DOCKET NO. 468 - The Connecticut Light & Power Company d/b/a Eversource Energy application for a Certificate of Environmental Compatibility and Public Need for the Southwest Connecticut Reliability Project that traverses the municipalities of Bethel, Danbury, and Brookfield, which consists of (a) construction, maintenance and operation of a new 115-kV overhead electric transmission line entirely within existing Eversource right-of-way and associated facilities extending approximately 3.4 miles between Eversource's existing Plumtree Substation in the Town of Bethel to its existing Brookfield Junction in the Town of Brookfield; (b) reconfiguration of two existing 115-kV double-circuit electric transmission lines at Eversource's existing Stony Hill Substation in the Town of Brookfield; and (c) related substation modifications.	}	Connecticut Siting Council November 10, 2016

Opinion

Introduction

On June 29, 2016, The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource) applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the Southwest Connecticut Reliability Project that traverses the municipalities of Bethel, Danbury, and Brookfield. The Southwest Connecticut Reliability Project consists of (a) construction, maintenance and operation of a new 115-kV overhead electric transmission line entirely within existing Eversource right-of-way and associated facilities extending approximately 3.4 miles between Eversource's existing Plumtree Substation in the Town of Bethel to its existing Brookfield Junction in the Town of Brookfield, (b) reconfiguration of two existing 115-kV double-circuit electric transmission lines at Eversource's existing Stony Hill Substation in the Town of Brookfield; and (c) related substation modifications (Project).

Public Need

The purpose of the Project is to bring the electric supply system in portions of Southwest Connecticut (SWCT) into compliance with applicable national and regional reliability standards and criteria by eliminating potential thermal overloads and voltage violations identified in studies conducted by the Independent System Operator in New England (ISO-NE). ISO-NE is responsible for the reliable and economical operation of New England's electric power system, which includes managing the comprehensive, long-term planning of the regional power system to identify the region's electricity needs and the development of plans to meet those needs.

ISO-NE initially identified transmission needs in the SWCT region in 2001. At that time ISO-NE focused on the construction and completion of additional transmission into the SWCT area, specifically the Docket 217 Bethel-Norwalk 345-kV line, the Docket 272 Middletown-Norwalk 345-kV line and the Docket 292 Glenbrook-Norwalk 115-kV cable. Despite the completion of these three major projects, the need for additional upgrades to the SWCT transmission network was necessary. The Council, in its 2005 final decision in Docket 272, acknowledged that thermal overloading issues would remain after construction of the Docket 272 project. It was recognized that this need would have to be addressed locally through future substation or transmission line upgrades.

As part of a Working Group formed by ISO-NE in 2012 to study grid reliability in the SWCT region, ISO-NE divided the SWCT region into five sub-areas and analyzed transmission load capability within and between the sub-areas. In June 2014, ISO-NE published the results of the needs assessment study, the SWCT Needs Report, identifying one of the needs as occurring within Housatonic Valley-Norwalk-Plumtree (HV) sub-area. The study determined that the HV sub-area does not have sufficient generation and/or transmission to serve its electric load and the existing electric system is insufficient to reliably serve peak load customer demands under contingency events. The study identified failures in reliability for various transmission elements and facilities, leading to thermal overloads and voltages falling below acceptable limits. The worst-case condition was identified as the loss of one or more electric import paths into the HV sub-area.

In early 2015, ISO-NE published the SWCT Solutions Report to address the identified electric system deficiencies, including solutions for the HV sub-area. Solutions include the proposed Project as well as other upgrades independent of the objectives of the proposed Project, and as such, these additional upgrades are being implemented separately. On April 16, 2015, ISO-NE, after a review of the Solutions Report by the Reliability Committee, issued a technical approval of the preferred solutions contained within the SWCT Solutions Study, including transmission improvements to the HV sub-area.

Project Alternatives

During the Working Group's SWCT study, Eversource considered and rejected a "no action" alternate on the grounds that doing nothing to eliminate existing and potential violations of national and regional reliability standards would be inconsistent with its obligation to provide reliable electric service. Eversource also considered several non-transmission alternatives to the proposed Project, namely: load pocket generation, energy efficiency and energy storage. However, none of the non-transmission alternatives were cost effective or able to provide enough power to resolve the identified reliability criteria violations.

In planning the specific route of its proposed 115-kV transmission circuit, Eversource wanted to find the shortest feasible route with the fewest potential environmental and social impacts. To solve the identified need, Eversource examined four possible routes, ultimately selecting the proposed Project as there was an existing right-of-way between the Stony Hill Substation and Plumtree Substation. Eversource examined ten route options between the two substations, including various overhead routes, an underground route, and combination overhead/underground routes. The proposed Project route was selected as it was within existing Eversource right-of-way that could easily and cost effectively accommodate a new transmission line. The alternatives and variations were found not to be cost effective and had a greater environmental and community impact than the proposed Project.

Project Description

The proposed Project entails the installation of a new 115-kV electric transmission line that would extend the existing 115-kV 1887 Line from Brookfield Junction in Brookfield to the Plumtree Substation in Bethel. Related improvements include:

a) minor modifications to the Plumtree Substation;
b) modifications at the Stony Hill Substation in Brookfield;
c) reconfiguration of the existing 1770 Line; and
d) reconfiguration of the existing 1887 Line.

Transmission Line

The proposed 3.4 mile overhead transmission line would be constructed in existing Eversource right-of-way, portions of which are already cleared and support existing electric transmission infrastructure. Land use along the existing right-of-way consists of a mix of wetlands, developed commercial property, highway infrastructure, and residential areas. Most of the residential areas occur along a 0.5 mile segment in Bethel south of Interstate 84 and a 0.2 mile segment in Bethel north of Interstate 84.

The new transmission line would be installed adjacent to other existing 115-kV and/or 345-kV lines (Lines 321, 1770, 1363, 1165). The new transmission line would consist of three conductors installed in a vertical configuration on weathering steel monopoles. West of Plumtree Substation, four three-pole weathering steel structures with conductors arranged in a horizontal configuration would be installed to accommodate conductor angles and to cross existing transmission lines. In general, the new vertical configuration monopoles would range in height from 95 feet to 135 feet above ground level (agl) and the horizontal structures range in height from 30 to 40 feet agl. The new structures would be shorter than the existing 150-foot double-circuit monopoles that support the existing 1770 Line (115-kV) and 321 Line (345-kV) within the entire Project right-of-way.

Substations

Modifications to both the existing Plumtree Substation and the existing Stony Hill Substation would occur on property owned by Eversource. Modifications at the Frost Bridge Substation would include new equipment and structures within the existing fenceline. Modification at the Stony Hill Substation consists of the installation of new equipment and relocation of existing equipment. The existing transmission lines adjacent to the substation would be modified to loop the existing 1770 line into the substation so that the 1770 Line becomes two new two new terminal lines, referred to as the 1268 Line and 1485 Line. The 1770 Line designation would no longer be used. Additionally, the substation connection to the existing 1887 Line would be removed. Thee wood pole structures would be removed adjacent to the substation and replaced with two monopole structures to accommodate this transmission line reconfiguration.

Environmental

The Project area is mainly suburban in character, with scattered residential areas, a former landfill, commercial/industrial areas, parks, major travel corridors, forested areas, and extensive wetlands. The existing substations, right-of-way and overhead transmission lines have been part of the landscape for over 40 years.

Work at both substations would have little environmental effect. Minimal clearing would occur adjacent to the Stony Hill Substation to accommodate the related transmission line work. Both substations are well established and are adjacent to existing transmission right-of way.

The existing right-of-way in the Project area has an established access road network in upland areas. Eversource would widen and re-surface the existing access roads to a base width of 20-25 feet and a travel surface width of 16-20 feet. The Council is concerned about the large footprint of the refurbished access roads both from a cost and environmental perspective. Eversource indicated that it would examine the issue in more detail, perhaps creating designated passing areas along sections of narrower roads, covering roads with soil if requested by the landowner upon completion of the Project, and by directing the selected contractor to build roads as narrow as possible to meet Project needs. The Council will order the access road design to be submitted as part of the Development and Management (D&M) Plan for the Project.

Vegetation

Transmission line construction and maintenance requirements are established by international, federal, and regional power authorities so as to assure reliability. In its Report on Transmission Facility Outages During the Northeast Snowstorm of October 29-30, 2011, the Federal Energy Regulatory Commission (FERC) determined that the vast majority of transmission line outages (80 percent) were caused when healthy trees contacted the transmission lines within the "full right of way," the portion of land for which a utility has documented legal rights to build and maintain transmission facilities, but outside of the "maintained right of way," the area in which the utility performs vegetation management. All of the trees that fell into the lines were located within the utility's "full right of way." Although managing a narrower "maintained right of way" has been a relatively common industry practice, FERC specifies that this is not a best practice. Therefore, in its Report, FERC concluded that utilities should work toward reclaiming the "full right of way" width where feasible.

For this Project, Eversource plans to remove all tall-growing tree species to the south and east edges of the right-of-way while low-growing tree species and scrub-scrub species would be retained where possible. Eversource would remove hazard trees from areas outside of the right-of-way where necessary and upon consultation with the respective property owner.

Construction and operation of the new transmission line would require clearing of forest for an additional 25 feet to the east/south of the existing 321/1770 lines, totaling 8.4-acres. The additional 25 feet coincides with the right-of-way boundary for most of the route. In some instances, clearing would remove most or all of the screening vegetation from open areas of residential properties along the route. Clearing for construction and operation of the new transmission line is unavoidable and would affect some adjacent residential properties by removing vegetation that screens the existing line. In some instances, landscape vegetation would need to be removed such as a decorative Norway maple in front of the residence at 12 Chimney Drive. In such cases Eversource has contacted the landowners to discuss specific details of the Project.

Following construction and restoration activities, the right-of-way would be monitored and controlled on a four-year vegetation management cycle. Invasive species would be discouraged from establishing in the new right-of-way area through repeated cutting or targeted removal.

The Council recognizes the additional clearing in the right-of-way would alter established forest and associated wildlife habitats, but considers these effects would be minor given that extensive woodland would remain in the southern portion of the Project area. Woodland in the northern portion of the Project area is fragmented by commercial and residential development and offers no core forest habitat. Once the Project is completed, the cleared areas would revert to shrubland habitat, benefiting wildlife species that depend on this habitat type. Old field and shrubland habitats are in decline because former post-agricultural lands are either being developed or allowed to revert to second-growth woodland. Maintained transmission line right-of-ways are now important surrogates for this habitat type. This habitat type is also a benefit to the health and diversity of pollinators by providing additional habitat for numerous types of flowering plants. Given the environmental sensitivity of clearing operations, the Council will recommend the use of clearing techniques to minimize environmental impacts, including seasonal clearing restrictions to reduce potential impacts to nesting birds, in the D&M Plan to the extent such methods will not violate the FERC standards regarding transmission line reliability.

Wetlands and Watercourses

The existing right-of-way traverses six wetlands, seven streams, and an open water pond. No vernal pools were identified in the Project area. One of the wetlands, associated with East Swamp Brook and Limekiln Brook in Bethel, extends for 1.3 miles along the right-of-way. Although Eversource intends to minimize disturbance to wetlands and watercourses to the greatest extent practical, there would be impacts from construction including the use of timber matting for temporary access and work pads and clearing of forest within wetlands or along watercourses. Permanent impacts include the filling of 0.03-acre of wetlands to install 11 new transmission structures within the East Swamp Brook/Limekiln Brook wetland complex. Due to the extensive wetlands in this area of the Project route, permanent wetland impacts cannot be avoided. Additionally, the East Swamp Brook/Limekiln Brook wetland complex includes a Federal Emergency Management Agency (FEMA) designated 100-year flood zone and associated floodway. Eversource would install 12 new structures within the flood zone and, of these; five would be in the floodway. Elimination of transmission structures by increasing the conductor span between the new structures is not feasible given the clearance requirements necessary to avoid the conductor sway interference with the adjacent existing transmission line.

Wildlife

Based on review of the Natural Diversity Database for state endangered, threatened or special concern species and ongoing consultations with the Department of Energy and Environmental Protection (DEEP), four state-listed species were identified as potentially occurring in the Project area: a reptile, a plant, and two bird species. During construction, Eversource would implement DEEP-approved protection strategies for each of these species. In addition to the identified reptile species, the southern portion of the project area contains habitat for the spotted turtle, a State Species of Special Concern. Although the spotted turtle was not specifically identified as occurring in the area, Eversource would be willing to incorporate DEEP-specified spotted turtle protection measures into the D&M Plan. Upon consultation with DEEP, Eversource has developed DEEP-approved protection strategies for the reptile species. The Council will order DEEP-approved species protection measures to be incorporated into the D&M Plan.

Historic and Recreational Resources

The Project would not affect any previously identified historic sites, archeological sites, or properties listed on the National Register of Historic Places.

The Project would traverse a wooded portion of Meckauer Park, a Town of Bethel park, and the East Swamp Wildlife Management Area, a DEEP property used primarily for small game and deer hunting. Impacts to these recreational resources would be minimal and temporary. The Project requires the temporary closure of a recreational trail which traverses open space and Eversource property around the Plumtree Substation. Eversource would coordinate with appropriate entities regarding construction related impacts to recreational resources.

Visibility

The visual impact of the Project on State and Town public recreation facilities and properties would be minimal given the presence of the existing managed transmission line right-of-way adjacent to and within these areas. Most visibility from recreational resources would be from open areas on these properties or where formal and informal trails intersect with the right-of-way.

Although concerns regarding clearing in the existing right-of-way for the new transmission line have been expressed by the Town of Bethel and several property owners along the right-of-way, the visibility impact of the new transmission line from adjacent areas would be incremental as it is being installed within an existing right-of-way that already contains transmission line structures. To minimize the visual effect of new transmission structures and in compliance with the *FERC Guidelines for the Protection of Natural, Historic, Scenic and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities*, Eversource would install the structures in line with existing structures to the greatest extent practical.

The Council recognizes Eversource's effort to minimize visibility to abutting residential properties and notes Eversource examined the option of installing the transmission line on the opposite side of the right-of-way in certain residential areas. The Council concurs with Eversource's determination that such a design is not feasible or cost effective given the additional property easements that must be obtained, the shift of visibility of the new structures to residential properties on the other side of the right-of-way and the requirement of larger transmission towers in certain areas to cross over the existing 150-foot transmission towers within the existing right-of-way.

Electric and Magnetic Fields

The Project route traverses a corridor already occupied by transmission lines that emit electric and magnetic fields (EMF). In accordance with the Council's *Electric and Magnetic Fields Best Management Practices for the Construction of Electric Transmission Lines in Connecticut*, Eversource reviewed current literature to determine if there were new developments or guidelines related to EMF exposure. No changes were identified. Additionally, Eversource developed a Field Management Design Plan to investigate cost effective ways to minimize EMF levels resulting from the new transmission line. Due to the presence of an existing 115 kV line and a 345-kV line within the right-of-way, Eversource selected an optimum phase design that arranges the conductors to enhance cancelation of the different magnetic field (MF) sources from the existing and proposed line. If the new line was installed on taller structures, it would reduce its ability to reduce MF emanating from existing sources, resulting in higher MF levels along the right-of-way. Upon review of the EMF data provided in the Application, the Council finds the EMF levels associated with the operation of the Project to be well below recommended EMF exposure standards from research groups and transmission line design changes are not warranted.

Conclusion

The Council finds the proposed Project necessary for the reliability of the electric power supply of the state, serving the interests of electric system economy and reliability, and as such, conforms to the long-range plan for expansion of the electric system serving the state and related interconnected utility systems.

The Council has examined the Project in accordance with the policies of the state concerning the natural environment, ecological balance, public health and safety, air and water purity, and fish, aquaculture and wildlife, together with all other environmental concerns, including EMF, and balanced the interests in accordance with Conn. Gen. Stat. §16-50p(a)(3)(B) and Conn. Gen. Stat. §16-50p(a)(3)(C). The environmental effects that are the subject of Conn. Gen. Stat. §16-50p (a)(3)(B) can be sufficiently mitigated and do not overcome the public need for the facility. Furthermore, the Council finds that the location of the new transmission line will not pose an undue hazard to persons or property along the area traversed by the transmission line pursuant to Conn. Gen. Stat. §16-50p (a)(3)(E).

The Council will require Eversource to submit a D&M Plan for the Project to include, but not limited to, provisions for municipal comment and review; detailed site plans identifying structure and equipment locations as well as temporary and permanent facilities and roadways; wetland mitigation methods for temporary and permanent effects, species protection plan upon consultation with DEEP, an erosion and

sediment control plan consistent with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*; a Spill Prevention, Control, and Countermeasures Plan; identification of vegetative removal areas, including shrub habitats, identification of existing scrub-shrub habitats to remain, provisions for post construction re-vegetation and maintenance of the right-of-way, provisions for inspection and monitoring of the proposed right-of-way and substation construction, and pre-construction and post-construction measurements of EMF. In order to verify consistency with the Council's Decision and Order, the Council will require Eversource to retain an independent environmental inspector to document compliance with environmental requirements and prepare periodic status reports.

With the conditions listed above, the Council will issue a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a new 115-kV transmission circuit between the Brookfield Junction in Brookfield to the Plumtree Substation in Bethel and related substation and line improvements.