STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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Petition No. 295
The United Illuminating Company
Derby Substation Rebuild Project
Derby and Ansonia, Connecticut
December 16, 1992

On November 25, 1992, Chairman Mortimer A. Gelston and Gloria Dibble Pond of the Connecticut Siting Council (Council) and Robert K. Erling of the Council staff, met Robert Silvestri Richard Reed, David Damer, and Mark Mushkin of the United Illuminating Company (UI) for a field review of this petition in the Towns of Derby and Ansonia, Connecticut.

UI is petitioning the Council for a declaratory ruling that Section 16-50k of the Connecticut General Statutes does not require that a Certificate of Environmental Compatibility and Public Need be obtained for the proposed project, because the proposed project, although a modification of a facility, would not have a substantial adverse environmental effect.

UI is proposing to reconstruct the 115kV/13.8 kV portion of its existing Derby substation, including the three existing 25 MVA non-tap changing transformers, 23 outdoor oil circuit breakers, and associated open bus work. The reconstructed substation, which would be named Indian Well Substation, would be a low profile substation and include two 24/32/40 MVA tap-changing transformers, two switchgear rooms with four incoming breakers, and 12 distribution feeders. The reconstructed substation would be constructed on property immediately adjacent to the existing Derby Substation.

The purpose of the proposed work is to avoid deterioration of reliability; replace aging equipment; improve voltage stability; and provide expansion for load growth.

UI conducted a study in 1988 which identified 14 problem areas at the Derby Substation, and ordered interim phase corrective measures. UI conducted another study in July 1992 which identified many technical and operational concerns, including fault current stress-related failure of 13.8-kV cap-and-pin bus insulators; overvoltages during ground faults; burning out of transformers; lighting shield inadequacies; inadequate electrical safety clearances; obsolete relays; high, unstable operating voltage; high maintenance costs; and high transformer losses.

The proposed solution by UI to these and other problems and concerns at the Derby Substation is to completely reconstruct a new substation, with a more aesthetic design. The new substation would be constructed on the western portion of UI property on Roosevelt Drive in Derby, Connecticut. UI is purchasing approximately 0.29 acres of land to accommodate the new substation. The existing Derby Substation would be taken off-line and removed after the proposed new Indian Well Substation is constructed and has the load from the existing Derby Substation shifted to it.

The proposed Indian Well Substation would consist of an outdoor air-insulated low profile 115-kV switchyard, 15 feet lower than the existing switchyard, which would include termination structures for two existing transmission lines; one circuit breaker; one line switch; one 115-kV gas circuit breaker; two 24/32/40 MVA power transformers; and interconnecting bus work. One 13.8kV capacitor bank would be installed, replacing two existing capacitor banks at Derby Substation. The new substation would have a nominal distribution rating of 58 MVA. A single-story control/switchgear building would house sixteen 13.8 kV metalclad switchgear cubicles; protection, control and metering equipment; and ac/dc auxiliary power equipment. The proposed Indian Well Substation would be smaller and more compact than the existing Derby Substation.

The dielectric fluid from the substation would consist of 18,000 gallons of oil with non-detectable levels of PCBs. Oil containment barriers capable of handling 110% of the transformer oil would be constructed around the transformers. The proposed new substation would be surrounded with a chain link fence.

To allow space for the construction of the proposed new substation, UI proposes to rearrange four transmission lines which serve Derby and Ansonia. The rearrangement would include installation of three new tubular steel transmission poles at the Derby Substation, which would replace three existing lattice transmission towers, #1, and #361, and structures 1A, 1/2, and 1/2A.

There are no known State or federal rare or endangered species occurring at the Derby Substation, and the project would have no effect on historic resources in the vicinity.

To accommodate the reconstruction of the Derby Substation, UI proposes to install two new termination structures, one circuit switcher, one line switch, one 115kV gas circuit breaker with insulating switches, and interconnecting bus work all at UI's existing Ansonia Substation in Ansonia, Connecticut. The revisions would result in a low profile 115 kV yard at the Ansonia Substation. UI also proposes to extend this substation's existing control building to allow room for additional protection and control devices associated with the new 115 kV circuit breaker. These modifications would take place within the existing fence lines of the Ansonia Substation, would be visible from the surrounding area, but would be similar to the existing onsite structures, and would not be greater in height than existing equipment.

Council staff and field review members asked for additional information regarding electromagnetic fields, disposal of PCB-laden materials, and whether prior Council approval is required for purchases of land to be used for substations.

UI has measured the existing magnetic and electric fields in the area of the fence lines of the proposed Indian Well Substation. The readings for the area of the proposed substation ranged from a low of 1.5 milliGauss (mG) to a high of 22 mG. The area of the existing substation ranged from 1.5 mG to 86 mG. Although UI stated that magnetic fields cannot be calculated with confidence, after estimating that the range of magnetic fields on the proposed site from just the transmission lines (0.6 mG to 6.7 mG) with the new substation in operation, UI concluded that magnetic fields along the fence line would not increase, and might possibly be reduced. Existing electric fields in the area of the existing transmission lines range from 0.10 to 0.44 kV per meter (kV/M). The calculated electric fields along the transmission lines with the proposed substation in place would range from 0.01 to 0.30 kV/M. UI attributes these reductions in field strengths to the compaction of components that physically moves equipment farther from the property line, and reduction in the amount of 115kV buswork.

UI would use two disposal contractors for PCB - containing equipment and materials, located in the states of Texas and Ohio.

UI contends Council approval is not required for land acquisitions for substations, based on a prior Council petition decision, Petition No. 237.

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