September 3, 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-04 Interrogatories dated 08/25/2004
CSC - 073 , 075 , 076 , 080 , 081

Very truly yours,

Anne B. Bartosewicz
Project Director - Transmission Business

ABB/ssn
cc: Service List

Witness: **Allen W. Scarfone**
Request from: **Connecticut Siting Council**

Question:
The GE Harmonic Study that describes the results for Study Cases 5, 6, and 7, dated August 2004, reports in Table 2, Page 3, that different load conditions and generation units' dispatch were studied. For the referenced study conducted by GE, please provide:

a. For both Light Load and Peak Load conditions, the real and reactive power components of the loads on all buses, as modeled in the referenced GE study.

b. Real and reactive power outputs for each generator interconnected with CP&L and United Illuminating, for each dispatch scenario used in the referenced GE study.

Response:

The studies performed by GE are not loadflow studies. They are switching and frequency analyses based upon an Electromagnetic Transients Program (EMTP) model. GE incorporated load in the model to provide damping, but MW and MVAR loads are not specifically modeled as they are in the loadflow model. In a similar fashion, generators are not modeled with a MW or MVAR output. The generators are either in service or out of service, as described in the referenced report.

The Companies note, that GE utilizes the term "Light Load" to designate a case with a low amount of generation operating in SWCT. The term "Peak Load" designates a case with a large amount of generation operating in SWCT. As discussed in the responses to Q-CSC-075, after this project is built it is quite likely that even when load in SWCT is approaching peak levels, the system can be operated with relatively little local generation dispatched to support the needs of SWCT. In other words, the term "Light Load" as used by GE is not correlated to the actual customer demand for electric power but rather to the amount of generation operating in SWCT.

Witness: **Allen W. Scarfone**
Request from: **Connecticut Siting Council**

Question:
Under heavy (peak or near-peak) load conditions, in southwest Connecticut, is it reasonable to assume that:

a. More local generation would be operating than at light load?

b. All (or most) shunt capacitors would be in service?

c. In each case, discuss all reasons for your answer.

Response:

a. The project will increase the transfer capability into SWCT in order to, among other things, provide access to remote less expensive and potentially cleaner generation than existing local generation, consistent with electric restructuring and the region's Standard Market Design. Both electric restructuring and the Standard Market Design are premised on the benefits of running less expensive generation in the northeast. Even when load is near peak, sufficient, less expensive and potentially less polluting generation may be available such that relatively little local generation in SWCT is dispatched. However, ISO-NE may dispatch generation in SWCT to support power system conditions in New England and in the rest of CT.

b. Today, the capacitors are switched in service as the load increases throughout the day. As the load nears peak, almost all capacitors are placed in service. This will continue to be the case after the project is constructed. Moreover, additional capacitors (beyond those which are utilized today) may be required for local voltage support and to support the additional transfers into SWCT that the project is intended to provide.

c. See a. and b. above.

Witness: **Allen W. Scarfone**
Request from: **Connecticut Siting Council**

Question:
Under light load conditions, is it reasonable to assume that:

a. Less local generation would be operating than under heavy load conditions?

b. No local generation would operate?

c. Most (or all) shunt capacitors would be out of service? d. In each case, describe all reasons for your answer.

Response:

a. Today, it is very likely that there would be less local generation in service under light load conditions than during heavy load conditions. However, as explained in response to Q-CSC-075, with the additional transfer capability provided by this project, it is quite likely that the system can be operated with no or very little generation in service within SWCT.

b. Yes. Even with today's transmission system, there are hours in the year when no generation in SWCT is economic to operate. When this project is placed in service, the number of hours when no generation is in service within SWCT increases.

c. With today's system, during light load conditions, one could expect most, and in some cases all, substation capacitor banks to be out of service. This is not likely to change when the project is placed in service.

Witness: **Allen W. Scarfone**
Request from: **Connecticut Siting Council**

Question:
Can the Applicant cite any instance(s) in actual operation where all capacitor banks were dispatched (i.e. in service) under light load conditions?

a. If so, please identify and describe each specific instance (or a representative set) in detail.

b. Would such operation of the shunt capacitors result in an acceptable system voltages for:

i. The existing system?

ii. The approved Phase I system?

iii. The system alternative examined as Study Case 6?

iv. In each case, discuss why or why not.

Response:

a. The Companies are not aware of a situation where all capacitor banks were placed in service under conditions of light customer demand for electric power in SWCT. Also, please see the response to CSC-04, Q-CSC-073.

b. i, ii, iii
Unacceptably high voltage conditions would be experienced during periods of light customer demand for electric power if all, or most, substation capacitor banks are placed in service. Substation capacitors banks would be placed in service if there was heavy customer demand for electric power and little generation dispatched within SWCT, which was the case designated by GE as "light load".

Witness: **Allen W. Scarfone**
Request from: **Connecticut Siting Council**

Question:
Is it reasonable or advisable to design transmission facilities to perform acceptably under operational circumstances that are not credible for either the existing or future system in southwest Connecticut? Why or why not?

Response:
Transmission facilities should not be designed for generation dispatches and contingencies that are not "credible." The bulk power system must, however, be designed to operate reliably under a wide range of generation dispatch scenarios and transmission element contingencies which take into account planned and unplanned facility and equipment outages. Since it is impossible to study each and every system configuration, limiting configurations are often used to bound what may occur on the system. For example, steady state thermal and voltage, transient, and stability studies must consider limited generation in service, varying amounts of substation shunt capacitor banks in service, and various combinations of transmission line and equipment outages.