



**Northeast
Utilities System**

107 Selden Street, Berlin, CT 06037

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

July 22, 2009

RECEIVED
JUL 22 2009

**CONNECTICUT
SITING COUNCIL**

Mr. S. Derek Phelps
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Docket No. 370 - CT Greater Springfield Reliability Project

Dear Mr. Phelps:

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

Response to OCC-01 Interrogatories dated 04/02/2009
OCC-001-SP03

Very truly yours,

Robert Carberry /tr

Robert Carberry
Project Manager
NEEWS Siting and Permitting
NUSCO
As Agent for CL&P

cc: Service List

Witness: CL&P Panel
Request from: Office of Consumer Counsel

Question:

Since filing its Application, has CL&P become aware of any statements in that Application that require correction or clarification? If so, please provide such corrections/clarifications. Please treat this interrogatory as a continuing request, which CL&P should update periodically as appropriate.

Response:

1. On page Q-3 of the Application, CL&P omitted to include a Stream Channel Encroachment Line permit from the Connecticut Department of Environmental Protection. This permit regulates the placement of structures or vegetation clearing within state-designated stream-channel encroachment lines.
2. In the Direct Testimony of Robert Carberry and Scott Newland that was filed on July 7, 2009, the following changes are needed:
 - The revisions to magnetic field data in Table 7 on page 12 of Appendix O-1 (reference response OCC-01, Q-OCC-001-SP02) also apply to the table on page 39 of the testimony. A replacement page 39, included as page 2 of 4 of this response, incorporates and highlights these changes.
 - With the above change, the first magnetic field number in a question on the top of page 40 should be 2.4 mG, not 2.6 mG.
 - Two tables on page 42 of the testimony contain incorrect data. A replacement page 42, included as page 3 of 4 of this response, incorporates and highlights these corrections.
 - A table on page 53 drew data from the table on page 39, so also needs correction. A replacement page with this correction, and also a correction to a number in the question on this page (37 should be 3.7) is included as page 4 of 4 of this response. The corrections are highlighted.
 - Throughout the testimony, the acronym "FDMP" should be "FMDP".

Q. Did CL&P evaluate other reduced-EMF designs for this focus area besides the delta design it is recommending?

A. Yes, as set forth in detail in the FMDP, CL&P evaluated a total of seven alternative designs. The results of that evaluation are set forth in summary form in the following table:

**Granby Jct. to CT / MA Border
Comparison to Existing Conditions
Line Configuration and Magnetic Fields @ ROW Edges**

X S2 Configuration	Typical Structure Height (ft.)		AAL Case	
	Existing To Remain	New	W/N ROW Edge (mG)	E/S ROW Edge (mG)
Existing Lattice Towers Pre- project	70		8.7	0.1
Base Line Design H-Frame	70	90	23.5	12.6
Alt 1 – H Frame + 20 feet	70	110	22.8	12.3
Alt 2 – Delta	70	110	17.9	9.8
Alt 3 – Delta + 20 ft.	70	130	15.7	9.2
Alt 4 – Vertical	70	130	15.6	9.6
Alt 5 – Vertical + 20 ft	70	150	13.0	9.0
Alt. 6 – Split Phase	70	130	2.4	1.9
Alt 7 345/115 Composite	N/A	130	18.9	8.3

Q. What is “split phasing” of a line?

A. A transmission circuit is usually comprised of three conductors (or conductor bundles), one for each “phase.” This configuration employs six, rather than three, phases, thus reducing the current in each of them one by one-half. The phases of the two sets of conductors are then arranged on the support structures so that the magnetic fields associated with each set of three phase conductors acts to partially cancel the fields from the other. This combination of reduced currents and mutual cancellation dramatically reduces MF levels at the ROW edges.

Q. What are the magnetic field levels that would be associated with each of the reduced MF strategies considered in the supplemental FMDP?

A. They are set forth in the following table, which also appears as FMDP

Table 7:

FMDP Table 7: Magnetic Field Management Results for a 3.7-Mile Section of the GSRP – Massachusetts Southern Route Alternative ROW (Enfield) (AAL Case)

XS-S07 Cross Section Configuration	Typical Structure Height (ft)	Average Annual Load Case					Cost	
		Maximum Level on ROW (mG)	North ROW Edge		South ROW Edge		Section Amount (\$)	Project Increase (%)
			Level (mG)	Change (%)	Level (mG)	Change (%)		
Base Line Design H-Frame	90	277.7	17.3		15.2		\$11,714,000.00	-
Alt 1 - H-Frame +20 feet	110	134.9	10.3	- 40%	14.3	- 6%	\$12,225,000.00	0.3%
Alt 2 - Delta Configuration	110	170.5	12.1	- 30%	11.9	- 22%	\$15,067,000.00	2.2%
Alt 3 - Delta +20 feet	130	85	10	- 42%	10.9	- 28%	\$16,908,000.00	3.4%
Alt 4 - Vertical Configuration	130	143.8	22.3	+ 29%	11.9	- 22%	\$15,998,000.00	2.8%
Alt 5 - Vertical +20 feet	150	67.1	24	+ 39%	10.8	- 29%	\$17,432,000.00	3.7%
Alt 6 - Split Phase	130	81.5	15.4	- 11%	2.5	- 84%	\$26,631,000.00	9.6%
Alt 7 - 345/115-kV Composite	130	137.6	17.2	- 1%	9.4	- 38%	\$27,527,000.00	10.2%

Q. How would the post-project fields and conditions compare to the pre-project fields and conditions, if overhead line construction were used for the entire Connecticut portion of the Southern Route?

A. The following table provides such a comparison:

**Comparison to Existing Conditions
Structure Configuration and Magnetic Fields @ ROW Edges**

XS-S07 Configuration	Typical Structure Height (ft.)		AAL Case	
	Existing To Remain	New	W/N ROW Edge (mG)	E/S ROW Edge (mG)
Existing H-Frame	60		7	0.3
Base Line Design H-Frame	60	90	17.3	15.2
Alt 1 – H Frame + 20 feet	60	110	10.3	14.3
Alt 2 – Delta	60	110	12.1	11.9
Alt 3 – Delta + 20 ft.	60	130	10	10.9
Alt 4 – Vertical	60	130	22.3	11.9
Alt 5 – Vertical + 20 ft	60	150	24	10.8
Alt. 6 – Split Phase	60	130	15.4	2.5
Alt 7 345/115 Composite	N/A	130	17.2	9.4

BMP Focus Area	West/North ROW*	East/South ROW*
Pre-project	8.7	0.1
Post-project BMP Delta Design	17.9	9.8
Post Project Split-Phase	2.4	1.9
Post-project, UG variation (in streets)		
Edge of ROW (existing lines, new loads)	3.2	0.5
25' from cables in streets	2.6	5.6

Therefore, if the primary objective in siting the line was to minimize magnetic field exposures, the choice would be a split-phase overhead line configuration, rather than an in-road underground line installation.

(ii) Connecticut Portion of Southern Route Alternative

Q. Now let us turn briefly to the application of the presumption of section 16-50p(i) to the FMDP for the Connecticut Portion of the Southern Route Alternative. Has CL&P evaluated an underground variation that would avoid the 3.7-mile BMP focus area along this route that you described earlier?

A. Yes, initially we looked at both in-row and street variations, but it is likely that only the latter could qualify for environmental permitting. This would be an XLPE cable system installed in streets for a distance of 4.3 miles. The planning grade comparative cost estimate is as follows: