



Northeast  
Utilities

107 Selden Street, Berlin, CT 06037

Northeast Utilities  
P.O. Box 270  
Hartford, CT 06141-0270  
(860) 665-5000  
www.nu.com

March 21, 2013

Mr. Robert Stein  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

ORIGINAL

Re: Docket No. CSC 435 - Stamford Reliability Cable Project

Dear Mr. Stein:

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

Response to CSC-02 Interrogatories dated 03/06/2013  
CSC-001, 002, 003, 004, 005, 006

Very truly yours,

John Morissette  
Manager  
Siting and Permitting, Transmission  
NUSCO  
As Agent for CL&P

cc: Service List

RECEIVED  
MAR 21 2013  
CONNECTICUT  
SITING COUNCIL

Witness: CL&P Panel  
Request from: Connecticut Siting Council

**Question:**  
What are the Project's thermal rating requirements referred to on page D-6 of CL&P's application?

**Response:**

The thermal rating requirements were determined using summer peak post-contingency event power flows with the Project in service. Based on the analyses, the summer continuous and the Short-Time and Long-Time emergency cable ratings, for the proposed cable must be equal to or greater than:

- Summer Normal rating = 1255 Amps (250 MVA)
- Summer Long-Time Emergency rating = 2259 Amps (450 MVA)
- Summer Short-Time Emergency rating = 2385 Amps (475 MVA)
- Drastic Action Limit rating = 2510 Amps (500 MVA)

The Connecticut Light and Power Company  
Docket No. CSC 435

Data Request CSC-02  
Dated: 03/06/2013  
Q-CSC-002  
Page 1 of 1

Witness: CL&P Panel  
Request from: Connecticut Siting Council

**Question:**

The application states (on page D-11) that centrifugally cast fiberglass-reinforced polymer-mortar pipe (HOBAS) would be used instead of steel casing to avoid de-rating of the circuit. Would any de-rating occur with the HOBAS piping? If so, how much?

**Response:**

No de-rating occurs with the HOBAS pipe because the HOBAS pipe is non-conductive, unlike a conductive steel casing. The conductive properties of the steel casing is what leads to the circuit's de-rating.

Witness: CL&P Panel  
Request from: Connecticut Siting Council

**Question:**

The cost of energy losses is one of the factors contributing to the project's life-cycle cost. What is the rate/amount of energy loss assumed by CL&P in calculating this value?

**Response:**

The assumptions which CL&P used in calculating the cost of energy losses are as follows:

1. Cable Resistance: 0.0268 Ohms/mile
2. Electricity Cost Escalation: 5% Annually
3. Cost of Electricity: \$0.10/kWh
4. Peak Current Year 1: 559 Amps/Phase
5. Load Factor: 0.62
6. Load Growth: 2% Annually
7. Line Length: 1.5 miles

For year 1, using the Loss Cost Calculation Method shown in Appendix G of the Connecticut Siting Council Investigation into the Life-cycle Cost of Electric Transmission Lines Report Life Cycle 2012 Report, the cost of energy losses would approximately \$12,690.

Witness: CL&P Panel  
Request from: Connecticut Siting Council

**Question:**

If the "pig" finds problems with conduit after it has been set in the duct bank, how would such problems be corrected?

**Response:**

Potential issues encountered while checking the PVC conduit with a "pig" or mandrel include:

1. foreign materials in the conduit;
2. out-of-round conduit, and;
3. collapsed conduit.

The corrections for these potential issues include:

1. Using high pressure air or a swab to clean out the foreign material.
2. Determining if the conduit diameter is still suitable for cable by using a slightly smaller "pig". If the conduit diameter is suitable for cable, no correction is necessary. If the conduit diameter is not suitable for cable, then the correction for a collapsed conduit described in 3) below would be used.
3. Excavating and replacing the damaged duct or entire duct bank in the affected area.

The Connecticut Light and Power Company  
Docket No. CSC 435

Data Request CSC-02  
Dated: 03/06/2013  
Q-CSC-005  
Page 1 of 1

Witness: CL&P Panel  
Request from: Connecticut Siting Council

**Question:**

What would happen to the transmission lines, duct banks, splice vaults, and other related equipment when this Project reaches the end of its useful economic life?

**Response:**

The cable will remain in-service until its end of life, i.e. repair no longer possible or economic. If the cable reaches its end of life and the power transfer provided by the circuit is still needed, then the cable could be replaced in the same duct bank and splice vaults. If the cable reaches its end of life and the power transfer provided by the circuit has become obsolete, then the cable and termination structures could be removed and the duct bank and splice vaults could remain in place in accordance with current practices.

Witness: CL&P Panel  
Request from: Connecticut Siting Council

**Question:**

Explain how "minimizing the spacing between cables and arranging the phases of the underground line" would help to achieve better cancellation of the magnetic fields from the existing overhead lines.

**Response:**

Much of the magnetic field reduction from the existing overhead lines would be due to the proposed underground cable circuit providing another path for current to flow between the Glenbrook Substation and the South End Substation. This new path would reduce the current flows on the existing overhead lines, and thus, their contribution to the magnetic field in the area.

The close spacing between the cable phases increases the cancellation effect of the magnetic fields produced by currents flowing in each phase. The spacing would only be reduced to the point where any additional spacing reduction would cause shared heating between the cable phases that would adversely affect their current carrying capability.

Further magnetic field reductions would be achieved by selecting the optimum arrangement of the underground cable circuit phases. Wherever two lines or more are closely parallel, whether overhead or underground or a mix thereof, there is an optimum arrangement of the three phases of each line for magnetic field cancellation between them. By selecting the best phasing of the underground cables with respect to the phasing of the overhead transmission line conductors, CL&P is able to maximize this cancellation effect.