November 24, 2015

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

Re: Docket No. 461 - CSC 461 Greenwich Substation and Line Project

Dear Mr. Stein:

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

Response to OCC-03 Interrogatories dated 11/04/2015
OCC-029, 032, 033, 034, 035, 036, 037, 038, 039, 040

Response to OCC-04 Interrogatories dated 11/17/2015
OCC-043

Very truly yours,

John Morissette
Project Manager
Siting
As Agent for CL&P
dba EversourceEnergy

cc: Service List

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Provide the peak MWh and MVA capacity of the above-captioned, proposed Greenwich transmission project ("Project"), and of the current system it would replace.

Response:
The permissible load capacity at 27.6 kV of the existing Cos Cob Substation is 135 MVA.

The proposed Greenwich Substation permissible load capacity will be about 134 MVA.

The MWh is not a unit of capacity measurement. It is a measure of power delivered over a period of time.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Reference Transcript of 10/06 at 22-23. Explain the dispatch protocol for substation incidents in Greenwich.

Response:
The Eversource System Operations Center is notified of an incident at a substation by receiving a substation alarm or when a phone call is made to the Eversource Customer Service Center regarding a problem at a substation. The System Operations Center makes a determination for dispatching someone to the substation, and the on-call electrician or an on-call supervisor is notified.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
How many gas-insulated switchgear (GIS) substations does the Company currently have in Greenwich? Provide detailed information, including
potential risks, concerning the gas that will be used in the proposed GIS substation. Explain how the Company has notified and educated Greenwich
emergency personnel on the properties of the gas and risks.

Response:
Currently, there are no Gas Insulated Switchgear (GIS) installed in Greenwich, Connecticut.

As set forth in Section J.7 of the Application, equipment in the GIS building would contain the insulating gas sulfur hexafluoride ("SF6"). The most common use for SF6, both domestically and internationally, is as an electrical insulator in high voltage equipment that transmits and distributes electricity. Since the 1950s, the U.S. electric power industry has used SF6 widely in circuit breakers, gas-insulated substations, and other switchgear used in the transmission system to manage the high voltages carried between generating stations and customer load centers. Like helium, sulfur hexafluoride is a non-toxic gas, but it has been identified as a "greenhouse gas" and utilities are required to monitor and annually report on any releases of gas from their equipment and to reduce the potential for releases through improvements in the leak rate of new equipment, refurbishing of older equipment, and the use of more efficient operation and maintenance techniques. The Company has had long experience with managing the potential for SF6 releases from its GIS equipment and does not anticipate any impacts to air quality as a result of its use of the proposed GIS equipment at the Greenwich Substation.

Assuming, for purposes of this response, that the Project is approved by the Siting Council, thereafter, the Company plans to contact Greenwich emergency personnel to discuss the approved Project facilities and provide any training that is warranted.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Reference transcript of 10/06 at 3 3. Explain in detail the possibilities of partial solutions for added capacity at much lower cost, including but not limited to, these two scenarios: a. a rebuild of the Prospect substation, and b) building at the current Cos Cob substation. For both scenarios, include an analysis of saving space with partial use of GIS.

Also include scenarios, that eliminate or mitigate horizontal directional drilling ("HDD") and the attendant large cost.

Response:
See Eversource's response to HD-01, Q-LF-001, Q-LF-002 and Q-LF-003.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Provide an accelerated time schedule for the time the Company would need to issue and analyze RFPs for non-transmission alternatives to provide at least a partial solution for capacity requirements.

Response:
The Company considered non-transmission alternatives as part of its Project planning. Please see Section F.3 of the Application. The Company's conclusion is set forth in Section F.3.6, as follows: *However, they* [non-transmission alternatives] *are not currently available, or available in sufficient amounts to meet the immediate needs that the Project would address. Further, such alternatives would not increase the reliability of the system with a new reliable capacity source sufficient to supply anticipated customer demand for the long-term future or extend the bulk power transmission infrastructure closer to the demand center.*

Accordingly, RFPs would not be a prudent exercise.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Reference Transcript of 10/06 at 95-96. Provide the minimum right of way and radius of clearance for a 115 kV line for overhead and for trench construction. Also explain tree clearance standards, including whether there is a no-trees requirement, or certain tree height restrictions within the required radius.

Response:
For underground transmission line options, tree clearing will be required for both the temporary and permanent easements. For the permanent easements, once construction is completed, drought resistant plantings may be placed above the ductbank so the plants do not take water out of the soil around the cable trench and impact ampacity ratings. In addition, no deep rooting plants may be planted which could damage the ductbank. For the temporary construction easements alongside the permanent easements, once construction is completed, the area can be replanted. However, to reduce the potential for damage to the ductbank, Eversource requests that property owners not locate deep rooting plants in these areas.

Minimum Easement Requirements

	Temporary	Permanent
Private Property (Trench):	30 feet x length	20 feet x length
Private Property (Vault):	50 feet x 200 feet (10,000 ft2)	20 feet x length
Pipe Jacking (Launching Pit)	100 feet x 100 feet (10,000 ft2)	20 feet x length
Pipe Jacking (Receiving Pit)	50 feet x 50 feet (2,500 ft2)	20 feet x length
HDD (not including setups)	100 feet x HDD length	40 feet x length

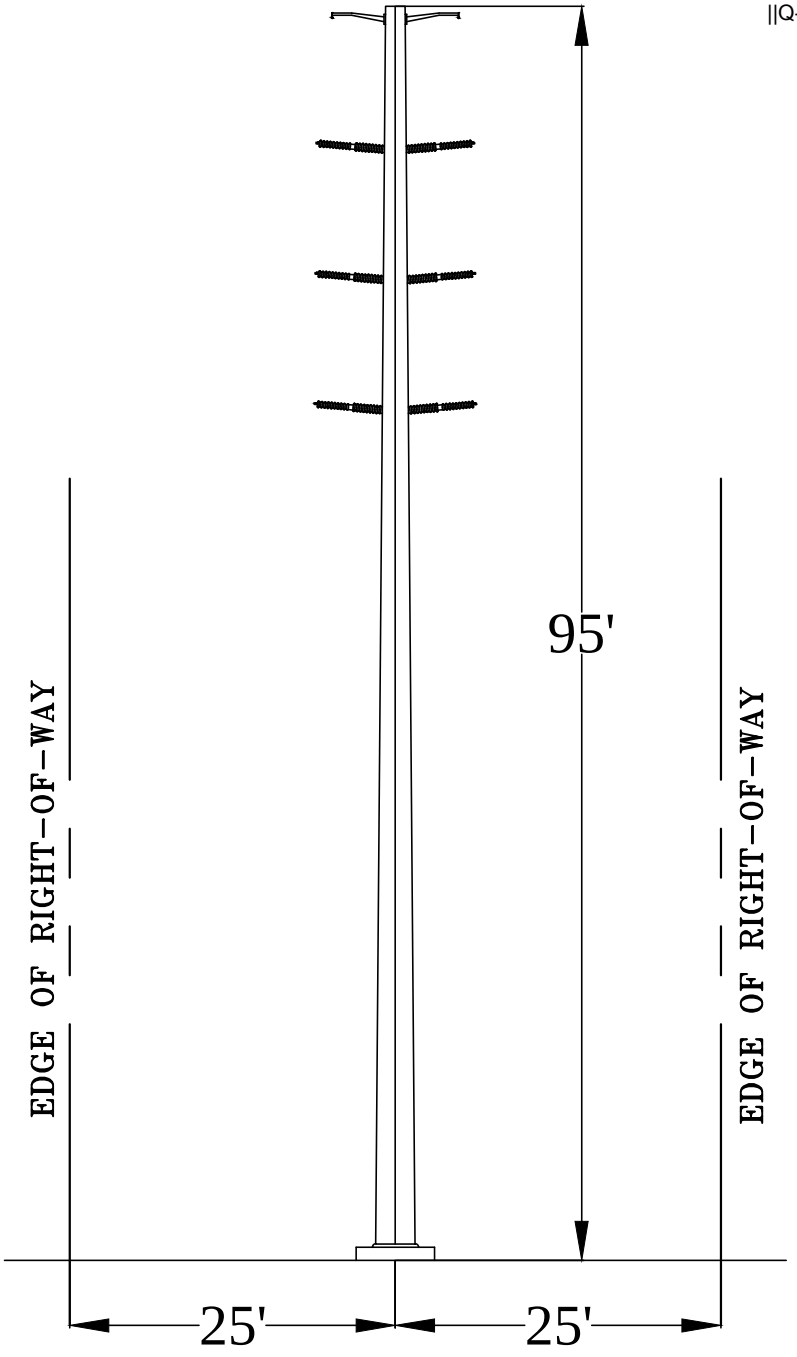
For overhead transmission line options, Eversource has investigated a number of options to minimize the right-of-way width required for an overhead double circuit transmission line. The second page of this response provides a cross section depiction of this design. The following conditions must also be met to accommodate this design:

Overhead Right-of-Way Requirements:

- Complete clearing of a 50-foot permanent right-of way for construction and operation of the overhead transmission line.
- Additional rights beyond the 50 feet to trim and cut down danger trees that may threaten the transmission lines.

Design Limitations:

- Maximum Span Length of 425 feet.
- Use of Rigid Post Insulators
- Certain low-growing vegetation may be allowed to remain in the cleared right-of-way. However, clearing for access may require the removal of such vegetation. Additionally, in areas where large tree vegetation must be cleared, additional low lying vegetation will be cleared to access the larger trees. Natural ingress of the low growing vegetation will be permitted after construction is completed.



EVERSOURCE ENERGY

TITLE

GREENWICH S/S AND LINE PROJECT
BRUCE PARK OPTION
ROW CROSS SECTION DRAWING
GREENWICH, CT

BY CPS	CHKD	APP	APP
DATE 10/20/2015	DATE	DATE	DATE
H-SCALE N.T.S.	SIZE A	FIELD BOOK & PAGES	
V-SCALE N.T.S.	V.S.	R.E. DWG	
R.E. PROJ. NUMBER 403813RA		DWG NO. GREEN-BP-XS	

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Reference Transcript of 10/06 at 97-98. Has the proposed HDD under the Metro North Railroad been approved by the Railroad? Would both the HD D and overhead construction require shutting down the railroad for a portion of time during construction?

Response:
Eversource typically does not request a permit to perform an HDD under the Metro-North railroad until a route has been approved by the Council that includes an HDD. Performing an HDD under the Metro-North railroad would not require shutting down the railroad.

An installation of an overhead transmission line above the railroad would require shutting down the railroad, possibly during multiple outages, to string the new wire across the railroad.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Reference Transcript of 10/06 at 112-115. Provide the Company's understanding of the legal status of the Siting Council's hypothetical approval
of Project routing vis-a-vis hypothetical disapproval by the Town of Greenwich. Provide a copy of the documentation that the Company mentioned
that it would like to submit (see Transcript at 115) regarding Kinsman Lane's status as a public or private road.

Response:
Pursuant to Section 16-50x of the Connecticut General Statutes (C.G.S.), other than the method and manner of construction which is subject to the Public Utilities Regulatory Authority under C.G.S. Section 16-243, the Siting Council has exclusive jurisdiction over the Project, including the location of the transmission lines and the new substation. The Town owns lands that would be needed for certain aspects of the Project. If the Siting Council approves the Project, then the Company will seek customary easements from the Town for any Town-owned lands that are included in the Project for which the Company requires rights. The Company has a very long history of successful negotiations with towns in its service territory for which rights have been required in the past. The Company expects that an agreement will be reached with Town officials for any necessary rights. Although the issuance of a Certificate of Environmental Compatibility and Public Need allows for acquisition by eminent domain when negotiations fail, the Company does not expect to pursue that course of action, unless it is as a last resort.

The Company has determined that a new substation in Greenwich in the area that it proposes the Greenwich Substation is urgently needed for capacity and reliability of service in Greenwich. If the Project is approved, then the Company expects to collaborate with Town officials to fulfill its obligation to provide reliable electric service in Greenwich and to accomplish the goal stated in the Town's Annual Report for Fiscal Year 2013/2014, i. e. "Working with Connecticut Light and Power Company to reinforce the importance of reliable energy to Greenwich residents and businesses and encouraging the implementation of an aggressive five year CL&P capital improvement plan as well as a new substation for the Town."

According to the Town Road List, Listing of Locally Maintained Roads by Town as of December 31, 2014 compiled by the Connecticut Department of Transportation, Kinsman Lane is a publicly maintained road for 0.16 miles, Kinsman Lane is, in its entirety, 0.16 miles. The relevant excerpts from that list are attached.

TOWN ROAD LIST

LISTING OF LOCALLY MAINTAINED ROADS BY TOWN

AS OF DECEMBER 31, 2014

CONNECTICUT DEPARTMENT OF TRANSPORTATION

BUREAU OF POLICY AND PLANNING

OFFICE OF ROADWAY INFORMATION SYSTEMS

ROADWAY INVENTORY SECTION

TOWN OF GREENWICH

MILES OF LOCALLY MAINTAINED ROADS AS OF DECEMBER 31, 2014

NUM	DIR	STREET NAME	GRID	UNIMP.MILES	IMP.MILES	TOTAL
327	S	IVY ST	H 17		.09	.09
328	W	JACKSON ST	H 11		.08	.08
329	E	JAMES ST	G 18		.20	.20
330	N	JANET CT	O 13		.03	.03
331	S	JEFFREY RD	M 12		.30	.30
332	E	JOFRAN LA	K 13		.11	.11
333	E	JOHN ST	C 07		2.17	2.17
334	S	JONES PARK RD	O 15		.23	.23
678	S	JOSEPHINE EVARISTO AV	J 16		.20	.20
335	E	JOSHUA LA	K 10		.10	.10
336	E	KEMONDO RD	O 11		.09	.09
337	W	KENILWORTH TER	L 12		.14	.14
806	W	KENSINGTON CT	Q 14		.05	.05
338	E	KENT PL	M 13		.11	.11
339	E	KEOFFERAM RD	Q 16		.31	.31
763	E	KERNAN PL	Q 15		.08	.08
340	S	KING ST NO 1	B 08		2.63	2.63
735	S	KING ST NO 2	D 12		.72	.72
341	E	KINSMAN LA	L 15		.16	.16
342	S	KIRBY ST	G 18		.08	.08
343	E	KNOLL ST	O 15		.15	.15
344	N	KNOLLWOOD DR	K 12		.38	.38
799	E	KNOLLWOOD DR EAST	K 12		.05	.05
345	S	LADDINS ROCK RD	P 14		.75	.75
346	N	LAFAYETTE PL	K 14		.18	.18
347	N	LAKE AV	G 02		7.66	7.66
348	N	LAKE DR NO 1	O 15		.14	.14
770	S	LAKE DR NO 2	N 15		.12	.12
349	E	LAKE DR SOUTH	N 15		.25	.25
350	N	LAKEVIEW DR	O 12		.12	.12
748	N	LANCER RD NO 1	O 13		.09	.09
351	E	LANCER RD NO 2	O 12		.29	.29
727	N	LANGHORNE LA	E 06		.38	.38
352	E	LANTERN LA	F 14		.05	.05
353	N	LAUB POND RD	D 08		.15	.15
354	S	LAUREL LA	J 11		.23	.23
355	N	LAWRENCE ST	K 14		.07	.07
356	N	LE GRANDE AV	L 15		.17	.17
357	W	LE JEUNE CT	P 12		.07	.07
358	E	LENOX DR	K 14		.10	.10
359	E	LEONARD AV	O 13		.29	.29
360	N	LESLIE AV	F 13		.01	.01
361	E	LEWIS ST	K 15		.30	.30
362	W	LEXINGTON AV	K 15		.19	.19
363	W	LICATA TER	O 11		.15	.15
364	E	LINCOLN AV NO 1	K 15		.14	.14
365	E	LINCOLN AV NO 2	Q 15		.23	.23
771	E	LINCOLN AV NO 3	K 15		.12	.12
366	E	LINDEN PL	G 14		.08	.08
367	W	LINDSAY DR	K 09		.28	.28
368	N	LINWOOD AV	P 13		.18	.18

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Reference Transcript of 10/06 at 116. When will the Company decide on the type of material (e.g., bentonite, etc.) it would use for HDD? List the types of drilling material the Company is considering for use. Provide the pros and cons of each type of material being considered including, but not limited to, cost and environmental impacts.

Response:
Eversource is proposing to use bentonite as the drilling material. It is the most widely used drilling material in the industry. Bentonite is a clay that is naturally occurring in nature. Its properties include being an excellent carrier of spoils from the drilled hole. Under the pressure of the drilling operation, bentonite's natural characteristic is to develop a caking effect on the walls of the drill hole that deters the loss of fine particles and small leaks. While other products are available, such as Bio-Bore, the industry professionals have recognized a lower performance with regards to developing the caking effect, a much desired attribute to efficiently drill an HDD. Many of the drilling contractors will only work with bentonite as other currently available products are considered inferior to bentonite.

No cost comparison is available because the industry as a whole typically uses bentonite.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Provide the information requested on pp. 135, 148 of the 10/06 Transcript.

Response:
See Eversource's response to HD-01, Q-LF-002 and Q-LF-003.

Witness: **Witness Panel**
Request from: **Office of Consumer Counsel**

Question:
Reference Response to OCC-4. Does the carrying charge factor ("CCF") of 17% account for all taxes -- federal and state, including gross earnings tax? If not, provide a CCF that is all-inclusive.

Response:
Yes, the carrying charge factor ("CCF") of 17% accounts for applicable federal and state taxes including gross earnings tax.