January 17, 2012

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

Re: Docket No. LIFE-CYCLE 2011 - LIFE-CYCLE 2011

Dear Mr. Stein:

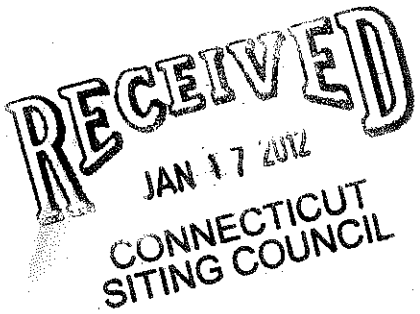
This letter provides the response to requests for the information listed below.

Response to CSC-01 Interrogatories dated 09/15/2011
CSC-004-RV01

Very truly yours,

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

cc: Service List



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

Question:
Provide updated capital costs ($/mile) for underground transmission lines that CL&P uses to compare alternative 115 kV and 345 kV lines of the following types:

- High pressure fluid filled (HPFF)
- Cross-linked polyethylene (XLPE)

If possible, break these costs into the following categories:

- Cable costs
- Piping and associated supporting structures
- Conduit costs
- Other supporting structures
- Land costs
- Installation costs
- Other (please specify)

If the costs are not available for all of these categories, provide them in as much detail as possible for the categories CL&P routinely uses.

Response:
The only changes in this revised response are revisions to the table below, in the column for XLPE 345-kV Single Circuit lines, where the construction cost per mile has been revised to $8,850,000 (instead of $8,580,000 stated in CL&P's previously filed response) and the total cost per mile has been revised to $21,971,000 (instead of $21,701,000).

Updated costs per mile for underground XLPE and HPFF transmission lines for generic comparisons are:

	XLPE 115-kV	XLPE 115-kV	HPFF 115-kV	XLPE 345-kV	XLPE 345-kV	HPFF 345-kV	HPFF 345-kV
	Single Circuit	Double Circuit	Single Circuit	Single Circuit	Double Circuit	Single Circuit	Double Circuit
Engineering/ Project Management	$2,659,000	$4,090,000	$1,154,000	$2,566,000	$3,948,000	$1,282,000	$1,973,000
Material	$2,919,000	$4,491,000	$2,759,000	$3,963,000	$6,096,000	$3,066,000	$4,717,000
Construction	$7,444,000	$11,445,000	$5,489,000	$8,850,000	$13,616,000	$6,099,000	$9,383,000
Overheads	$5,759,000	$8,857,000	$5,568,000	$6,592,000	$10,142,000	$6,187,000	$9,518,000
Totals	$18,781,000	$28,883,000	$14,970,000	$21,971,000	$33,802,000	$16,634,000	$25,591,000

Notes:

1. Costs are provided in the categories CL&P routinely uses.
2. Costs may vary significantly due to adverse soil conditions such as rock, water, and/or contaminated soil.
3. All costs are in 2011 dollars.
4. Estimates based on Northeast Utilities Transmission's Estimate Database and actual costs for recently completed work.
5. No land costs are included in the above costs due to high variability in property acquisition costs.

6. No substation improvements or overhead to underground transition stations are included in the above unit costs.
7. All underground cable construction costs exclude reactors.
8. Since it is usually necessary at 345 kV to use two (or more) parallel cable sets to provide ampacities similar to that provided by one overhead line, the 345-kV XLPE and HPFF double-circuit costs should be compared to single 345-kV overhead circuit costs.
9. Assumed conductor size for 115-kV XLPE cables is 3000 kcmil.
10. Assumed conductor size for 345-kV XLPE cables is 3000 kcmil.
11. Assumed conductor size for HPFF cables is 2500 kcmil.
12. HPFF underground lines require pressurization plants at each end of the line, the cost of these pressurization plants is approximately $2,000,000 which has not been included in the above cost estimates.
13. The 345-kV cable systems have high charging currents which for typical circuit lengths will require compensation by shunt reactors. These shunt reactors would be located at the terminal substations of an underground 345-kV circuit, or at line transition stations built specifically for transitions between overhead and underground segments of a 345-kV circuit. The initial and ongoing costs of these shunt reactors and associated equipment is not included in the above estimates for 345-kV cable lines.