

-STATE OF CONNECTICUT  
SITING COUNCIL

The Connecticut Light and Power Company and	:	Docket 272
The United Illuminating Company Application for a	:	
Certificate of Environmental Compatibility and	:	
Public Need for the Construction of a New 345-kV	:	
Electric Transmission Line and Associated Facilities	:	
Between Scovill Rock Switching Station in Middletown	:	
And Norwalk Substation in Norwalk, Connecticut	:	
Including the Reconstruction of Portions of Existing	:	
115-kV and 345-kV Electric Transmission Lines, the	:	
Construction of the Beseck Switching Station in	:	
Wallingford, East Devon Substation in Milford, and Singer	:	
Substation in Bridgeport, Modifications at Scovill Rock	:	
Switching Station and Norwalk Substation and the	:	
Reconfiguration of Certain Interconnections	:	March 28, 2005

DEPARTMENT OF TRANSPORTATION COMMENTS AND EXCEPTIONS TO  
PROPOSED FINDINGS OF FACT DATED MARCH 23, 2005

Pursuant to the Council's directive, the Department of Transportation has the following comments and/or exceptions to the Siting Council's Proposed Findings of Fact dated March 23, 2005:

Finding of Fact No. 325.

325. A creeping effect taking place on cables has been recognized since the 1920's, especially in areas of grade change. As a result of heating and cooling of cables, there is a tendency for cables to move downhill. Vibrations from vehicle movements can have the effect of the cable tending to establish a new equilibrium. (Tr. 2/17/05, pp. 215-217).

Exceptions:

The DOT takes exception to finding number 325 since it implies that the mechanism responsible for longitudinal movement of cables in pipes and ducts has been recognized since the 1920's and because it fails to specify that cable movement takes place with a pipe or duct bank system. Mr. Gregory, one of the Applicants' witnesses,

co-authored the document attached to Applicants' Exhibit 184 issued by the Electric Power Research Institute entitled "Mechanical Effects on Extruded Dielectric Cables and Joints Installed in Underground Transmission Systems in North America."

Contrary to the Applicants' testimony (Tr. 2/17/05, pp. 215-217), the EPRI paper states "The work in this chapter shows that vibration precipitates movement in a cable containing a nonuniform distribution of axial strain. The necessary distribution arises from the gravitational and thermomechanical forces present in normal service operation. *The mechanism is believe to be new* and is described at the start of the chapter to assist the reader in the interpretation of the detailed results." "Mechanical Effects on Extruded Dielectric Cables and Joints Installed in Underground Transmission Systems in North America" 9-1 (March 2004)(emphasis added). The paper identified traffic vibrations as a cause of rapid cable movement *independent of the grade of the surface above the duct bank*. The DOT recommends splitting finding of fact 325 into two separate findings.

Proposed modifications:

325. A creeping effect taking place on cables installed in pipes, ducts and extruded aluminum sheaths has been recognized since the 1920's, especially in areas of grade change. As a result of heating and cooling of cables, there is a tendency for cables to move downhill.

325a. Vibrations from vehicle movements can have a similar effect of the cable tending to establish a new equilibrium. (Tr. 2/17/05, pp. 215-217).

Finding of Fact No. 326.

326. In some cases, the avalanche effect may be positive by relieving areas where the cable is under compression or tension. (Tr. 2/17/05, p. 218)

Exceptions:

The DOT takes exception to finding number 326 since it ignores the negative effects of the avalanche effect that can result in increased strain on the splices.

Finding of Fact No. 327.

327. The issue of avalanching does not apply to 345 kV, but rather for 69 kV, 115 kV, 230 kV cables and both HPFF and XLPE. (Tr. 2/17/05, p. 225)

Exceptions:

This is directly contradictory to the language in “Mechanical Effects on Extruded Dielectric Cables and Joints Installed in Underground Transmission Systems in North America” p. 9-1 (March 2004) wherein the paper cites references a 330 kV with splice failure due to vibration induced cable movement. This finding of fact should be deleted.

Findings of Fact No. 498

498. In HDD, while the pipe is being pulled in, bentonite drilling mud is pumped in, allowing the pipe to be pulled through even if the hole collapses. The depth is designed to be a minimum of 15 feet. (Tr. 4/20, p. 161-163)

Exceptions:

This finding misconstrues the testimony of Mr. John Hair. Mr. Hair’s statement concerning the ability to pull the pipe through a collapsed hole depended upon the presence of a “sand or cohesion-less soil...in a fluidized state for a short period of time” due to the presence of the drilling fluid. “[I]f the soil is composed of larger grain material, gravel and cobble-size material, it can be a problem. It is possible and it does occur that pipelines or bundles of ducts can get stuck during pull-back, in which case you pull them out or undertake some remedial measure or start over.” Tr. 4/20/2004 pp.161-162.

Proposed modifications:

498. In HDD, while the pipe is being pulled in, bentonite drilling mud is pumped in, allowing the pipe to be pulled through a sand or cohesion-less soil while in a fluid state even if the hole collapses. (Tr. 4/20, p. 161-163).

498a. If the soil is composed of larger grain material, gravel and cobble-size material, it is possible for pipes or bundles of ducts to get stuck during pull-back, which would

require pulling the pipes or bundles of ducts out of the hole and starting over or undertaking some other remedial measure. (Tr. 4/20, p. 161-163).

498b. The depth is designed to be a minimum of 15 feet. (Tr. 4/20, p. 161-163).

Findings of Fact No. 505.

505. The cost of an overhead line is \$7, 330,000 per mile. (Tr. 4/20, p. 180)

Exceptions:

The reference to an “overhead” line should be changed to an “underground” line. The number is not supported by the information contained in the Application or the information contained in the Applicants’ December 28, 2004 filing of Exhibit . During the April 20, 2004 hearing discussion on undergrounding, Mr. Prete testified that “the direct cost of the proposed route underground, 23.6 miles, is 177,904,000. So the cost per mile on that particular calculation is 7.33 million per mile.” Tr. 4/20/2004 pp. 102-104. That cost did not include the cost of substations.

The Application, pages I-4 and 5 of the application, the cost for segments 3 and 4 are listed as \$76.3 million and \$127.5 million, respectively. Therefore the total cost of \$203.8 million divided by 24 miles of undergrounding results in a cost of \$8.5 million dollars per mile.

In the December 28, 2004 prefiled testimony on costs, the Applicants’ indicated that there would be an additional \$100 million cost for undergrounding, including substations. The Applicants did not provide a breakdown of the additional costs for the construction of the underground cable and vaults versus the cost of the substations. If the entire \$100 million additional cost were attributable to the construction of the underground cables and vaults, this would add another \$4.17 million dollars per mile to

the \$8.5 million per mile cost. If all of the additional costs are attributable to the construction of the substations, then the undergrounding cost would remain at \$8.5 million per mile as set forth in the Application. Therefore, the cost of constructing underground cables and vaults would range from \$8.5 million to \$12.67 million per mile.

Proposed modifications:

505. The cost of an underground line ranges from \$8,500,000 per mile to \$12,670,000 per mile. (Application, I-4 and I-5, Applicants' Exhibit 172)

#### Finding of Fact #238

238. An underground cable may be attached to an overhead road structure. Coordination with DOT would be necessary to ensure the structure can support the loads. (Tr. 4/22, p. 24)

Exception:

The DOT disagrees with this statement. In its testimony, the DOT referenced the problems encountered at the Howard Avenue Bridge in Bridgeport. (Arthur Gruhn's Testimony, Exhibit 3, page 6.) While the Applicants testified that it may be feasible to attach an underground cable to an overhead route, any such proposal would still be subject to the DOT permitting requirements.

Proposed modification:

238. It may be possible to attach an underground cable to an overhead road structure. Such option would be subject to DOT permitting requirements. (Tr. 4/22, p.24, Tr. 6/16/04, p.232).

References to state highway route options should include a requirement that the Applicants enter into an agreement with the DOT for the longitudinal use of the state highway for transmission type facilities. (Transcript, June 16, 2004, page 232.)

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**CERTIFICATION**

I hereby certify that a copy of the foregoing has been mailed, postage prepaid, this  
28<sup>th</sup> day of March, 2005, to the Service List.

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