line.
(c)	<b>Procedure for preparation.</b> The D&M plan shall be prepared by the Certificate Holder or the owner or operator of the proposed facility or modification to an existing facility. The preparer may consult with the staff of the Council to prepare the D&M plan.	This D&M Plan was prepared by Eversource.
(d)	<b>Timing of plan.</b> The D&M plan shall be submitted to the Council in one or more sections, and the Council shall approve, modify, or disapprove each section of the plan not later than 60 days after receipt of it. If the Council does not act to approve, modify or disapprove the plan or a section thereof within 60 days after receipt of it, the plan shall be deemed approved. Except as otherwise authorized by the Council, no clearing or construction shall begin prior to approval of applicable sections of the D&M plan by the Council.	The D&M Plan addresses the Council’s requirements for the construction of the underground segment of the new 115-kV transmission line.
<b>16-50j-61</b>	<b>Elements of D&amp;M Plan</b>	
(a)	<b>Key Map</b> , 1 inch=2,000 feet USGS topographic map	Volume 1-UG
(b)	<b>Plan Drawings</b> , 1 inch=100’ feet or larger, and supporting documents, which shall contain the following information:	Volume 1-UG
1.	Edges of the proposed site and any existing site contiguous to or crossing the site, portions of the site owned by the company in fee, and the identity of property owners of record of the portions of the site not owned by the company in fee	Volume 1-UG

<b>RCSA Section</b>	<b>Description</b>	<b>D&amp;M Plan (Section Reference, as Applicable)</b>
2.	Public roads and public land crossings or adjoining the site	Volume 1-UG
3.	Approximate location of 50-foot contours along the site	Volume 1-UG
4.	Probable location, type, and height of the proposed facility and components (including each new transmission structure, position of guys, description of foundations, and locations of any utility or other structures to remain on the site or to be removed)	Volume 1-UG
5.	Probable points of access to the site, and the route and likely nature of access ways, including alternatives	Volume 1-UG
6.	Edges of existing and proposed clearing areas, the type of proposed clearing along each part of the site, and the location and species identification of vegetation that would remain for aesthetic and wildlife value	Volume 1-UG, Section 3.4.2; Appendix A maps
7.	<p>Identification of sensitive areas and conditions within and adjoining the site, including but not limited to:</p> <ul style="list-style-type: none"> <li>A. Wetland and watercourse areas regulated under CGS Chapter 440 and any locations where construction may create drainage problems</li> <li>B. Areas of high erosion potential</li> <li>C. Critical habitats or areas identified as having rare, endangered, or threatened, or special concern plant or animal species listed by the state or federal government</li> <li>D. Location of known underground utilities or resources to be crossed (electric line, fuel line, drainage systems and natural or artificial public or private water resources)</li> <li>E. Residences or businesses within or adjoining the site that may be disrupted during construction</li> <li>F. Significant environmental, historic and ecological features (significantly large or old trees, buildings, monuments, stone walls or features of local interest)</li> </ul>	<p>Volume 1-UG, Section 5.2; Volume 1-UG, Appendix A</p> <p>Not Applicable (N/A)</p> <p>Volume 1-UG, Section 5.3; Volume 1-UG, Appendix A</p> <p>Volume 1-UG, Appendix A, Exhibit A.4</p> <p>Volume 1-UG, Appendix A</p> <p>Volume 1-UG, Sections 5.2, 5.3, 5.8; Volume 1-UG, Appendix A. (No significant historic features)</p>
(c)	<b>Supplemental Information</b>	
1.	Plans (if any) to salvage marketable timber, restore habitat and maintain snag trees within or adjoining the site	Volume 1-UG, Section 3.4.2
2.	All construction and rehabilitation procedures with reasonable mitigation that shall be taken to protect areas and conditions identified in 7(b), above, including but not limited to:	

<b>RCSA Section</b>	<b>Description</b>	<b>D&amp;M Plan (Section Reference, as Applicable)</b>
	<p>A. Construction techniques at wetland and watercourse crossings</p> <p>B. Sedimentation and erosion control and rehabilitation procedures, consistent with the CT Guideline for Soil Erosion and Sediment Control, as updated and amended for areas of high erosion potential</p> <p>C. Precautions and all reasonable mitigation measures to be taken in areas within or adjoining the site to minimize any adverse impacts of such actions or modifications endangered, threatened, or special concern plant or animal species listed by federal or state agencies and critical habitats that are in compliance with federal and state recommended standards and guideline, as amended</p> <p>D. Plans for modification and rehabilitation of surface, drainage, and other hydrologic features</p> <p>E. Plans for watercourse bank restoration in accordance with Chapter 440 of the C.G.S.</p> <p>F. Plans for the protection of historic and archaeological resources with review and comment from a state historic preservation officer of the CT Department of Economic and Community Development (DECD) or its successor agency</p>	<p>Volume 1-UG, Sections 3.4.3 and 5.2; Appendices A and B; Volume 2, Attachment E, BMPs</p> <p>Volume 1-UG, Sections 3.4.3 and 5.1; Appendix B; Volume 2, Attachment E, BMPs</p> <p>Volume 1-UG, Section 5.3; Appendix B</p> <p>Volume 1-UG, Sections 3.4.3 and 5.2; Volume 2, Attachment E, BMPs</p> <p>Volume 1-UG, Section 5.2; Appendix B, Detail Sheets; Volume 2, Attachment E, BMPs</p> <p>Volume 1-UG, Section 5.8 (no cultural resources associated with transmission facility sites)</p>
3.	Plans for the method and type of vegetation clearing and maintenance to be used within or adjacent to the site	Volume 1-UG, Section 3.4.2 and Appendices
4.	Location of public recreation areas or activities known to exist or being proposed in or adjacent to the site, together with copies of agreements between the company and public agencies authorizing the public recreation use of the site to the extent of the company's rights thereto.	N/A
5.	Plans for ultimate disposal of excess excavated material, stump removal, and periodic maintenance of the site	Volume 1-UG, Section 5.5
6.	Locations of areas where blasting is anticipated	None anticipated
7.	Rehabilitation plans, including but not limited to reseeded and topsoil restoration	Volume 1-UG, Section 3.4.9; Volume 2, Attachment E, BMPs

<b>RCSA Section</b>	<b>Description</b>	<b>D&amp;M Plan (Section Reference, as Applicable)</b>
8.	Contact information for the personnel of the contractor assigned to the project	To be provided after contract award for the underground line segment
9.	Such site-specific information as the CSC may require	Refer to Table 1-2: List of requirements per Docket 474 Decision and Order and Opinion
(d)	<b>Notice</b> A copy, or notice of the filing, of the D&M Plan, or a copy, or notice of the filing of any changes to the D&M Plan, or any section thereof, shall be provided to the service list and the property owner of record, if applicable, at the same time the plan, or any section thereof, is submitted to the CSC	Acknowledged
(e)	<b>Changes to the Plan</b> The CSC may order changes to the D&M plan, including but not limited to vegetative screening, paint color, or fence design at any time during the preparation of the plan	As applicable; refer to Volume 2, Attachment A.2 (Eversource's Change Notice process)
<b>16-50j-62</b>	<b>Supplemental Reporting Requirements</b>	
(a)	<b>Site Testing and Staging Areas</b> The Certificate Holder, or facility owner or operator, shall provide the CSC with written notice of the location and size of all areas to be accessed or used for site testing or staging areas. If such an area is to be used prior to approval of the D&M plan, the CSC may approve such use on terms as it deems appropriate.	Volume 1-UG, Section 3.3; Appendix A. The locations of contractor yards and material staging areas will be identified by the contractor and submitted to the Council for review and approval prior to use, pursuant to the Change Notice process described in Volume 2, Attachment A.2.
(b)	<b>Notice</b>	
1.	The Certificate Holder, or facility owner or operator, shall provide the CSC, in writing with a minimum of two weeks advance notice of the beginning of: A. Clearing and access work in each successive portion of the site, and B. Facility construction in that same portion	Acknowledged. Volume 2, Attachment A.2 summarizes notification procedures.
2.	The Certificate Holder, or facility owner or operator, shall provide the CSC with advance written notice whenever a significant change of the approved D&M plan is necessary. If advance written notice is impractical, verbal notice shall be provided to the CSC immediately and shall be followed by written notice not later than 48 hours after the verbal notice. Significant changes to the approved D&M plan shall include, but not be limited to, the following: A. The location of wetland or watercourse crossing B. The location of an access way or structure in a regulated wetland or watercourse area	Volume 2, Attachment A.2 includes Eversource's D&M Plan change process

RCSA Section	Description	D&M Plan (Section Reference, as Applicable)
	<ul style="list-style-type: none"> <li>C. The construction or placement of any temporary structures or equipment</li> <li>D. A change in structure type or location including, but not limited to, towers, guy wires, associated equipment or other facility structures</li> <li>E. Utilization of additional mitigation measure, or elimination of mitigation measures. The CSC or its designee shall promptly review the changes and shall approve, modify, or disapprove the changes in accordance with subsection (d) of Section 16-50j-60 of the RCSA</li> </ul>	
3.	The Certificate Holder, or facility owner or operator, shall provide the CSC with a monthly construction progress report or a construction progress report at intervals determined by the CSC or its designee, indicating changes and deviations from the approved D&M Plan. The CSC may approve changes and deviations, request corrections, or require mitigation measures.	Acknowledged
4.	The Certificate Holder, or facility owner or operator, shall provide the CSC with written notice of completion of construction and site rehabilitation.	Acknowledged
(c)	<p><b>Final Report</b> The Certificate Holder, or facility owner or operator, shall provide the CSC with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation. The report shall identify:</p>	
1.	All agreements with abutters or other property owners regarding special maintenance precautions	
2.	Significant changes of the D&M plan that were required because of property rights of underlying and adjoining owners for other reasons	
3.	The location of construction materials which have been left in place including, but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands	Acknowledged (Volume 2, Attachment A)
4.	The location of areas where special planting and reseeding have been done	
5.	<p>The actual construction cost of the facility, including but not limited to the following costs:</p> <ul style="list-style-type: none"> <li>A. Clearing and access</li> <li>B. Construction of the facility and associated equipment</li> <li>C. Rehabilitation; and</li> <li>D. Property acquisition for the site or access to the site</li> </ul>	
(d)	<p><b>Protective Order</b> The Certificate Holder, or facility owner or operator, may file a motion for protective order pertaining to commercial or financial information related to the site or access to the site.</p>	Acknowledged



**Table 1-2:  
D&M Plan Directory of Docket No. 474 Decision and Order Requirements  
Greater Hartford-Central Connecticut Reliability Project:  
115-kV Transmission Line – Underground Segment**

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
<b>Condition Number</b>	<b>Decision and Order</b>	
(1)	The Certificate Holder shall construct the proposed electric transmission line along the proposed route and perform related Project improvements, as proposed, subject to modifications during final site design and approval of the Development and Management (D&M) Plan for the Project.	Volumes 1-UG & 2
(2)	<p>The Certificate Holder shall prepare a D&amp;M Plan for this Project that shall be in compliance with Sections 16-50j-60 through 16-50j-62 of the RCSA. The D&amp;M Plan shall be served on the municipalities of Newington, West Hartford, and Hartford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction. The D&amp;M Plan shall include:</p> <p>a. Detailed site plans depicting final structure heights and showing the placement of the access roads, structure foundations, equipment and material staging areas for the overhead portion of the route;</p> <p>b. Detailed site plans depicting final transition structure heights and showing the placement of transition structures, duct banks and splice vaults for the underground portion of the route;</p> <p>c. Plans to address traffic impacts associated with underground construction;</p> <p>d. Plans for perennial stream crossing (e.g., open cut method) for underground cable;</p> <p>e. Detailed site plans for equipment installation/modifications for the expanded areas at Newington Substation (including Newington Tap modifications) and Southwest Hartford Substation, including fencing details;</p> <p>f. Identification of areas for staging and equipment lay down, field office trailers, sanitary facilities, and parking;</p>	<p>Volumes 1-UG &amp; 2</p> <p>Refer to Overhead Transmission Line D&amp;M Plan</p> <p>Volume 1-UG, Appendix A</p> <p>Volume 1-UG, Sections 3.4.8 and 5.7</p> <p>Volume 1-UG, Sections 3.4.3 and 5.2; Appendices A and B</p> <p>Refer to Modifications to the Newington and Southwest Hartford Substations and Newington Tap D&amp;M Plan</p> <p>Volume 1-UG, Appendix A (Contractor yard locations to be submitted to the Council separately)</p>

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
	<p>g. An erosion and sediment control plan, consistent with the <i>2002 Connecticut Guideline for Soil Erosion and Sediment Control</i> as amended;</p> <p>h. A stormwater management plan consistent with the <i>2004 Connecticut Stormwater Quality Manual</i>;</p> <p>i. Identification of wetland and watercourse resources, related temporary construction impacts and methods to reduce such impacts;</p> <p>j. Details of ground disturbance;</p> <p>k. Vegetative clearing plan;</p> <p>l. Wetland restoration plan;</p> <p>m. Restoration plan of disturbed areas;</p> <p>n. A spill prevention and countermeasures plan;</p> <p>o. Invasive species control plan;</p> <p>p. A schedule of construction hours;</p> <p>q. A blasting plan, if necessary;</p> <p>r. Provisions for site specific measures to reduce impacts to State listed endangered, threatened, and special concern species; and</p> <p>s. An EMF Monitoring Plan</p>	<p>Volume 1-UG, Sections 3.4.3 and 5.1; Volume 2, Attachment E</p> <p>Volume 1-UG, Section 3.4.3.</p> <p>Volume 1-UG, Sections 5.2 and 5.3; Appendices A and B Volume 1-UG, Appendix A</p> <p>Volume 1-UG, Section 3.4.2</p> <p>Volume 1-UG, Section 5.2; Appendix B</p> <p>Volume 1-UG, Appendix B Volume 2, Attachment C</p> <p>Volume 1-UG, Section 5.2; Appendix B</p> <p>Volume 1-UG, Section 4 and Section 5.7</p> <p>N/A</p> <p>Volume 1-UG, Section 5.3</p> <p>Volume 2, Attachment F</p>
(3)	<p>The Certificate Holder shall obtain necessary permits from the United States Army Corps of Engineers and the Connecticut Department of Energy and Environmental Protection and any other state or federal agency with concurrent jurisdiction prior to the commencement of construction, in areas where said permits are required.</p>	<p>Acknowledged</p>
(4)	<p>The Certificate Holder shall comply with all future electric and magnetic field standards promulgated by State or federal regulatory agencies. Upon the establishment of any new standards, the facilities granted in this Decision and Order shall be brought into compliance with such standards.</p>	<p>Acknowledged</p>

Condition or Page Number	Description	D&M Plan (Section Reference, as Applicable)
(5)	The Certificate Holder shall provide to the Council an operating report within three months after the conclusion of the first year of operation of all facilities herein with information relevant to the overall condition, safety, reliability, and operation of the new transmission line.	Acknowledged
(6)	Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within five years of the effective date of the Decision and Order, or within five years after all appeals to this Decision and Order have been resolved. Authority to monitor or modify the schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as practicable.	Acknowledged
(7)	Any request for extension of the time period referred to in Condition 6 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, the Towns of Newington and West Hartford, and the City of Hartford.	Acknowledged
(8)	This Certificate may be surrendered by the Certificate Holder upon written notification to the Council.	Acknowledged
(9)	The Certificate Holder shall comply with Sections 16-50j-60 through 16-50j-62 of the RCSA and submit quarterly construction progress reports. The Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.	Acknowledged
(10)	The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under CGS §16-50v.	Acknowledged
(11)	This Certificate may be transferred in accordance with CGS §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under CGS §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide to the Council a written agreement as to the entity responsible for any quarterly assessment charges under CGS §16-50v(b)2 that may be associated with this facility.	Acknowledged

## 2. REGULATORY APPROVALS AND CONSULTATIONS

### 2.1 REGULATORY APPROVALS AND REQUIREMENTS

This D&M Plan conforms to the specifications of Sections 16-50j-60 through 16-50j-62 of the RCSA (*Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements*); incorporates Eversource's commitments as contained in the record of the Council's Docket 474 regulatory process; and reflects adherence to the conditions of the Council's Certificate for the Project and other relevant, previously received or anticipated regulatory approvals. The federal and state permits and approvals needed for the underground segment of the Project are listed in Table 2-1.

### 2.2 CONSULTATIONS

During the planning of the Project, Eversource consulted with representatives of the two municipalities traversed by the underground segment of the 115-kV transmission line, as well as with representatives of various state and federal agencies, including the U.S. Army Corps of Engineers (USACE), New England District; U.S. Fish and Wildlife Service (USFWS); Connecticut Department of Energy and Environmental Protection (CT DEEP); State Historic Preservation Office (SHPO), and Connecticut Department of Transportation (CT DOT). In addition, Eversource communicated with municipal representatives, property owners along the existing Eversource ROW, and the interested public. During these discussions, Eversource provided information regarding the Project, including the D&M Plan process, the planned transmission line construction activities, and Eversource's outreach procedures and points-of-contact.

On June 8, 2018, Eversource submitted a draft of this D&M Plan to the chief elected officials of Newington and Hartford<sup>3</sup>. Subsequently, Eversource met with representatives of both municipalities to review the draft D&M Plan and to solicit comments, if any, on the Plan. The Town of Newington had no comments on the draft D&M Plan. City of Hartford representatives inquired about mitigation for vegetation removal at two properties: Eversource's Southwest Hartford Substation property and along the underground cable alignment across the Bow Tie Cinema property. Accordingly, during the Project construction, Eversource will coordinate with City of Hartford representatives regarding vegetation replacement, as appropriate, on these two properties. Any such vegetation replacement, which would be performed as part of the restoration phase of the Project, would comply with Eversource's requirements for the protection of the 115-kV line and substation facilities and, for any replacement vegetation planned on the Bow Tie Cinema property, also would be in accordance with agreement of the property owner.

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<sup>3</sup> Eversource did not consult with the Town of West Hartford on this D&M Plan Volume 1-UG as no portions of the underground segment for the Project are located within West Hartford. Eversource will consult with the Town of West Hartford on the draft D&M Plan for the overhead segment of the Project.

This D&M Plan, as submitted to the Council, is also being provided to both the Town of Newington and the City of Hartford. Additional information regarding Eversource's overall public outreach process is included in Section 6.

In addition, as specified in the D&M Plan requirements, RCSA Section 16-50j-61(c)(2)(F), Eversource consulted with representatives of the SHPO regarding the potential effects of the Project on archaeological or historic resources and the measures to mitigate such effects, as necessary. Eversource also submitted copies of the cultural resources Phase IB survey results and Addendum to the Cultural Resources Review to the involved Native American tribes<sup>4</sup> for review and concurrence.

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<sup>4</sup> Mohegan, Mashantucket Pequot, and Wampanoag Tribal Historic Preservation Offices.

**Table 2-1:  
Permits, Reviews, and Approvals Relevant to the 115-kV Transmission Line – Underground Segment**

Agency	Certificate, Permit, Review, Approval or Confirmation	Activity Regulated
<b>FEDERAL</b>		
U.S. Army Corps of Engineers	Clean Water Act (CWA), Section 404, Pre-Construction Notice (PCN) per Connecticut General Permits	Work in wetlands/waters of the U.S.
U.S. Fish and Wildlife Service	Coordinates with USACE regarding endangered or threatened species	Activities that may affect federally-listed endangered or threatened species
<b>CONNECTICUT</b>		
Connecticut Siting Council	Certificate of Environmental Compatibility and Public Need (Docket 474, February 2, 2018)  D&M Plan approvals	General transmission line need, siting, construction, environmental compatibility, safety, and operation/maintenance and ROW management procedures
CT DEEP	Clean Water Act, Section 401 (part of USACE PCN process).	CT DEEP 401 WQC is required for the USACE Section 404 authorization
	General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Construction General Permit)	Stormwater management during construction
	Threatened, Endangered, and Special Concern Species	Activities that may affect state-listed endangered, threatened, or special concern species.
SHPO	Concurrence with determination that Project will have no adverse effect on cultural resources	No significant cultural resources were found in the areas to be affected by Project construction and operation. SHPO provided correspondence on 8/17/2017 and 6/25/2018 concurring that the Project will have no adverse effect on cultural resources.
CT DEEP Public Utilities Regulatory Authority	Approval pursuant to CGS Section 16-243	Method & Manner of Construction and Approval to Energize Line
CT DOT	Encroachment permits	Transmission line crossings of state highways (State Route 173 [Willard Avenue, Newington]) and alignment within New Park Avenue underneath I-84

### 3. GENERAL CONSTRUCTION PROCEDURES

This section describes the typical construction procedures and plans for the underground segment of the new 115-kV transmission line. The construction procedures for the underground cable will involve a sequential, phased, construction approach; however, some procedures will vary depending on whether the cable is aligned within paved or non-paved areas. Sections 3.1 through 3.2 provide an overview of the transmission line facilities to be constructed, construction management, and contractor yards/staging areas required to support the transmission line construction. Section 3.3 discusses procedures for the construction of the underground segment of the new 115-kV transmission line.

Additional special construction procedures, plans, or mitigation measures will be implemented to protect or minimize impacts to the public (e.g., traffic management during in-road construction) and to environmental features (e.g., water resources, special concern species, air quality). Such measures are described in Section 5, as well as in Appendix B. The Appendix A maps include construction drawings and plans and identification of environmental features along the cable route, property owners, construction work areas, and the locations where special resource protection measures will be implemented.

#### 3.1 SUMMARY OF UNDERGROUND CABLE SYSTEM COMPONENTS AND ALIGNMENT

##### 3.1.1 Cable System Components

The underground cable system will consist of the following:

- ***A single-circuit 115-kV line, consisting three XLPE cables, or phases.*** Each phase of the circuit will include one 5000-kcmil copper conductor cable insulated to 115-kV with approximately 1.4 inches of XLPE insulation. Each cable, which will be approximately 4.66 inches in diameter, will be installed in a separate PVC conduit.

The PVC conduits will be encased in concrete to form a duct bank, and the remainder of the trench backfilled with an approved material or fluidized thermal backfill (FTB), a type of low-strength concrete specifically designed to efficiently dissipate heat from the cable system. The duct bank typically will be buried to provide minimum of 30 inches of cover<sup>5</sup>, consisting of backfill material and surface restoration materials (roadway structure, or topsoil and turf, depending on the location), from the top of the duct bank to the existing surface grade. Appendix A provides a cross-section of a typical 5000-kcmil copper conductor XLPE 115-kV cable and XLPE duct bank.

- ***Three splice vaults.*** The XLPE cable must be installed in sections, due to limitations such as the maximum allowed pulling tension (while installing the cable in the conduit), maximum allowed

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<sup>5</sup> Thirty-six inches of cover will be provided within the State Route 173 ROW, as required by CT DOT.

side wall pressure (while pulling the cable into the conduit), and maximum length of cable that can be transported on a cable reel. As a result, underground splice vaults will be required at intervals of approximately 1,100 to 2,200 feet along the 1.16-mile underground cable segment in Newington. The walls, floor and roof of the splice vaults will consist of reinforced concrete. The outside dimensions of the splice vaults will be approximately 24 feet long by 8 feet wide and 8 feet high. The top of the splice vault will be installed a minimum of 30 inches below grade with two access holes, or manhole covers, each approximately 36 inches in diameter. The Appendix A maps illustrate the planned locations of the three splice vaults; Appendix A, Exhibit A.2 shows an engineering typical of a splice vault.

- ***Cables for communications, temperature monitoring, and ground continuity.*** Two fiber-optic cables will be installed for remote protection and control of the cable system and associated equipment; a third fiber optic cable will be installed to monitor the operating temperature of the cables. A ground continuity conductor will also be installed for safe transmitting of a ground return current from a ground fault in other transmission equipment back through the cable system to the ground connections within the Newington and Southwest Hartford substations. The ground continuity conductor and temperature monitoring fibers will be pulled into and spliced within the transmission vaults, and the fiber optic cables will be pulled into and spliced within a pre-cast handhole located near each splice vault location. The outside dimensions of the handholes will be approximately 5 feet long by 5 feet wide by 5 feet high. The handholes will be installed below grade with a single access hole, or manhole cover, of approximately 30 inches in diameter (refer to Appendix B Detail Sheet 6).

### 3.1.2 Cable Segment Alignment

The construction procedures used to install the underground cable system will vary slightly, depending on the alignment of the transmission line within the 0.8-mile Eversource ROW, road ROWs, or other areas. The cable system alignment is summarized below and illustrated on the cross-sections, maps, and Plan and Profile drawings in Appendix A.

- **Eversource ROW.**  
Within the Eversource ROW, the cable system will be aligned to avoid or minimize impacts to both the existing 23-kV distribution lines and nearby residential properties. Except for crossing two public roads in the Town of Newington (i.e., Avery and West Hartford roads), the entire cable system (consisting of the cable, duct bank, and two splice vaults) will be aligned on Eversource property or within ROW.

Along the western portion of the Eversource ROW (from Newington Substation to near West Hartford Road; refer to XS-UG-1 and -2), the cable route will be situated north of all five of the existing Eversource distribution circuits. Along this segment, a splice vault will be located on Eversource property, in an upland area west of Avery Road.

At a point approximately 0.12 mile west of West Hartford Road, the 115-kV cable will extend south, crossing beneath the underground distribution circuit and one of the overhead 23-kV overhead lines. As illustrated on XS-UG-3, within this segment of the Eversource ROW, the 115-kV cable will be aligned between the two overhead distribution pole lines, before crossing beneath West Hartford Road to the south side of the Eversource ROW.

East of West Hartford Road to the intersection with State Route 173 (Willard Avenue), the 115-kV cable will be aligned along the south side of the Eversource ROW (refer to XS-UG-4 and -5).



A second splice vault will be located on Eversource property, in an upland area west of wetland N-3.

To safely install the 115-kV cable system within the eastern portion of the Eversource ROW while maintaining clearance from the in-service 23-kV facilities, temporary modifications to some of the overhead distribution circuits will be required. For instance, along the approximately 0.12-mile segment west of West Hartford Road where the 115-kV cable will be buried between the two 23-kV pole lines, the existing 23-kV overhead distribution circuits will be temporarily relocated to taller poles (which would be approximately 65 feet in height, 20 feet taller than the existing 23-kV distribution line poles). The temporary relocation of the 23-kV circuits to these taller poles during cable construction will allow the distribution lines to remain in-service, while maintaining appropriate clearance from cable construction equipment and minimizing the width of the construction work area. After the installation of the 115-kV line, the 23-kV circuits will be replaced on the original poles, and the temporary poles will be removed.

Similarly, east of West Hartford Road (including within wetland N-3) where the cable will be aligned on the south side of the Eversource ROW, access to the northern distribution poles will be required if the southern 23-kV circuits need to be temporarily relocated to facilitate cable system construction.

- **Road ROWs and Other Areas.**

The remainder of the 115-kV cable will be aligned within state and local road ROWs (i.e., State Route 173, Shepard Drive, and New Park Avenue) and commercial/industrial properties (Shepard Steel property in Newington, Bow Tie Cinema property in Hartford). As described above, the cable also will cross two Town of Newington roads (Avery and West Hartford roads) along the Eversource ROW segment.

In these areas, utility survey and subsurface investigations were utilized to design the underground cable route and depth to avoid existing utilities and minimize effects on traffic. The location of the cable route in relation to existing buried utilities is depicted on the Plan and Profile Drawings for the underground segment included in Appendix A, Exhibit A.4, however, because the actual locations of buried utilities may vary, to maintain required and/or approved clearances during construction, the cable duct bank depth and alignment may be slightly different than that illustrated on the Plan and Profile Drawings.

***Southern Segment: Newington.*** Along the Eversource ROW segment, the cable will traverse perpendicularly across both Avery and West Hartford roads.

From the Eversource ROW, the cable will cross beneath State Route 173 and then will extend north along the eastern side of the road ROW to the intersection with Shepard Drive. In this area, the cable will be installed adjacent to the paved road surface within the road shoulder, due to underground utilities located beneath the pavement area. To install the cable system, portions of the northbound lane of State Route 173 will be temporarily closed and used for construction work space. Additional temporary work space will be required on seven private properties, adjacent to the road ROW. The installation of the cable system in this area will require the removal of lawn, approximately five trees, and ornamental vegetation. Eversource is coordinating with the property owners (e.g., CT DOT and private landowners) regarding the removal of the vegetation.

From the intersection of State Route 173 and Shepard Drive, the cable system will be aligned east within the southern portion of the Town of Newington's Shepard Drive ROW. The third splice vault will be located within the Shepard Drive ROW. Both the splice vault and the duct bank will

be installed within paved or adjacent grassed road shoulder areas, in front of three commercial properties.

At the end of Shepard Drive, the cable will cross and be buried beneath an un-named perennial tributary to Piper Brook (PS-1) and an associated wetland (N-5)<sup>6</sup> and then will extend onto private industrial property owned by Shepard Steel. On the Shepard Steel property, the cable will be buried beneath a graveled parking/access area. The southern cable segment will terminate at a new transition structure, also located on Shepard Steel property, west of the Amtrak ROW.

**Northern Segment: Hartford.** Along this 0.17-mile segment, the cable will be installed on both private property (Bow Tie Cinema) and within the New Park Avenue ROW, which extends beneath I-84. On the Bow Tie Cinema property, the cable system will be installed within a lawn area adjacent to the cinema parking lot and an elevated section of I-84. In this area, some ornamental vegetation and pine trees will be removed. The paved cinema parking lot will be used for temporary construction work space. From the Bow Tie Cinema property, the cable will turn north, and will be aligned within the east side of the New Park Avenue ROW, extending beneath I-84, and then crossing New Park Avenue to the Southwest Hartford Substation.

### **3.2 CONSTRUCTION MANAGEMENT AND CONTACT INFORMATION**

Eversource representatives will manage the overall construction of the Project, including all work activities relevant to the underground cable segment. These representatives will be assigned to monitor construction activities, including adherence to safety, engineering plans issued for construction, and compliance with Project-specific siting, regulatory, and property owner requirements.

After Eversource awards construction contracts for the Project, but prior to the commencement of the contractors' on-site work on the underground segment of the new 115-kV transmission line, Eversource will provide the Council with contact information for the prime construction contractor(s), consisting of the names of the firms, primary contacts, corporate addresses, telephone numbers, and e-mail addresses.

### **3.3 CONSTRUCTION FIELD OFFICES, CONTRACTOR YARDS, STAGING AREAS, AND ACQUISITION OF PROPERTY RIGHTS**

To support the construction of the new 115-kV transmission line, temporary contractor yards, as well as other equipment/material staging, storage, and laydown support areas will be required. The preferred locations for these sites, which typically will encompass 1 to 5 acres, will be in the general vicinity of the underground cable segment, including on Eversource properties.

Accordingly, to support the underground cable system construction, Eversource proposes to use upland portions of its property at Newington and Southwest Hartford substations and along its ROW in Newington. Additional construction support areas will be identified as needed; such areas will preferably be sited on previously disturbed property (e.g., parking lots, properties formerly used for other types of

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<sup>6</sup> The cable will be installed beneath this stream and wetland using an open cut method.

construction staging, such as highway or railroad work). These areas will be used for equipment and contractor vehicle parking, sanitary facilities, and construction materials staging.<sup>7</sup>

Except for the construction support (staging/equipment laydown) areas identified at the Newington and Southwest Hartford substations on the maps in Appendix A, the Project construction contractors will be responsible for identifying proposed locations for temporary contractor yards, field construction offices, and staging areas, and for entering into agreements with the property owners for the use of such sites during construction. In accordance with the Change Notice Approval Process (Volume 2, Attachment A.2), Eversource will submit the proposed locations of these construction support areas to the Council staff for review and approval prior to use.

As described previously, virtually all of the underground cable route will be aligned on Eversource property or beneath public ROWs, where no additional easements are required. In the locations where the underground cable is aligned across private properties, Eversource has contacted and initiated negotiations with all of the involved property owners from whom the Company is seeking to acquire permanent or temporary property rights (e.g., for the installation of the new 115-kV cable, temporary access, temporary work space).

### **3.4 CONSTRUCTION PROCEDURES**

#### **3.4.1 General Construction Sequence**

The following typical construction activities will be performed to install the 115-kV underground cable segment. As noted below, certain activities will vary, depending on the alignment of the cable system beneath paved or un-paved areas.

- Survey and stake, paint, or otherwise mark work area boundaries, vegetation clearing boundaries, and underground utilities.
- Mark the boundaries of previously-delineated wetlands and watercourses, as well as other areas to be avoided or otherwise protected.
- Establish construction field offices and yards, typically including space for an office trailer, equipment storage and maintenance, sanitary facilities, and parking.
- Establish traffic control procedures to minimize traffic disruption and provide a safe working environment (for cable installation in or adjacent to roads or for construction activities that could otherwise affect traffic).
- Remove vegetation, as required, from work areas. Vegetation removal (tree and brush clearing, mowing, side tree trimming) will be required along the Eversource ROW, within temporary work areas adjacent to State Route 173, at the crossing of the un-named tributary to Piper Brook at the end of Shepard Drive, and along portions of the underground segment in Hartford. Other vegetation removal will be performed as necessary to provide access for construction equipment to install the cable system in paved areas.
- Establish a construction access road/work spaces along the Eversource ROW in Newington.

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<sup>7</sup> The construction contractor also may temporarily store equipment and materials for cable system installation within temporary work spaces along the cable route.

- Relocate (temporarily) sections of the 23-kV distribution circuit, as necessary, within the Eversource ROW.
- Install splice vaults and handholes.
  - Excavate for splice vaults and handholes. For the vault and handhole located along Shepard Drive, pavement saw cutting and removal will be performed as needed. For the two vaults located within Eversource’s ROW, topsoil will be segregated for subsequent reuse during restoration.
  - Install pre-cast or cast-in-place splice vaults and handholes.
  - Backfill over top of the splice vaults and handholes with excavated spoils and/or other approved material. Restore topsoil over the vault locations along the Eversource ROW.
  - Restore disturbed areas (revegetate or repave, depending on vault location).
- Construct duct bank system.
  - Excavate trench, including saw cutting and pavement removal for location in roads or other paved areas. Within non-paved areas, topsoil will be segregated for subsequent reuse during restoration.
  - Install conduits in trench.
  - Encase the conduits in concrete.
  - Backfill trench with approved material, including subsoil and topsoil, as appropriate in non-paved areas.
  - Restore affected areas, by repaving (roads, parking lots) or by revegetating with an appropriate seed mix and stabilizing with mulch, as appropriate.
- Install cable system.
  - Pull the transmission cables, fiber optic cables, and ground continuity conductor into the conduits.
  - Splice the cables within the splice vaults or handholes as appropriate, or terminate cables at substations.
- Return the temporarily-relocated Eversource distribution circuit(s) to existing configuration along the Eversource ROW and remove any temporary poles.
- Remove temporary construction access roads and work spaces.
- Perform any remaining site restoration work (e.g., pave affected road ROWs and parking lots; revegetate non-paved or graveled areas, such as those along the Eversource ROW).

### **3.4.2 Site Preparation**

The first step in the construction process will be to flag or otherwise demarcate work space boundaries, as well as previously-delineated environmental resources (e.g., wetlands and streams).

### **3.4.3 Vegetation Removal and Management**

#### **Vegetation Removal Limits**

Along the Eversource ROW, in other areas where the new 1346 Line will not be installed beneath paved or graveled areas, and where temporary work space will be located in non-paved/graveled areas,

vegetation removal will be required. The Appendix A maps identify vegetation clearing limits for construction along the underground cable route (i.e., along the access roads and work spaces needed for cable installation). Within these clearing limits, trees and shrubs will be removed and other vegetation will be mowed as required.

Vegetation (all types) will be removed, as required, within access roads and work spaces. Over and in the general vicinity of the duct bank trench and splice vault excavations, tree stumps and roots will be grubbed and removed. Within other work areas (e.g., the work space/access adjacent to the cable trench), stumps will typically be cut to 3 inches or less above the ground surface and left in place. Adjacent to roads, vegetation will be removed as needed to provide construction work space and to maintain appropriate clearance from construction equipment.

The type and extent of vegetation removal required will vary along the underground cable segment, as generally summarized below and illustrated on the Appendix A map sheets.

- ***Eversource ROW.*** Within the Eversource ROW, a 40-foot-wide temporary construction work space will be required to accommodate the cable trench and parallel access for cable installation equipment. A wider construction work area will be required at the two splice vault locations. All vegetation within these designated work areas (refer to the Appendix A map sheets) will be removed. Overall, approximately 1.54 acres of forest vegetation (including 0.52 acre of forested wetland) will be cleared along the Eversource ROW. The remaining vegetation (consisting of about 3 acres) affected by cable system construction consists of herbaceous and shrub vegetation that Eversource presently manages beneath and near the 23-kV distribution circuits.
- ***Road ROWs and Other Areas.*** Where the underground cable is aligned along road ROWs, a 30-40-foot-wide construction area typically will be required. One paved travel lane will typically be used for construction work space, minimizing the amount of adjacent vegetation clearing required. Within the State Route 173 road ROW, vegetation will be removed within the cable trench area (to be located in the state highway road shoulder) and temporary work space on private property. Similarly, within the Bow Tie Cinema property, vegetation (consisting of lawn, a few ornamental trees, and some pine trees) will be removed along and in the vicinity of the cable trench.

At the end of Shepard Drive, where the cable route crosses the wooded riparian area adjacent to the un-named tributary to Piper Brook, all vegetation within the construction area will be removed. Stumps will be removed over and in the immediate vicinity of the cable trench.

Total tree clearing areas adjacent to road ROWs and other areas includes approximately 0.22 acres (including 0.006 acres of forested wetland).

### **Vegetation Removal Methods**

All vegetation clearing activities will be performed in accordance with Eversource specifications<sup>8</sup>, the requirements of this D&M Plan, and all other relevant regulatory approvals, including permits from the USACE and CT DEEP, as well as pursuant to property owner agreements. Eversource will incorporate

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<sup>8</sup> Eversource Energy, 2017, *Specification for Rights-of-Way Vegetation Management, Section III, Technical Requirements*.

into the vegetation removal contract relevant specifications for access, wetland/stream crossings, and vegetation removal methods.

Clearing will typically be accomplished using mechanical methods, although manual methods (e.g., climbing crews with chain saws) may be used in certain areas. Vegetation removal activities typically require flatbed trucks, brush hogs or other types of mowing equipment, skidders, forwarders, bucket trucks for canopy trimming, feller bunchers for mechanical tree cutting, wood chippers, log trucks, and chip vans.

Eversource will require the contractor to use low-impact tree clearing means and methods to the extent practical. Low-impact tree clearing incorporates approaches, techniques, and equipment to minimize site disturbance and to protect wetlands, watercourses, and soils. Eversource will require the contractor to use some or all of the following low-impact tree clearing methods, depending on site-specific considerations:

- Consider soil and weather conditions when scheduling vegetation removal activities.
- Fell trees directionally (parallel to and within the ROW) to minimize impacts to residual vegetation, where practical.
- Adhere to best management practices (BMPs), as described in the *Best Management Practices for Water Quality while Harvesting Forest Products, 2007 Connecticut Field Guide* (also referenced in the Eversource BMP Manual, Volume 2, Attachment E) ([http://www.ct.gov/deep/cwp/view.asp?a=2697&q=379248&deepNav\\_GID=1631](http://www.ct.gov/deep/cwp/view.asp?a=2697&q=379248&deepNav_GID=1631))
- Use clearing methods appropriate to site-specific features (e.g., terrain, environmental resources and land uses) to minimize impacts to the extent practicable.
- Temporarily stockpile cut timber and brush only in uplands while awaiting removal and disposal from work areas.

For vegetation removal within wetlands and across streams along the Eversource ROW, timber mats or equivalent will be used to provide a stable base for clearing equipment. At stream crossings, the temporary mats will be installed to span from bank-to-bank. The use of timber matting will avoid or minimize the potential for rutting in wetlands and sedimentation in streams. For additional information regarding vegetation removal requirements in and near water resources, refer to the *Wetlands and Waterbodies Impact Avoidance and Minimization Measures* included in Appendix B, Detail Sheet 1.

Temporary erosion and sedimentation (E&S) controls may be installed before vegetation removal, depending on site-specific characteristics. After vegetation removal, E&S controls typically will be installed as needed around work limits (e.g., access roads, work spaces) in or near wetlands and streams. Refer to Section 3.4.3 and to the typical drawings of E&S control measures in the BMP Manual and in Appendix B, Detail Sheet 5.

### **Timber and Brush Disposition**

Timber and firewood resources along the 1346 Line easement belong to the property owners across whose parcels the ROW is aligned. Eversource will coordinate with these property owners, and the disposition of timber and brush cut within the ROW on such properties will be in accordance with Eversource's property owner agreements, consistent with any applicable siting and regulatory approvals.

Other than when wood is to be left for the property owner, all vegetative materials not requested by a property owner or chipped for use as mulch on the ROW or on Eversource property will be removed from Project construction areas. Eversource's contractor will be responsible for properly disposing of such vegetative materials. Further, no timber or brush will be stockpiled or left as chips in wetlands or watercourses.

#### **Vegetation Management during Cable System Operation**

The objective of Eversource's well-established ROW vegetation management program<sup>9</sup> is to maintain safe access to its transmission facilities and promote the growth of vegetative communities that are compatible with transmission line operation and consistent with federal and state BMPs. Following completion of the Project, the vegetation along the new 115-kv underground line will be managed in accordance with these standards.

For the underground cable segment in the Eversource ROW and at the crossing of the un-named tributary to Piper Brook, 15 feet of vegetation on either side of the duct bank will be managed in low-growth species. Such low-growth species will facilitate access to the cable duct bank and splice vaults, if required, and also will minimize the potential for root systems to adversely affect the cable system. In total, approximately 1 acre of vegetation, including 0.28 acre forested wetlands that will be converted to low-growth species, will be managed for the operation of the cable system.

Along the remainder of the cable route, the areas temporarily affected by construction will be allowed to revegetate. For example, along the Eversource ROW, temporary construction work space outside of the 30-foot-wide area centered over the duct bank/splice vaults will be allowed to revert to pre-construction vegetation (including trees), as consistent with Eversource's distribution circuit maintenance/clearance requirements. Along other areas of the cable route, Eversource will coordinate with property owners to re-establish lawn and vegetation, consistent with the safe operation of the cable system and property owner agreements.

#### **3.4.4 Erosion and Sedimentation Controls, Stormwater Management and Water Resource Protection**

To minimize the potential for erosion and sedimentation outside of designated construction work areas, the following general construction BMPs will be used:

- a. Temporary erosion control structures consistent with the *2002 Connecticut Guidelines for Erosion and Sediment Control* (Connecticut Guidelines) will be installed as necessary to protect nearby water resources, and will be inspected on a routine basis, in accordance with regulatory requirements (refer to Volume 2, Attachment E).
- b. Excavation dewatering will not be discharged within 25 feet of a wetland or watercourse, unless a fractionization tank (frac tank) or similar engineering controls for sediment containment are employed.

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<sup>9</sup> Eversource Energy, 2017, *Specification for Rights-of-Way Vegetation Management, Section III, Technical Requirements*.

- c. Excavation dewatering may be discharged on-site into an appropriate sediment control basin or into a dewatering bag; pumped into a frac tank and then discharged into a municipal stormwater system; or pumped into a tanker truck for disposal at appropriate wastewater treatment facilities.
- d. Residual silt/sediment collected at the bottom of the frac tanks will be disposed off-site at an appropriately designated disposal facility.
- e. Catch basin inlet protection will be installed as needed to prevent sediment and construction debris from entering storm water systems.
- f. Construction activities will adhere to the requirements of the Project's Spill Prevention and Control Plan (refer to Volume 2, Attachment C). For example, equipment will not be refueled within 25 feet of any wetland or watercourse, unless appropriate containment procedures are in place; petroleum products will not be stored, mixed, or loaded within 25 feet of a wetland or watercourse; spills will be reported to CT DEEP.

In addition to these BMPs, all construction activities will comply with Eversource's BMP Manual (refer to Volume 2, Attachment E), which is consistent with the Connecticut Guidelines, as well as with the water resource protection protocols and erosion/sedimentation control details included in Appendix B. Additional information related to E&S controls for construction of the underground segment is provided in Appendix A, as well as in Section 5.1.

Pursuant to CGS Section 22a-430b, construction activities, such as the Project, must comply with the CT DEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities* (Construction General Permit)<sup>10</sup>. Pursuant to the requirements of this Construction General Permit, Eversource submitted a Registration Form to CT DEEP and prepared a *Stormwater Pollution Control Plan*<sup>11</sup> (SWPCP) specific to the Project work. The SWPCP addresses stormwater management during the construction of the Project. The SWPCP was prepared in accordance with sound engineering practices, and is consistent with the Connecticut Guidelines, Eversource's BMP Manual, and the *2004 Connecticut Stormwater Quality Manual*. Eversource will provide the Council with a copy of the SWPCP after CT DEEP authorizes the Construction General Permit registration.

Pursuant to the SWPCP, Eversource's construction contractor will deploy temporary E&S controls where necessary around construction work areas. Such controls may include silt fence, straw/hay bales, wattles, diversion swales, and anti-tracking pads, among other measures. In addition, as required by the Construction General Permit, during construction (until site stabilization is achieved), Eversource will perform inspections to verify the effectiveness of the measures deployed based on the SWPCP and, if necessary, to recommend modifications to the E&S controls. In accordance with the General Permit, the following types of inspections will be performed:

- Initial inspection by a Qualified Environmental Professional, as defined by the General Permit.
- Weekly inspections during construction.
- Monthly turbidity monitoring at dedicated discharge points.

<sup>10</sup> Available online at: [www.ct.gov/Deep/cwp/view.asp?a=2721&q=558612&DEEPNav\\_GID=1654](http://www.ct.gov/Deep/cwp/view.asp?a=2721&q=558612&DEEPNav_GID=1654)

<sup>11</sup> In compliance with Docket No. 474 Decision & Order Condition 2.h., the SWPCP developed for the Project will serve as the Stormwater Management Plan.



- Inspections (within) 24-hour period after rain events.
- Once construction is complete and sites affected by construction are deemed to be restored and stabilized, sites will be inspected once a month for three months to verify stabilization.

### 3.4.5 Access Roads and Work Spaces

During construction, linear access and work space will be required along the cable route. The Appendix A maps illustrate the planned location of these access and work space areas. The public road network will provide the principal means for transporting equipment and materials to construction work sites.

Where the cable system is routed along roads or through parking lots, the existing roads and paved parking areas will provide both direct access and work space for construction activities. The work areas established within road ROWs will provide space for the construction equipment required to excavate the cable trench and install the duct bank, as well as for material staging. An approximately 30-foot-wide construction area will be required to install the cable system within paved areas. A slightly wider work space (up to 50 feet) will be needed in the vicinity of the planned splice vault adjacent to Shepard Drive (refer to the Appendix A maps). Along State Route 173, the cable will be installed east of the pavement, within a vegetated portion of the state ROW. To accommodate construction activities while maintaining traffic flow on State Route 173, Eversource continues to pursue and obtain the appropriate rights on certain private property owners for the temporary work space abutting the road ROW (refer to Sections 3.4.6 and 5.8 for information concerning traffic management).

Along the Eversource ROW, temporary access roads/work spaces will be established to provide ingress and egress along the underground cable route, as well as to provide space for the excavation and installation of the duct bank and splice vaults. As illustrated on the Appendix A maps, these on-ROW roads/work spaces will be accessible via Eversource's Newington Substation property, as well as from Avery Road, West Hartford Road, and State Route 173. Along the Eversource ROW, a typical work space width of 40 feet will be required to accommodate an access road, the cable trench, space for the temporary storage or topsoil/subsoil (in upland areas), and E&S controls.

In addition, to safely install the underground cable segment along the Eversource ROW, temporary access will be required to some of the distribution line poles for distribution circuit relocation. These work spaces are depicted on the Appendix A maps.

At intersections with public roads, access roads/work spaces will typically be wider to accommodate equipment turning radii. In upland areas, access roads/work spaces will typically be graveled. In these areas, anti-tracking stone pads will be installed to minimize tracking of dirt from the access road onto the public roads as a result of construction vehicle movements. Eversource will require the construction contractor to use BMPs as warranted by site-specific conditions to maintain access road stability and minimize the potential for erosion and sedimentation.

During construction, Eversource's contractor will install signs as needed specifying "construction work zone/entrance ahead" (or equivalent) along Cherry Hill Drive, Avery Road, West Hartford Road, State Route 173, and Shepard Drive in Newington, and on New Park Avenue in Hartford. Such signs will be installed near the intersections of the Project access points with public roadways. Signs also will be

installed at the access road entrances specifying that the roads are for construction purposes and are restricted from public use.

In the vicinity of the construction sites, Eversource’s contractor will periodically sweep public roads, if necessary, to remove dirt tracked from by construction vehicles.

Through wetland areas along the Eversource ROW, access roads/work spaces will be constructed using timber mats. Within and near wetlands and watercourses, E&S controls will be installed as necessary adjacent to such access roads/work spaces.

Along the cable segment within non-paved areas, after vegetation removal and access road installation, topsoil will be removed, as needed, from the cable trench and splice vault excavation areas. Topsoil will be stockpiled separately for future use during restoration.

### 3.4.6 Cable Construction in Road ROWs and Parking Areas

The installation of the cable facilities within public road ROWs and private parking areas will be carefully scheduled to avoid or minimize adverse effects on traffic flow and adjacent land uses, to the extent practicable. In addition, work within public road ROWs will be in accordance with the road crossing or opening permits that Eversource will obtain from CT DOT, the Town of Newington, and the City of Hartford. Such permits are expected to include details regarding construction work hours, construction warning signs, measures to maintain traffic flow patterns, etc. Eversource’s traffic management plan for the underground cable segment, which is based on consultations to date with CT DOT, the two affected municipalities, and the owners of the private parking areas, is provided in Section 5.7.



**Figure 3-1: Typical Splice Vault Installation**

In general, cable construction work within road ROWs and parking areas will temporarily affect traffic patterns and land uses in the immediate vicinity of work sites. Within road ROWs, construction will typically require single lane and road shoulder closures. Work spaces within roads will be demarcated and protected by barriers, cones and/or flagging.

The cable construction activities will be performed sequentially, but not continuously. For example, after the installation of the splice vault along Shepard Drive in Newington, the areas affected by the vault installation will be restored (e.g., returned to grade, temporarily repaved). Figure 3-1 illustrates a typical splice vault installation. Additional construction work at the Shepard Drive splice vault will not be required until the vault is connected to the cable trench and then cable pulling and splicing activities

commence. Similarly, trenching for the cable duct bank and the installation of the cable conduits will proceed linearly, affecting relatively small segments of road ROWs and parking areas at any given time.

The length of a construction work zone within a paved area typically ranges from about 600 to 800 feet. This area is needed to accommodate both the construction materials and equipment required to excavate the cable trench and install the conduits. Within this work zone, active construction will typically be concentrated within an approximately 200-foot-long area, where activities such as pavement saw cutting, trench excavation, duct bank construction, backfilling, and pavement restoration will be performed. Figure 3-2 illustrates a typical cable trench excavation and work zone.

Within the work space, approximately 50-100 feet of complete trenching and conduit installation will generally be achievable, on average, during a typical 10- to 12-hour work day. However, in areas where special construction measures are required (e.g., to excavate rock, dewater the trench) or where work hours are limited due to traffic constraints, trenching and conduit installation progress will be slower.



Approximately 0.14 mile of the cable route will be installed within the State Route 173 ROW. Pursuant to CT DOT's requests (refer to CT DOT comments submitted to the Council<sup>12</sup>), within the state ROW the duct bank will be buried to a minimum of 36 inches<sup>13</sup>. Further, Eversource will coordinate with CT DOT regarding the markings to be used on the concrete duct bank for future identification purposes (to avoid or limit inadvertent excavations into the duct bank by third parties). All work performed within State Route 173 will be conducted in accordance with the Project-specific CT DOT permit, which will specify construction work hours and lane closures.

Eversource also has coordinated with and will continue to consult with Newington and Hartford Department of Public Works (DPW) officials to define in-road construction work hours that will minimize interference with traffic and adjacent properties to the extent possible. The timing of construction work will be a function of the characteristics of each road ROW, traffic volumes, and

<sup>12</sup> CT DOT Bureau of Engineering and Construction comment letter dated August 14, 2017.

<sup>13</sup> Eversource response to CT DOT comment letter dated August 18, 2017.

adjacent land uses (e.g., residential, commercial, industrial). Figure 3-3 provides a representative illustration of cable trench excavation in a residential street.

Similarly, Eversource has contacted the owners of the parking lot areas that will be affected by the cable construction (i.e., Shepard Steel in Newington and Bow-Tie Cinema in Hartford) to discuss measures to minimize impacts to employee/customer parking and access.



**Figure 3-3: Typical Cable Trench in Residential Area**

To minimize potential conflicts with traffic flow and business operations through areas bordered principally by commercial uses along the proposed cable route (e.g., along Shepard Drive and New Park Avenue), Eversource anticipates that some in-road construction may occur at night or during other non-peak travel times.<sup>14</sup> Night construction will require lighting and will result in localized noise and glare. In contrast, installation of the cable system within public road ROWs in residential areas of Newington will likely occur during daylight hours.

Refer to Section 5.8 for additional details on traffic management and the anticipated work hours for underground construction affecting paved areas.

<sup>14</sup> Construction activities within the parking lot of the Bow Tie Cinema in Hartford will be coordinated with the property owner to minimize potential disruptions to cinema patrons.

### 3.4.7 Duct Bank and Splice Vault/Handhole Installation

#### General Procedures

- ***Duct Bank Installation.*** Trenching, duct bank/conduit installation, and backfilling will proceed in a similar fashion along the portions of the underground cable system both within the Eversource ROW and along paved areas. The following describes the procedures common to the installation of underground cable system along both segments of the Project. Information pertinent to cable system installation in paved areas vs. non-paved areas is provided following this discussion.

In general, specialized construction crews will proceed progressively along the cable route such that relatively short sections of trench (typically 200 feet per crew) will be open at any specific time and location. Construction work along the trench area usually occupies a linear work space that ranges from approximately 600 to 800 feet.

During non-work hours, temporary cover (steel plates) will be installed over the open trench within paved roads to maintain traffic flow over the work area. Similar plates may be installed over open trench areas in paved parking areas; alternatively, temporary fencing may be erected around such locations if traffic flow does not need to be maintained.

Along the cable segment within the Eversource ROW, open trench areas will be protected by steel plates or plywood sheets during non-work hours.

Within the excavated trench, the PVC conduit will be installed in sections, each of which will be about 10 to 20 feet long and will have a bell and spigot connection. Conduit sections will be joined by swabbing the bell and spigot with glue then pushing the sections together. After installation in the trench, the conduits will be placed into spacers that hold the conduit in the desired configuration and then encased in concrete.

After the installation of the duct bank, the trench will be backfilled with approved material, over which topsoil will be placed. Wetland topsoil removed during trenching in wetland areas will be returned after installation of the duct bank is complete. Within existing paved areas, the trench will be repaved using an asphalt patch or equivalent as part of final restoration.

- ***Splice Vault and Handhole Installation.*** At three upland locations (two on Eversource property and one within the ROW shoulder adjacent to Shepard Drive), pre-cast concrete splice vaults and handholes will be installed below ground. The outside dimensions of each splice vault will be approximately 8 feet wide by 8 feet high by 24 feet long, while each handhole will be approximately 5 feet wide by 5 feet high by 5 feet long. Therefore, the installation of each splice vault will typically require an excavation area approximately 12 feet wide by 12 feet deep and 28 feet long, and each handhole will typically require an excavation area approximately 7 feet wide by 8 feet deep and 7 feet long adjacent to the splice vault. The actual burial depth of each vault and handhole may vary, depending on topography and the depth of the adjacent cable sections that will connect to the vault (the depth of the cables will depend on factors such as the avoidance of other buried utilities). Each vault will have two entry points, via manholes, to the surface; and each handhole will have one. After the area above a splice vault and handhole is backfilled and restored, only the manhole covers will be visible; these covers will be set flush with the ground or road surface.

After the vaults and duct bank are in place, the conduits will be swabbed and tested (proofed), using an internal inspection device (mandrel), to check for defects. Mandrelling is a testing procedure in which a “pig” (a painted wood cylindrical object that is slightly smaller in diameter than the conduit) is pulled through the conduit. This is done to ensure that the “pig” can pass easily, verifying that the conduit has not been crushed, damaged, or installed improperly.

#### **Methods Specific to Installation in Paved Areas**

Along the cable segment within roads and other paved areas, the initial step in preparing for the duct bank, splice vault and handhole excavations will be to saw cut and remove pavement. A pavement saw will be used to cut roadway pavement on both sides of the planned excavation to a width of approximately 4 to 5 feet for the standard duct bank configuration (refer to Appendix A, Exhibit A.4). Alternate duct bank configurations to avoid existing utilities will likely result in slight variations in the pavement width being cut. Prior to cutting the pavement, appropriate E&S controls, such as catch basin protection, will be installed, as needed.

To install the duct bank, a trench will be excavated approximately 6 to 10 feet deep and approximately 5 feet wide (for trench depths requiring shoring to stabilize the sidewalls). Excavated material (e.g., pavement, subsoil) will be placed directly into dump trucks and transported to either a suitable final disposal site or a temporary storage site. At the temporary storage site, materials will be screened/tested prior to final off-site disposal. Only approved backfill material and segregated topsoil will be re-used during backfill and restoration of cable system excavations. If groundwater is encountered, dewatering will be performed in accordance with authorizations from applicable regulatory agencies; dewatering may involve discharge to temporary settling basins, wetland filter bags, temporary holding tanks (frac tanks), or vacuum trucks.

During construction in roadways, access to private properties along State Route 173 and commercial properties on Shepard Drive will be coordinated with the owners and maintained during construction activities. This may be accomplished by providing alternate driveways or property access while trenching occurs across existing driveways or through use of steel plates across the trench where it crosses a driveway. After installation of the duct bank is finished and backfilling of the trench is complete, restoration of the driveways will be completed in accordance with procedures detailed in Section 3.4.10 and property owner agreements.

#### **Methods Specific to Installation within Eversource ROW: Work near Distribution Circuits**

To provide electrical clearance necessary for the construction equipment to operate safely along the Eversource ROW, some temporary relocation of the existing overhead distribution lines will be performed. Within the 0.12-mile segment west of West Hartford Road where the 115-kV cable will be buried between the two 23-kV pole lines, the existing 23-kV overhead distribution circuits will be temporarily relocated to taller poles (which would be approximately 65 feet in height, 20 feet taller than the existing 23-kV line poles). The temporary relocation of the 23-kV circuits to these taller poles during cable construction will allow the distribution lines to remain in-service, while maintaining appropriate clearance from cable construction equipment and minimizing the width of the construction work area. After the installation of the 115-kV line, the 23-kV circuits will be replaced on the original poles, and the temporary poles will be removed.



Similarly, east of West Hartford Road (including within wetland N-3), where the cable will be aligned on the south side of the Eversource ROW, access will be required to the distribution poles located on the northern portion of the ROW. To allow room for the installation of the 115-kV underground cable, the southern 23-kV circuits will be temporarily relocated to the northern poles. The locations of work pads and access for these temporary relocations are depicted on the D&M Plan mapsheets.

#### **Methods Specific to Installation across Water Resources**

In Newington, the underground segment of the proposed 115-kV transmission line will cross five wetlands and an intermittent stream along the Eversource ROW, as well as an unnamed tributary to Piper Brook and an associated linear wetland, located at the end of Shepard Drive. All construction activities involving these water resources will be performed in accordance with the conditions of the Council's Certificate, the impact avoidance and minimization protocols listed in Appendix B, the requirements of water resource permits issued by the CT DEEP and the USACE, Eversource's BMP Manual, and the other Project-specific plans included in Volume 2.

Eversource will install the cable system through the five wetlands within the ROW using an "open cut" method, which will minimize the time required to install the duct bank. This construction technique will require trenching to a minimum depth of approximately 6 feet for installation of the duct bank and subsequent backfill. Generally, a temporary construction area approximately 40 feet wide will be required to install the duct bank in wetlands. This 40-foot-wide area will accommodate access/work space for the equipment required to excavate and install the duct bank (approximately 20 feet), the duct bank trench (approximately 10 feet), and temporary spoil/topsoil storage and/or work space for materials/equipment staging, as needed (approximately 10 feet).

As summarized in Volume 2, Attachment B, the installation of the transmission cable will result in approximately 2.21 acres of temporary direct impacts within wetlands and watercourses from the use of timber mats within work space areas and trenching. Upon completion of the duct bank installation, the duct bank trench will be backfilled, temporary timber mats will be removed, and wetland and watercourse areas will be restored.

The following typical measures will be employed to avoid or minimize the potential for impacts to water resources during construction of the transmission cable (refer to Section 5.2 below and Appendix B, Detail Sheet 1 for additional procedures):

- Conform to the requirements of USACE and CT DEEP permits and Council conditions concerning work in water resources.
- Install appropriate E&S controls as needed to prevent or minimize impacts to water resources.
- Implement procedures for petroleum product management to avoid or minimize the potential for spills into water resources (e.g., to the extent possible, store petroleum products and refuel construction equipment only in uplands more than 25 feet from water resources, except for equipment that cannot be practically moved).

- Cut forested wetland vegetation without removing stumps except over the cable trench or in areas where the intact stumps pose a concern for the installation of timber mat access/work space and the safety of construction personnel.
- Install timber mats, or equivalent, for access and work space in wetlands and across streams.
- Strip topsoil/organic layer from over the trench line and segregate from subsoils for use during backfill and restoration.
- Stockpile wetland soils excavated from the trench in adjacent upland staging areas within the ROW or on Eversource property.
- Backfill the trench, after the installation of the duct bank, with FTB and then restore the affected wetland/watercourse areas to pre-construction grade using the original surficial soils. Remove any excess excavation spoils from the site and dispose of appropriately.
- Stabilize affected wetland areas with an appropriate seed mix and allow native revegetation to recolonize. Woodchip mulch and fertilizer will not be applied within wetlands. Straw (mulch) may be utilized for post-construction stabilization, as necessary.

Eversource will require the construction contractor(s) to adhere to such conditions and plans during the construction of the Project.

#### **3.4.8 Cable Installation**

After the conduits have been tested successfully, the transmission cables, fiber optic cables, and ground continuity conductors will be installed and spliced. Transmission cable reels will be delivered by special tractor trailers to each splice vault location, where the cable will be pulled into the conduit using a truck-mounted winch and special cable handling equipment. A single cable will be pulled into place within each conduit.

To install each transmission cable, the large cable reel will be set up over the splice vault, and a winch will be set up at one of the adjacent splice vault locations. The cables will then be inserted in the conduits by winching a pull rope attached to the ends of each cable.

The splice vaults will also be used as points for installing the fiber optic cables and ground continuity conductor under a separate pulling operation. The communications fiber optic cables will be spliced and pulled into the pre-cast handhole located near each splice vault, and the temperature sensing fiber optic cable and ground continuity conductor will be pulled into the transmission cable splice vaults.

After the transmission cables, fiber optic cables and ground continuity conductors are pulled into their respective conduits, the ends will be spliced together in the vaults. Splicing XLPE cables involves a precise and complex procedure that requires a controlled atmosphere. This operation is time-consuming and reflects the sensitivity of the cables to moisture (which reduces cable life) and the need to maintain a clean working environment. This “clean room” atmosphere will be provided by an enclosure or vehicle that must be located over the manhole access points during the splicing process. Approximately five to seven days will be required to complete the splices in each splice vault (three XLPE 115-kV cable splices in each splice vault). Each cable and associated splice will be stacked vertically and supported on the wall of the splice vault on a racking system.



At Newington and Southwest Hartford substations, terminations will be connected to the ends of the cables. These terminations will link the underground cables to switches and bus work within the substations. Similarly, the new transition structures on the Shepard Steel property and the Bow Tie Cinema, will transition the underground cable to an overhead transmission line.

### **3.4.9 Rock Removal**

Geotechnical investigations have been performed along the cable system route. These investigations indicate rock is not likely present. If encountered, rock will typically be removed using mechanical methods, or mechanical methods supplemented by controlled drilling. Excavated rock will be transported to either a suitable final disposal site or a temporary storage site prior to final off-site disposal.

### **3.4.10 Cleanup and Restoration**

The areas affected by the cable system construction will be restored in phases.

Initial restoration will be performed in conjunction with the installation of each section of duct bank and each splice vault/handhole. As part of initial restoration of construction areas in non-paved areas, approved backfill and topsoil will be replaced over sections of the duct bank and the splice vaults/handholes; the affected areas will be rough graded to match adjacent land contours and, depending on the time of year and location, will be seeded and mulched. Initial restoration of paved areas will typically consist of restoring the affected areas to grade (by backfilling with approved material) and restoration in accordance with municipal or CT DOT requirements, or property owner agreements. Similarly, final restoration will be completed in accordance with municipal/agency permits or property owner agreements, and may include asphalt milling and re-paving of a larger area (i.e., edge of pavement to center line, or full road width).

Restoration activities will include the removal of any remaining construction debris, signs, flagging, temporary access roads and work space, equipment, and other materials and demobilization of temporary office trailers. Areas affected by construction along the Eversource ROW including temporary work spaces along State Route 173, at the un-named tributary to Piper Brook, and within the Bow Tie Cinema property, will be restored to approximate pre-construction grade and seeded, as necessary, to promote revegetation. Temporary E&S controls will remain in place, as needed, until stabilization is achieved.

All temporary access roads and work space areas will be removed from wetlands and watercourse crossings, as well as from uplands (including residential and commercial areas) as identified on the Appendix A maps. After removal of the access road materials, the affected areas will be re-graded (back-bladed), if necessary, to match the approximate contours of the land outside the construction zone.

After grading, upland areas affected by construction will be seeded with the appropriate seed mix and fertilized, if necessary. Seed mix(es) will be selected by Eversource to provide a quick vegetative cover until vegetation recolonizes the ROW. Along the Eversource ROW, shrub and herbaceous vegetative communities are expected to re-establish; however, Eversource will maintain all vegetation in an herbaceous or low-growth cover type within 15 feet of the duct bank centerline for operations and

maintenance purposes. In conjunction with the seeding, E&S controls (e.g., erosion control blankets, mulch) will be installed or maintained, as appropriate based on site-specific conditions and the time-of-year in which final grading is performed. Temporary E&S controls will be left in place and maintained until final stabilization is achieved.

If necessary, wetland areas affected by construction will be stabilized with annual rye grass, a wetland seed mix, or an equivalent mix (40 pounds/acre, unless standing water is present), which will serve to provide a temporary vegetative cover until wetland species become reestablished. No fertilizer, lime, or mulch will be applied in wetlands unless allowed per the Project's regulatory approvals from the USACE or CT DEEP.

Flagging (or equivalent markers) denoting wetlands, streams, and other environmentally sensitive resource avoidance or protection areas will be maintained (and reflagged or marked as needed), typically until the completion of ROW restoration activities.

Restoration typically will be deemed successful, based on the effectiveness of stabilization measures (such as paving, revegetation), as defined in accordance with Project-specific permits and certificates. After appropriate stabilization is achieved, Eversource will remove any remaining E&S controls.

Along the Eversource ROW in Newington, vegetative species compatible with the use of the ROW for transmission and distribution line purposes are expected to regenerate naturally over time. Eversource will promote the re-growth of desirable species (i.e., native vegetation that is compatible with electric line operation) by implementing its standard vegetation management practices to control tall-growing trees and, where practicable, undesirable invasive species, thereby enabling native plants to dominate the ROW.

## 4. CONSTRUCTION SCHEDULE AND WORK HOURS

### 4.1 CONSTRUCTION SCHEDULE

Project construction will require outages, which must be coordinated with and approved by the Connecticut Valley Electric Exchange (CONVEX), will be required for certain construction activities, including cutovers into Newington and Southwest Hartford substations. These outages are expected to occur in the third quarter of 2019.

As currently planned, the general schedule for the construction of the underground segment of the new transmission line is as follows:

General Construction Dates*	Transmission Line and Related Line Modification Construction Activity
Quarter 3, 2018	Construction contracts awarded; establish material laydown yards and field offices, begin receiving materials. Contractor mobilization, commence vegetation clearing, access road installation, and work space preparation.
Quarter 3, 2018 through Quarter 3, 2019	Perform construction (vegetation removal, access road/work area installation, duct bank, splice vault, and cable installation, begin ROW clean-up and restoration, etc.).
Quarter 3, 2019	Connect the new 115-kV transmission line at Newington and Southwest Hartford Substations. Perform line testing, energization, finish ROW cleanup and restoration**.

\* Construction schedule is dependent on the receipt of D&M Plan approval from the Council and the acquisition of permits from CT DEEP and the USACE. The Project schedule may change in accordance with receipt of these approvals, as well as on approval of outage schedules.

\*\*Where feasible, restoration may begin on some portions of the ROW when line installation work is completed. Final ROW revegetation and stabilization pursuant to regulatory requirements could extend into Quarter 2 of 2020.

After Eversource retains construction contractors for the Project and identifies and schedules the outages, this construction schedule may be refined accordingly.

### 4.2 WORK HOURS

Construction work hours will typically be between 7:00 AM and 7:00 PM, six days per week (Monday through Saturday). For work within road ROWs, these typical work hours will vary in accordance with final work schedules defined in permits from CT DOT, the Town of Newington, and the City of Hartford. In addition, work hours may vary, in accordance with easement conditions, for work on Shepard Steel and

Bow Tie Cinema. Refer to Table 5-2 for a summary of anticipated work hours within road ROWs and on private properties, based on consultations conducted to date with representatives of CT DOT and the municipal DPWs.

**Typical Construction Work Window: Monday-Saturday 7:00 AM-7:00 PM**

*Construction workers may arrive for work and leave work outside of these times. Eversource compliance monitors may be on the Project site outside of these work hours to comply with regulatory requirements, such as SWPCP inspections.*

Further, certain activities will involve work during other non-typical hours, in some cases on a continuous basis (24 hours) and/or on Sundays. The performance of these activities during non-typical work hours can be critical for completing the required tasks as expeditiously as possible. Examples of such activities include: cable installation within the duct bank; performing work during CONVEX approved outages; switching, testing, and commissioning. Additionally, non-typical hours may be implemented in specific locations in an effort to mitigate interruptions to business operations.

In addition, during winter, snow plowing and de-icing activities (which will be performed pursuant to the plan included in Volume 2, Attachment D) will typically commence, when necessary, prior to 7 AM to ensure a safe environment for construction personnel prior to the start of the work day.

## 5. SPECIAL CONSTRUCTION PROTOCOLS AND PROCEDURES

This section provides resource-specific protocols and procedures applicable to the construction of the underground segment of the new 115-kV transmission line; additional details are provided in Appendix B. Volume 2 includes standard BMPs, as well as plans and guidance applicable to Project-wide construction activities (e.g., *Spill Prevention and Control Plan*; *Snow Removal and De-Icing Plan*).

The Project does not involve any work in or near vernal pools, aquifer protection areas, active farmlands, or known culturally-sensitive areas. Similarly, neither blasting nor implosive connections are expected to be required for the work. As a result, no special construction procedures pertaining to these topics are included in this D&M Plan.

### 5.1 EROSION AND SEDIMENTATION CONTROL PLAN

Eversource will install E&S control measures during transmission line construction to avoid or minimize the potential for surface water runoff, erosion, and sedimentation to occur outside of work limits. These measures will comply with Eversource's BMP Manual, which incorporates, and is consistent with the Connecticut Guidelines (refer to Volume 2, Attachment E, pp. 1-5 for a list of the guidance documents used in preparing Eversource's BMPs) and CT DEEP and USACE permit conditions. Appendix B includes typical drawings regarding E&S control measures (refer to Detail Sheet 5).

Pursuant to CGS Section 22a-430b, construction activities, such as the Project, must comply with the CT DEEP's Construction General Permit. Pursuant to the requirements of this Construction General Permit, Eversource submitted to CT DEEP a Registration Form and prepared a SWPCP<sup>15</sup> specific to the Project. See Section 3.4.3 above for further information on the Construction General Permit and SWPCP requirements.

Permanent stabilization will consist of the application of gravel or pavement (for areas within previously graveled or paved roadways/parking lots), or reseeding to establish vegetative cover on disturbed soils that will not otherwise be paved or graveled (i.e., for the Eversource ROW from Newington Substation to State Route 173, and area adjacent to the Bow Tie Cinema parking lot). After final stabilization is achieved, all temporary E&S controls will be removed and disposed of properly.

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<sup>15</sup> In compliance with Docket No. 474 Decision & Order Condition 2.h., the SWPCP developed for the Project will serve as the Stormwater Management Plan.

## 5.2 WATER RESOURCES

### 5.2.1 Surface Water Resource Crossing Summary

As shown on the Appendix A maps and summarized below, water resources (wetlands, watercourses) are located along the Project ROW. All construction activities in wetlands and watercourses will be performed in accordance with the Council's requirements, the conditions of USACE and CT DEEP regulatory approvals, and Eversource's BMP Manual. In addition, Eversource will require construction contractors to follow the Project's *Water Resources Protocols (Protocols)*. These Protocols are included on Detail Sheet 1 in Appendix B.

Permitted water resource impacts as a result of Project construction are tabulated in Volume 2, Attachment B. As illustrated on the Appendix A maps, the underground segment of the new 115-kV transmission line will:

- Extend across two watercourses (one intermittent and one perennial tributary to Piper Brook) in the Town of Newington.
  - No placement of permanent surficial fill will occur in either watercourse.
  - Eversource proposes to use a conventional “dry open cut” trenching method to install the 115-kV cable beneath the two watercourses. After the installation of the cable trench, the watercourse substrate will be restored and stream banks will be re-established. This construction method will result in approximately 0.03 acre of temporary impacts to the stream substrates.
- Require the following work within wetlands:
  - The installation of the underground transmission line will require the placement of temporary fill in wetlands (e.g., the use of timber mats or equivalent for access) and will involve short-term impacts associated with trenching required to bury the cable duct bank within the wetlands. However, these impacts will be temporary and will not result in any permanent wetland surface fill. Approximately 0.29 acre of forested wetlands will be permanently converted to scrub-shrub wetland habitat along the Eversource ROW. This habitat conversion represents a long-term cover type change, but will not be either a net loss of wetlands or an adverse impact to wetland functions and values (although the wetland cover type will change, the affected wetlands will continue to provide wildlife habitat, etc.).
  - The installation of the transmission cable will result in approximately 0.30 acre of temporary direct impacts within wetlands from trenching. All other surface impacts within wetlands (1.91 acres) will be for the use of temporary construction matting for work space areas and access. Upon completion of the duct bank installation, the duct bank trench will be backfilled, temporary matting will be removed, and wetland areas will be restored.
  - No permanent access roads will be located in wetlands.

### 5.2.2 Watercourse Crossings

The Project will temporarily impact two watercourses (IS-2 and PS-1) during installation of the underground duct bank. However, the Project will not result in the placement of permanent surface fill (i.e., culvert piping) in any of these watercourses. Along the underground segment in Newington,

Eversource proposes to use a dry open cut method to install the 115-kV cable beneath the two watercourses, utilizing a dam-and-pump or dam-and-flume method to temporarily bypass stream flows around the isolated work area. After the installation of the trench, the stream bed will be restored and stream banks will be re-established and stabilized. The specialized construction details included here and in Appendix B, Detail Sheets 1 and 2 consist of Eversource's plan for stream crossings as required in Condition 2.d. of the Council's Decision and Order for the Project.

The use of the dry open cut method to install the cable trench beneath the two watercourses in Newington will minimize impacts to water quality during construction activities in and near these streams and will result in approximately 1,156 square feet (0.03 acre) of temporary impacts to watercourses. Eversource will perform the watercourse crossings in accordance with Eversource's BMP Manual. The Appendix A maps identify the locations of watercourse crossings and watercourse construction; restoration BMPs are detailed in the attached Eversource BMP Manual (Volume 2, Attachment E).

To implement a dam-and-flume streamflow bypass, a temporary flume pipe (or pipes) would be laid linearly within the stream bed at the crossing location and temporary cofferdams (likely consisting of sand bags or equivalent) would be installed at the upstream and downstream ends of the flume pipe to direct stream flow (if any) through the pipe(s). The interior of the work space between the upstream and downstream cofferdams would then be dewatered as necessary and the underground cable and duct bank trench would be excavated beneath the flume pipe(s). The temporary coffer dam height, as well as the number and size of the flume pipes needed are based on the hydrologic characteristics of the watercourse at the point of crossing. Additional detail on this dry crossing method as well as an engineering typical detail drawing are included in Volume 2, Attachment E (Eversource BMP Manual Appendix A Section 2.3.)

For a dam-and-pump method, the work space across the stream would be isolated by temporarily damming both the upstream and downstream side of the work space using cofferdams of sandbags (or equivalent) and the streamflow would then be pumped from the upstream side to the downstream side of the work space. This would create a dry area within the stream bed in which the trench would be excavated and duct bank would be installed. The temporary coffer dam height, as well as the number and size of the bypass pumps needed are based on the hydrologic characteristics of the watercourse at the point of crossing. Additional detail on this dry crossing method as well as an engineering typical detail drawing are included in Volume 2, Attachment E (Eversource BMP Manual Appendix A Section 2.2.)

Eversource will attempt to time the crossing of intermittent Watercourse IS-2 during a period of low flow or no flow. This intermittent drainage originates from a culvert behind residential homes on Barnard Drive, and it is believed to convey stormwater drainage from roadway catch basins within the adjacent residential development. Therefore, Eversource will attempt to cross the intermittent stream "in the dry" and install appropriately sized temporary cofferdams, as determined by the contractor and compliance monitor based on field conditions at the time of construction.

When working in or traversing watercourses, Eversource will:

- Install temporary construction matting or equivalent for equipment access across the watercourse or to establish safe and stable construction work areas, where necessary.

- Install and maintain E&S controls and other applicable construction BMPs in and around watercourses (see Volume 2, Attachment E – Eversource BMP Manual Appendix A Section 1.6).
- Conduct vegetation clearing on the banks of watercourses and immediately adjacent areas without removing stumps except over the cable trench and in other areas unless it is determined that intact stumps pose a safety concern for personnel or the movement of equipment.
- Pile cut woody vegetation in upland areas, or on matting in wetlands, so as not to block surface water flows within watercourses or otherwise to adversely affect the watercourse integrity.
- If suitable gravel and cobble stream bed substrates are present over the trench line, remove and segregate the top 12 inches of stream bed substrates. These native stream bed substrates will be preserved separately from the subsoils and, after the installation of the duct bank and backfilling, will be replaced for the upper 12 inches of trench backfill within the watercourse.
- If suitable gravel and cobble stream bed substrates are not present over the trench line, Eversource will use clean gravel and cobble for the upper 12 inches of trench backfill within the stream bed.
- If groundwater is encountered, dewatering will be performed in accordance with authorizations from applicable regulatory agencies and may involve discharge to catch basins, temporary settling basins, wetland filter bags, temporary holding tanks (frac tanks), or vacuum trucks.
- Implement procedures for petroleum product management to avoid or minimize the potential for spills into watercourses. For example, to the extent practical, Eversource’s construction contractor will store petroleum products in upland areas more than 25 feet from watercourses; refuel construction equipment, except for equipment that cannot be practically moved, in upland areas and if refueling must occur within 25 feet of a watercourse, provide temporary containment. Equipment, except for equipment that cannot be practically moved, would not typically be parked overnight within 25 feet of a watercourse. If equipment must be parked overnight within 25 feet of a watercourse, temporary containment will be required.
- Backfill trench with excavated spoils and/or other approved material. Other approved material may include FTB.
- Restore watercourse bed and banks to pre-construction grades and contours to the extent practicable.
- Disturbed stream bed will be stabilized using Eversource’s BMPs included in Volume 2, Attachment E (see BMP Manual Appendix A Section 1.12 [pp. A1-30]). Previously segregated stream bed substrates or clean gravel and cobble will be backfilled for the upper 12 inches to restore pre-construction stream bed elevations.
- Stream banks will be seeded and, if necessary stabilized with an erosion control fabric to facilitate re-establishment of stream bank vegetation as detailed in Volume 2, Attachment E (see BMP Manual Appendix A Section 1.6 [pp. A1-14]).

Temporary E&S controls installed at the watercourse top of bank will remain in place until adjacent disturbed areas have been stabilized through revegetation or other final stabilization measures (i.e., paving or installation of gravel surface).



### 5.2.3 Wetland Crossings

The proposed 115-kV underground cable and duct bank will cross five wetlands (designated Wetlands N-1, N-2, N-3, N-4, and N-5). Additionally, the temporary 23-kV circuit relocations, if required, will involve temporary construction matting and work in wetlands N-3 and N-4.

These wetland crossings are depicted on the Appendix A maps. Due to residential development adjacent to the Eversource ROW, as well as the extent of the wetlands and the constraints posed by the existing Eversource distribution lines, these wetlands cannot be avoided. Project construction activities in wetlands will conform to the Protocols listed in Appendix B, Detail Sheet 1.

The duct bank trench through wetlands will be restored by backfilling to pre-construction grades and contours and restoring the top 12 inches of backfill with previously stripped and stockpiled wetland topsoil to promote the regrowth of wetland species. Any temporary work spaces in wetlands (including any construction matting in Wetland N-3 required for temporary distribution line relocations) will be removed after the installation of the cable system.

During Project construction, Eversource will limit the effects to these wetlands to the extent practical through implementation of the BMPs for work in wetlands detailed in Volume 2, Attachment E (see Eversource BMP Manual Section 3.4.3). Temporary construction matting (i.e., timber mats) will be used in the wetlands to support for construction equipment and vehicles. After the completion of the duct bank installation, the temporary construction matting used for the work in wetlands will be removed, in accordance with the conditions of the water resource permits issued by the CT DEEP and the USACE.

The wetland boundaries along the ROW will be clearly flagged prior to the commencement of work. When working in or traversing wetlands, Eversource will:

- Develop access across wetlands to avoid interference with surface water flow or wetland functions.
- Install temporary construction matting or equivalent for access roads across wetlands or to establish safe and stable construction work areas within wetlands, where necessary.
- Install and maintain E&S controls and other applicable construction BMPs in and around wetlands (see Volume 2, Attachment E – Eversource BMP Manual, Appendix A Section 1.6).
- Conduct vegetation clearing in wetlands to minimize adverse effects (e.g., by using low-impact equipment and installing temporary timber mats [or equivalent] to minimize rutting).
- Pile cut woody vegetation in upland areas, or on matting in wetlands, so as not to block surface water flows within wetlands or otherwise to adversely affect the wetland integrity.
- Cut forested wetland vegetation without removing stumps except over the cable trench and in other areas unless it is determined that intact stumps pose a safety concern for personnel or the movement of equipment.
- Remove and segregate the topsoil layer that must be removed for the cable trench excavation. The wetland topsoil layer will be stockpiled separately from the subsoil layer and, after the installation of the duct bank, will be replaced to promote revegetation using the existing seed bank contained in the topsoil layer.
- If groundwater is encountered, dewatering will be performed in accordance with authorizations from applicable regulatory agencies and may involve discharge to catch basins, temporary settling basins, wetland filter bags, temporary holding tanks (frac tanks), or vacuum trucks.

- Implement procedures for petroleum product management to avoid or minimize the potential for spills into wetlands. For example, to the extent practical, Eversource and its construction contractor will store petroleum products in upland areas more than 25 feet from wetlands; refuel construction equipment, except for equipment that cannot be practically moved, in upland areas and if refueling must occur within a wetland, provide temporary containment. Equipment, except for equipment that cannot be practically moved, would not typically be parked overnight on access roads or work spaces in wetlands. If equipment must be parked overnight on construction matting in wetlands, temporary containment will be required.
- Restore sites and temporary access ways in and through wetlands following the completion of cable installation activities.
- Restore wetlands to pre-construction grades and contours to the extent practicable. If necessary, stabilization by seeding with annual ryegrass or native seed equivalent will be required; otherwise, native vegetation can be expected to recolonize (see Volume 2, Attachment E, BMP Manual Section 5 for details on wetland restoration measures).

Temporary E&S controls installed at the limit of work within and adjacent to wetlands will remain in place until all disturbed areas have been stabilized through revegetation or other final stabilization measures (i.e., paving or installation of gravel surface).

#### **5.2.4 Wetland Invasive Species Control Plan**

All wetlands traversed by the 115-kV cable system contain invasive species. During construction, Eversource will require its construction contractors to implement the wetland invasive species control BMPs included in Appendix B, Detail Sheet 1 and in the Eversource BMP Manual (Volume 2, Attachment E). These control measures also were submitted to the USACE and CT DEEP as part of the CT GP PCN application for the Project. These measures are designed to prevent the further spread of invasive species as a result of transmission line construction, and constitute the Project's invasive species control plan.

#### **5.2.5 Wetland Restoration Plan**

Eversource's plan for restoring the wetland areas affected by Project construction is provided in Appendix B, Detail Sheet 1.

#### **5.2.6 Flood Zones**

The Federal Emergency Management Agency (FEMA) classifies Special Flood Hazard Areas for insurance and floodplain management purposes and has prepared maps designating certain areas according to the frequency of flooding. An area mapped within the 100-year flood designation has a 1% chance of flooding each year or is expected to flood at least once every 100 years. An area within the 500-year flood designation has a 0.2% chance of flooding each year.

No floodplains are mapped in association with the unnamed tributaries to Piper Brook at the proposed 115-kV cable crossing locations. However, along the cable system route in Hartford, a small area of temporary work space within New Park Avenue encompasses the FEMA-mapped 100-year floodplain associated with the unnamed tributary to the South Branch of the Park River. However, this work space

is already paved (as part of New Park Avenue) and will be utilized “as is” such that no grading or fill material (temporary or permanent) will be deposited within the floodplain. Therefore, no impacts to 100-year and 500-year floodplains will be associated with the underground segment of the new 115 kV transmission line.

### **5.3 PROTECTION MEASURES FOR STATE-LISTED SPECIES**

In correspondence dated August 1, 2017, the CT DEEP Natural Diversity Database (NDDDB) identified two state-listed species of special concern as potentially occurring in the vicinity of Newington Substation and Newington Tap.<sup>16</sup> The August 1, 2017 correspondence also listed BMPs to be implemented during Project construction to protect the species.

On February 9, 2018, Eversource received CT DEEP’s License #201709099-PCN for the USACE Connecticut General Permit PCN Approval for the Project. Conditions of the CT DEEP license required Eversource to perform a pre-construction survey of the Project area to determine if the two species are present, and, if so, to prepare a best management plan to protect the species.

Accordingly, in the spring of 2018, Eversource performed the pre-construction survey of potential species habitat in the Project area. This survey confirmed the presence of one state-listed species of special concern within portions of the Project area covered by this D&M Plan.

Prior to the commencement of construction in the species’ habitat (as determined by the survey), Eversource will submit a best management plan to the CT DEEP that will identify the measures to be implemented during construction to avoid or minimize potential adverse effects to the species. The measures are included in Appendix B, Detail Sheet 3. The Project contractors will be required to adhere to the species protection measures as identified in the plan and approved by CT DEEP.

To protect the listed species, information regarding the name and habitat of the species is not provided in this D&M Plan.

### **5.4 CULTURAL RESOURCES**

The SHPO has determined that no adverse effects will occur to any known cultural resources as a result of the Project. It is also unlikely that cultural materials will be discovered during construction. However, Eversource will brief Project construction contractor managers regarding the procedures to be followed should potential cultural materials be discovered during construction. Specifically, construction personnel will be instructed to immediately stop the task that resulted in the potential discovery and inform Eversource. Construction work at the potential cultural resource discovery site will not resume until authorized by Eversource, after review and approval by a professional archaeologist retained by Eversource.

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<sup>16</sup> This NDDDB correspondence was submitted to the Council by CT DEEP on August 18, 2017, as that agency’s overall comments on the Project. No state-listed species were identified near Southwest Hartford Substation. To protect the species, this D&M Plan does not include any details regarding the species names or habitats.

## 5.5 AIR QUALITY PROTECTION (MINIMIZATION OF DUST AND VEHICLE IDLING PROTOCOL)

### 5.5.1 Dust Suppression and Anti-Tracking Pads

To minimize short-term adverse effects to air quality during construction, access roads and staging areas will be graveled<sup>17</sup> and may be watered, as necessary, to suppress fugitive dust emissions. Additionally, crushed stone aprons will be installed at all gravel or dirt access road entrances to public roadways, with the objective of minimizing tracking of soil onto the roadway. Paved roads at the intersection with Project access roads (e.g., at Cherry Hill Road, Avery Road, West Hartford Road, Willard Avenue, and Shepard Road in Newington, New Park Avenue in Hartford) will be periodically swept, as necessary to remove excess dirt tracked onto the pavement from the ROW. Active work areas will also be watered, as necessary, to suppress fugitive dust emissions.

Where the duct bank will be installed within paved areas, a pavement saw will be used to cut the pavement on both sides of the planned excavation to a width of approximately 4 to 5 feet for the standard duct bank configuration. Eversource's contractor will wet the pavement saw blade as necessary during cutting to suppress fugitive dust emissions as a result of this activity.

### 5.5.2 Construction Equipment: Idling vs. Warm-up during Cold Weather

Vehicle emissions will be limited by requiring contractors to properly maintain construction equipment and vehicles, and by minimizing the idling time of equipment and vehicles, including diesel construction equipment in accordance with regulatory standards. Idling requirements are as follows:

- Unnecessary construction equipment and vehicle idling expends fuel, increases costs, and causes air pollution. For the Project, pursuant to Connecticut requirements (RCSA 22a-174-18), the allowable idling time for vehicles of all kinds, including diesel construction equipment, is 3 minutes.
- Under winter work conditions (when the ambient temperature is below 20 degrees Fahrenheit), the following apply:
  - Construction equipment may require longer periods to warm up after overnight shut down or other extended periods of inactivity. Such “warm up” periods, as required to bring the equipment up to a safe operating temperature (as defined by the equipment manufacturer), are exempt from the idling time limit. However, most diesel engines take 3 minutes or less to warm up (contractors should consult the engine manufacturer's recommendations).
  - Construction equipment may have to idle for longer periods to operate defrosting or heating equipment to ensure the safety or health of the driver.

**Note:** “Idling” is defined as the period when mobile construction equipment is not in motion or is not otherwise actively performing its designated function. Thus, “idling” does not apply to the use of certain types of mobile construction equipment (e.g., cranes, cement mixers) when they are stationary, but actively operating, at a work site.

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<sup>17</sup> Except where timber mats, or equivalent, are used (e.g., at wetland crossings).

## **5.6 SOILS AND MATERIALS HANDLING AND DISPOSITION**

Eversource's construction contractors will be responsible for the proper handling and disposal of all excess soils, groundwater, recyclable materials, and other wastes generated during the construction process. These waste products will be handled and disposed of in accordance with regulatory requirements (depending on the type of material) and Eversource's BMP procedures.

Excess soil and segregated topsoil materials may be temporarily stockpiled within the identified upland Project work spaces or on upland areas of Eversource's Newington and Southwest Hartford substation or other properties. Stockpiled topsoil will be re-used during site restoration.

All other excess soils will be spread in upland locations, away from water resources, and residential or commercial land uses, or will ultimately be removed for off-site disposal at an appropriate receiving facility.

If groundwater is encountered in excavations, the water will be pumped from the excavated area and then will be discharged or disposed of based on site-specific conditions. For example, the water may be discharged to an upland area of the ROW in a location that will not result in a discharge to wetlands or watercourses; discharged on the ROW into an appropriate sediment control basin or filter bag; pumped into a temporary frac tank and then discharged into an appropriate upland area; with appropriate approvals, discharged to a municipal storm sewer; or pumped into a tanker truck for disposal at appropriate upland sites or wastewater treatment facilities.

The contractors also will be responsible for reporting and properly handling and disposing of any contaminated soils and groundwater, if encountered or generated during construction activities. If polluted or contaminated soil or groundwater is encountered, it must be reported to Eversource and handled in accordance with the applicable regulatory requirements. If encountered, contaminated soils will be stockpiled on and covered by polyethylene sheeting. Sheeting used to cover the stockpile will be weighted to prevent the wind migration of contaminated dust. The materials will be tested to determine appropriate handling and disposition. Potentially contaminated groundwater, if encountered, will be addressed on a case-by-case basis and may involve pumping to a frac tank prior to off-site disposal or the use of other measures.

## **5.7 LIGHTING AND NOISE MITIGATION**

Construction of the 115-kV transmission line will result in localized and short-term increases in ambient noise levels in the vicinity of work sites. Construction-related noise will occur as a result of the operation of equipment and vehicles, including vegetation removal equipment, jackhammers, and cranes. Eversource will require its contractors to properly maintain mufflers on equipment and vehicles to minimize noise emissions.

Because noise attenuates with distance, the effects of construction-generated noise will depend on the noise source location in relation to noise receptors.

Noise impacts associated with construction will be localized, relatively short-term, and – near residential areas – limited primarily to daylight hours (i.e., between 7 AM and 7 PM, Monday through Saturday: refer to Section 4.2). As discussed in Section 5.9, along portions of the cable route, construction will be performed during different work hours. For example, the City of Hartford has requested night-time work along New Park Avenue; however, in this area, the cable route is situated near commercial uses where the noise environment is significantly affected by traffic on I-84. Similarly, Shepard Steel has requested work hours, which may involve night time work, to avoid or minimize impacts to its business; however, construction activities on Shepard Steel would be confined to the industrial property, which is not located near residential areas.

Because most of the 115-kV transmission line construction work will be performed during daylight hours, temporary lighting is not expected to be required on a routine basis. Where needed, construction lighting will be focused on the targeted work areas and will have only a short-term and localized effect.

## 5.8 PLANS FOR TRAFFIC MANAGEMENT

During construction, the public road network will provide primary access to Project work sites, including those portions of the underground cable route that will be aligned either along road ROWs (e.g., State Route 173 and Shepard Drive in Newington; New Park Avenue in Hartford) or within or adjacent to commercial/industrial parking lots (Shepard Steel, Bow Tie Cinema). Public roads in Newington (Avery Road, West Hartford Road, and State Route 173) also will provide access to the Eversource ROW, along which Eversource will establish an on-ROW construction access road to install the cable.

As shown on the Appendix A maps, the cable route will:

- Cross four public roads: Avery Road, West Hartford Road, State Route 173, and New Park Avenue.
- Extend linearly for approximately 0.14 mile along State Route 173<sup>18</sup>, 0.13 mile along Shepard Drive, and 0.7 mile along New Park Avenue.

All of the roads affected by the Project are two-lane, except for New Park Avenue, which consists of three lanes. Traffic volumes on the roads vary. State Route 173 and New Park Avenue typically have the highest traffic volumes.

In these areas, cable construction will require temporary lane closures and – in the case of Avery Road – a short-term road closure and detour. These activities will result in short-term and localized disruptions to

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<sup>18</sup> From the Eversource ROW, the cable system will cross State Route 173 and then will extend linearly along the curb line on the east side of the state road. To construct the cable system while maintaining traffic flow (i.e., using a single-lane closure with alternating traffic pattern), Eversource continues to pursue and obtain the appropriate rights on seven private properties adjacent to the CT DOT ROW (refer to the Appendix A map sheets).

traffic patterns. Eversource is in the process of consulting further with the Town of Newington, City of Hartford, and CT DOT regarding in-road construction activities and road crossing permits.

As required pursuant to Condition 2(c) of the Council’s Decision and Order, Eversource has developed site-specific procedures to avoid or minimize impacts to traffic, as well as to maintain access to adjacent land uses during the cable system construction. These procedures, listed in Table 5-1, reflect Eversource’s past experience in successfully minimizing traffic disruptions while constructing similar underground 115-kV cable systems in urban environments, as well as the results of consultations with representatives of CT DOT, the Town of Newington, the City of Hartford, and Shepard Steel regarding the approach to traffic management for this Project.

**Table 5-1: Traffic Impact Management Procedures**

<b>Continuous Coordination with the Municipalities and CT DOT</b>	The Town of Newington, City of Hartford, and CT DOT will be apprised of the schedule for cable construction activities involving road crossings or temporary linear road occupancy. Similarly, Eversource will conduct outreach to provide the public with advance notice of modifications to traffic patterns during construction (e.g., temporary lane closures).
<b>Warning Signs</b>	Construction warning signs will be posted and maintained along roads in the vicinity of work sites. All signs will be in accordance with state and local requirements and with the federal Manual of Uniform Traffic Control Devices ([MUTCD], 2009 edition, as revised May 2012, or the latest version) <sup>19</sup> .
<b>Barriers</b>	Cones, barrels, Jersey barriers, fencing or other appropriate measures will be used to isolate work sites in order to maintain the safety of the public and construction workers.
<b>Traffic Control Patterns</b>	During construction activities requiring a lane closure or the use of road shoulders, traffic flow will be maintained by adherence to standard traffic management procedures such as alternating lane closures, using protocols such as CT DOT’s Construction Traffic Control Plan.
<b>Flaggers</b>	Flaggers or local police will be deployed as necessary to maintain traffic flow. Along the cable segment in Newington, the Town of Newington will provide flaggers and/or a police presence to support the proposed temporary closure of Avery Road and proposed lane closures on West Hartford Road and Shepard Drive.
<b>Road Plates</b>	At the end of each work day as approved by the applicable municipality, any areas of open trench within public roads may be covered with metal plates, which will be skid resistant, appropriately pinned, or counter-sunk to allow traffic to pass safely over the affected area. Project-specific permits from CT DOT, Newington, and Hartford, may impose restrictions on the use of metal plates during winter (to allow for snow plowing).
<b>Detour at Avery Road</b>	During the installation of the duct bank across Avery Road, a residential street with limited traffic, Eversource anticipates that the road will be closed to through traffic. This will facilitate the trenching and duct bank installation work, minimizing the overall duration of in-road construction work. Eversource or its contractor will coordinate with the Town of Newington to define and post signs regarding temporary detour routes, and will inform residents in advance of the temporary road closure.
<b>Access to Existing Land Uses</b>	Cable construction will be performed to maintain access to businesses and residences. Affected property owners will be informed of the schedule for cable trenching/duct

<sup>19</sup> Connecticut has adopted the federal MUTCDs.

	bank installation.
<b>Work Hours</b>	To minimize impacts during peak travel times, cable construction activities will be performed in accordance with the work hours specified in Table 5-2. These work hours reflect the results of Eversource’s consultations to date with the Town of Newington, City of Hartford, and CT DOT. The actual work hours for in-road construction will conform to the Project permits issued by the municipalities and CT DOT and thus may vary slightly from those listed in Table 5-2.

Unless otherwise noted, Eversource’s construction contractor will be responsible for obtaining and implementing all traffic management procedures and for conforming to any additional requirements as may be specified in Project-specific municipal and CT DOT permits for work in each public road.

**Table 5-2: Proposed Cable Construction Work Hours within and along Road ROWs/Parking Areas\***

Road Name/Location	Road Occupancy (Crossing, Linear)	Construction Work Hours to Minimize Traffic Impacts	Proposed Traffic Pattern
<b>Newington</b>			
Avery Road	Perpendicular	9:00 – 3:00 PM (Monday – Friday)	Road closure; detour
West Hartford Road	Perpendicular	9:00 – 3:00 PM (Monday – Friday)	Alternating traffic pattern (1 lane closure)
State Route 173	Perpendicular/Linear	6:00 AM – 2:00 PM (Monday – Saturday)	Alternating traffic pattern (1 lane closure)
Shepard Drive	Linear (with splice vault)	9:00 – 3:00 PM (Monday – Saturday)	Alternating traffic pattern (1 lane closure)
Shepard Steel	Private access and parking area	7:00 AM – 9:00 PM (Monday – Saturday) (Typical) <i>Note: Property owner has requested work past 9:00 PM or on Sundays as an option, if needed, to minimize potential effects to business</i>	N/A; parking lot (cable will be aligned south of the access road to the property)
<b>Hartford</b>			
Bow Tie Cinema Parking	Linear (northern parking area)	7:00 AM – 7:00 PM (Monday – Saturday) (Typical) <i>Note: The installation of this cable segment may be coordinated with the cable installation within the New Park Avenue, requiring night-time work</i>	N/A; maintain access to cinema and main parking area
New Park Avenue	Perpendicular/Linear	8:00 PM – 6:00 AM	Alternating traffic pattern (1 lane closure)

\*Based on consultations conducted to date with representatives of CT DOT, Newington, Hartford, and Shepard Steel. Work hours may be modified in accordance with the conditions of road crossing permits.



## **5.9 CONSTRUCTION EQUIPMENT/VEHICLE WASHING AND CLEANING**

With the exception of concrete trucks, no construction equipment or vehicle washing will be allowed on the ROW. Concrete truck wash-out will be allowed only in designated upland locations, which will be identified by Eversource representatives, working with the Project contractor, to minimize the potential for off-site environmental impacts. All wash-out areas will include measures to control and contain wash-water and to collect the cement wash-off for off-site disposal.

E&S controls deployed at wash-out areas will conform to the relevant provisions of the Connecticut Guidelines, Eversource's BMP Manual (refer to Volume 2, Attachment E), and the CT DEEP's Construction General Permit.

As required pursuant to the wetland invasive species control BMPs (refer to Appendix B, Detail Sheet 1), construction vehicles, equipment, and mats also must be cleaned to prevent the transport of invasive wetland species. The cleaning protocol will typically involve the use of shovels, brooms, compressed air, or other methods to remove visible dirt from construction equipment, vehicles, and timber mats.

## **5.10 UTILITY CROSSINGS**

Above-ground utilities and marked underground utilities are identified on the Appendix A, Exhibit A.4 Plan and Profile Drawings. Eversource has completed "Call Before You Dig" submissions and has identified the locations of all known buried utilities in relation to proposed sub-surface construction activities. Additionally, Eversource has coordinated with utility owners through the Connecticut Public Utilities Regulatory Authority process. During the construction planning and implementation phase, Eversource will coordinate with utility operators to avoid, relocate, or otherwise bypass other utilities in proximity to the Proposed Route.

## **5.11 WINTER WORK, ROW STABILIZATION, AND ROW MONITORING PROTOCOL**

If required, snow removal and the use of de-icing procedures at construction sites will be implemented in accordance with the *Snow Removal and De-Icing Plan* (Volume 2, Attachment D). In addition, Eversource will adhere to any conditions relevant to winter work in road ROWs that may be included in CT DOT and DPW approvals for in-road work.

If, after the installation of the new transmission line, some ROW clean-up or restoration work is completed too late in the season to initiate or complete permanent stabilization of disturbed areas (e.g., temporary staging areas that may require reseeding), temporary E&S controls will be left in place and augmented if necessary. These measures will be periodically inspected and maintained until permanent site stabilization can be completed. All E&S control practices and over-winter monitoring will be in accordance with Eversource's BMP Manual and the CT DEEP's Construction General Permit, as well as any relevant conditions of Project approvals from the Council, USACE, and CT DEEP.

## **5.12 POST-CONSTRUCTION EMF MONITORING PLAN**

Pursuant to Condition 2.s of the Council's Decision and Order, Eversource has prepared a post-construction electric and magnetic field (EMF) monitoring plan for the 115-kV transmission line. This plan is included in Volume 2, Attachment F.

## 6. PUBLIC REVIEW AND OUTREACH

### 6.1 PROJECT PLANNING AND D&M PLAN

As part of the overall Project planning process, including the development of the Application to the Council and the D&M Plans, Eversource consulted with the officials of the three municipalities traversed by the Project and provided opportunities for municipal representatives, other agencies (e.g., CT DOT, CT DEEP), and the public to comment on the Project. Prior to the submission of this D&M Plan to the Council, Eversource also provided draft copies of the Plan to representatives of the Town of Newington and City of Hartford for review and comment.

Along with the provision of the draft D&M Plan, Eversource extended an invitation to meet with municipal officials to review the Plan. Accordingly, Eversource met with municipal officials from the Town of Newington on June 29, 2018, and the City of Hartford on June 21, 2018.

During these meetings, Eversource provided information regarding the general construction process for the underground line work, addressing topics such as construction sequence, vegetation clearing; the size and locations of work spaces, locations of temporary access roads, work hours, use of anti-tracking pads at intersections of the ROW and construction access roads with public roads, underground duct bank design and location, planned work hours, and expected schedule for construction in each municipality. The Town of Newington had no comments on the draft D&M Plan, whereas the City of Hartford provided comments regarding vegetation removal as noted in Section 2.2.

In conjunction with the submission of the D&M Plan to the Council, Eversource will post the filed D&M Plan on the Project website. This website is accessible from the Eversource homepage ([www.eversource.com](http://www.eversource.com)). From this homepage, Project information can be accessed by clicking the “About” tab, then the “Projects and Infrastructure” tab, then select “Connecticut Transmission Projects” to view a list of the Company’s ongoing and proposed projects, including this Project. Included on the website is an e-mail address ([transmissioninfo@eversource.com](mailto:transmissioninfo@eversource.com)) and a telephone number (800-793-2202) to contact Eversource for more Project information or to provide comments about the Project.

### 6.2 PUBLIC OUTREACH DURING CONSTRUCTION

Throughout the Project’s planning and the Council’s siting processes, Eversource conducted extensive community outreach, including direct coordination and meetings with abutting property and business owners, business groups and homeowner organizations, and municipal officials. In addition, Eversource held two public open houses regarding the Project during the Municipal Consultation phase of the siting process. Eversource will continue its outreach efforts throughout the Project’s construction and will notify affected stakeholders of upcoming construction activities.

As referenced in Section 6.1, the public can access the Project website to obtain an overview of the Project, a map of the Project facilities, and Eversource's information line and email address. The website will continue to be maintained as the primary means for residents, businesses, and other stakeholders to contact Project representatives throughout Project construction.

In addition, Eversource representatives will be available to brief residents and businesses affected by the Project construction activities and other interested stakeholders regarding the construction process, key construction stages and expected construction timeline. Project representatives will also contact adjacent and nearby residents and businesses to notify them of upcoming construction activities and will be available throughout the construction process to address any specific questions or concerns.

## 7. GLOSSARY OF TERMS

TERM/ACRONYM	DEFINITION
<b>Access Road:</b>	A road that provides access into and out of the stations, staging areas, or ROW.
<b>BMP:</b>	Best Management Practice
<b>BMP Manual:</b>	Eversource's <i>Best Management Practices Manual for Massachusetts and Connecticut (Construction and Maintenance Environmental Requirements)</i> September 2016
<b>Certificate:</b>	Certificate of Environmental Compatibility and Public Need (from the Connecticut Siting Council)
<b>CGS:</b>	Connecticut General Statutes
<b>Conductor:</b>	A metallic wire, busbar, rod, tube or cable that serves as a path for electric current flow.
<b>Conduit</b>	Pipes, usually PVC plastic, typically encased in concrete, for housing underground power and control cables.
<b>CONVEX</b>	Connecticut Valley Electric Exchange
<b>CT DOT:</b>	Connecticut Department of Transportation
<b>Council or CSC:</b>	Connecticut Siting Council
<b>CWA:</b>	Clean Water Act
<b>CT DEEP:</b>	Connecticut Department of Energy and Environmental Protection
<b>D&amp;M Plan:</b>	Development and Management Plan (required by the Connecticut Siting Council)
<b>DECD:</b>	Connecticut Department of Economic and Community Development
<b>Docket 474:</b>	Council Docket number for the application proceeding concerning the Project.
<b>Distribution</b>	Line system. The facilities that transport electrical energy from the transmission system to the customer.
<b>Electric Transmission:</b>	The facilities (69 kV or above) that transport electrical energy from generating plants to distribution substations.
<b>EMF:</b>	Electric and magnetic fields.
<b>FEMA:</b>	Federal Emergency Management Agency
<b>Frac Tank:</b>	Fractionization tank, used to temporarily hold water pumped from Project excavations or otherwise used during Project construction activities
<b>GHCCRP:</b>	Greater Hartford-Central Connecticut Reliability Project
<b>Idling:</b>	The period when mobile construction equipment is not in motion or is not otherwise actively performing its designated function.
<b>kV:</b>	Kilovolt, equals 1,000 volts

TERM/ACRONYM	DEFINITION
<b>Line:</b>	A series of overhead transmission structures that support one or more circuits; or in the case of underground construction, a duct bank housing one or more cable circuits.
<b>Magnetic Field:</b>	Produced by the flow of electric currents; however, unlike electric fields, most materials do not readily block magnetic fields. The level of a magnetic field is commonly expressed as magnetic flux density in units called gauss (G), or in milligauss (mG), where 1 G = 1,000 mG.
<b>MUTCD:</b>	Manual of Uniform Traffic Control Devices
<b>NDDB:</b>	Connecticut Natural Diversity Data Base (CT DEEP)
<b>Phases:</b>	Transmission (and some distribution) AC circuits are comprised of three phases that have a voltage differential between them.
<b>Project:</b>	Greater Hartford-Central Connecticut Reliability Project
<b>RCSA:</b>	Regulations of Connecticut State Agencies
<b>ROW:</b>	Right-of-Way
<b>SHPO:</b>	State Historic Preservation Office (Connecticut)
<b>Stormwater Pollution Control Plan:</b>	A sediment and erosion control plan that also describes all the construction site operator's activities to prevent stormwater contamination, control sedimentation and erosion, and comply with the requirements of the Clean Water Act.
<b>Substation:</b>	Part of the electric transmission system, a high-voltage electrical facility with a fenced-in yard containing switches, transformers, line-terminal structures, and other equipment enclosures and structures to regulate and distribute electrical energy, such as receiving power from a generating facility, changing voltage levels, limiting power surges, etc. Adjustments of voltage, monitoring of circuits and other service functions take place in this installation.
<b>Terminal Structure:</b>	Structure typically within a substation that ends a section of transmission line.
<b>Transmission Line:</b>	Any line operating at 69,000 or more volts.
<b>USACE:</b>	United States Army Corps of Engineers
<b>USFWS:</b>	United States Fish and Wildlife Service
<b>USGS:</b>	United States Geological Survey (U.S. Department of the Interior).
<b>Vegetation Clearing:</b>	Removal of forest vegetation. Within the vegetation clearing limits for construction, other types of vegetation (e.g., shrubland) also will be removed as needed for transmission line construction.
<b>Watercourse:</b>	Rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, public or private.
<b>Wetland:</b>	Is an area of land consisting of soil that is saturated with moisture, such as a swamp, marsh, or bog. CT DEEP and the USACE have formal definitions of state and federal jurisdictional wetlands, respectively.
<b>XS:</b>	Cross section (drawing)

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