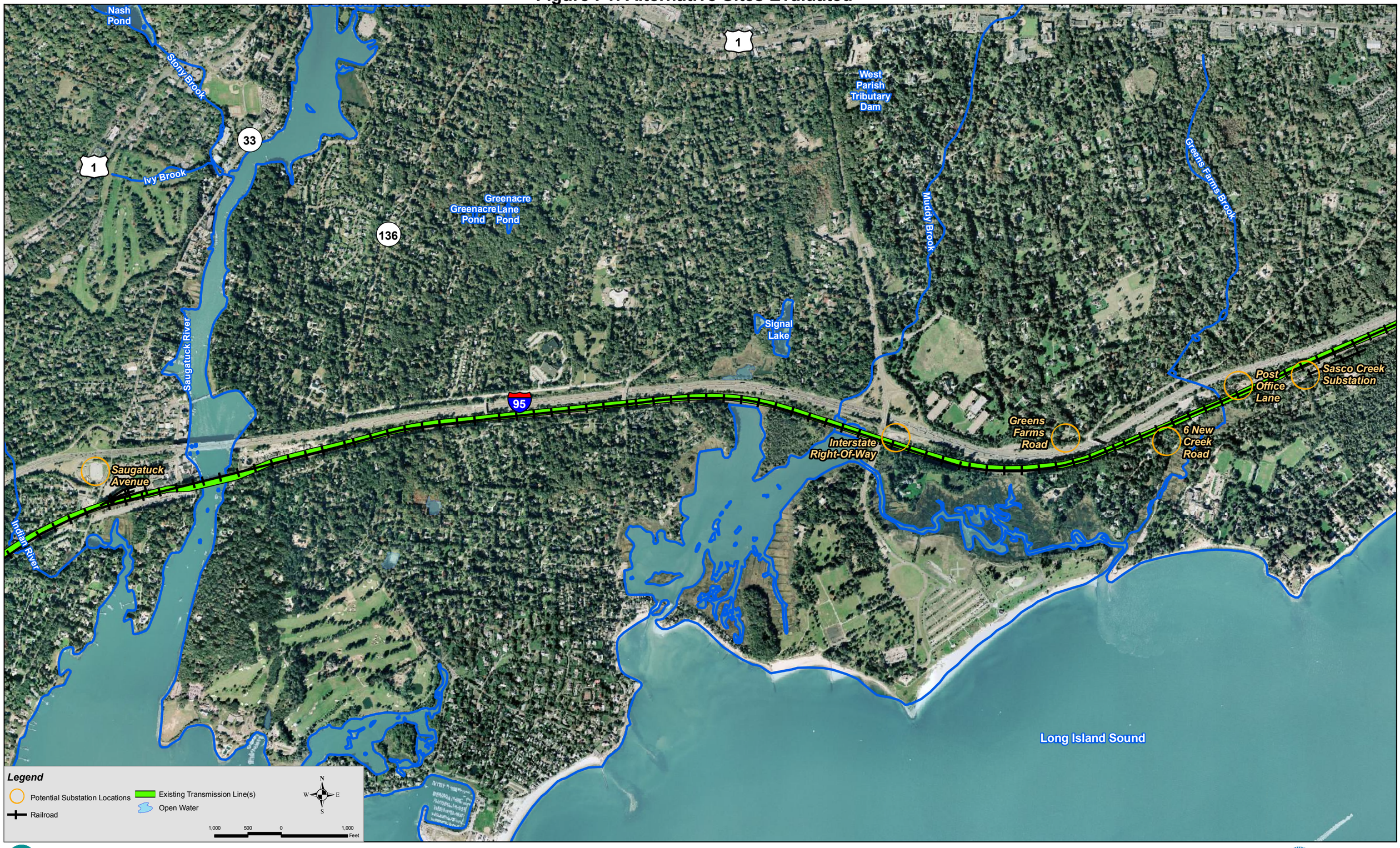
I. ALTERNATIVE SITES EVALUATED

CL&P identified an area in Westport, Connecticut where additional bulk substation capacity is needed (i.e., the "load pocket"). In this case, the Westport load pocket area is bordered on the south by Long Island Sound, to the east by the Westport/Fairfield Line, to the north by Easton Road, and to the west by Compo Road (Route 136).

At present, the Town is supplied power from three substations with no ability to increase capacity at these facilities as discussed in Section G-1. The most viable solution to address this need is to construct a new bulk power substation in the Greens Farms section of Westport. The primary selection criteria for the location of a new bulk power substation are: proximity to an existing 115-kV transmission circuit; proximity to the distribution load pocket; and, accessibility to and from a public road. Locating the facility near an existing 115-kV transmission circuit avoids new transmission line construction and ROW acquisitions. A site centrally located within the load pocket minimizes distribution circuit lengths and enhances contingency tie capabilities with distribution circuits emanating from adjacent substations. Additionally, direct access to a substation site is important to minimize land clearing for new road construction and to reduce overall environment impacts along the transmission line corridor.

Six site locations in Westport were identified and evaluated to determine their potential viability for development of the new Substation. These locations are depicted on Figure I-1 (*Alternate Sites Evaluated*).

Figure I-1: Alternative Sites Evaluated



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The following major criteria were used to determine the most suitable location for construction of this new Substation:

- Proximity to distribution load pocket and existing feeders;
- Proximity to existing transmission electrical circuits;
- Ease of access;
- Earthwork requirements;
- Sufficient size and shape;
- Zoning and land-use constraints;
- Wildlife and habitat;
- Wetlands, vernal pools, watercourses and floodplains; and
- Proximity to public water supply watershed and/or aquifer protection areas.

The New Creek Road Property best satisfied the criteria and is therefore the most feasible location. A summary of the potential site locations is provided below.

I.1. 6 New Creek Road (the Property)

This 2.56-acre site is situated in the center of the load pocket area and immediately south of a multi-use transportation and energy infrastructure corridor; its location provides for direct connections to an existing 115-kV transmission circuit resulting in minimal, additional infrastructure needs. There are also optimal connection opportunities to the existing distribution feeder network along New Creek Road, Greens Farms Road, and Maple Lane. The Property has sufficient size and shape to provide for substantial landscaping to screen the Substation from surrounding areas, and has direct access from New Creek Road. In summary, 6 New Creek Road possesses the following characteristics:

- Direct connections are available to existing 115-kV transmission circuit;
- Optimal connections can be made to existing distribution feeders;
- Sufficient room exists to establish vegetative screening;

- Direct access is available from New Creek Road;
- No wetland impacts would occur as a result of construction or operation of the Substation; and
- The Site is not located in an aquifer protection area.

I.2. Terminus of Post Office Lane (between I-95 and Metro-North Railroad)

Located adjacent to transportation corridor, this 2± acre site would provide relatively short interconnections to an existing 115-kV circuit; however, connections to the existing distribution network serving the load area would require bundling several new overhead circuits onto one existing line along Greens Farms Road. The site's configuration would limit CL&P's ability to fit all of the required equipment within the substation at this location, as it could only accommodate two transformers with no room for a mobile transformer position. Access to the parcel and utility infrastructure would require obtaining an easement from a third party; upon further investigation, it was determined that an easement would not be made available. Negotiations with the landowner were unsuccessful and the parcel is not available for purchase. In summary, this location is not viable due to the following considerations.

- Site configuration would limit ability to fit all required equipment within the substation; the site could only accommodate two transformers with no room for a mobile transformer position;
- Connections to existing distribution network would require bundling several new overhead circuits onto one existing line on Greens Farms Road;
- Potential wetland impacts would exist;
- Parcel would require an access/utility easement from third party; easement not available; and
- Parcel is not available for purchase.

I.3. Interstate Right-of-Way, north of Sherwood Island Connector

This parcel is of sufficient size (three acres) to accommodate the substation, but it has several technical and physical limitations. Although interconnection with the existing 115-kV transmission circuit to the south would be relatively easy, this property is located west of the load area and would present substantial challenges for connecting to the existing distribution facilities, which are located over 3,500 feet to the north. Access to the site would have to be gained directly from the highway ramp, requiring ConnDOT approvals. Historic dumping has occurred on this property, raising the likelihood of significant excavation and disposal of contaminated media, and resulting in substantial earthwork requirements to accommodate a substation at this location.

This site has limited development potential for CL&P due to:

- Its location west of load pocket;
- Poor connection possibilities to existing distribution network;
- Substantial earthwork that would be required for substation development; and
- Limited access from the highway ramp.

I.4. West of existing Sasco Creek Substation

At the site of CL&P's temporary transformer, Metro-North and ConnDOT will not allow development of a permanent substation for non-railroad-related uses. Technically, the 1.08-acre site possesses some positive features, most notably the existing infrastructure. A 115-kV line loop exists to the nearby 1890 circuit which could be brought inside a new substation to supply new power transformers. In addition, the site is accessible from Clayton Street off Maple Lane and is of sufficient size to accommodate the substation facility with two transformer positions,

but no room for a mobile transformer position. On the negative side, the existing transformer and substation are located in a residential neighborhood and there have been complaints historically by nearby residents. Regardless of the potential opportunities, this site is not feasible for further consideration because:

- The site was constructed for the sole purpose of supplying traction power to Metro-North and, as such, ConnDOT will not allow permanent use of the Sasco Creek site for another purpose; and
- Several neighboring residences are located in close proximity.

I.5. Saugatuck Avenue at Exit 17, south side of I-95

Roughly 1.5 acres in size, this site is nestled between Saugatuck Avenue to the east, I-95 to the north, and the I-95 northbound entrance ramp to the south and west. This property is currently developed and partially paved; clearing and earthwork requirements would be minimal. However, the site is located west of the load center and an existing business would require relocation. Further, connection to the existing transmission circuits would require extensive new infrastructure. There are numerous neighboring residences located along Ferry Lane West, Indian Hill Road and Hiawatha Lane immediately south of this property. In summary, this site was not considered further because:

- Connection to existing transmission circuits would require extensive new infrastructure;
- Numerous neighboring residences are located immediately to the south; and
- Redevelopment would impact an existing business operation.

I.6. Wooded Lot across from #247 Greens Farms Road

Approximately 1.2 acres of this wooded portion of the ConnDOT/I-95 Right-of-Way, located south of Greens Farms Road and immediately east of Beachside Avenue, could accommodate a substation. Connection to the existing 115-kV circuits would require crossing I-95 and installing several new support structures and interconnections. Connecting to the existing distribution network serving the load area would require bundling several new overhead circuits onto one existing line along Greens Farms Road. Significant clearing of trees that currently buffer the neighborhood north of I-95 would be required. The area also slopes down approximately 20 to 30 feet from Greens Farms Road to I-95 and would require significant earthwork to develop a site to accommodate the substation pad. Numerous homes are located to the west and north along Greens Farms Road. The following developmental constraints limit this site's potential:

- Connection to the existing 115-kV circuit would require extensive new infrastructure;
- There are poor connection possibilities to the existing distribution network;
- Substantial clearing and earthwork would be required; and
- Several residences are located in the immediate area.

I.7. Summary of Alternate Site Analysis

Six sites were evaluated for development of the Sherwood Substation. Expansion of the existing Sasco Creek Substation, where CL&P currently houses a temporary transformer, is not viable for future development because ConnDOT and Metro-North are unwilling to commit to uses other than those dedicated to the railroad. The privately-owned parcel located at the terminus of Post Office Lane was originally considered a viable alternative; however, it is not available for purchase. In addition, further evaluation of CL&P's long-term needs and the site's

configuration, showed that this parcel would provide fewer long-term benefits because it does not have sufficient space for more than two transformer positions. The Property at 6 New Creek Road is the most suitable location due primarily to its proximity to an existing circuit, accessibility to optimal feeder interconnections, and sufficient size to establish ample vegetative screening.

The other sites evaluated have technical, physical and/or environmental constraints and are not considered viable alternatives for development of the new Substation.

A comparative analysis of the sites considered for the Project is provided in Table I-1.

Table I-1: Sherwood Substation Site Alternative Analysis Matrix

Review Criteria	Location 1 6 New Creek Road Proposed Site	Location 2 Terminus of Post Office Lane	Location 3 Interstate Right-of-Way	Location 4 West of Sasco Creek Substation	Location 5 Saugatuck Avenue	Location 6 Wooded Lot Greens Farms Road
Close Proximity to Distribution Load Area and Existing Feeders	√	√		√		
Close Proximity to Existing Transmission Circuits	√	√		√		
Ease of Access	√			√	√	√
Minimal Earthwork Requirements		√		√	√	
Sufficient Size and Shape	√		√	√	√	√
No Zoning and Adjacent Land Use Constraints	√		√			
No Environmental Constraints	√			√	√	√
Sufficient Distance from Public Watershed/ Aquifers	√	√		√		√

J. SAFETY AND RELIABILITY INFORMATION

The Substation would be constructed in full compliance with the standards of the National Electrical Safety Code, the Connecticut Department of Public Utility Control, and good utility practice. In the event that an energized line or substation equipment fails, protective relaying equipment would immediately remove the failed line or equipment from service, thereby protecting the public and the remaining equipment within the Substation.

The Sherwood Substation would be equipped with measures to ensure continued service in the event of outages or faults on transmission or substation equipment. Continued reliability would be achieved by incorporating a "loop through" design configuration for the existing 115-kV overhead transmission line, transformer protection, and redundant automatic protective relaying equipment.

Protective relaying equipment would be provided to automatically detect abnormal system conditions (e.g., a faulted overhead transmission line) and would send a protective trip signal to circuit breakers to isolate the faulted section of the transmission system. The protective relaying schemes would include fully redundant primary and backup equipment so that a failure of one scheme would not require the portion of the system being monitored by the protective relaying equipment to be removed from service.

The protective relaying and associated equipment, along with a Supervisory Control and Data Acquisition ("SCADA") system for remote control and equipment monitoring by the Connecticut Valley Electric Exchange ("CONVEX") System Operator, would be housed in a weatherproof, environmentally-controlled electrical equipment enclosure.

CL&P incorporates IEEE/ANSI and NFPA standards for fire protection in its substation design and operates these facilities to minimize the impact of fire, in the unlikely event it occurs. CL&P also trains its employees and the local fire department on the safe methods to deal with a substation fire. The control enclosure would be locked and equipped with fire extinguishers, as well as smoke detectors that would be monitored from a remote location. Smoke detection would automatically activate an alarm at CONVEX and the system operators would then take appropriate action.

Additional devices would constantly monitor the Substation to alert CL&P of any abnormal or emergency situations. The perimeter of the Substation would be enclosed by a seven-foot high chain link fence topped with an additional foot of three strands of barbed wire to discourage unauthorized entry and/or vandalism. The Substation entrance would be gated and locked. Lighting would be available within the Substation yard to facilitate work at night or during inclement weather.

CL&P would install sumps to serve as oil-spill containment reservoirs around the proposed transformers. The sumps would be sized with sufficient capacity to contain a spill in the event of an inadvertent release of oil. CL&P plans to install an Imbiber Beads Drain Protection System® for the sump, similar to containment systems installed at other CL&P substations.

K. EFFECTS ON THE ENVIRONMENT

The development of the Sherwood Substation would not have any long-term adverse effects on the existing environment and ecology, nor would it affect the scenic, historic and recreational values of the vicinity. A *Proposed Conditions Map* is included as Figure K-1.

K.1. Public Health and Safety

The Sherwood Substation would be designed to applicable CL&P, industry, State, and local codes and standards and would not pose a safety concern or create undue hazard to the general public. The Substation would not consume any raw materials, would not produce any by-products and would be unmanned during normal operating conditions. Applicable signage would be installed alerting the general public of the dangers of high voltage associated with the Substation, as well as a seven-foot tall chain-link fence topped with one foot of barbed wire (three strands). There are no plans to store fuels or hazardous materials at the Substation.

K.2. Local, State and Federal Land Use Plans

The Project is consistent with local, State, and federal land use plans. Local land use application processes do not specifically apply to the Project. However, the Project has been designed to meet the intent of local land use regulations. According to the Town of Westport Zoning Regulations, the Property lies within an area zoned as Residential (AAA), and is not within an Aquifer Protection Zone. Pursuant to Section 11-2.2.8 of the Westport Zoning Regulations, public utility buildings and facilities necessary for the services of the surrounding residential area are a permitted use with a Special Permit and Site Plan Approval. The general area of the Property is identified in the *Westport 2007 Plan of Conservation and Development* (a copy of which has been provided to the Council under a separate Bulk Filing) to be land for

Figure K-1: Proposed Conditions

GREEN'S FARMS METRO-NORTH STATION

95

G06006000 TOWN OF WESTPORT NEW CREEK RD

RAILROAD

H06012000 STATE OF CONNECTICUT 26 MAPLE LN

H06007000 SOENNICHSEN KLAUS & CAROL 46 MAPLE LN

H06005000 GREENS FARMS ACADEMY 56 MAPLE LN

H06006000 DUPONT, ROBERT J & PATRICIA A 52 MAPLE LN

G06005000 CONNECTICUT LIGHT & POWER COMPANY 6 NEW CREEK RD

H06004000 WAKEMAN, EVERETT V 60 MAPLE LN

H06003000 PAIR, MARY E 62 MAPLE LN

Wetland Boundary

H06001000 NATURE CENTER FOR ENVIRONMENTAL 68 MAPLE LN

H06002000 SHEIKH, SARAH AND BLUNNIE KEVIN 64 MAPLE LN

G06003000 TOWN OF WESTPORT BEACHSIDE AVE

G06004000 GIUNTA, ROBERT J & LOU ANN 1 BEACHSIDE AVE

MAPLE LANE

H05001000 GREENS FARMS ACADEMY INC 35 BEACHSIDE AVE

BEACHSIDE AVENUE

Watercourse

NEW CREEK ROAD

H06042000 TOWN OF WESTPORT BEACHSIDE AVE

Greens Farms Brook

G06001000 HIRSCHFIELD, PHYLLIS 2 BEACHSIDE CMN

BEACHSIDE COMMON

G05005000 WITKIN, LORRAINE J 8 BEACHSIDE AVE

G05021000 LORD, KEVIN E & PATRICIA M 4 BEACHSIDE CMN

Legend

- Existing Line Support Structures
- Proposed Line Support Structures
- Existing Transmission Circuit
- Proposed Interconnecting Lines
- Proposed Substation Footprint
- CL&P Property Boundary
- Field Delineated Wetland Boundary
- Field Delineated Watercourse
- Paved Road
- Assessor Parcels (2009)

*Base Map Source: 2006 color aerial photograph with 1 foot resolution

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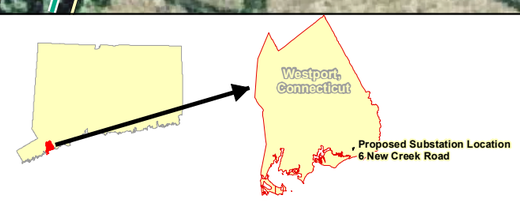
100 50 0 100 Feet

N W E S



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single-family development and transportation/utility infrastructure. CL&P has met with Town officials and provided Location Review submissions to Westport's Conservation Commission and Planning and Zoning Commission. These Commissions provided comments which have been addressed by CL&P.

K.3. Existing and Future Development

The Sherwood Substation would benefit the community by improving electrical service for existing development in the Town and surrounding areas, as well as supporting additional development through enhanced reliability and the capacity to serve additional load. The Town of Westport currently has two older distribution substations and one temporary substation. None of the existing substations have the ability to expand.

The Substation would be situated immediately south of the existing overhead transmission line corridor, generally in the eastern portion of the Property. The Substation would be located within an irregularly shaped fenced compound that would encompass a 21,370 ± square foot area (measuring approximately 137 feet by 160 feet at its longest dimensions). Connecting the Substation to the existing transmission circuit requires the installation of two new steel monopoles within the railroad ROW immediately north of the Site. These new structures would be similar in height to those currently occupying the transmission line corridor, and two new line-terminal structures within the Substation.

K.4. Roads

CL&P initially evaluated using the existing driveway for permanent access to the Substation; however, its grade would not be compatible with that of the Substation final base

elevation. Further, the existing driveway configuration would not allow for delivery and removal of a mobile transformer in the event of an emergency.

A new 15-foot wide paved driveway would be developed to serve as entry/egress from New Creek Road to the Substation. A bituminous concrete apron would be provided at the entrance of the Property along New Creek Road, south of the railroad overpass and west of the entrance to the Metro-North commuter station parking lot. This would serve as the only access to the Site once the Substation is operative. The existing driveway would be used during construction; anti-tracking mats would be installed to prevent tracking of soil onto local streets.

During construction of the Substation, the new driveway would be stabilized with stone, and anti-tracking mats would also be installed in this location. Upon completion of the Project, the new driveway would be finished with a gravel base and gated. Once the Project is completed, the existing driveway and pavement would be removed and the area landscaped. After construction is completed, approximately three to four vehicular trips per month to the Property would be anticipated for maintenance and inspection activities.

K.5. Wetlands

No direct impacts to on-site wetlands would occur as a result of construction or operation of the Substation. No portion of the 21,370± square foot Substation fenced compound would be located within wetlands and none of the Substation components/structures would be situated within 50 feet of the on-site wetlands. A small section of the Substation's northwest corner (consisting of trap rock and fencing) would fall within 50 feet of the wetlands.

No impacts to the tidal wetland system located across New Creek Road would occur.

K.6. Wildlife and Vegetation

The Substation would occupy what is currently a developed residential building lot. Construction of the Substation would require the removal of several existing trees and landscape shrubs, but would not have significant adverse effects on wildlife or habitat values.

Any effects on wildlife and wildlife habitat would be minimal and limited to temporary disturbances during construction. The Property is currently used by wildlife species that are typically generalists, commonly found in the area, and adaptable to habitat modifications. The wetland habitat found on the Property would remain intact and the adjoining upland area to its east would be enhanced, ultimately increasing its wildlife value. Based on the habitat types found on the Property and surrounding area, species diversity and abundance should be maintained after the Substation is completed and operational.

K.6.1. Rare, Threatened, and Endangered Species

No state or federally endangered, threatened or special concern species have been identified on the Property. Based on current CTDEP NDDB review criteria, the Project does not present a potential conflict with a listed species or significant natural community. CL&P received confirmation in writing on June 19, 2008 and December 18, 2009 that no known extant populations of federal or state endangered, threatened, and special concern species occur at the Property (refer to *CTDEP Correspondence*, in Volume II, Exhibit 4). In email correspondence dated December 18, 2009, CTDEP personnel indicated that special care should be taken to adhere to coastal regulations as they relate to avoiding run-off or impacts to the nearby marsh, including avoiding siltation into the marsh or any other long-term impacts from the Project. As discussed in Section L of this Application, CL&P will implement measures to protect this resource throughout construction and during operation of the Substation.

K.7. Water Supply Areas

There are no known public water supply wells located in the vicinity of the Property. The transformers at the Sherwood Substation would contain mineral oil. However, this equipment would have secondary containment and accidental spill prevention provisions in place. Based on these design considerations, the Project would have no adverse environmental effect on the water resources.

K.8. Historic and Archaeological Resources

Based on the consultation with the SHPO, the Property lacks historical and architectural importance. As a result, no impacts to historic/cultural resources are anticipated.

K.9. Noise

After the Substation is placed in service, infrequent impulse noise would be generated from switching and circuit breaker opening and closing. The impulse noise levels and steady-state transformer noise levels are not expected to exceed the levels permitted at the Property line by CTDEP's noise control regulations.

The construction and testing of the Substation facilities is expected to occur over a 12- to 18-month period. In general, construction hours would be from 7 a.m. to 5 p.m., Monday through Friday. Site preparation, including grading and installation of foundations, would take place during the initial six months of construction and involve the use of earth-moving equipment and construction vehicles.

The installation and testing of equipment would take approximately nine months and would involve the use of cranes to unload and install structural elements and large equipment. The installation of the 115-kV line and Substation terminal structures, interconnection of the

supply lines to the Substation, and connections to the distribution system would occur outside of normal work hours because these activities necessitate taking critical transmission and/or distribution equipment out of service. As a result, this work would be scheduled for off-peak electrical demand hours and coordinated with the Town.

K.10. Floodplains

Although portions of the Site are located within the 100-year floodplain and 500-year floodplain, the activities associated with the Substation would be located entirely outside of these areas.

K.11. Seismic Areas

As with all substations constructed by CL&P, this Substation would meet or exceed the State Building Code, which includes seismic loading, wind loading, and snow and ice loadings, among others.

K.12. Lighting

The Sherwood Substation would have low-level lighting for safety and security purposes. These lights would be recessed or activated manually to minimize visual effects at night. Lighting would not affect existing residences in the vicinity of the Property. Additional lighting capability would exist in the Substation to allow for work at night under abnormal or emergency conditions.

K.13. Natural Resources

No adverse effects are anticipated on natural resources occurring at and/or nearby the Property. Vegetative clearing and earthwork would be required for construction of the

Substation; however, no impacts to wetlands would occur. Select areas within 75 feet of the wetland resource on the Property would be disturbed by grading activities, a small (northwest) corner of the Substation (which would include a breaker arrangement), and installation of a bioswale and a level spreader. Cut and fill slopes would not exceed two to one (2:1) grades, and would be loamed and seeded where not incorporated into the landscape plan.

Existing trees that require removal at the Property, several of which are non-native species, would be replaced with a variety of specimens, the majority of which are native to the region. CL&P also proposes to enhance the buffer area between the Substation and the adjacent wetland resource.

K.14. Coastal Zone Management Areas

The Site falls within the Coastal Area Management Boundary, as defined by Conn. Gen. Stat. § 22a-94(a). No tidal wetlands/ watercourses or coastal resources are located on the Site. A tidal (wetland) salt marsh is located approximately 50 feet from the Site immediately southeast of New Creek Road. Greens Farms Brook flows within the marsh interior. An on-site inland freshwater wetland system discharges to the tidal marsh via a 15-inch culvert beneath New Creek Road. The on-site freshwater wetland is not subject to tidal influence due to its elevation.

The Project would not result in adverse impacts to coastal resources as defined in the Connecticut Coastal Management Act (CCMA). The CCMA identifies eight adverse impacts to coastal resources. This section provides a definition of each adverse impact for each resource area and explains why the Project would not adversely affect each resource.

1) *Degrading **water quality** of coastal waters by introducing significant amounts of suspended solids, nutrients, toxics, heavy metals or pathogens, or through the significant alteration of temperature, pH, dissolved oxygen or salinity.*

The Project would not affect water quality within the adjacent tidal marsh or Greens Farms Brook. Erosion and sediment controls would be established as required by CTDEP Bulletin 34 *Connecticut Guidelines for Soil and Erosion and Sediment Control, dated 2002*. Stormwater generated by the Project would be adequately treated, both in quantity and quality, in general accordance with the 2004 CT Stormwater Quality manual.

2) *Degrading **existing circulation patterns of coastal waters** by impacting tidal exchange or flushing rates, freshwater input, or existing basin characteristics and channel contours.*

The Property is currently developed and outside of tidally influenced areas and as such would not impact current drainage or circulation patterns.

3) *Degrading **natural erosion patterns** by significantly altering littoral transport of sediments in terms of deposition or source reduction.*

The Project would not affect littoral transport of sediments.

4) *Degrading **natural or existing drainage patterns** by significantly altering groundwater flow and recharge and volume of runoff.*

Drainage patterns would not be significantly altered by the Project. It is anticipated that the proposed stormwater treatment practices would maintain or increase groundwater recharge at the Site and not increase runoff for the 5-, 10- and 25-year design storms.

5) *Increasing the hazard of **coastal flooding** by significantly altering shoreline configurations or bathymetry, particularly within high velocity flood zones.*

Portions of the Site occur within the 100-year and 500-year floodplains; however, the proposed activities would be located outside of the 100-year and 500-year floodplains and would not affect the shoreline configuration.

*6) Degrading **visual quality** by significantly altering the natural features of vistas and viewpoints.*

The Project is located approximately 1,000 feet from the nearest coastal resource and would not degrade the visual quality of the area. The Project consists of demolishing an existing residential structure and constructing the Substation in the eastern portion of the Site. The Substation would be located at a ground elevation approximately 4 to 8 feet lower than what exists today. Planned landscaping would incorporate earthen berms and extensive vegetative screening, resulting in the lower portions of the Substation being largely out of view.

*7) Degrading or destroying **essential wildlife, finfish or shellfish habitat** by significantly altering the composition, migration patterns, distribution, breeding or other population characteristics of the natural species or significantly altering the natural components of the habitat.*

No essential wildlife, finfish or shellfish habitat exist on portions of the Property planned for construction activities.

*8) Degrading **tidal wetlands, beaches and dunes, rocky shorefronts, and bluffs and escarpments** by significantly altering their natural characteristics or function.*

The Project would not alter the natural characteristics of any coastal resource area as none exist on the Site.

K.15. Other Surrounding Features

No adverse effects are anticipated to the facilities listed in Table H-1, primarily because of their sufficient distance from the Substation and/or the presence of the existing transportation and utility infrastructure corridor.

L. MITIGATION MEASURES

CL&P has incorporated measures into all phases of Project development and implementation to promote protection of the environment in accordance with federal, State and local requirements.

L.1 Pre-Construction Considerations

Before any construction activities occur, CL&P would prepare a Development and Management Plan ("D&M Plan"), which would be submitted for approval by the CSC. The D&M Plan would include *CL&P's 2005 Construction Best Management Practices*, which are designed to minimize or eliminate potential adverse environmental effects that may result from construction activities. The D&M Plan would include specific procedures and information on erosion and sedimentation control, spill prevention and control, construction staffing and hours, traffic control, and provisions for restoration and landscaping after construction of the Substation. The D&M Plan would also provide contact information should questions or concerns arise during construction or operation of the facility.

Prior to commencement of construction, CL&P intends to install erosion controls at the limits of work in accordance with the approved D&M Plan and the *2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control*. The erosion controls would be inspected and maintained throughout the course of the Project until final site stabilization has been achieved.

L.2 Construction-Related Activities

All construction activities would be conducted in accordance with the required D&M Plan as approved by the CSC. The siting and design of the Substation provides for a sufficient

setback from on-site wetlands. Vegetation loss resulting from the development would be compensated by establishing a substantial natural buffer of tree and shrub landscaping and enhancement of the upland area adjacent to the wetlands. The Substation would be graded to contain and treat stormwater runoff on the Property via an infiltration trench. The remainder of the stormwater would infiltrate through the gravel base of the Substation or would be allowed to run off through vegetated uplands.

Approximately 21,800 square feet within 75 feet of on-site wetlands (and 13,800± square feet within 50 feet) would be disturbed as a result of the proposed construction activities. These activities primarily include landscaping and, to a lesser degree, grading, construction of a portion of the fenced Substation compound (1,620 square feet within 75 feet and 52 square feet within 50 feet of wetlands), and the installation of a bioswale and level spreader to treat stormwater.

CL&P's Best Management Practices would be utilized in accordance with the *2002 Connecticut Guidelines for Erosion and Sediment Control* (see typical details on enclosed drawing C-6 in Volume II, Exhibit 1, *Site Plans*) throughout the course of construction activities at the Site and maintained until disturbed areas have been stabilized. Geotextile fabric sediment barriers would be placed between the development footprint and wetland resource areas during construction and maintained until the Site is stabilized and rehabilitated.

L.3 Post-Construction Features

Upon completion of construction activities, all disturbed/exposed areas would be stabilized with topsoil and seeded with a New England conservation/wildlife mix, to establish a

cover of native grasses, forbs, wildflowers and legumes that would provide both soil stability and wildlife habitat value. Erosion controls would remain in place until final site stabilization is achieved.

After construction, a small portion of the northwest corner of the Substation (which would include a breaker arrangement) and the bioswale and a level spreader would be located within 75 feet of wetlands. Construction-related disturbances to the remaining area within 75 feet between the Substation and the adjacent wetland resource would be enhanced by a combination of seed mixes containing native grasses and forbs for post-construction stabilization in all exposed areas, including those within the proposed landscaped areas.

Areas along the east side of the on-site wetland resource would be undersown with a New England wet mix to create a wetland meadow environment. The adjoining upland area to the east, currently occupied by a portion of an existing driveway, lawn and landscaped areas would be undersown with a New England conservation mix to establish a tall meadow; non-native plant species (excluding mature trees) and lawn would be removed within this area and trees and shrub species native to the region would be planted. Along the south and east portions of the Site, a low meadow mix would be used in combination with landscaping of native trees. A Concept Planting Plan is provided in Volume II, Exhibit 1, *Site Plans*.

All of the 21,800± square feet of disturbance within 75 feet of the on-site wetland resource would be pervious to stormwater following Site construction activities. This represents a net gain of 4,209± square feet of pervious surfaces within this area from existing conditions, due to the conversion of the on-site residence and paved driveway to landscaping.

The Project includes the installation of two 60-MVA transformers that would contain insulating (mineral) oil. The transformer equipment would each have secondary containment designed to hold 110 percent of a transformer's fluid capacity, and accidental spill prevention measures in place. CL&P proposes to install Imbiber Bead® Containment Systems for the sumps, similar to containment systems installed at other CL&P substations, to assist in preventing oil discharges from the containment sumps. Further, a low oil level alarm that is integral to the system would be monitored remotely and would notify CL&P in the event of abnormal conditions. Periodic inspections of the sumps would be performed by CL&P personnel to promote proper functioning of the systems. Based on these design considerations, the Project would have no adverse environmental effect.

CL&P would provide extensive landscaping around the Substation perimeter, resulting in the fencing and lower portions of internal equipment being largely out of view. Lighting would be available within the Substation yard to facilitate work at night under emergency conditions and during inclement weather. The Substation would have low-level lighting for safety and security purposes. However, these lights would be recessed or activated manually to minimize visual effects at night. Lighting would not extend beyond the limit of the fenced area.

L.4 Construction Sequencing

The general construction sequence for the Substation and line interconnection would include:

- Installation of erosion and sedimentation control measures;
- Construction of the access drive;
- Removal of the existing residential dwelling;
- Removal of trees and shrubs within the areas to be graded;
- Preparation of the Site (cut, fill, grading);
- Installation of Substation foundations, conduits and grounding grid;
- Spreading trap rock;

- Installation of steel structures and Substation equipment;
- Installation of transmission line interconnections;
- Removal of existing driveway;
- Commissioning the Substation;
- Completion of Site restoration activities; and
- Removal of erosion and sedimentation control measures.

As requested by the Town and consistent with CL&P's Best Management Practices for construction of substations:

- The erosion and sediment controls would be employed by the contractor during the earthwork and construction phases of the Project in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control;*
- Prior to starting any other work on the site, CL&P's contractor would notify the appropriate agencies and install appropriate erosion control measures as depicted on the Site Plans in Volume II;
- CL&P's contractor would inspect and maintain erosion-control measures, remove sediment from the erosion-control measures on a weekly basis and within twenty-four hours after each storm event and dispose of sediments in an upland area such that they do not encroach into other protected areas;
- CL&P's contractor would be fully responsible for controlling construction activities such that sedimentation will not affect regulated areas, whether such sedimentation is caused by water, wind or direct deposit;
- CL&P's contractor would perform construction sequencing such that earth materials are exposed for a minimum of time before they are covered, seeded, or otherwise stabilized to prevent erosion; and,
- Upon completion of construction and establishment of permanent ground cover, CL&P's contractor would remove and dispose of erosion-control measures, and remove sediment and debris from areas where control measures were used.

M. HEALTH AND SAFETY

M.1 Electric and Magnetic Fields

Electric fields ("EF") are produced within the surrounding area of a conducting object (e.g., a wire) when a voltage is applied to it. EF are measured in units of kilovolts per meter ("kV/m"). The level of an EF near to energized power line depends on the applied voltage, the distance between the conductors, and the distance to the measurement location.

Magnetic fields ("MF") are produced within the surrounding area of a conductor or device which is carrying an electric current. MF are measured in units of milliGauss ("mG"). The level of a MF near to line conductors carrying current depends on the magnitude of the current, the distance between conductors, and the distance from the conductors to the measurement location.

Both electric and magnetic fields decrease rapidly as the distance from the source increases, and even more rapidly from electric equipment in comparison to line conductors. EF levels are further weakened by obstructions such as trees and building walls, while MF pass through most obstructions. In the case of parallel lines of circuit conductors, the levels of EF and MF are also dependent on the phasings of the circuits.

The highest levels of electric and magnetic fields around the perimeter fence of a substation occur where transmission and distribution circuits cross over or under the substation boundary. The levels of fields from substation equipment decrease rapidly with distance, reaching very low levels at relatively short distances beyond the fenced-in equipment. Substation-caused MF off the property of a substation will commonly be in the same range as the background MF levels in homes, which commonly range up to four (4) mG.

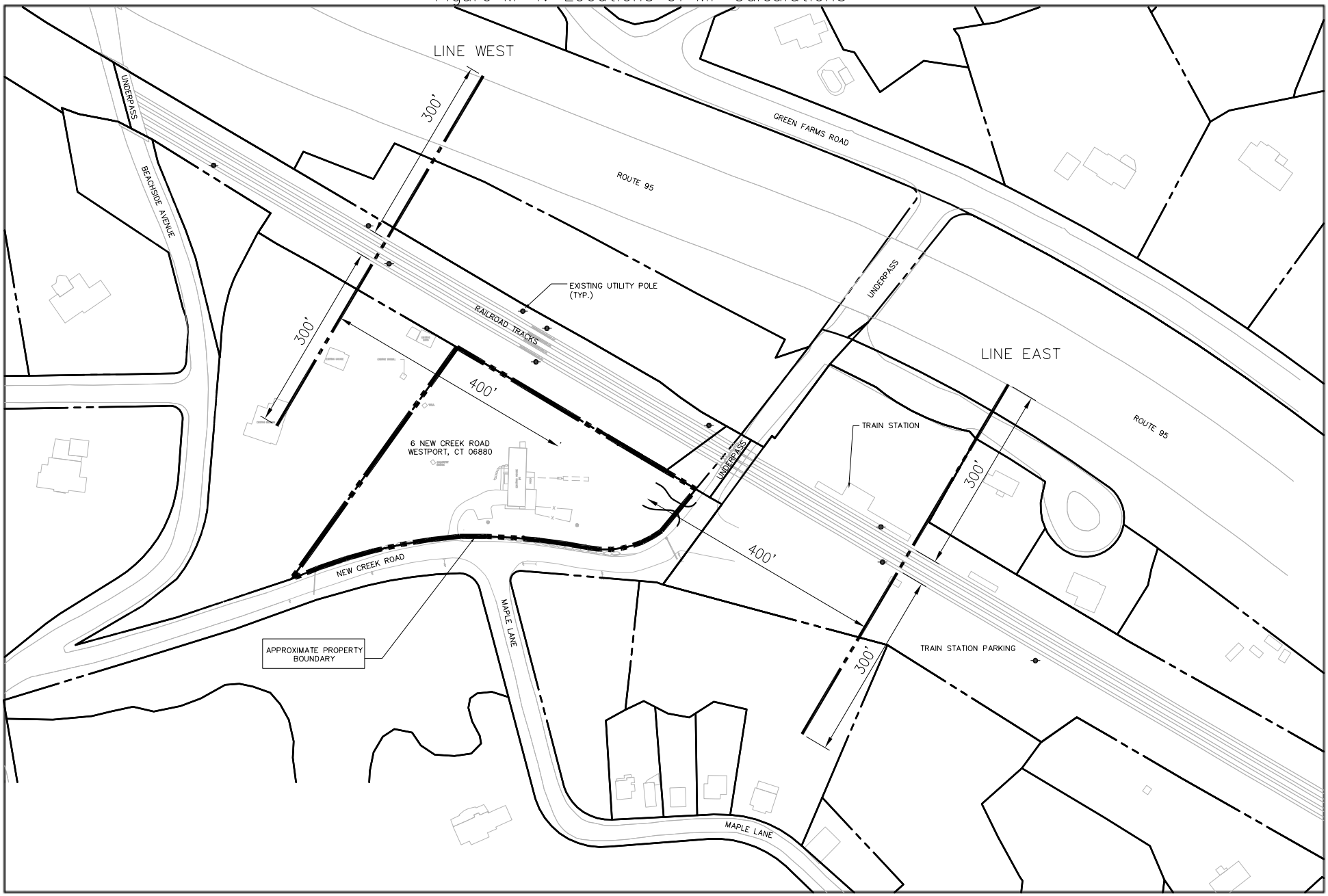
Pre-Project Magnetic Fields on Boundaries of the Property

At and beyond the Property boundaries of the Substation, the predominant existing sources of power-frequency MF are the 1130 and 1890 transmission line conductors, which are routed west to east with respect to the Property. The centerline of the 1890 Line's conductors, which are mounted on the railroad catenary structures, is approximately 35 feet to the north of the Property's northerly border; the centerline of the 1130 Line's conductors is approximately 100 feet to the north of the Property's northerly border. The two circuits as they are constructed today utilize phasings such that cancelling of interaction of their power-frequency MF is optimum.

The MF calculations of the pre-project circuits were made using projected seasonal peak and peak day average currents in the two transmission circuits in 2012, before the proposed Substation is placed in service. For this purpose, the projected peak transmission circuit currents were estimated using ISO New England's 90/10, system power-flow forecast of the summer peak in 2012 The projected pre-project, seasonal peak and peak day average circuit currents in the 1130 Line used in these calculations are 637 and 705 amperes, respectivitely. The projected pre-project, seasonal peak and peak day average circuit currents in the 1890 Line are 354 and 606 amperes, respectively.

The magnetic fields resulting from the pre-project circuit configuration in 2012 were calculated along a path perpendicular to the existing lines that extend 300 feet from each of the existing transmission lines. This path is labeled "Line West" on the Figure M-1 (*Locations of MF Calculations*) and MF values at four points along Line West are provided in Table M-1. Please refer to Figures M-2, M-3, M-4 and M-5 for graphs of Magnetic Fields.

Figure M-1: Locations of MF Calculations



Vanasse Hangen Brustlin, Inc.
Transportation Land Development Environmental Services

LINE EAST AND LINE WEST REPRESENT LOCATIONS WHERE
PRE-PROJECT MAGNETIC FIELDS WERE CALCULATED

Connecticut Light & Power
The Northeast Utilities System

Table M-1: Existing Magnetic Fields in 2012

Location along Perpendicular Path – Line West	Magnetic Field (mG) Levels at Projected Seasonal Peak Circuit Currrents in 2012	Magnetic Field (mG) Levels at Projected Seasonal Peak Day Average Currents in 2012
300 feet north of the northernmost transmission circuit (1130)– North of the Property	0.53	0.44
Beneath northernmost transmission circuit (1130)	12.79	15.07
Beneath southernmost transmission circuit (1890)	11.64	20.10
300 feet south of the southernmost transmission circuit (1890) – West of the Property	0.20	0.36

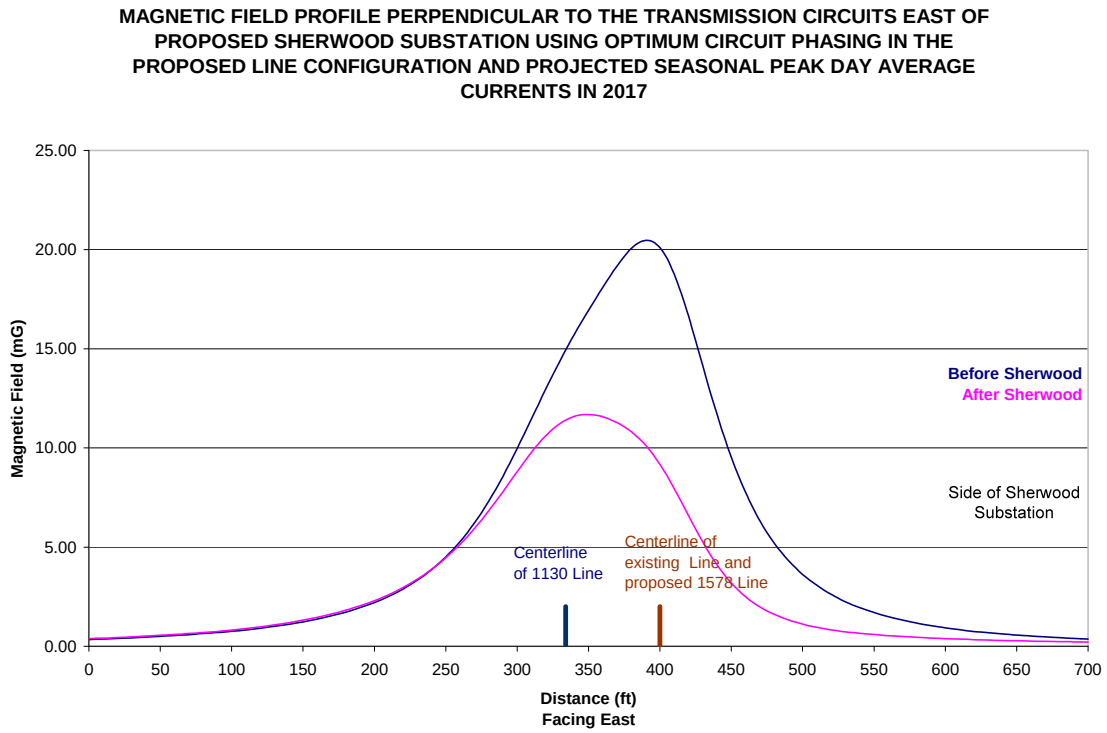

MAGNETIC FIELD PROFILE PERPENDICULAR TO THE TRANSMISSION CIRCUITS EAST OF PROPOSED SHERWOOD SUBSTATION USING OPTIMUM CIRCUIT PHASING IN THE PROPOSED LINE CONFIGURATION AND PROJECTED SEASONAL PEAK DAY AVERAGE CURRENTS IN 2017
Magnetic Field (mG)
25.00
20.00
15.00
10.00
5.00
0.00
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
Distance (ft)
Facing East
Before Sherwood
After Sherwood
Side of Sherwood Substation
Centerline of 1130 Line
Centerline of existing Line and proposed 1578 Line

Figure M-2

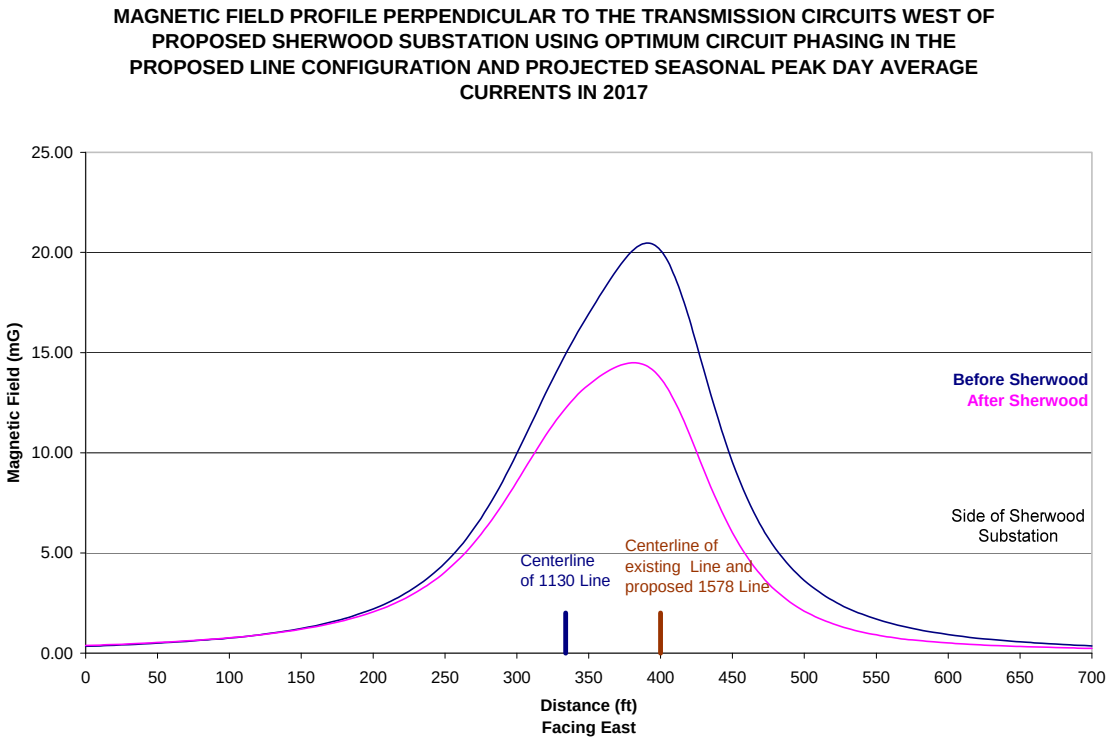

MAGNETIC FIELD PROFILE PERPENDICULAR TO THE TRANSMISSION CIRCUITS WEST OF PROPOSED SHERWOOD SUBSTATION USING OPTIMUM CIRCUIT PHASING IN THE PROPOSED LINE CONFIGURATION AND PROJECTED SEASONAL PEAK DAY AVERAGE CURRENTS IN 2017
Magnetic Field (mG)
25.00
20.00
15.00
10.00
5.00
0.00
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
Distance (ft)
Facing East
Before Sherwood
After Sherwood
Side of Sherwood Substation
Centerline of 1130 Line
Centerline of existing Line and proposed 1578 Line

Figure M-3

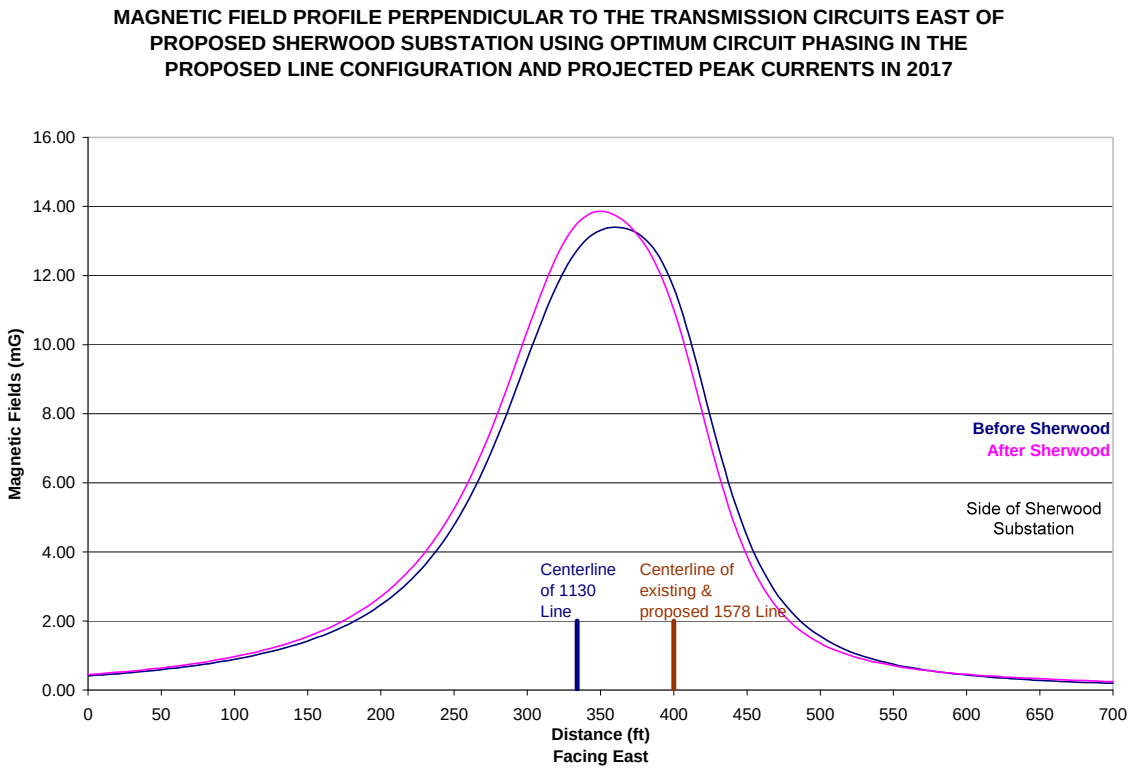

MAGNETIC FIELD PROFILE PERPENDICULAR TO THE TRANSMISSION CIRCUITS EAST OF PROPOSED SHERWOOD SUBSTATION USING OPTIMUM CIRCUIT PHASING IN THE PROPOSED LINE CONFIGURATION AND PROJECTED PEAK CURRENTS IN 2017
Magnetic Fields (mG)
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
Distance (ft)
Facing East
Before Sherwood
After Sherwood
Side of Sherwood Substation
Centerline of 1130 Line
Centerline of existing & proposed 1578 Line

Figure M-4

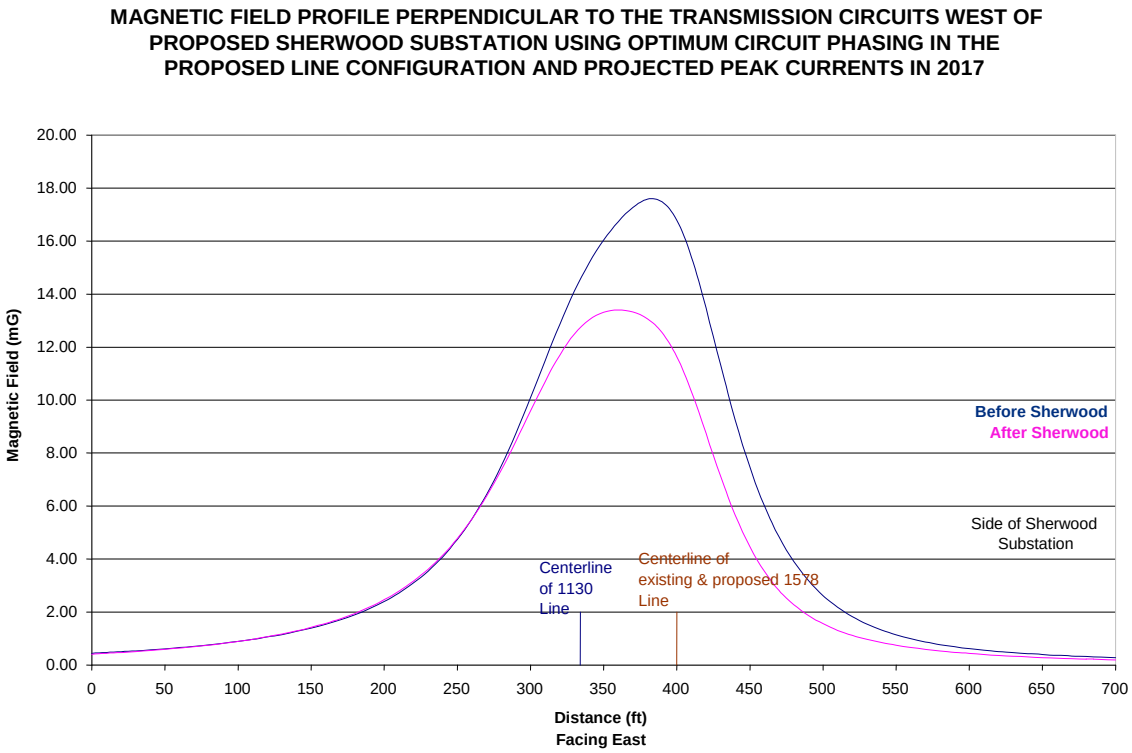

MAGNETIC FIELD PROFILE PERPENDICULAR TO THE TRANSMISSION CIRCUITS WEST OF PROPOSED SHERWOOD SUBSTATION USING OPTIMUM CIRCUIT PHASING IN THE PROPOSED LINE CONFIGURATION AND PROJECTED PEAK CURRENTS IN 2017
Magnetic Field (mG)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
Distance (ft)
Facing East
Before Sherwood
After Sherwood
Side of Sherwood Substation
Centerline of 1130 Line
Centerline of existing & proposed 1578 Line

Figure M-5

Changes That Would Affect Magnetic Fields

The existing 1890 transmission circuit would be looped into the proposed Substation. The segment of the existing 1890 transmission circuit to the east of the Property would be renamed the 1578 transmission circuit; the remaining segment of this transmission circuit to the west of the Property would remain the 1890 transmission circuit. The currents on these transmission circuits would remain predominantly east to west but would change slightly because distribution loads would be moved to the new Substation. The projected seasonal peak and peak day average currents in the year 2017 on the 1578 transmission circuit are 539 and 441 amperes, repsectively; projected seasonal peak and peak day average currents in the year 2017 on the 1890 transmission circuit are 334 and 278 amperes, respectively; projected seasonal peak and peak day average currents in the year 2017 on the 1130 transmission circuit are 679 and 574 amperes, respectively.

The fence of the Substation would be approximately 40 feet at its closest point from any Property line, specifically the northerly Property line. At this distance, and because the line conductors and electric railroad lines are sources of MF on the north side, the Substation equipment within the fenced area would not noticeably contribute to any change in MF along the Property lines. However, there would be a small change to the existing magnetic field levels at points on and beyond the Property lines due to the change in loads flowing in the looped transmission line into the Substation.

Projected Magnetic Fields on Boundaries of the Property

CL&P made calculations of the projected magnetic field levels along two paths that run perpendicular to the transmission lines. These paths are located 300 feet to the west and 300 feet to the east of the proposed Substation and are referred to herein as Line West and Line East, respectively (see Figure M-1, *Locations of MF Calculations*). The location of Line West was specifically chosen because the closest residential dwelling is located along this calculation path at about 300 feet south of the nearest transmission line and 150 feet from the Substation's westerly Property boundary.

The magnetic fields of the existing lines were calculated using projected levels of system power-flow model simulations using ISO New England's 90/10 forecast of seasonal peak circuit currents in the year 2012, before the Substation is placed in service, and projected seasonal peak day average circuit current five years after the Substation is placed in service (2017). The transmission circuits connecting to the Substation were modeled with their typical minimum clearance to ground of 40 feet in this area. In addition, the proposed modifications to the transmission lines would retain the optimum circuit phasings.

Table M-2 tabulates projected magnetic field levels at points along the calculation paths Line West and Line East after the Substation is placed in service.

Table M-2: Projected Magnetic Field Levels in 2017

Line West		
Location along Perpendicular Path – Line West	**Magnetic Field (mG) Levels at Projected Seasonal Peak Circuit Currents in 2017**	**Magnetic Field (mG) Levels at Projected Seasonal Peak Day Average Currents in 2017**
300 feet north of the northernmost transmission circuit (1130)– North of the Property	0.55	0.48
Beneath northernmost transmission circuit (1130)	14.66	12.32
Beneath southernmost transmission circuit (1890)	16.79	13.72
300 feet south of the southernmost transmission circuit (1890) – West of the Property	0.28	0.24
Line East		
300 feet north of the northernmost transmission circuit (1130) – North of the Property	0.57	0.49
Beneath northernmost transmission circuit (1130)	13.55	11.44
Beneath southernmost transmission circuit (1578)	11.01	9.18
300 feet south of the southernmost transmission circuit (1578) – East of the Property	0.25	0.21

Consistent with the Connecticut Siting Council's *Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut*, the design of the Substation incorporates field management practices as follows:

- The Substation has been located very close to an existing transmission line so that the lengths of Substation entry spans are very short.

- Optimum circuit phasing would be retained to enhance magnetic field cancellation. While the line loads projected on the 1890 transmission circuit during seasonal peak conditions in 2017 are expected to decrease from the existing levels, the magnetic field levels would increase by 0.08 mG at a point 300 feet south along Line West. The magnetic fields at this same point would increase 0.12 mG during the seasonal peak average load conditions, five years after the Substation is placed in service. This is due to the fact that the 1890 transmission circuit would provide less cancellation of the magnetic fields caused by the 1130 transmission circuit.

- The Substation equipment has been located at a sufficient distance from Property lines so that this equipment makes no noticeable contribution to magnetic field levels along these Property lines.

There are no state or federal limits for magnetic field levels at the property line of a substation. However, the Institute of Electrical and Electronic Engineers ("IEEE") and the International Commission on Non-ionizing Radiation Protection ("ICNIRP") have issued guideline limits for long-term public exposures to magnetic fields. These limits are:

	Magnetic Field (mG)
IEEE	9,040
ICNIRP	833

The existing and proposed levels of magnetic fields at and beyond the Property lines are typical for all similar substations and well below these IEEE and ICNIRP limits. Based on these aforementioned guidelines and science peer group reviews of epidemiological and laboratory studies, these magnetic field exposure levels would not pose an undue safety or health hazard to persons or property at or adjacent to the Property.

M.2 Site Security

A seven-foot-high chain link fence topped with one foot of barbed wire (three strands) would enclose the Substation yard to prevent unauthorized access. The Substation yard would also be gated and locked. All gates would be padlocked at the end of the work day during construction activities and at all times once the Substation is in service. Appropriate signage would be posted at the Substation alerting the general public of high voltage facilities located within the Substation. Should equipment experience a failure, protective relaying would immediately remove the equipment from service, thereby protecting the public and the equipment within the Substation. Other devices installed within the Substation would constantly monitor the equipment to alert CL&P of any abnormal or emergency situations.

M.2.1 Energy Facility Security

As a general rule, in its planning process for new facilities, CL&P carefully designs its facilities to protect the security of the site and the on-going transmission of electricity. In response to the Council's concerns expressed in its White Paper on the security of siting energy facilities, in addition to the design features and the measures discussed above to monitor the operation of the Sherwood Substation and to discourage unauthorized entry onto the Site, CL&P met with law enforcement and emergency response personnel in Westport to discuss the Substation and coordination of efforts to protect its security. On November 5, 2009, Project team members, along with CL&P's Southern Division Safety Administrator, met with the Westport First Selectman Gordon Joseloff, Police Chief Al Fiore, and Assistant Fire Chief Jonathan Gottfried. CL&P provided a briefing on the lay-out of the Substation and site features, including the fencing design for the Substation yard, including height (7 feet), three strands of

barbed wire atop the fence, and chain link with vinyl coating, as well as plantings and landscaping.

In addition, CL&P discussed moving the main entrance driveway from its initial location in the vicinity of the existing driveway to a point facing almost due east towards the northbound railroad parking lot entrance, to help reduce the impact and visibility of the Substation yard from nearby properties and people driving down Maple Lane towards New Creek Road.

CL&P also suggested that the Town of Westport increase the number of streetlights from the Greens Farms Academy exit drive to the train station. CL&P recommended the use of small, 70 watt lights, on existing utility poles currently without lights, to increase security for all properties in the vicinity and pedestrian safety. The Town and CL&P plan to continue their discussions on additional lighting as the Project progresses.

Site construction was also discussed. CL&P will work closely with the Westport Police Department to establish off-duty police protection at the site during the course of major construction activity.

M.3 Traffic Considerations and Hours of Operation

Access would be gained from the proposed, at-grade driveway to be established along New Creek Road. Post-construction site conditions would not substantially affect existing traffic patterns. Once construction of the Substation is complete, the facility may be remotely operated, with personnel on site only for periodic inspections, maintenance and emergency work.

N. PROJECT SCHEDULE

Construction is expected to begin in the fall of 2010, with the Substation in service in January 2012.

O. GOVERNMENT APPROVALS OBTAINED

Pursuant to Conn. Gen. Stats. § 16-50*l*(e), the Municipal Consultation Filing ("MCF") was completed and delivered to the chief elected official of the Town of Westport on October 14, 2009, beginning the 60-day (minimum) consultation process.

On many occasions over the past eighteen months, CL&P has consulted with Town of Westport officials, including First Selectman Gordon F. Joseloff, regarding the electric service provided by CL&P to the Westport community and CL&P's desire to improve the reliability of that service. On April 12, 2009, CL&P officials also met with Mr. Joseloff, the Director of Planning and Zoning, Laurence Bradley, the Conservation Director, Alicia Mozian, and the Director of Public Works, Stephen Edwards. These officials were briefed on CL&P's determination that a new substation would be required in Westport, based on the Town's growing need for additional electrical distribution capacity and to improve system reliability.

As part of the State review process, Connecticut law provides a mechanism for input by certain town land use agencies on electric substation locations. Specifically, Conn. Gen. Stat. §16-50x(d) permits zoning commissions and inland wetland commissions to "regulate and restrict the proposed location" of such public utility facilities. CL&P filed "Location Review" submissions with the Westport Conservation Commission and the Planning and Zoning Commission (the "P&Z") on May 14, 2009.

At the request of the Town, a June 8, 2009 site walk was hosted by CL&P for Town staff and members of the P&Z and Conservation Commission to familiarize themselves with the Property and the Project. On June 9, 2009, the Town's Conservation Analyst, Lynne Krynicki,

provided her written comments to CL&P. CL&P responded to these comments in a June 17, 2009 letter.

On June 11, 2009, CL&P gave a presentation to the P&Z at its regular meeting. At its next working session on June 25, 2009, the P&Z discussed and agreed upon its preliminary findings and subsequently provided a recommendations letter (dated June 26, 2009) to the Council. CL&P responded to the P&Z on September 23, 2009. CL&P similarly presented the Substation to the Conservation Commission on June 17, 2009. One member of the public spoke and asked questions. The Conservation Commission indicated that the minutes of their meeting would serve as its comments. CL&P responded to the Conservation Commission meeting minutes on September 23, 2009.

CL&P also met with the Westport Architectural Review Board (the "ARB") on July 14, 2009 to present the Substation. The ARB expressed a preference for painting the control enclosures an earth tone color (either green or brown), incorporating dense, tall plantings into the site landscaping, and inclusion of a decorative gate at the Site entrance. As discussed in Section M.2.1 of this Application, Project team members, along with CL&P's Southern Division Safety Administrator, met with the Westport First Selectman Gordon Joseloff, Police Chief Al Fiore, and Deputy Fire Chief Jonathan Gottfried on November 5, 2009, to discuss energy security issues.

After the filing of the MCF, the First Selectman requested that CL&P meet again with the Conservation and P&Z Commissions and Town staff provided its comments regarding the MCF on October 13, 2009. CL&P responded in writing to the Town staff comments in a letter dated November 16, 2009. On November 18 and 19, 2009, CL&P attended public meetings of the

Conservation and P&Z Commissions, respectively. At such meetings, CL&P provided an overview of the changes to the site plan since the Location Review process (including comments received from the Commissions and Town staff) and addressed all issues raised by Commission members. No members of the public spoke in favor or opposition to the Project when provided the opportunity. By letter dated November 20, 2009, the Conservation Commission informed CL&P that it was prepared to support the Project upon filing of the updated site plan. The P&Z Commission commended CL&P for its excellent responses to the Town's questions raised throughout the process. By letter dated December 7, 2009, the P&Z Director stated that the P&Z Commission was satisfied with the Project as presented. By letter dated December 7, 2009, the First Selectman indicated the Town's support for the Sherwood Substation.

Copies of correspondence between CL&P and the Town are included in Volume II, Exhibit 6, *Government Approvals Obtained*.

Table O-1 summarizes the applicable approvals required for this Project.

TABLE O-1: PERMITS APPLICABLE TO THE SHERWOOD SUBSTATION PROJECT				
AGENCY	PERMIT	DATE SUBMITTED	DATE RECEIVED	LOCATION
Connecticut Siting Council	Certificate of Environmental Compatibility and Public Need under Connecticut General Statutes Section 16-50*l*(a)(1)	December 29, 2009		
Connecticut Natural Diversity Data Base	T&E clearance under state Endangered Species Act (Connecticut General Statutes Sec. 26-303 to Sec. 26-315)	Consultation initiated on May 19, 2008; and, December 18, 2009	June 19, 2009; and, December 18, 2009	CSC Application Volume II Exhibit 4, CTDEP Correspondence
Connecticut Historical Commission	Cultural Resource Consultation under Section 106 of the National Historic Preservation Act	Consultation initiated on May 19, 2009	May 21, 2009	CSC Application Volume II Exhibit 5, SHPO Correspondence
Town of Westport	Municipal Consultation Filing under Connecticut General Statutes Section 16-50*l*(e)	October 14, 2009	60-day period ended December 14, 2009	CSC Application Bulk Filing #1
Town of Westport Conservation Commission	Location Review Application under Connecticut General Statutes Section 16-50 x(d)	May 14, 2009	September 23, 2009	CSC Application Bulk Filing #1
Town of Westport Planning and Zoning Commission	Location Review Application under Connecticut General Statutes Section 16-50 x(d)	May 14, 2009	June 26, 2009	CSC Application Bulk Filing #1

P. BULK FILING OF MUNICIPAL DOCUMENTS

A bulk filing of municipal regulations and documents that were submitted to the Town of Westport is being provided solely to the Council under a separate attachment, as part of this Application, including the below-referenced applications submitted by CL&P and applicable local regulations, respectively:

- Application to the Town of Westport Conservation Commission pursuant to Conn. Gen. Stats. § 16-50x(d) Location Review;
- Application to the Town of Westport Planning and Zoning Commission pursuant to Conn. Gen. Stats. § 16-50x(d) Location Review;
- Inland Wetlands and Watercourses Regulations of the Town of Westport;
- Town of Westport, Connecticut Zoning Regulations;
- Westport Plan of Conservation and Development; and,
- Municipal Consultation Filing.

Q. ADMINISTRATIVE NOTICE, PUBLIC AND ABUTTERS NOTICE, SERVICE AND OTHER FILING REQUIREMENTS

As requested by the CSC, CL&P is furnishing to the CSC one original and 20 copies of the Application, as well as an electronic version of the Application.

This Application is presented based on the CSC's June 2007 *Application Guide for Electric Substation Facility* to assist applicants in filing for a Certificate from the CSC for the construction of an electric substation as defined in Conn. Gen. Stat. § 16-50i (a) (4).

CL&P also consulted Conn. Gen. Stat. §§ 16-50g through 16-50aa and Sections 16-50j-1 through 16-50z-4 of the Regulations of Connecticut State Agencies in preparing this Application.

Q.1 Administrative Notice

CL&P requests administrative notice of the following CSC docket records, generic hearings or statements prepared by the CSC as a result of generic hearings, and other pertinent documents. We would suggest the following documents be included.

- *Energy Plan for Connecticut Prepared by the Connecticut Energy Advisory Board, Connecticut Energy Advisory Board, February 6, 2007*
- *An Assessment and Report of Distributed Generation Opportunities in Southwest Connecticut, Institute for Sustainable Energy at Eastern Connecticut State University with assistance from XENERGY, January 14, 2003*
- *Distributed Generation Market Potential: 2004 Update/Connecticut and Southwest Connecticut, Institute for Sustainable Energy at Eastern Connecticut State University with assistance from XENERGY, March 15, 2004*
- *Connecticut Department of Public Utility Control, Docket 05-07-17RE01 and Docket 05-07-17RE02, DPUC Review of the Development of a Program to Provide Monetary Grants for Capital Costs of Customer-Side Distributed Resources, final decision dated September 25, 2007and March 18, 2009, respectively*

- *Connecticut Siting Council Review of the Connecticut Electric Utilities Ten-Year Forecast of Loads and Resources, 2007, 2008, and 2009.*

- *Connecticut Guidelines for Soil Erosion and Sediment Control 2002*

- *Conservation and Development Policies Plan for Connecticut 2005-2010, adopted by the Connecticut General Assembly, 2006. http://www.opm.state.ct.us/igp/cdplan/cdplan2.htm*

- *Connecticut General Statutes Section 16-243 and Sections 16-11-134, and 135 of the Regulations of Connecticut State Agencies (and by reference, the National Electrical Safety Code ANSI C2, 2007 Edition)*

- *National Electrical Safety Code, ANSI C2-2007, August 1, 2006*

- *IEEE Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields From AC Power Lines, IEEE Std 644-1994, December 13, 1994*

- *IEEE Guide for the Design, Construction, and Operation of Electric Power Substations for Community Acceptance and Environmental Compatibility, IEEE Std 1127-1998 (R2004), March 2004. (Revision of IEEE Std 1127-1990)*

- *Current Status of Scientific Research, Consensus, and Regulation Regarding Potential Health Effects of Power-Line Electric and Magnetic Fields (EMF), January 2006*

- *Connecticut Siting Council's Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut, December 14, 2007*

- *Interagency Task Force Studying Electric and Magnetic Fields, Connecticut 1998 Report on Task Force Activities to Evaluate Heath Effects from Electric and Magnetic Fields, January 1998*

- *NIEHS Report to Congress on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, 1999*

- *EMF, Electric and Magnetic Fields Associated with the Use of Electric Power, Questions and Answers, NIEHS, 2002*

- *Research on Power-Frequency Fields, National Research Council, 1999*

- *Review of the Scientific Evidence for Limiting Exposure to EMF, National Radiation Protection Board, 2004*

Q.2 Pre-Application Process (Conn. Gen. Stat. § 16-50*l*(e))

CL&P met with representatives of the Town of Westport on several occasions prior to distribution of the MCF. On September 29, 2009, the MCF was preliminarily distributed to the CEO, P&Z, Conservation Commission, Department of Public Works, and the Town Librarian. On October 14, 2009, the MCF was submitted to the CEO and the Connecticut Energy Advisory Board, thereby commencing the formal municipal consultation period.

Q.3 Application Filing Fees (Conn. Gen. Stat. § 16-50v-la)

The filing fee for this Application is determined by the following schedule:

Estimated Construction Cost		Fee
Up to	$5,000,000	0.05% or $1,000.00, whichever is greater
Above	$5,000,000	0.1% or $25,000.00, whichever is less

Based on this schedule and the estimated construction cost for the Project presented in Section F, a check for the filing fee in the amount of $19,800 payable to the CSC accompanies this Application. CL&P understands that additional assessments may be made for expenses in excess of the filing fee, and that fees in excess of the CSC's actual costs will be refunded to CL&P.

Pursuant to Conn. Gen Stat. § 16-50*l*(a)(1), CL&P also encloses a separate check in the amount of $25,000 payable to the CSC for the municipal participation fee.

Q.4 Proof of Service (Conn. Gen. Stat. § 16-50*l*(b))

This Application was served on the following:

A. The chief elected official/chief executive officer, and where applicable, the zoning commission, planning commission, the planning and zoning commissions, and the conservation and wetlands commissions of the site municipality and any adjoining municipality having a boundary not more than 2,500 feet from the facility;

B. The regional planning agency;

C. The State Attorney General;

D. Each member of the Legislature in whose district the facility is proposed;

E. Any federal agency which has jurisdiction over the proposed facility; and,

F. The State Departments of Agriculture, Environmental Protection, Public Health, Public Utility Control, Economic and Community Development, and Transportation; the Council on Environmental Quality; and the Office of Policy and Management.

The names of governmental officials and agencies on which a copy of the Application is being served (the "Proof of Service") are provided in Volume II, Exhibit 7 (*Form of Affidavit and Service List*).

Q.5 Public Notices (Conn. Gen. Stat. § 16-50*l*(b))

Notice of the Application (the "Notice") was published at least twice prior to the filing of the Application in a newspaper having general circulation in the site municipality. The Notice included the name of the applicant, the date of filing and a summary of the Application. The Notice was published in not less than ten point type and run in the following newspapers:

- The Westport News on December 18, 2009 and again on December 23, 2009.
- Norwalk Hour on December 17, 2009 and again on December 22, 2009.

Copies of the Affidavit of Notice and the legal ad are provided in Volume II, Exhibit 8 (*Affidavit and Public Notice*).

Q.6 Notice to Owners of Property Abutting Substation Site

Notice of the proposed Sherwood Substation was provided to abutters and other property owners proximate to CL&P's Property via certified mail, return receipt requested.

An Affidavit regarding the notice, a list of recipients, and a copy of the legal notice are provided in Volume II, Exhibit 9 (*Affidavit of Notice to Abutting Landowners*).

R. OTHER RELEVANT INFORMATION

This Project was identified in the *Connecticut Siting Council Review of the Connecticut Electrical Utilities Ten-Year Forecast of Loads and Resources,* published in 2007, 2008, and again in the 2009 (by reference to the 2008 report). CL&P received ISO-NE approval per *Section I.3.9 of the ISO New England Inc. Transmission, Markets and Service Tariff* for the proposed Project plan (see letter dated December 12, 2008, in Volume II, Exhibit 10, *Other Relevant Information*).

R.1 Public Outreach

CL&P sent out information by mail on May 19, 2009 to 28 residences in the vicinity to introduce the Substation. CL&P received a response from residents at 10 Clayton Street whose primary interest was additional screening of the temporary CL&P transformer at Sasco Creek Substation. This issue was subsequently resolved to the residents' satisfaction.

On June 9, 2009, CL&P presented the Substation to Greens Farms Academy. At the request of Greens Farms Academy, CL&P provided copies of preliminary landscaping concept plans and a digital video disc (DVD) discussing electric and magnetic fields. Greens Farms Academy also expressed interest in CL&P exploring pedestrian improvements to New Creek Road and its intersection with Maple Lane to provide for the enhanced safety of students using the nearby rail station for access to the school. CL&P is committed to resolving the Academy's concerns. CL&P also presented the Project to members of the Greens Farms Association on June 9, 2009.

A listing of those residents and abutting land owners provided copies of the public outreach information and associated correspondence with residents and Greens Farms Academy are included in Volume II, Exhibit 10, (*Other Relevant Information*).

R.2 Exemption from CEAB Mandatory RFP Process

Pursuant to Conn. Gen. Stats. § 16-50*l* (a) (2), as an electric substation designed to change or regulate voltage of electricity greater than 69kV, this project is exempt from the mandatory request for proposal process of the Connecticut Energy Advisory Board ("CEAB"). CL&P furnished to the CEAB a copy of the municipal consultation filing on October 14, 2009, and a copy of the legal notice and this Application on December 29, 2009.

GENERAL GLOSSARY OF TERMS

(Not all terms are used in this document)

115-kV: 115 kilovolts or 115,000 volts.

345-kV: 345 kilovolts or 345,000 volts.

AC: (alternating current)
An electric current which reverses its direction of flow periodically. (In the United States this occurs 60 times a second-60 cycles or 60 Hertz.) This is the type of current supplied to homes and business.

A-frame Structure: A steel structure constructed of two A-shaped uprights with horizontal cross-members and bracings.

Autotransformer: A single winding step-down transformer (see Transformer).

Ampere (Amp): A unit measure for the flow (current) of electricity. A typical home service capability (i.e., size) is 100 amps; 200 amps are required for homes with electric heat.

Arrester: Protects lines, transformers and equipment from lightning and other voltage surges by carrying the charge to ground. Arresters serve the same purpose on a line as a safety valve on a steam boiler.

Bundle: (circuit) Two or more parallel 3-conductor circuits joined together to operate as one single circuit.

Bundle: (conductor) Two or more phase conductors or cables joined together to operate as a single phase.

Bus: A conductor capable of carrying large amounts of current in a substation.

Cable: A fully insulated conductor usually installed underground but in some circumstances can be installed overhead.

CTDEP: Connecticut Department of Environmental Protection.

CELT: NEPOOL, Annual Capacity, Energy, Load and Transmission report.

CGS: Connecticut General Statutes.

Circuit: A system of conductors (three conductors or three bundles of conductors) through which an electrical current is intended to flow and which may be supported above ground by transmission structures or placed underground.

Circuit Breaker: A switch that automatically disconnects power to the circuit in the event of a fault condition. Located in substations, this switch performs the same function as a circuit breaker in a home.

CHP: Combined heat power

CL&P: The Connecticut Light & Power Company.

CMEEC: Connecticut Municipal Electric Energy Cooperative, Inc.

Conductor: A metallic wire, busbar, rod, tube or cable which serves as a path for electric flow.

Conduit: Pipes, usually PVC plastic, typically encased in concrete, for underground power cables.

Conversion: Change made to an existing transmission line for use at a higher voltage, sometimes requiring the installation of more insulators. (Lines are sometimes pre-built for future operation at the higher voltage.)

CSC: Connecticut Siting Council; the Council.

CONVEX: Connecticut Valley Exchange.

dBA: Decibel, on the A-weighted scale.

DC: Direct current; electricity that flows continuously in one direction. A battery produces DC power.

Demand: The total amount of electricity required at any given time by an electric supplier's customers.

Distribution: Line, system; the facilities that transport electrical energy from the transmission system to the customer.

DG: Distributed generation

D&M Plan: Development & Management Plan.

DPUC: (Connecticut) Department of Public Utility Control.

Duct: Pipe or tubular runway for underground power cables (see also Conduit).

Duct Bank: A group of ducts or conduit usually encased in concrete in a trench.

Electric Field: Result of voltages applied to electrical conductors and equipment.

Electric Transmission: The facilities (69-kV+) that transport electrical energy from generating plants to distribution substations.

EMF: Electric and magnetic fields.

Fault: A failure or interruption in an electrical circuit (short circuit).

FEMA: Federal Emergency Management Agency.

Fiber Optic Shield Wire (FOSW): See **Lightning Shield Wire**

G: Gauss; 1G = 1000 mG (milligauss); the unit of measure for magnetic fields.

GIS: Gas insulated substation using sulfur hexaflouride (SF_6).

Glacial till: These deposits are predominantly nonsorted, nonstratified sediment and are deposited directly by glaciers. These deposits consist of boulders, gravel, sand silt, and clay mixed in various proportions.

Gneiss: Light and dark, medium- to coarse-grained metamorphic rock characterized by compositional banding of light and dark minerals, typically composed of quartz, feldspar and various amount of dark minerals.

Granofels: Light to dark, medium- to coarse-grained, massively to poorly layered metamorphic rock composed primarily of quartz and feldspar; lacking the compositional banding of gneiss.

Ground Wire: Cable/wire used to connect wires and metallic structure parts to the earth. Sometimes used to describe the lightning shield wire.

H-frame Structure: A wood or steel structure constructed of two upright poles with a horizontal cross-arm and bracings.

Hz: Hertz, a measure of frequency; one cycle/second.

ISO: Independent System Operator.

ISO-NE: ISO New England, Inc.; referred to as New England's Independent System Operator.

kcmil: 1000 circular mils, approximately 0.0008 sq. in.

kV: kilovolt, equals 1000 volts.

kV/m: Electric field measurement (kilovolts/meter).

Lattice-type Structure: Transmission or substation structure constructed of lightweight steel members.

Lightning Shield Wire: Electric cable intended to prevent lightning from striking transmission circuit conductors. May contain glass fibers for communication use, "Fiber Optic Shield Wire", or "FOSW".

Line: A series of overhead transmission structures which support one or more circuits; or in the case of underground construction, a single electric circuit.

Load: Amount of power delivered as required at any point or points in the system. Load is created by the power demands of customers' equipment (residential, commercial, and industrial).

LOLE: Loss of Load Expectation; a measure of bulk power system reliability.

Magnetic Field: Produced by the flow of electric current; strength measured as magnetic flux density in units called gauss (G) or milligauss (mG) – 1/1000Gauss.

Magnetic Flux Density: Strength of magnetic field

mG: milligauss (see Magnetic Field) – 1/1000Gauss.

MOD: Motor-Operated Disconnect switch.

MVA: Megavolt Ampere: Measure of electrical capacity equal to the product of the voltage times the current. Electrical equipment capacities are sometimes stated in MVA.

MW: Megawatt. Megawatt equals 1 million watts, measure of the work electricity can do.

NDDB: Natural Diversity Data Base (CTDEP).

NEPOOL: New England Power Pool.

NERC: North American Electric Reliability Council.

NESC: National Electrical Safety Code.

NPCC: Northeast Power Coordinating Council.

NU: Northeast Utilities.

OH (Overhead): Electrical facilities installed above the surface of the earth.

Palustrine: Marshy, wetland areas described as palustrine include marches, swamps and bogs.

Peaking Facility: A generating station that runs when demand on the grid exceeds base load generation capacity in the region.

Phases: Transmission (and some distribution) AC circuits are comprised of three phases that have a voltage differential between them.

PUESA: Public Utility Environmental Standards Act.

Reinforcement: Any of a number of approaches to improve the capacity of the transmission system, including rebuild, reconductor, conversion and bundling methods.

Rebuild: Replacement of an existing overhead transmission line with new structures and conductors generally along the same route as the replaced line.

Reconductor: Replacement of existing conductors with new conductors, but with little if any replacement or modification of existing structures.

Right of way: ROW; corridor.

Riprap: A permanent erosion-resistant ground cover of large, loose, angular stone with filter fabric or granular underlining used to protect soil from the erosion fences of concentrated runoff.

RTEP: Regional Transmission Expansion Plan prepared by ISO-NE.

SCADA: System Control and Data Acquisition system – A system installed at the substation which allows control and monitoring from a remote location.

Schist: Light, silvery to dark, coarse- to very coarse-grained, strongly to very strongly layered metamorphic rock whose layering is typically defined by parallel alignment of micas. Primarily composed of mica, quartz and feldspar; occasionally spotted with conspicuous garnets.

SF_6: Sulfur hexaflouride, an insulating gas used in GIS substations and circuit breakers.

Shield Wire: See Lightning Shield Wire.

SHPO: State Historic Preservation Office (State of Connecticut Commission on Culture and Tourism, Historic Preservation and Museum Division).

Statutory Facilities: Environmental, ecological, scenic, historic, recreational or other resources identified by the Connecticut Siting Council in its *Electric Substation Facility Application Guidelines, section VII, items H and K (CGS Section 16-50l (a) (1)*.

Substation: A fenced-in yard containing switches, transformers, line terminal structures, and other equipment enclosures and structures. Adjustments of voltage, monitoring of circuits and other service functions take place in this installation.

Switching Station: A fenced-in yard containing switches, line terminal structures and other equipment, enclosures and structures. Switching of circuits and other service functions take place in this installation.

Steel Lattice Tower: See Lattice-Type Structure.

Steel Monopole Structure: Transmission structure consisting of a single tubular steel column with horizontal arms to support insulators and conductors.

Step-down Transformer: See Transformer.

Step-up Transformer: See Transformer.

Switchgear: General term covering electrical switching and interrupting devices. Device used to close or open, or both, one or more electric circuits.

Terminal Points: The substation or switching station at which a transmission line terminates.

Terminal Structure: Structure typically within a substation that ends a section of transmission line.

Terminator: A flared pot-shaped insulated fitting used to connect underground cables to overhead lines.

Transformer: A device used to transform voltage levels to facilitate the efficient transfer of power from the generating plant to the customer. A step-up transformer increases the voltage while a step-down transformer decreases it.

Transmission Line: Any line operating at 69,000 or more volts.

Upgrade: See Reinforcement.

USGS: United States Geological Survey (U.S. Department of the Interior).

V/m: volts per meter; kilovolt per meter; 1000 V/m = 1-kVm.

Voltage: A measure of the push or force which transmits electricity.

Voltage Collapse: A condition where voltage drops to unacceptable levels.

Watercourse: Rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, public or private.

Wetland: Land, including submerged land, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial or flood plain by the U.S. Department of Agriculture, Natural Resources Conservation Service. Connecticut jurisdictional wetlands are based solely on soil type; federal jurisdictional wetlands are classified based on a combination of soil type, wetland plants, and hydrologic regime.

Wire: See Conductor