March 15, 2004

Ms. Pamela B. Katz
Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Docket No. 272 - Middletown-Norwalk 345kV Transmission Line

Dear Ms. Katz:

This letter provides the response to requests for the information listed below.

While it is not possible to provide all the information requested at this time, the Company is attaching the information which has been completed.

Response to CSC-01 Interrogatories dated 03/03/2004
CSC - 001 , 003 , 004 , 005 , 006 , 007 , 009 , 014 , 015 , 017 , 018 , 019 , 024 , 025 , 033

Very truly yours,

Anne B. Bartosewicz
Project Director - Transmission Business

ABB/tms
cc: Service List

SERVICE LIST
Docket: 272

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Witness: **Jay Williams**
Request from: **Connecticut Siting Council**

Question:
Describe the degree of reduction of magnetic fields by steel pipes in underground electric transmission lines.

Response:
Steel pipes reduce the magnetic field significantly, by a factor of approximately twenty.

Witness: **Jay Williams**
Request from: **Connecticut Siting Council**

Question:
Is there any method to detect moisture damage to XLPE transmission lines?

Response:
There is no known external available technology which is capable of detecting moisture damage except by dissecting the cable and performing laboratory tests. Unlike most distribution-voltage XLPE cables, transmission-voltage XLPE cables have metallic sheaths as hermetic seals. No moisture should enter. If a small amount of moisture penetrates the hermetic seal, water-swellable tapes absorb the moisture and prevent its migration. Water penetration into the cable insulation is detrimental and will result in cable failure.

Witness: **Jay Williams**
Request from: **Connecticut Siting Council**

Question:
Describe any differences in magnetic fields emanating from XLPE systems versus HPFF systems.

Response:
For the same current level, magnetic field levels from XLPE cables are higher than those from HPFF cables because the XLPE cables are farther apart, resulting in less cancellation, and because there is no steel pipe to provide a shielding effect as there is with HPFF cables.

Witness: **Jay Williams**
Request from: **Connecticut Siting Council**

Question:
Have any studies been concluded since the publication of the Docket No. 272 application as to the mechanical performances of XLPE in pipes and ducts?

Response:
To our knowledge, no study has been concluded since the Docket No. 272 filing.

Witness: **Richard J. Reed; Roger C. Zaklukiewicz**
Request from: **Connecticut Siting Council**

Question:
In areas of the proposed route where undergrounding is proposed, has the applicant conducted any surveys or studies as to the amount of infrastructure currently buried along the route, such as water pipes, draining, communications cable, distribution lines, etc?

Response:
Yes, a foreign utility and municipal record search is in progress to determine what underground facilities are along the route and their proximate locations relative to each other. To date this record search is complete from the proposed East Devon Substation in Milford to the Fairfield/Westport boundary and is continuing to the Norwalk Substation. So far, the results of this record search, which encompass the most congested areas of the proposed route, show that it appears to be a feasible route. While these records are not accurate enough to determine the precise location of existing utility and municipal facilities, they are adequate for a preliminary design of the proposed underground facilities associated with the Middletown to Norwalk Project. Once the final route is approved by the Connecticut Siting Council, detailed analysis of foreign pipe plans and on-site investigations will be conducted to determine the precise location of the proposed underground facilities. It will also be necessary to dig test pits along this route,

Witness: **Jay Williams**
Request from: **Connecticut Siting Council**

Question:
Identify a substitute for the use of alkylbenzene fluid?

Response:
A substitute is polybutene, another synthetic dielectric liquid, which the Companies are proposing to use.

Witness: **Jay Williams**
Request from: **Connecticut Siting Council**

Question:
Where else has 345-kV XLPE been used in the United States? When were these lines installed? Have there been any problems with these lines? Are the applicants aware of any other 345-kV XLPE lines presently under consideration in the United States?

Response:
The first application was by an Independent Power Producer at the Mystic Plant near Boston, which was energized in 2001. Each line was just a few hundred feet long; there were no splices. Several additional lines, each several hundred feet long with no splices, have been installed within the last two years in Texas. There have been a number of IPPs considering 345-kV XLPE interconnections utility systems, but we are not aware of any that are currently being designed.

Witness: **Peter T. Brandien**
Request from: **Connecticut Siting Council**

Question:
How long in the future will the proposed 345-kV loop satisfy area requirements before further expansion is necessary? In responding to this question, employ the following assumptions.

- A 345-kV Norwalk-Devon Junction-Beseck loop is completed.
- The two 115-kV Devon-Norwalk lines are reconstructed to 1272 kcmil ACSR (or a larger conductor if part of these circuits is already at a size larger than 1272 kcmil)
- The existing Norwalk Harbor generation is retired and replaced by 600 megawatt (MW) of combined cycle generation.
- The Cos Cob jets are retired and replaced by a 100MW peaking plant.
- 100MW of distributed generation s installed which, for these purposed, is shown as a source at Norwalk S/S.
- The Norwalk-Northport tie is replaced with another tie between these terminals with a 300 MVA capacity.
- Generation at Pequonnock and the Bridgeport Energy plant as it currently exists.

Response:
Based on the above assumptions and that the generation listed is economic and available for dispatch under today's market rules, the 345-kV loop, when completed, will satisfy southwestern Connecticut source supply requirements for the next 30 or more years. However, other construction within the area would be required to satisfy area requirements. The assumptions in the question do not include the construction of the 115-kV Glenbrook to Norwalk Cables Project (currently in the municipal consultation phase). Moreover, the question assumes that the Norwalk to Northport cable replacement is effected, and new generation is constructed at the Norwalk Harbor generating site. These developments would require a new 115-kV cable from Norwalk Harbor to Glenbrook. (Such a line would be required even if it were assumed that the existing Norwalk Harbor generation and the existing 1385 line would continue in service indefinitely. CL&P has not yet proposed such a line because the future of these system elements is unclear; were the Norwalk Harbor generating station and the 1385 line to both be retired and not replaced, a Norwalk Harbor to Glenbrook line would not be needed.) If the existing Norwalk Harbor generating station were retired and replaced with a 600 MW facility, as assumed, this could require significant transmission upgrades in the area, including new transmission lines, to be able to fully dispatch 600 MW of generation into the Norwalk - Stamford area. Finally, smaller local improvements will be required. The Companies list all planned transmission projects in their annual Forecasts of Loads and Resources filing to the Siting Council.

Witness: **Peter T. Brandien**
Request from: **Connecticut Siting Council**

Question:
Using the results of questions #14, what is the next probable significant transmission project(s) to argument the proposed 345-kV loop when it requires further expansion?

Response:

Based upon the best assumptions we have today for the timing of existing generating plant closures, construction of new generating plants, usage patterns and amounts, and known technology changes, we expect that a completed 345-kV loop will meet southwestern Connecticut's bulk power supply needs for the foreseeable future, perhaps 30 years or more. However, additional 115-kV projects will be required. The first of these is the Glenbrook to Norwalk Cables Project, which is in the municipal consultation process. As stated in the response to CSC-01, Q-CSC-014, a Norwalk Harbor to Glenbrook 115-kV line would be proposed if it becomes clear that Norwalk Harbor will continue to be a significant generating site and the 1385 line (or its replacement) will continue in operation. Located within SWCT are several local load pockets that may need additional transmission reinforcement in the future. These areas are limited in geographic area and following contingency conditions are fed by weak transmission systems that are usually radial in nature. The Companies plan to continue regular reviews of Connecticut's transmission grid to ensure that cost-effective facilities are available to benefit the region's consumers. Finally, since the question is not limited to Southwest Connecticut, please note that CL&P plans to propose a 345-kV upgrade of the line between its Card Street Substation in Lebanon and the National Grid system in Rhode Island. See, Application, Vol.1, p. F-15. This line is currently being studied by ISO-NE.

Witness: **Roger C. Zaklukiewicz**
Request from: **Connecticut Siting Council**

Question:
Identify existing transmission structures between Scovill Rock Substation and Chestnut Junction; between Oxbow Junction and proposed Beseck Substation; between Black Pond Junction and proposed Beseck Substation; between proposed Beseck Substation and proposed East Devon Substation; proposed East Devon Substation to Norwalk Junction; and Norwalk Junction to Norwalk Substation, which now support telecommunications antennas.

Response:
Existing transmission structures which now support telecommunications attennas are as follows:

(none)		Scovill Rock S/S to Chestnut Jct
(none)		Oxbow Jct to Beseck S/S
#9403	Meriden	Black Pond Jct to Beseck S/S
#2384	Woodbridge	Beseck S/S to East Devon S/S
#2461	Hamden	Beseck S/S to East Devon S/S
#2366	Orange	Beseck S/S to East Devon S/S
#2336	Milford	Beseck S/S to East Devon S/S
#830	Stratford	East Devon S/S to Norwalk Jct
#838	Trumbull	East Devon S/S to Norwalk Jct
#844	Trumbull	East Devon S/S to Norwalk Jct
#845	Trumbull	East Devon S/S to Norwalk Jct
#860	Bridgeport	East Devon S/S to Norwalk Jct
#876	Fairfield	East Devon S/S to Norwalk Jct
#936	Wilton	East Devon S/S to Norwalk Jct
(none)		Norwalk Jct to Norwalk S/S

Witness: **Roger C. Zaklukiewicz**
Request from: **Connecticut Siting Council**

Question:
Identify existing transmission structures between Scovill Rock Substation and Chestnut Junction; between Oxbow Junction and proposed Beseck Substation; between Black Pond Junction and proposed Beseck Substation; between proposed Beseck Substation and proposed East Devon Substation; proposed East Devon Substation to Norwalk Junction; and Norwalk Junction to Norwalk Substation, that are planned to support telecommunications antennas.

Response:
Existing transmissions structures upon which telecommunications antennas are being proposed include the following:

(none)		Scovill Rock S/S to Chestnut Jct
(none)		Oxbow Jct to Beseck S/S
(none)		Black Pond Jct to Beseck S/S
#2493	Wallingford	Beseck S/S to East Devon S/S
#2492	Wallingford	Beseck S/S to East Devon S/S
#2466	Hamden	Beseck S/S to East Devon S/S
#2433	Bethany	Beseck S/S to East Devon S/S
#2392	Woodbridge	Beseck S/S to East Devon S/S
#826	Stratford	East Devon S/S to Norwalk Jct
#833	Trumbull	East Devon S/S to Norwalk Jct
#848	Trumbull	East Devon S/S to Norwalk Jct
#888	Fairfield	East Devon S/S to Norwalk Jct
#910	Fairfield	East Devon S/S to Norwalk Jct
(none)		Norwalk Jct to Norwalk S/S

Witness: **Roger C. Zaklukiewicz**
Request from: **Connecticut Siting Council**

Question:
How would telecommunications service providers be affected by the construction of the overhead transmission line.

Response:
Any existing telecommunications facility on a transmission structure scheduled to be replaced would have to be relocated to a new structure. During the construction phase, the telecommunications providers, could experience a short outage period during the transfer of equipment between structures if nearby antennas do not provide overlapping coverage . Any new telecommunications facility will be accommodated on the new transmission structures consistent with each provider's contract.

Witness: **Peter T. Brandien**
Request from: **Connecticut Siting Council**

Question:
Describe why points east of Scovill Rock Substation and Oxbow Junction do not need upgrading.

Response:
Thermal and voltage analyses performed by ISO-NE and the Companies confirmed the existing transmission facilities east of Scovill Rock and Oxbow Junction have sufficient capacity to operate in the proposed 345-kV bulk power system, without overloading. The establishment of Beseck Substation and reconfiguration of the 345-kV transmission lines do not require additional transmission upgrades beyond those currently identified in the Middletown to Norwalk Project.

Witness: **Roger C. Zaklukiewicz**
Request from: **Connecticut Siting Council**

Question:
Define the term junction and transition station.

Response:
The term "junction" relates to the physical location where two or more transmission line rights-of-way converge. The transmission lines on each of the rights-of-way may pass directly through the intersecting rights-of-way, or the lines may interconnect with one or more of the other transmission lines. Typically, a junction only consists of transmission structures and their associated conductors.

The term "transition station" relates to a fenced-in area containing equipment, similar to that found in a substation, which provides for the connection of overhead conductors to underground cables. The overhead conductors terminate at a steel framed structure within the transition station. The underground cables surface in protective steel piping which connect to termination devices called potheads. Circuit breakers, disconnect switches, shunt reactors, coupling capacitive voltage transformers, other associated electrical equipment, and a control house would also be located in this fenced-in area. An example of a transition station is provided in Volume 7 of the Application under "Alternative Transition Station Drawings".

Witness: **Richard J. Reed; Roger C. Zaklukiewicz**
Request from: **Connecticut Siting Council**

Question:
Provide a proposed schedule and manner of overhead transmission right-of-way maintenance.

Response:
While the proposed Middletown-Norwalk 345-kV Line project is a joint filing by CL&P and UI (the "Companies"), the portion of the project being proposed overhead is entirely on CL&P rights-of-way. For that reason, this response only focuses on CL&P's schedules for the affected transmission rights-of-way, which are listed below. There are several different vegetation management projects that cover the entire length of the proposed overhead upgrade and rebuild from Scovill Rock Substation to the proposed East Devon Substation. There are two scheduled vegetation maintenance programs; the brush control program that includes the floor area of the maintained right-of-way width which is performed on a four-year cycle, and a side trimming program that is also cyclical but based on a ten-year cycle.

The brush control schedule is as follows:

Project CT-03 includes the section of the project from Beseck Junction south to the East Wallingford Junction. Last maintained in 2003 with follow up work required in 2004. Next scheduled maintenance would be in 2007.

Project CT-10 includes the section of the project from Cook Hill Junction to the Devon Generating Station. Scheduled for maintenance in 2004. Next scheduled maintenance would be in 2008.

Project CT-24 includes the sections from Oxbow Junction to Beseck Junction and north to Black Pond Junction. Last maintained in 2001. Next scheduled maintenance would be in 2005.

Project CT-25 includes the section of the project from Scovill Rock Substation to Chestnut Junction. Last maintained in 2001. Next scheduled maintenance would be in 2005.

Project CT-28 includes the section of the project from Cook Hill Junction to East Wallingford Junction. Last maintained in 2003. Next scheduled maintenance would be in 2007.

The side trimming schedule has not been established for these sections and will be deferred until the project is under construction. At that time, the clearing work associated with the new construction will include the side trimming and danger tree removal along these rights-of-way. After the side trimming and tree removal work is completed, the next scheduled maintenance trimming would be in approximately 9 - 10 years. The actual schedule may vary due to workload equalizing.

The Companies adhere to NEPOOL Operating Procedure No. 3, Transmission Maintenance Scheduling for Facilities Operating at 115-kV and Above. The specific information regarding the scheduling and manner of

overhead transmission right-of-way maintenance is contained in Appendix 3-C1, NEPOOL Standard 115-kV and Above Transmission Line Patrol & Inspection Program, and Appendix 3-D1, NEPOOL Right-Of-Way Vegetation Management Standard.