

<p><b>DOCKET NO. 465</b> – The United Illuminating Company }          application for a Certificate of Environmental Compatibility and }          Public Need for the construction, maintenance, and operation of a }          115/13.8-kilovolt (kV) replacement substation facility located on an }          approximately 1.5 acre portion of two adjoining UI-owned parcels }          directly adjacent to UI’s existing Baird Substation, 1770 Stratford }          Avenue, Stratford, Connecticut, and related transmission structure }          and interconnection improvements.</p>	<p>Connecticut  Siting  Council  April 28, 2016</p>
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**Opinion**

On December 21, 2015, The United Illuminating Company (UI or Applicant) applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a replacement electric substation facility located at 1770 Stratford Avenue, Stratford, Connecticut. The purpose of the proposed replacement substation facility is to address several compliance and aging infrastructure needs at the existing Baird Substation and reliably serve the customers in the Stratford and Bridgeport areas. UI, the Town of Stratford (Town) and The Office of Consumer Counsel are parties in this proceeding.

UI provides electrical distribution service to the following municipalities: Ansonia, Bridgeport, Derby, East Haven, Easton, Fairfield, Hamden, Milford, New Haven, North Branford, North Haven, Orange, Shelton, Stratford, Trumbull, West Haven, and Woodbridge. UI has an existing 115-kV/13.8-kV substation located at 1770 Stratford Avenue, Stratford, Connecticut, known as Baird Substation. The existing Baird Substation delivers electricity to UI’s residential, commercial and industrial customers through a series of 13.8-kV distribution circuits.

Immediately to the north of the existing Baird Substation are two existing 115-kV transmission lines which carry electricity along the Metro-North Railroad (MNR) right-of-way and supply power to the existing Baird Substation. These transmission circuits not only deliver electricity to the existing Baird Substation, but they also allow electricity to pass through it to nearby substations that serve UI customers. An ISO-NE Southwest Connecticut Area Transmission Needs Assessment from July 13, 2011 (2011 ISO-NE SWCTNA) identified these transmission circuits as requiring significant capacity upgrades due to projected load growth, generation and system topology changes.

On July 17, 2015, the Council received a Petition (Petition No. 1176) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed modification of an approximate 2.3-mile section of a 115-kV transmission line extending between the existing Baird Substation in Stratford and the Congress Substation in Bridgeport. The existing line consists of two separate circuits mounted on metal support “bonnets” attached to the top of the railroad catenaries. New conductors were proposed to meet capacity and reliability needs but the existing structures cannot support the new lines. The new conductors were proposed to be relocated to new monopole structures in the right-of-way. The Petition was approved by the Council on September 17, 2015.

In addition, the 2011 ISO-NE SWCTNA determined that the existing Baird transmission bus would be substantially overloaded under contingency conditions. These overloads range in severity under worst-case contingency conditions. Necessary modifications to alleviate overloaded elements of the existing Baird Substation require a substantial investment in the aging transmission bus system.

There are also structural concerns regarding the transmission bus at the existing Baird Substation due to the potential for overstressing the existing strain bus and support structures under extreme weather conditions or due to certain faults on the transmission bus. The overstressed conditions could lead to a structural failure of

the bus support system, which in turn could lead to an extended duration outage for the customers served from that substation.

The existing Baird Substation utilizes two 115-kV/13.8-kV transformers that were manufactured in 1963. Currently, these two transformers fail to maintain adequate distribution voltages to UI's customers under normal and contingency conditions. UI's System Integrity Department determined that, in 2011, voltages would be below the ANSI allowable voltage on all 16 distribution circuits supplied by the substation under line and transformer contingency conditions. These levels also violate the allowable voltage levels defined by the State of Connecticut Public Utilities Regulatory Authority.

The distribution circuits served by the existing Baird Substation are controlled by switchgear manufactured over 50 years ago that is reaching the end of its useful operating life. Aged equipment of this vintage could experience sudden failures resulting in unexpected customer outages, increased maintenance and unscheduled replacement activities. As a result of the equipment's deteriorating condition and risks to reliability, its replacement is required.

The existing Baird Substation control house lacks sufficient space to accommodate any future expansion, upgrades or modifications at the substation. Existing identified protection system upgrades at nearby substations would require modifications of the protection and control systems at the existing Baird Substation. These modifications are not viable within the existing control enclosure. Additionally, the existing cable tray system within the control house is significantly overfilled, and any additional protection and control cable work at the system would be difficult to implement.

UI's most recent 90/10 load forecast for loads served by Baird Substation for 2015–2024 indicates a projected load of 50.57 megavolt-amperes (MVA) for 2015 that would grow to 57.15 MVA by 2024. The existing Baird Substation capacity is 78 MVA. The Council notes that while the existing 78 MVA capacity exceeds the forecast loads, the need for the project is related to other issues including, but not limited to, distribution voltage issues, aging equipment, structural concerns, transmission bus overload under certain contingency conditions, and control house space.

UI identified three sites that appeared to be feasible for the development of the project: Bruce Street; West Broad Street; and Baird Annex (i.e. the proposed site). After examining the three sites, UI selected the proposed Baird Annex site for a new, replacement substation. The Bruce Street site was rejected because it has insufficient space to accommodate the proposed project. The West Broad Street Site does not have underground distribution infrastructure, and it would require approximately one mile of new distribution infrastructure. West Broad Street is also a brownfield site that would likely require considerable remediation of contaminated soils during construction. The foundations from an existing demolished building would also have to be removed at the West Broad Street site. Thus, the West Broad Street site was rejected based on cost and environmental concerns.

UI also looked at system alternatives that would not involve another raw land substation site including the "In-kind Replacement" option which is essentially a full on-site replacement of the existing Baird Substation. While this alternative could address identified needs, it would expose UI's customers to significant reliability risks and expose workers to construction hazards associated with rebuilding an energized substation. Finally, this alternative has a longer construction duration and is substantially more expensive than a full replacement facility on the adjacent property. Thus, UI would install a new, replacement substation adjacent to the existing Baird Substation.

UI plans to leave the existing Baird Substation in place and use it as a substation training facility. Some limited work would be required to deactivate the facility including, but not limited to, disconnecting the transmission and distribution connections to the existing substation. The Council will require that that any

modifications required to deactivate the existing Baird Substation be included in the Development and Management Plan (D&M Plan) for the proposed replacement substation.

The proposed replacement substation capacity is 72 MVA and would be sufficient to meet the projected 90/10 forecast loads. The proposed replacement substation would meet or exceed the capacity of the interconnected transmission circuits and also utilize load tap changing transformers to provide adequate distribution voltage regulation. New 13.8-kV switchgear would control the new distribution circuits. As a result, the new substation would eliminate significant compliance issues and mitigate reliability risks to UI customers as a result of aging and antiquated equipment.

The proposed replacement substation would be located on two contiguous parcels with a combined area of 3.5 acres and with frontage along Stratford Avenue. Both parcels are zoned Commercial for the first 500 feet north of Stratford Avenue. The rear (or northern portions) of both parcels are zoned Manufacturing. The western portion of the two-parcel site is presently occupied by the existing Baird Substation. The two-parcel site is bounded to the west by Savings Auto Center, to the south by Stratford Avenue (Route 130), to the east by the Two Roads Brewing Company (TRBC), and to the north by the MNRR right-of-way with existing transmission lines.

The proposed site was historically developed for industrial purposes by the U.S. Baird Corporation (USBC), which was established in the 1890s. USBC's original building occupied the site circa 1920. Based on the Department of Energy and Environmental Protection (DEEP) records, the portion of the site where the proposed replacement substation would be located has had no historic environmental soil and/or groundwater contamination issues. However, abutting properties such as 1725 Stratford Avenue and 1650 through 1700 Stratford Avenue are on record with DEEP as having remedial activities performed. Thus, UI does anticipate performing minor remedial activities during the construction of the proposed replacement substation.

The proposed replacement substation would consist of an irregular shaped compound approximately 1.15 acre in area and containing the substation equipment, associated connections, switchgear enclosures, and a control house. The proposed replacement substation would have a 14-foot high chain link fence with one foot of barbed wire and two-inch mesh. This would be the same fence design as the existing Baird Substation, except that it would also include opaque winged slats as an anti-climbing measure and for visual screening. The final fence design would be included in the D&M Plan.

Substation equipment would include, but not be limited to, the following: two 115-kV circuit breakers; eight 115-kV disconnect switches; two 50 MVA 115-kV/13.8-kV transformers; provisions for a temporary mobile transformer; six 70-foot tall lightning masts; two switchgear enclosures each approximately 42 feet long, 15 feet wide and 13 feet high; and a control house approximately 60 feet long, 28 feet wide and 13 feet high.

Access to the substation would be via a new 190-foot asphalt access drive from Stratford Avenue (Route 130). The interior of the substation would be predominately traprock, with the exception where the access drive encircles the control house (which would be asphalt). Given the proximity to Route 130, UI would apply for an encroachment permit from the Connecticut Department of Transportation for any work to be performed in the State right-of-way.

To accommodate the proposed replacement substation's location and interconnection with the existing 115-kV transmission conductors to the north, five new monopole transmission structures in the 70-foot to 85-foot height range are proposed in the existing MNRR right-of-way to accommodate the proposed replacement substation interconnection. Two installed structures would be directly to the north of the proposed replacement substation (i.e. the southern side of the MNRR right-of-way). One structure would be installed on the northern side of the MNRR right-of-way. One structure would be installed to the northeast

of the proposed replacement substation on the northern side of the MNRR right-of-way. The last structure would be installed behind the TRBC on the southern side of the MNRR right-of-way.

UI would fill a small on-site wetland approximately 654 square feet in size and located within the proposed replacement substation footprint. UI cannot avoid filling this wetland because the wetland is physically located within the proposed replacement substation perimeter, and its location would be needed for a bus support structure. The subject wetland does not provide basic functions and values at more than a minimal level.

A US Army Corps of Engineers (ACOE) permit would be required to fill this wetland. UI intends to submit a ACOE Category I Certification Form and will copy DEEP. UI would implement the conditions per the ACOE and DEEP's approval during construction. UI has developed a scenario to provide compensation to the Town for this activity. The compensation scenario was developed by mirroring the ACOE's "In-Lieu Fee Program." This program allows applicants who are permanently impacting wetlands or watercourses the ability to compensate the local chapter of the Audubon Society in order to provide a positive monitoring program and long-term solution. UI will be conducting work with the Housatonic River service area, and each square foot of impact would result in a rate of \$7.56 based on the compensation structure within the ACOE's program.

According to DEEP, the proposed project is not expected to adversely impact State-listed species. However, the Council notes that the DEEP determination letter dated April 14, 2015 just recently expired on April 14, 2016. Thus, the Council will require that an updated DEEP determination and any associated wildlife protection measures be submitted in the D&M Plan.

The proposed project is not expected to impact federally-listed species including but not limited to the northern long-eared bat. Development of the site would not affect any historic properties. The replacement substation area is unlikely to yield intact cultural deposits; thus no additional archaeological research is recommended.

Approximately 0.73 acres of wooded area exists currently at the site. Approximately all of the 0.73 acres of trees would be cleared to construct the project. Of those trees, the total number of trees six inches or greater in diameter to be removed would be approximately 130.

Magnetic fields (MF) and their possible effects concern both the Council and citizens living in the vicinity of substations and electric transmission lines. Specifically, the highest calculated magnetic field level for pre-construction conditions was 137.2 mG at the northern fence line of the existing Baird Substation. This is due to the existing 115-kV transmission and interconnection with the existing substation. Magnetic field levels at this location under average load conditions would decrease to approximately 47.8 mG post-construction.

The highest post-construction magnetic field level under average load conditions would be approximately 90.9 mG at a distance of 100 feet north of the northern fence line of the proposed replacement substation and across the MNRR right-of-way. This is due to the repositioning of the existing 115-kV transmission conductors onto new monopole structures located closer to the edges of the right-of-way and the proposed interconnection with the proposed replacement substation. This would be an increase from the existing (or pre-construction) magnetic field level of 60.3 mG at this location.

The nearest home to the proposed replacement substation is located to the north on Jackson Avenue and has an existing (or pre-construction) magnetic field level of approximately 4.6 mG. The post-construction magnetic field level at this home would be approximately 15.2 mG (based on average line loading). This is also due to the repositioning of the existing 115-kV transmission conductors onto new monopole structures located closer to the edges of the right-of-way and the proposed interconnection with the proposed replacement substation.

The Council notes that the existing and post-construction magnetic field levels noted above are far below the International Commission on Non-ionizing Radiation Protection acceptable exposure level of 2,000 mG for the general public as recognized in the Council's "Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines in Connecticut." Thus, there is no evidence for the Council to conclude that the proposed replacement substation and transmission line connection would be hazardous to persons or property near the proposed facility. However, the Council will order that the proposed facility be brought into compliance with any future state or federal standard for MF, should such a standard be adopted.

Noise levels at the nearest receptors are expected to be in compliance with DEEP and Town of Stratford noise regulations. Notwithstanding, if noise levels become an issue, the Council will order the applicant to perform a noise survey to determine compliance with the applicable standards. (This does not prevent the Certificate Holder from performing a noise survey if it deems it warranted.)

The tallest features of the proposed replacement substation facility would be the 80-foot tall communications pole, 70-foot tall lightning masts and transmission structures ranging in height from 70 feet to 85 feet tall. While 55-foot lightning masts were possible, it would have resulted in seven masts and thus more structures.

The tops of the proposed structures that are in the 70-foot to 85-foot height range may be visible year-round above the trees from some locations within a total area of approximately 34 acres. The majority of the views of these structures would occur in the immediate area of the site and extend approximately 0.3 miles to the south and up to 0.75 miles to the east and west. To the north, views would be more limited because of intervening structures and vegetation. Seasonally (i.e. during leaf-off conditions), views may be extended to some locations over an additional approximately seven acres. However, these proposed new structures would create views that are similar to what currently exists.

The primary portions of the replacement substation are lower structures with heights that range up to 26 feet tall. Year-round views of these structures are possible from locations within an area of 22 acres. Seasonal views are possible from an additional area of six acres.

A residential area is located directly north of the substation site, on the opposite site of the MNRR right-of-way. The Jackson Avenue, Hollister Street and Knowlton Street neighborhood is located in this area. Currently, some of the infrastructure associated with the electrical corridor is visible from locations on these residential roads.

UI is willing to work with the Town and TRBC regarding a landscaping design that would face Stratford Avenue. The specific details of the landscaping plan shall be submitted in the D&M Plan.

The Council finds the proposed site suitable for a replacement substation, given its location in Commercial and Manufacturing Zones and its position adjacent to the MNRR tracks and the existing electric transmission facility to the north. The 14-foot replacement substation fence with opaque winged slats will help reduce visibility of the shorter structures such as the 13-foot tall switchgear enclosures and control house. Although there are residences located to the north of the MNRR right-of-way, particularly Jackson Avenue, these homes are located roughly 38 feet higher in ground elevation and thus will be looking over the fenced replacement substation. UI, in consultation with the Town, also reduced the number of lightning masts by opting for taller lighting masts. Finally, the Council believes that landscaping along Stratford Avenue will improve the aesthetics of the project as viewed from Stratford Avenue and other properties to the south.

Based on the record in this proceeding, the Council finds that the effects associated with the construction, operation, and maintenance a replacement electric substation at 1770 Stratford Avenue in Stratford, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic,

and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the state concerning such effects, and not sufficient reason to deny this application. Therefore, the Council will issue a Certificate for the construction, operation, and maintenance of a replacement electric substation facility at 1770 Stratford Avenue in Stratford, Connecticut.