

July 18, 2017

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

Re: Docket No. 461A - CSC 461A Greenwich Substation and Line Project - Petition for Reconsideration

Dear Mr. Stein:

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

Response to STACY-01 Interrogatories dated 07/14/2017
STACY-001

Response to TOWN-01 Interrogatories dated 07/06/2017
TOWN-001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, 021, 022, 023, 024, 025, 026, 027, 028, 029, 030, 031, 032, 033, 034, 035, 036, 037, 038, 039, 040, 041, 042, 043, 044, 045, 046, 047, 048, 049, 050, 051, 052, 053, 054, 055, 056, 057, 058, 059, 060, 061, 062, 063, 064, 065, 066, 067, 068, 069, 070, 071

Very truly yours,

Kathleen Shanley
Manager
Transmission, Siting
As Agent for CL&P
dba EversourceEnergy

cc: Service List

CL&P dba Eversource Energy
Docket No. 461A

Data Request STACY-01
Dated: 07/14/2017
Q-STACY-001
Page 1 of 1

Witness: Witness Panel
Request from: Connecticut Siting Council

Question:

Will Eversource suspend their efforts toward these two new costly and disruptive proposals and instead explore low-cost, non-disruptive “green” alternatives which a project with a supplier such as Tesla might offer?

Response:

Eversource has updated its non-transmission alternatives (NTA) analysis for the revised project need and confirmed that it is not a feasible or cost effective solution. The Tesla product is a form of energy storage.

Eversource has worked with the Town of Greenwich during the past year on several energy efficiency initiatives and has identified a potential roadmap for both Town owned facilities and private investments to mitigate the electrical demand and usage within the Town (a copy of the presentation is attached). The types of investments presented included energy storage, as well as distributed generation and demand response programs. A variety of incentives are available within federal and state programs for these types of investments. Eversource will not ask for a suspension of the current proceeding to explore energy storage as an alternative to the currently proposed project.



Town of Greenwich Meeting Non Transmission Alternative Analysis (Distributed Generation, Energy Storage and Demand Response)

Kenneth Bowes
Vice President Engineering
December 12, 2016

Today's Topics

- Use of “non-Transmission Alternatives” to meet the Need
 - Size of the Need to Replace new Substation
- Target Areas – Geographic View
- Solar PV Requirements to Fill the Need
- Fuel Cells Requirements to Fill the Need
- Energy Storage Requirements to Fill the Need
- Demand Response Requirements to Fill the Need
- Size of the Need to offset Future Load Additions

- Appendix
 - Distributed Generation in Greenwich
 - Brooklyn Queens Demand Management Program and comparison to Greenwich Initiatives
 - Bridgeport Fuel Cell Installation

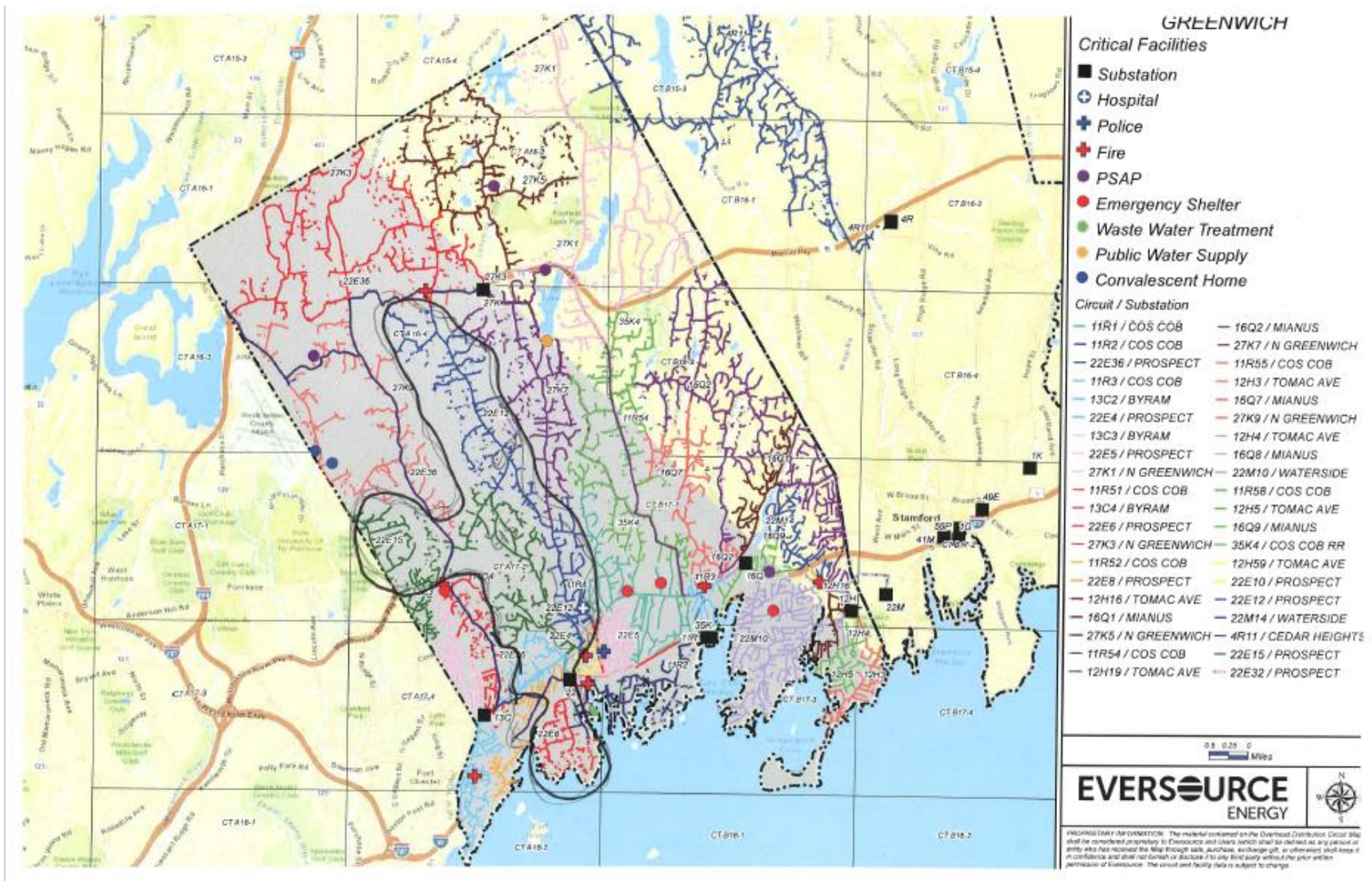
Size of the Need to Replace new Substation

Town's desire to improve overall grid by:

- Approximately 30MVA of load reduction required to address the Substation Project Need
 - Solar PV Requirements
 - Fuel Cells Requirements
 - Energy Storage Requirements
 - Demand Response Requirements

- Energy Efficiency (EE)
 - Efforts well underway
 - Previously agreed that EE alone does not solve the Project need

Target Area for Development



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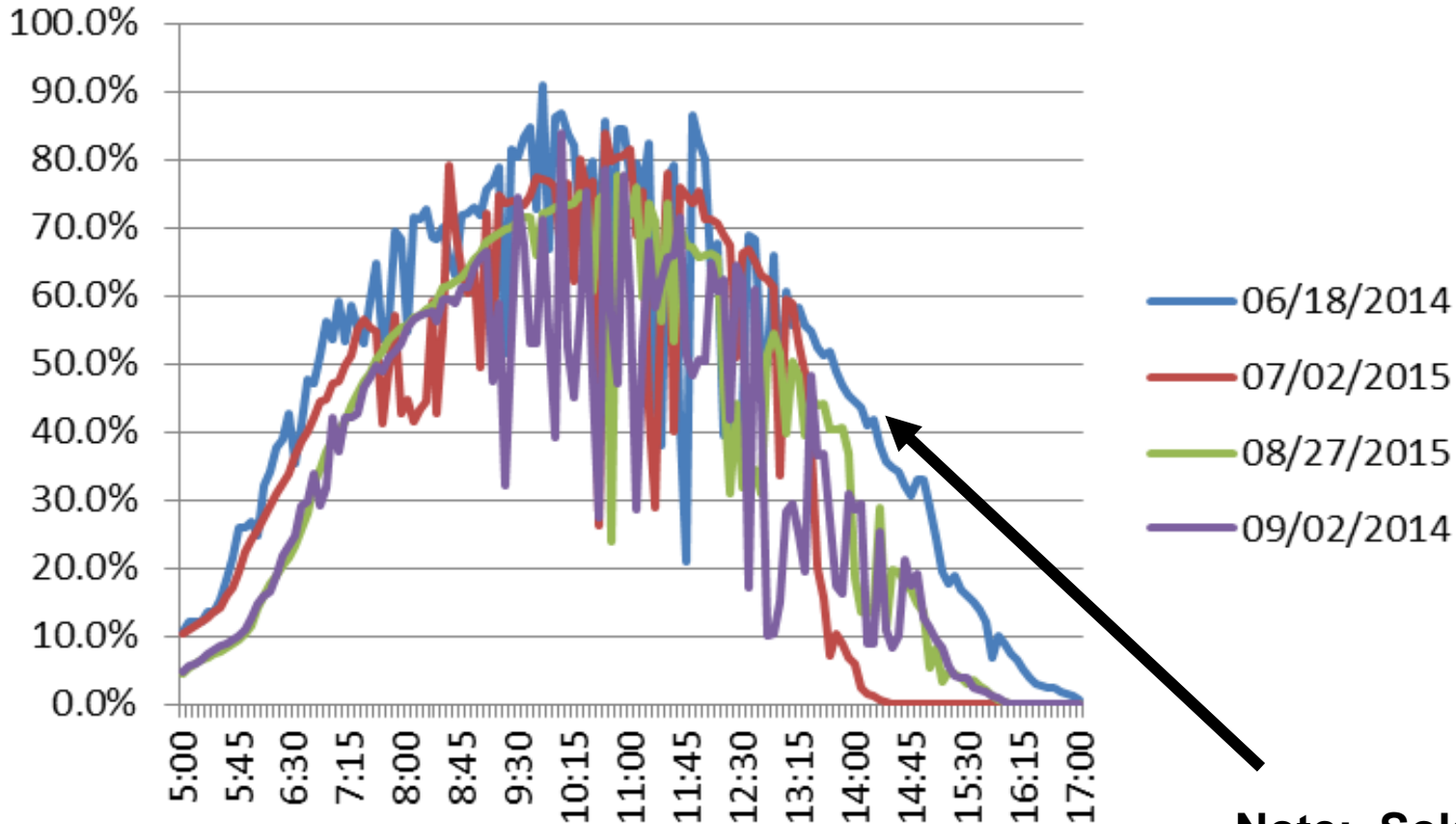
Solar PV - Requirements to Fill the Need

- Solar PV capacity factor 15-18%
- Initial target of 30MW of Solar PV would require approximately 5 acres per MW = 150 acres of rooftop or ground based systems
- Projected to supply up to 15MW during peak time hours
- Would need Energy Storage to “firm up” the variability and shift output later in the day to 4-6 pm Greenwich peak hours
- Estimated cost of \$105M (based upon 1-3 MW solar farms)

Solar PV - Requirements to Fill the Need



Typical PV production profile



Note: Solar PV output at time of peak

Fuel Cell - Requirements to Fill the Need

- Fuel Cell capacity factor 95-98%
- Initial target of 10MW of Fuel Cells would require approximately 15-20 installations
 - Could use one or more larger utility type installations of 2-5 MW size to reduce number of units needed
- Projected to supply up to 10MW during peak time hours
- Would need gas supply
- Estimated cost of \$78M

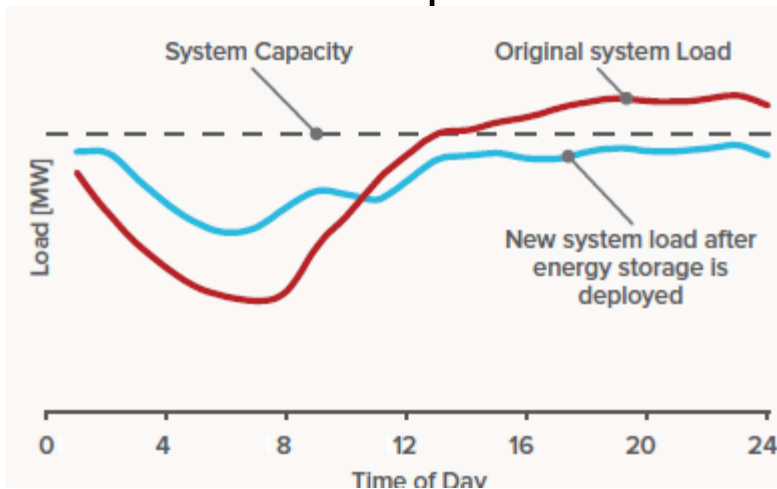


Source: Bloom Energy

Energy Storage - Requirements to Fill the Need



- Energy Storage capacity factor 95-98%
- Initial target of 5MW of Energy Storage would require approximately 2-4 installations
- Projected to supply up to 5MW during peak time hours – 2 to 4 hours needed
- Estimated equipment cost of \$15M
 - Site development costs would be incremental

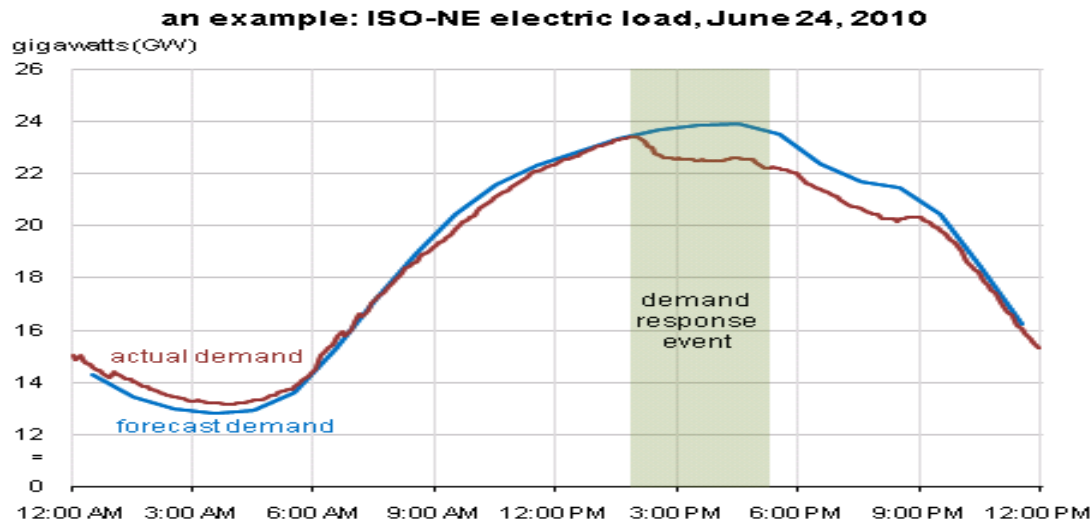


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Demand Response - Requirements to Fill the Need



- Demand Response capacity factor 50-75%
- Initial target of 2MW of Demand Response would require approximately 100+ installations
- Projected to supply 1 to 2MW during peak time hours – 2 to 4 hours needed
- Estimated equipment cost of \$1M



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Comprehensive Non-Transmission Alternatives Solution



	Size of Solution (in MW)	Locations/Customers	Costs (in millions)
Solar PV (50% output at peak)	30 MW	10-15	\$105
Fuel Cells	10 MW	10 – 20	\$78
Energy Storage	5 MW	2-4	\$15
Demand Response	1 MW	100+	\$1
Total (with capacity factor weightings)	31 MW	120+	\$199M

Future - Size of the Need to offset Load Additions

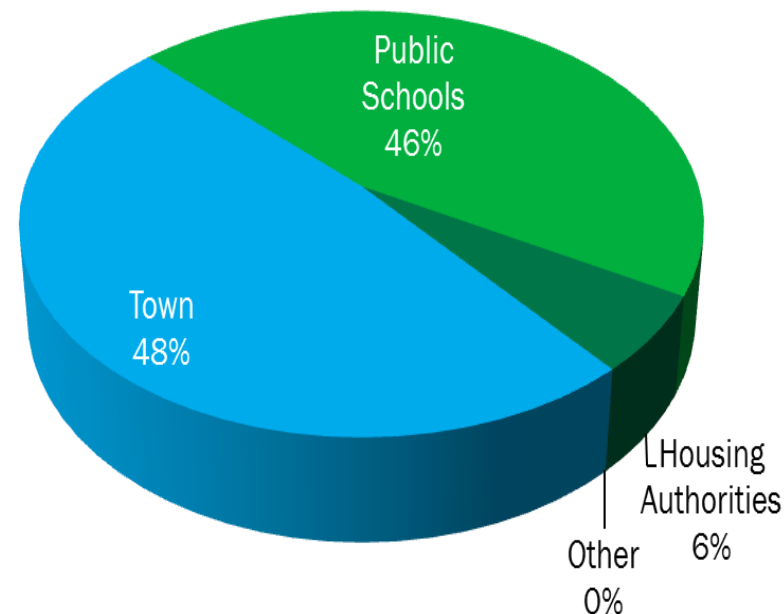
- 1-2 MW of Non-Transmission Alternatives would be needed each year going forward
- New Construction requirements to include Distributed Energy Resources
- Focus on Town of Greenwich Facilities (see next slide)
 - Continue with Energy Efficiency measures
 - Inventory of Town Facilities
 - Establish goals for Town Facilities – ultimately to meet up to 15MW of need (2X existing peak demand of Town Facilities)

Town of Greenwich Facility Profile



Sector	Quantity of Accounts	kW Demand
Town	204	3,682
Public Schools	23	3,471
Housing Authorities	16	439
Other*	5	-
Total	248	7,592

kW Demand



Top five facilities - typical peak KW demand

TOWN FACILITY	STREET_NAME	KW DMD
GREENWICH HIGH SCHOOL	HILLSIDE RD	1,300
GREENWICH SEWER DEPT	GRASS ISLAND RD	700
TOWN OF GREENWICH DEPT OF PUBLIC WORKS	FIELD POINT RD	500
TOWN OF GREENWICH DEPT OF PUBLIC WORKS	PARSONAGE RD	500
TOWN OF GREENWICH DEPT OF PUBLIC WORKS	BRUCE PL	300
Total peak demand - typical		3,300

* Parks & Recreation, DPW

Note: Housing Authority Data excludes individual apartment use and account quantities

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Town of Greenwich - DER Action Plan

- Suggested Steps to create DER action plan for town facilities:
 - Complete energy benchmarking already underway and prioritize energy efficiency opportunities
 - Overlay DER opportunity and feasibility on EE benchmarking results:
 - Roof orientation and physical condition to accommodate a PV system
 - Available town owned land area suitable for a ground mounted system
 - Evaluate the feasibility of fuel cells (natural gas inventory part of EE benchmarking)
 - Determine deal and contracting strategy (e.g. lease versus buy)
 - Issue a RFP to solicit PV and Fuel Cells developers on select buildings
 - Conduct outreach to residential and business community to encourage the use of existing renewable energy programs
 - Consider “stretch” building codes to promote Zero Energy construction

Appendix

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Distributed Generation in Greenwich

- YTD June 2016 – there are 15 new customers connected – nameplate total of 0.12 MW (120 kW)
- YTD June 2016 – there are 24 new customer requests – nameplate total of 0.282 MW (282 kW)
- Experience has shown that many requests are never completed or completed late and the actual generation outputs are less than request
- The DEEP Microgrid and Clean Energy RFPs have yielded zero customers in Greenwich

Distributed Generation - Fuel Cell Opportunity



- The first large commercial fuel cell – nameplate rating of 0.525 MW was interconnected in 2015
- Bloom Energy has approached Eversource to assist in the development of a targeted fuel cell program in Greenwich
- Bloom has provided customer criteria to Eversource – see below:

Bloom Customer Criteria - Greenwich

1. 250kW+ of 24x7 minimum baseload electricity behind a single meter
2. Creditworthy customer, typically BB rated or higher
(Alternatively, Eversource could consider providing a credit enhancement product to non-creditworthy customers)
3. At least 650ft² space outdoors or on a rooftop with freight elevator access within 500ft of the customer's main electrical switchgear

Brooklyn Queens Demand Management Program



Source: BQDM QUARTERLY EXPENDITURES & PROGRAM REPORT, Q-1 2016, Consolidation Edison of New York Inc., May 31, 2016

	Design Stage*	Deployment Stage*
<u>Customer-side Solutions</u>		
Small Business Direct Install		✓
Multi-family Energy Efficiency		✓
Residential Energy Efficiency Program(s)	✓	
Bring Your Own Thermostat Adder ("BYOT")	✓	
Virtual Building Audits		✓
New York City Housing Authority		✓
Direct Customer Activity		✓
Dynamic Resource Auction**	✓	
Fuel Cells		✓
Queens Resiliency Microgrid	NP	NP
City Agency Solutions	✓	
Commercial Refrigeration	✓	
Combined Heat and Power ("CHP")		✓
Battery Storage		✓
<u>Utility-side Solutions</u>		
Distributed Energy Storage System		✓
Distributed Generation (DC-Link)	✓	
Voltage Optimization		✓
Utility Side PV Pilot	✓	
Fuel Cell	✓	
<u>Foundational Elements</u>		
Distributed Energy Resource Evaluation Tool		✓
Solutions Technology Validation		✓
Community Engagement and Outreach		✓
Auction Designs and Analyses		✓
Measurement & Verification Pilot		✓
Demand Management Tracking System		✓

Table 2: BQDM Program Activity

Brooklyn Queens Demand Management Program



- New York PSC approval for \$200M program to defer the need for a new substation
 - December 12, 2014 program established
- Active Programs in Deployment Stage
 - Customer-side Solutions
 - Small Business Direct Install – 4155 small businesses for 6.88 MW at peak hour
 - Multi-Family Energy Efficiency – 1002 multi-family buildings (7681 apartments) for 3.62 MW at peak hour
 - Fuel Cells – multiple locations identified
 - Combined Heat and Power (CHP)
 - Battery Storage
 - Non-traditional utility-sided solutions
 - Distributed Energy Storage System – 2 MW for up to 6 hours
 - Voltage Optimization – 4 MW

Fuel Cell Installation - Industrial Scale

■ Fuel Cell Characteristics:

- Requires of 3 to 5 acres of land
- Requires a high pressure gas line
- Requires the inflow of 60,000 gallons of water per day
- Expels 30,000 gallons of waste water per day



Pictured Above: Dominion Bridgeport Fuel Cell

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-001
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Figure 1 of Pre-filed Direct Testimony of Kenneth B. Bowes dated May 5, 2017 ("Pre-Filed Testimony") at p. 4. For each feeder segment identified on the spreadsheet entitled "Existing 27.6-kV Feeders- Greenwich" attached hereto as Exhibit 1, please provide the information requested in each column corresponding to each feeder segment.

Response:

The information requested is attached.

Existing 27.6-kV Feeders - Greenwich

(based on present records)

Feeder Designation (per Fig. 1)	Segment	Segment Length (approx.) (feet)		Installation Date (approx.) (cable)	Conductor Size		Predominant Duct Size (inches)	Normal Rating (based on 75% load factor) (MVA)
		Total OH and UG	% UG		OH	UG		
15H59	Tomac - Mianus	10020	57	various*	2x 350 AL	2x 500	4	29.3
11R50	Cos Cob - Mianus	8000	100	various*	-	2x 500	4**	27.9
11R56	Cos Cob - Byram	22000	100	various*	-	500	4**	15.9
11R56	Tap to Network	2900	100	various*	-	4/0 AL	4	8.4***
11R53	Cos Cob - N. Greenwich	35600	100	various*	-	2x 500	4**	16.2
11R54	Cos Cob - N. Greenwich	37500	5	2012	750 AL	500	4**	16.2
22E36	Prospect - N. Greenwich	49200	1.5	1980	556 AL	2x 4/0 AL	4	32
22E36	Tap to Byram	900	10	1980	336 AL	500	5	23.4
22E35	Prospect - Byram	8500	100	various*	-	500	4	11.4
11R58	Cos Cob - Prospect	15400	44	2009	750 AL	2x 500	5	25.6
11R58	Tap to Network	4813	100	various*	-	4/0 AL	4	8.4***
11R55	Cos Cob - Prospect	10950	14	2009	750 AL	2x 500	5	32.5
11R55	Tap to Network	4700	100	1980	-	4/0 AL	4	8.4***
11R52	Cos Cob - Prospect	10400	58	2012	750 AL	2x 500	4**	33.5
11R52	Tap to Network	4700	100	2012	-	500	4	12.1***
11R51	Cos Cob - Prospect	10900	54	2012	750 AL	2x 500	4**	24.6
11R51	Tap to Network	4400	100	various*	-	4/0 AL	4	8.4***

* date range: from prior 1980 to 2016

** Duct size adjacent to Cos Cob substation is 5 inch

*** Cable de-rated due to sharing same duct bank with the secondary secondary mains and services.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Reference Figure 1 of Pre-Filed Testimony at p. 4, and Figure 5 at p. 10. Since feeders 11R51, 11R52, 11R55 and 11R58 each concurrently feed both the Prospect Substation and Greenwich Network, if it becomes necessary to deenergize one of those feeders to accommodate work to be done within the Greenwich Network, what is the impact of that feeder's service to the Prospect Substation? Do any of those feeders have the ability serve just one of those two load components? How many times in a typical year does it become necessary to deenergize those feeders to accommodate the Greenwich Network? Would the Prospect Substation be better served if those feeders were severable, allowing the Prospect Substation portion of the feeder to remain energized when it would be necessary to deenergize the Greenwich Network segment of the same feeder?

Response:

If a feeder is de-energized to accommodate work, then it will also be unavailable to serve Prospect substation. Therefore, maintenance and other planned work are scheduled for low load periods. None of the feeders have the capability to serve just one of the two load components. Maintenance is scheduled at each feeder every 24 months. In any 24 month period, there would likely be five outages. Yes, it would be better to have dedicated feeders serving the Prospect Substation independent of the Greenwich Network. The proposed project would do that by installing two new 115-kV lines serving the new Greenwich Substation separately from the service to the existing Greenwich Network.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-003
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Under both the Proposed Modified Project and the Alternate Modified Project, if the need arises to shut down any of the four 27.6-kV distribution feeders (11R51, 11R52, 11R55, or 11R58) supplying electricity to the Greenwich Network, explain how the shutdown of any of those feeders will affect the supply of electricity to the Prospect Substation.

Response:

The shutdown of any of these feeders will not affect the supply of electricity to Prospect Substation.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-004
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Explain the purpose and capability of the distribution line identified as 12H59 on Figure 1 on page 4 of the Pre-Filed Testimony.

Response:

Feeder 12H59 at 27.6-kV from Tomac Substation is the normal supply to the Mianus Substation and has a capacity of 29.3 MVA.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-005
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Figure 5 of Pre-Filed Testimony at p. 10. Figure 5 depicts a 115-kV transmission line identified as "1750" supplying electricity to the Tomac Substation. However, this tap to the 115-kV transmission line is not shown on Figure 1 on page E-4 of the original Application dated June 2015 in Docket 461 ("2015 Application"), or on Figure 1 on page 4 of the Pre-Filed Testimony. Explain whether this transmission tie to the Tomac Substation currently exists or whether Eversource intends to build that transmission tie in conjunction with either the Proposed Modified Project or the Alternate Modified Project.

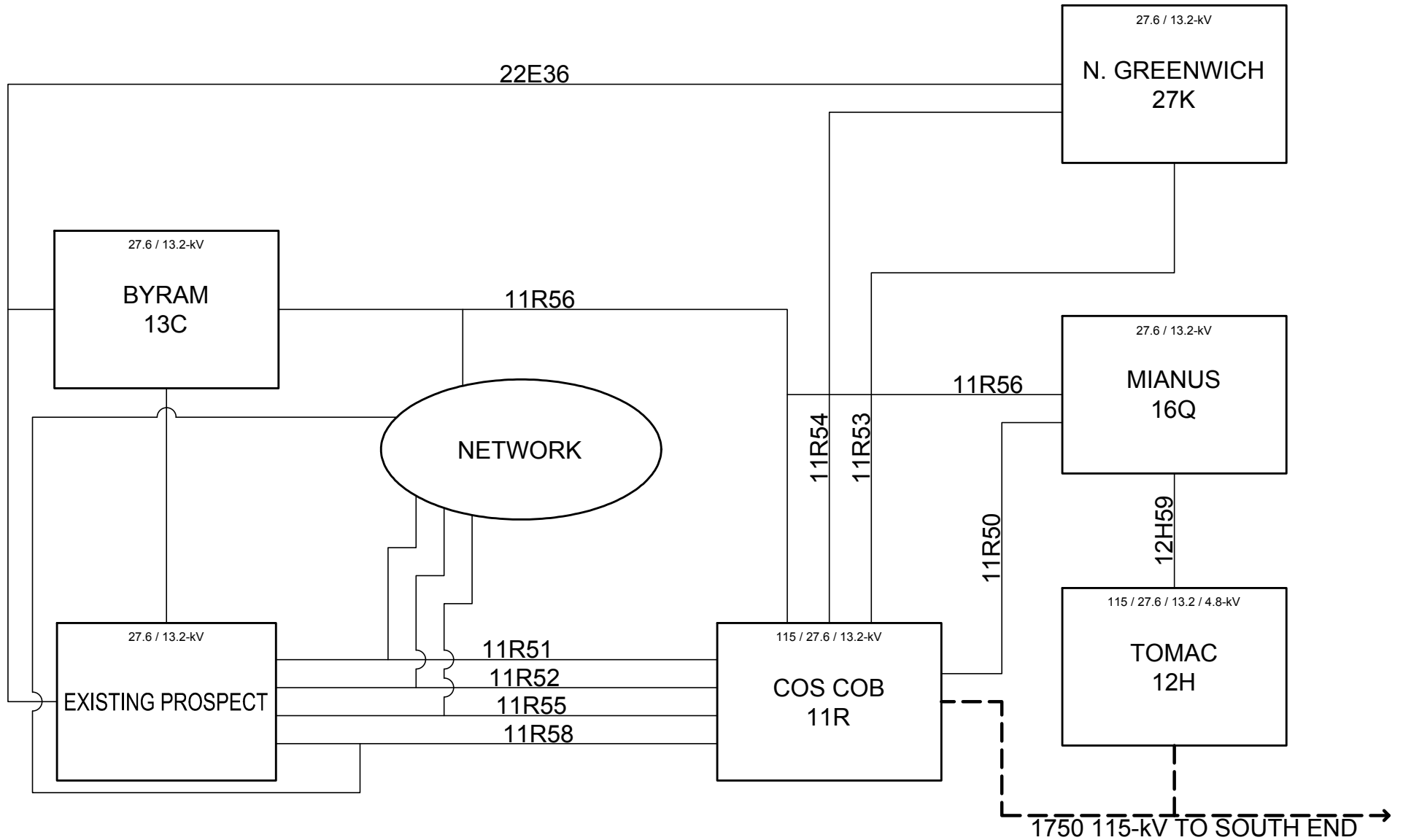
Response:

The 1750 line tap currently exists and is shown in the attached figure.

LEGEND

- EXISTING 27.6-kV DISTRIBUTION SYSTEM
- - - EXISTING 115-kV TRANSMISSION SYSTEM

|| Docket No. 461a
|| Data Request TOWN-01
|| Dated 7/18/2017
|| Q-TOWN-005, Page 1 of 1



CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-006
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

If the response to the preceding interrogatory is that the 115-kV 1750 transmission line's connection to the Tomac Substation currently exists, please provide an accurate Figure 1 on page 4 of the Pre-Filed Testimony reflecting this tap. Please furnish a one line drawing to show how the Tomac Substation has the capability of being supplied either by the 115-kV 1750 transmission line or by the 27.6-kV feeders originating from the Cos Cob Substation. Please include feeder 12H59 in that one line drawing.

Response:

Please reference the diagram which has been included in Q-TOWN-005. The Figure included in Q-TOWN-005 includes the existing 115-kV 1750 Line as a dashed, black line. The diagram also includes the 115-kV transmission tap from the 1750 Line to Tomac Substation. In addition to the 115-kV transmission line, the diagram also identifies the 27.6-kV path that originates at Cos Cob Substation, passes through Mianus Substation, and ends at Tomac Substation. The 27.6-kV 11R50 and 11R56 feeders connect Cos Cob and Mianus Substations while the 27.6-kV 12H59 feeder connects Mianus and Tomac Substations.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-007
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify, by the number of days for each month since January 1, 2011, when the Tomac Substation was supplied electricity from its 115-kV 1750 transmission line tap. For each month, identify the recorded peak load at the Tomac Substation, and on those dates, indicate whether the Tomac Substation was fed by its 115-kV tap or by the 27.6-kV feeders originating from the Cos Cob Substation.

Response:

The Tomac Substation has been supplied from the 1750 Line every day since January 1, 2011 to the present, The exception to this would be when there were scheduled or unscheduled outages of the 1750 Line. The Tomac Substation load was supplied by the 115-kV 1750 Line tap when the monthly peak loads occurred. (Please note that the July 2016 peak load is higher than the actual Tomac Substation load due to emergency switching that brought load from Waterside Substation.)

Metered MVA							
Month	Tomac Load (MVA) by Year/Month						
	2011	2012	2013	2014	2015	2016	2017
January	29	27	29	31	23	21	22
February	15	23	27	22	22	21	21
March	24	23	23	23	21	17	19
April	21	22	20	18	17	17	17
May	35	38	32	26	25	32	37
June	44	49	35	31	30	28	39
July	49	43	43	35	37	45	
August	35	41	30	31	33	38	
September	37	36	39	34	36	42	
October	24	23	24	19	17	18	
November	27	22	26	20	18	19	
December	26	0	29	21	18	18	

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-008
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify, by the number of days for each month since January 1, 2011, when the Mianus Substation was supplied electricity from the 12H59 feeder from the Tomac Substation, or from the 27.6-kV feeders originating from the Cos Cob Substation. For each month, identify the recorded peak load at the Mianus Substation, and on those dates, indicate whether the Mianus Substation was fed by the 12H59 feeder from the Tomac Substation, or from the 27.6-kV feeders originating from the Cos Cob Substation.

Response:

Mianus Substation is normally supplied from Tomac Substation over the 12H59 feeder. In the event in the loss of either the Tomac Substation or the 12H59 feeder, Mianus Substation is fed by the 27.6-kV feeder originating from Cos Cob Substation. These contingency events are rare. The last planned outage occurred March 30, 2017 to perform maintenance work on the 12H59 circuit. Regardless of the peak load at Mianus Substation, it is fed by 12H59 feeder from Tomac unless Tomac Substation or the 12H59 feeder is lost from service. In light of this circumstance, the month by month substation loads and dates the question seeks would not provide any relevant information, and the effort required to gather it would be unreasonably burdensome.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-009
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify the planning criteria by which: (a) the Tomac Substation is fed from the 115- kV 1750 transmission line, and (b) the Mianus Substation is fed from feeder 12H59. For each of (a) and (b) above, how far in advance of the actual switching is the switching order given under non-emergency conditions?

Response:

No planning criteria apply. The Tomac Substation is designed to be served by the 115-kV 1750 transmission line and the Mianus Substation is designed to be fed from the 12H59 feeder.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Reference Eversource's Response to Q-OCC-065 dated December 22, 2015. In that response, in footnote "a," Eversource notes that the Tomac Substation's "Load transferred to Waterside" in 2013 and 2014. Neither Figure 1 nor Figure 5 of the Pre-Filed Testimony depicts the supply of electricity from the Waterside Substation to the Tomac Substation. According to Figure 5 of Pre-Filed Testimony at p. 10, the Tomac Substation is tied to the "1750 115-kV" line "to South End." Please explain how the Tomac Substation tie to the 115-kV 1750 transmission line, which is shown being fed from "South End" on Figure 5, allows the load from the Tomac Substation to be "transferred to Waterside?"

Response:

The 1750 transmission line is not used to transfer load from other substations. The 13.2-kV system was reconfigured so that some load was served by Waterside Substation rather than Tomac Substation.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-011
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Please explain whether Eversource has considered a solution to address the projected overloads of the 27.6-kV transformers at the Cos Cob Substation and the claimed reliability deficiencies in the 27.6-kV distribution feeder network that involves feeding the Tomac Substation from the existing 115-kV transmission lines originating in Stamford, and in turn feeding the Mianus Substation from the Tomac Substation, thus eliminating the Mianus and Tomac Substations' loads served by the Cos Cob Substation. Please explain why Eversource has never presented such a solution.

Response:

As explained in responses to previous questions, the Mianus and Tomac substations are not normally served by the Cos Cob Substation. Therefore, feeding Mianus and Tomac from Stamford would not relieve load at the Cos Cob Substation.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Describe the criteria that have changed from the time the Greenwich distribution system was initially designed so as to justify why it is no longer feasible to feed the proposed new substation at 27.6-kV? Why does Eversource contend that the only plausible alternative is to feed the proposed substation at 115-kV? More specifically, assuming that the original design consisting of multiple 27.6-kV feeders to the Prospect Substation (the majority of which, 11R51, 11R52, 11R55, and 11R58, also fed the Greenwich Network), was a functional, reliable and cost-effective concept when it was designed, what criteria have changed to now require a new 115-kV feed into a new substation whose purpose is to replace the existing Prospect Substation?

Response:

The Greenwich 27.6 kV system could be rebuilt to serve the proposed new substation, at a greater cost and with less flexibility as compared to the project. Such a project would also be incompatible with Eversource's plan to convert 27.6kV systems to a multi-grounded system at 23kV or 13kV across its service territory in Connecticut. The Siting Council found that there were no feasible distribution alternatives for the project, and Eversource confirmed this with additional analyses which were presented to the Town of Greenwich and summarized in the pre-filed testimony and in response to Q-CSC-026.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Reference 2015 Application at p. E-16. In 2012, \$8.4 million was spent to "Add an aerial feed to North Greenwich Substation and upgrade right of way." In 2010-2012, \$14.0 million was spent to, "Replace three distribution transformers." According to Eversource's Response to Q-CSC-013 dated June 12, 2017, the North Greenwich Substation has 75 MVA of "Transformer Capacity." According to Figure 1 of the Pre- Filed Testimony, the North Greenwich Substation is presently fed from two 27.6-kV feeders, 11R53 and 11R54, and a backup 27.6-kV feeder, 22E36. Please explain why the proposed new substation, which is described as being of a smaller capacity than the present North Greenwich Substation, cannot be fed by a pair of paralleled 27.6-kV feeders and a 27.6-kV backup feeder just as the larger North Greenwich Substation is presently being fed? Realizing the condition of the existing 27.6-kV feeders to the Prospect Substation may be compromised, please explain why reconductoring two of the existing parallel feeders serving the Prospect Substation is not a viable means to feed the proposed new substation, particularly if these feeders are converted to "express feeders" and do not feed the Greenwich Network as well.

Response:

The capacity of the proposed new substation is not smaller than that of the existing North Greenwich Substation. The permissible load at North Greenwich is 50 MVA. The maximum permissible load at the new Greenwich substation will be 60 MVA. The normal load at the existing North Greenwich substation is approximately 30 MVA. The load at the new Greenwich substation is expected to be approximately 51 MVA. Eversource did consider feeding new Greenwich substation from Cos Cob with new four (4) 27.6-kV feeders and determined that this configuration would be more expensive (~\$120M) than, and its performance would be inferior to, that of the currently proposed project. See the response to Q-CSC-026 (distribution option #4).

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-014
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition for Reconsideration dated May 5, 2017 ("Petition") at p. 1. What conditions changed to justify your proposal for a smaller, less costly modification of the project and one that specifically eliminates any work at the Byram Substation?

Response:

The development of a smaller, less costly project was driven by the Council's direction in its Docket 461 Opinion.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-015
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference statement in Petition at p. 1 that the Proposed Modified Project and Alternate Modified Project are designed to address needs in the Town "based on a peak load that has already occurred..." Identify the "peak load that has already occurred" referenced in the Petition. Please identify what the loads were at the Prospect, Byram, North Greenwich, Mianus, Tomac, and Cos Cob Substations and the Greenwich Network at that specific date and time that contributed to the "peak load that has already occurred" referenced in the Petition.

Response:

The "peak load" that has already occurred is 130.5 MVA. The individual substation loads are stated in the table provided in response to Q-CSC-013.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

For each substation depicted in Figure 1 of the Pre-Filed Testimony, i.e., Prospect, Byram, North Greenwich, Mianus, Tomac, Cos Cob and the Greenwich Network, identify the recorded peak load in 2016, including the date and time of such recorded peak load. Identify any anomaly that may be associated with such recorded peak load such as switching surges, use of backup feeders, etc.

Response:

The 2016 peak load was recorded on July 22, 2016 at approximately 16:15. This was a coincident peak load for Cos Cob, Prospect, North Greenwich and Byram substations. Tomac and Mianus coincident peak occurred on July 22, 2016 at approximately 16:30. The individual substation loads are stated in the table provided in response Q-CSC-013. No anomaly contributed to this peak load.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

With respect to the 115-kV outage event in August 2012, the 27.6-kV outage events of July 2015, and the Tomac Substation outage of April 2016, for each of those events individually, please answer the following:

- a) Describe the cause of each outage event and identify all feeders affected;
- b) Identify the Customer Average Interruption Duration Index for each outage;
- c) Explain how the Proposed Modified Project would have prevented each outage;
- d) Explain how the Alternate Modified Project would have prevented each outage;
- e) Identify the recorded peak loads on each of the dates of such outages; and
- f) Explain how the new Greenwich substation (under either the Proposed Modified Project or the Alternate Modified Project) would be used to restore power to customers affected by similar outages in the future.

Response:

115-kV outage in August 2012

- a) Cause of outage: Tree contact caused an overlapping outage of the 1740 Line, from Waterside Substation to Cos Cob Substation, and the 1750 Line, from South End Substation to Cos Cob Substation (including the tap to Tomac Substation).
- b) For the outage event in total, the Customer Average Interruption Duration Index (CAIDI) was approximately 228.7 CAIDI minutes. The outage of the 1750 line occurred on August 5, 2012 at approximately 20:00. The line was returned to service on August 6, 2012 at 16:00. The outage on the 1740 line occurred on August 5, 2012 at approximately 10:00. The line was returned on August 6, 2012 at approximately 14:00.
- c) This question is no longer relevant because the Proposed Modified Project is no longer a viable alternative
- d) The Alternate Modified Project would not have prevented this outage because the outage affected the lines that supply Cos Cob Substation
- e) The recorded peak load on August 5, 2012 at the Tomac Substation was approximately 38 MW and the Cos Cob Substation load was approximately 104 MW. The recorded peak load on August 6, 2012 at the Tomac Substation was approximately 33 MW and the Cos Cob Substation load was approximately 123 MW.
- f) Refer to answer d)

27.6-kV outage in July 2015

- a) Cause of outage: Eversource experienced three feeder failures (11R52, 11R55, and 11R56) All three interruptions were due to cable failures of the company's 40 plus year old cable segments of the Cos Cob feeders
- b) No customer was impacted by these outages, however the durations are listed below. Continuity of service was maintained by operating the remaining feeders at Cos Cob above their normal rating:
 - a. 11R52: Failure Occurred on July 5, 2015 at 17:00. The feeder was returned to service on July 22, 2015 at 6:00
 - b. 11R55: Failure occurred on July 28, 2015 at 22:30. The feeder was returned to service on July 30, 2015 at 02:45
 - c. 11R56: Failure occurred on July 7, 2015 at 17:30. The feeder was returned to service on July 29, 2015 at 04:15
- c) This question is no longer relevant because the Proposed Modified Project is no longer a viable alternative
- d) The Alternate Modified Project would have eliminated the need to run the remaining cables above their normal rating limits in order to maintain continuity of service.
- e) The Cos Cob load during this outage was 113.5 MVA
- f) Refer to answer d)

27.6-kV outage in April 2016

- a) Cause of outage: Failure of a lightning arrester at the Tomac substation
- b) The outage occurred on April 25, 2016 at 09:40. Service was restored on April 25, 2016 at 18:51.
- c) This question is no longer relevant because the Proposed Modified Project is no longer a viable alternative
- d) This Alternate Modified project would not have prevented this outage because it does not propose an upgrade of Tomac Substation. Tomac Substation upgrades will be performed as future distribution projects not subject to Siting Council jurisdiction
- e) An outage on one transformer occurred on April 25, 2016; however there was no Tomac substation outage on that date. The recorded peak load at Tomac substation on that date was 13.9 MVA
- f) Refer to answer d)

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-018
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Lines 241-243 at p. 8 of the Pre-Filed Testimony. Describe how the Proposed Modified Project would eliminate this problem.

Response:

The question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

Witness: Witness Panel
Request from: Town of Greenwich

Question:

For each year beginning January 1, 2011, identify:

- a) the recorded peak load for all Eversource customers located within the Town of Greenwich;
- b) the percentage of the recorded peak load attributable to residential customers;
- c) the percentage of the recorded peak load attributable to commercial customers; and
- d) the percentage of the recorded peak load attributable to the Metro-North Railroad ("MNRR").

Response:

The recorded peak load for all Eversource customers located within the Town of Greenwich is as follows:

- a) See Response to Q-CSC-013 for Greenwich peak loads between 2011 and 2016
- b) Peak load is not recorded by customer class
- c) Peak load is not recorded by customer class
- d) None of the peak load values recorded are attributable to the MNR. The MNR is supplied by the 115-kV system and was not included in the distribution load statistics

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-020
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Please identify all the customers whose incoming service currently supplied by Eversource is at 27.6-kV. Please identify which customers will no longer be supplied at 27.6-kV upon completion of the Proposed Modified Project. For those customers that are presently fed at 27.6-kV and after the construction of the proposed substation will no longer be fed at 27.6-kV, which of these customers are presently being fed under normal conditions by any of the following feeders: 11R51, 11R52, 11R55, or 11R58?

Response:

There are 11 commercial customers whose incoming service is currently supplied by Eversource at 27.6kV. The identities of these customers is confidential. All of them will continue to be supplied at 27.6kV upon completion of the proposed project.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Reference Lines 273-275 at p. 9 of the Pre-Filed Testimony.

- a) What loads that are presently fed from 27.6-kV cables that originate at the Cos Cob Substation will continue to be fed from the Cos Cob Substation upon completion of the Proposed Modified Project?
- b) Identify the "certain large customers" referenced on Line 275, and identify the recorded peak load for each such customer for each year beginning January 1, 2011.

Response:

A. The Cos Cob 27.6kV system will continue to feed North Greenwich substation, Bryam substation, the Greenwich secondary network, and large commercial customers.

B. The total peak demand of the Greenwich customers fed at 27.6kV is illustrated in the attached table.

Greenwich 27.6kV LG Customer Demands						
Peak Demand MVA						
Year	2011	2012	2013	2014	2015	2016
Total MVA	16.8	19.2	19.3	18.4	18.4	18.5

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-022
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

In the usage figure for the Town of Greenwich stated on the table in Eversource's Response to Q-OCC-064 dated December 22, 2015, identify the usage or load attributable to the MNRR.

Response:

Usage statistics for individual customers are confidential. However, Eversource can report that the value of 869,829,569 kwh does include sales to MNRR (see table attached) and that, if these sales were not included, Greenwich would rank fourth in the table provided in response to Q-OCC-064, rather than third.

2014 Greenwich Usage by Class	
Class	Total KWH
Residential	388,962,086
Commercial	302,105,628
Industrial	27,390,180
Street Lighting	1,795,685
Rail Road	149,575,989
Total	869,829,569

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-023
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Ex. A, p. A-9, section A.4.1. Provide the pull tension calculations, including sidewall pressures, for the two underground segments of the transmission line in the Proposed Modified Project.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-024
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Ex. B, p. A-8, section A.3.1. Provide the pull tension calculations, including sidewall pressures, for the nine underground segments of the transmission line in the Alternate Modified Project.

Response:

The referenced exhibit is conceptual. Preliminary pulling tensions have not been calculated. Vault locations are preliminary and are subject to relocation, which may be necessary due to conflicts that are discovered during the field investigation and design process.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Please explain how it is that in the Proposed Modified Project, the underground cable is planned as one continuous run of approximately 2,640 feet without any intermediate splice vaults, whereas in the Alternate Modified Project, the circuit length of approximately 12,144 feet requires eight intermediate splice vaults, or one every 1,349 feet.

Response:

While the question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn, the Company would like to take the opportunity to provide some clarifications. The PMP had a run of 2,538 feet from Greenwich Substation to the riser structure. While this is at the high end of cable distance, it is a distance that was determined to be feasible considering the weight and pulling tensions for this cable that would be expected.

The AMP currently has 8 vault locations (16 vaults), which includes "pull-through" vaults near Greenwich Substation and Cos Cob Substation. There is no splice at the pull-through vaults, but this vault accommodates a more expeditious and economical repair in the event of a failure at a cable termination. Therefore the 7 splice locations along the route represents an average cable pull length of approximately 1800 feet.

These vault locations have been established based on the preliminary design and are subject to refinement of location, and possibly quantity, through the design process.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-026
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Under normal operating conditions, how many customers are served by the Byram Substation?

Response:

Approximately 4,530 customers.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-027
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Response to Field Point Estate Townhouses Interrogatory #010 dated November 18, 2015 (Q-FPET-010). Please explain whether Eversource continues to contend that Byram Substation's transformers are "vintage and obsolete." If not, please explain what has occurred since November 18, 2015 that has caused Eversource to abandon its earlier assertion that Byram Substation's transformers are "vintage and obsolete," since both proposals do not include any modifications to the existing Byram Substation, whereas the 2015 Application included the retirement of all the 27.6-kV to 13.2-kV transformers at Byram Substation and the shifting all of the 13.2-kV circuits to the new substation located on Railroad Avenue.

Response:

The Byram transformers are "vintage and obsolete." As stated in the pre-filed testimony of Kenneth Bowes, Eversource will upgrade the Byram Substation equipment as part of one or more future distribution projects that will not fall within the Siting Council's jurisdiction.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-028
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Other than construction of the 13.2-kV exit feeders, 13.2-kV construction associated with the proposed substation, and the installation of 13.2-kV equipment within the confines of the proposed substation, what other 13.2-kV-related construction will be performed as part of the Proposed Modified Project or the Alternate Modified Project? Identify the locations of any such improvements.

Response:

Additional 13.2kV feeder work would be required outside the substation in order to connect the new substation's 13.2kV feeders to the existing 13.2kV feeders presently served out of Prospect Substation.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-029
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

In the event of the loss of the 4800 volt transformer at the Tomac Substation, is there any way the 4800 volt circuits fed by that transformer can be fed from any of the existing 13.2-kV circuits? Please describe how this situation would change with the construction of a new substation under both the Proposed Modified Project and the Alternate Modified Project.

Response:

Yes, in the event of the loss of the 4800-volt transformer at Tomac approximately 2 MVA of load could be served by the surrounding 13.2-kV system. This situation would not change with the completion of the currently proposed project. A project is scheduled to be built during 2018-2019 to convert all of the Tomac 4.8kV system to 13.2kV. Upon completion all customers will have automatic /manual backup.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-030
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Within the Town of Greenwich, list any 13.2-kV circuits that presently do not have at least one tie to another 13.2-kV circuit. Describe how this situation will change under the both the Proposed Modified Project and the Alternate Modified Project.

Response:

There are no 13.2-kV circuits that presently do not have at least one automatic or manual tie to another circuit.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-031
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify all improvements or other system changes performed on the Greenwich distribution system that explain why recorded peak loads have declined since 2013. In addition, specifically identify all steps taken to remove or replace the feeders to the Prospect Substation.

Response:

Peak load on the Greenwich distribution system has not declined because of system improvements or changes. During 2017, 500 Cu PILC cable was replaced with 1000Cu on the following Cos Cob feeders:

- 11R53 – 1,000 feet of cable replaced at the Cos Cob end of the feeder
- 11R52 – 1,100 feet of cable replaced at the Cos Cob end of the feeder

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

For the existing force main and the new force main:

- a) Identify all limitations and restrictions that will be imposed on the Town's access to the force mains during construction of the Proposed Modified Project, including but not limited to requirements of advance notice, payments of fees or other charges, and safety requirements.
- b) Identify all limitations and restrictions that will be imposed on the Town's access to the force mains after construction of the Proposed Modified Project, including but not limited to requirements of advance notice, payments of fees or other charges, and safety requirements.
- c) Explain how the Proposed Modified Project ensures the Town's access to the force mains during construction of the Proposed Modified Project.
- d) Explain how the Proposed Modified Project ensures the Town's access to the force mains after construction of the Proposed Modified Project.
- e) After construction of the Proposed Modified Project, how will the installation of the proposed new 115-kV transmission line impact the Town's ability to access the force mains with heavy equipment such as a crane or large excavator?
- f) If after the construction of the Proposed Modified Project the Town needs to employ lifting equipment such as a crane or large excavator to perform work on its force mains and the vertical extensions of these devices would not comply with the Occupational Safety and Health Administration's regulations regarding operations of equipment near power lines, including 29 CFR 1926.1408, could both the proposed overhead 115-kV transmission lines be de-energized at the same time to facilitate the Town's work?
- g) If not, what measures would you employ to ensure the Town complete and full access to the force mains once the overhead wires and their poles are installed? h) Explain how the Force Main Variation changes the answers to (a)-(g) above.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-033
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify on a Greenwich town map all roads, streets and highways Eversource expects to use during construction of the Proposed Modified Project to transport the necessary material and equipment to the work site in the MNRR right-of-way, and for the underground portions of the Proposed Modified Project.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-034
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

If the construction of the transmission lines in the MNRR right-of-way increases the costs to the Town of maintaining and repairing the existing and new force mains, how does Eversource plan to reimburse the Town for those increased costs?

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

Witness: Witness Panel
Request from: Town of Greenwich

Question:

For each of the Proposed Modified Project and the Alternate Modified Project, describe the relay protection scheme designed to protect the entire 115-kV transmission circuit between the Cos Cob Substation and the proposed new substation, including a description of the inputs these relays would receive and from what location along the circuit. Is the relay scheme of a hybrid overhead- underground circuit deemed to be as effective as the relay protection on a non- hybrid circuit in protecting the entire circuit? Would the Proposed Modified Project feature reclosers on the transmission circuits? If so, would these reclosers adversely impact the protection of the underground portions of those circuits?

Response:

Eversource Protection & Controls will implement dual transmission line current differential protection schemes over a dedicated, diverse fiber optic communication path. The high speed clearing of faults will protect Eversource equipment damage and minimize the impact a fault may have on customers. The Eversource P&C standard does not allow automatic reclosing on underground cables because reclosing a faulted cable could result in significant damage to the underground cable. The application of dual high speed protection and no automatic reclosing will provide adequate protection and reduce the potential for excessive collateral damage if a cable fault were to occur.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-036
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify the total number of structures supporting overhead transmission lines within Eversource's Connecticut service territory, the number of such structures that exceed 190 feet in height, and for each such structure exceeding 190 feet in height, identify its height and location and whether it contains aircraft warning lights.

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Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn..

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-037
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify by date and location each Eversource project in the last ten years in which helicopters were used in the construction of an overhead transmission line. Compare the conditions of those projects to the conditions of the Proposed Modified Project relative to the route's proximity to active railroad tracks and residential and commercial structures.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-038
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

See photograph attached hereto as Exhibit 38. Please provide representative photos and/or photo-simulations of the eastward view standing on Steamboat Road south of the railroad tracks: (a) under present conditions, (b) during construction of the Proposed Modified Project, and (c) after construction of the Proposed Modified Project.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-039
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Ex. A, p. A-27, section A.4.5. State with specificity the basis for the estimate that the transmission line in the Proposed Modified Project will cost approximately \$36.3 million, with transmission totaling approximately \$33.4 million and distribution \$2.9 million, and provide an itemized breakdown of the work to be done, and the costs for each specific item. Identify all documents, including estimates and quotes from third-parties, used to arrive at those figures.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Provide a detailed list of all estimated costs associated with the Proposed Modified Project, including a description of each item of cost, an explanation for how you arrived at the estimated cost, and copies of all documents upon which you relied to arrive at the estimated cost, including estimates and quotes from third-parties, broken down as follows:

- a) For the underground segments originating at the Cos Cob Substation referenced on lines 285-287 at p. 9 of the Pre-Filed Testimony and all related improvements, identify the following estimated costs:
 - i. for trenching and conduit (include the costs of temporary restoration and proofing of ducts);
 - ii. for materials including cables, cable accessories, and lightning arresters for the Cos Cob Substation;
 - iii. for costs, including labor, involved in installing cables and cable accessories;
 - iv. for permanent restoration; and v. for all other estimated costs.
- b) For the overhead segment adjacent to the MNRR tracks referenced on lines 288-291 at p. 9 of the Pre-Filed Testimony and all related improvements, identify the following estimated costs:
 - i. for clearing vegetation;
 - ii. for building and removing both temporary and permanent roads;
 - iii. for grading;
 - iv. for drilling shafts for direct embedded poles;
 - v. for drilling shafts for concrete caisson foundations;
 - vi. for pouring concrete caisson foundations (including all reinforcing steel and anchor bolts);
 - vii. for all materials, including ladders and associated work-related items, used in the construction of all poles, and other associated items such as davit arms, bolts, etc., as needed for a completed transmission pole assembly;
 - viii. for all wire, insulators, line hardware, lightning arresters and any other line hardware needed to construct a complete overhead transmission line;
 - ix. for setting all poles (include any offloading/reloading in any laydown facility), all trucking and crane costs;
 - x. for stringing and clipping in all wire;
 - xi. for making taps between overhead and underground cables at transition structures;
 - xii. for railroad flagging personnel and fees or other charges imposed by the MNRR;
 - xiii. for the presence of police and lane closure costs along 1-95 due to construction;
 - xiv. for all lost and non-productive time associated with any inability to access MNRR tracks or closures of any portion of 1-95 during construction; and
 - xv. for all other estimated costs.

- c) For the underground segment originating at the proposed substation referenced on lines 285-287 at p. 9 of the Pre-Filed Testimony and all related improvements, identify the following estimated costs:
- i. for trenching and conduit installation (including the costs of temporary restoration and proofing of ducts);
 - ii. for relocating existing utilities; iii. for materials including cables, cable accessories, and lightning arresters at the proposed substation;
 - iv. for costs, including labor, involved in installing cables and cable accessories;
 - v. for maintenance and protection of traffic (including police detail);
 - vi. for additional costs associated with construction at night;
 - vii. for permanent restoration; and
 - viii. for all other estimated costs.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-041
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, p. A-27, section A.4.5. State with specificity the basis for the estimate that the proposed substation in the Proposed Modified Project will cost approximately \$28.2 million with transmission totaling approximately \$14 million and distribution \$14.2 million, provide an itemized breakdown of the work to be done, and the costs for each specific item. Identify all documents, including estimates and quotes from third-parties, used to arrive at those figures.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-042
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Ex. A, p. A-27, section A.4.5 & Ex. B, p. A-17, section A.6. State with specificity the basis for the estimate that proposed modifications to the Cos Cob substation will cost approximately \$12.7 million, provide an itemized breakdown of the work to be done, and the costs for each specific item. Identify all documents, including estimates and quotes from third-parties, used to arrive at those figures.

Response:

Please see attached for a breakdown of the estimate. A more granular breakdown is not possible because it involves confidential and commercially sensitive information, the disclosure of which would disadvantage the applicant from seeking competitive bid for the construction of the project.

||Docket No. 461a
||Data Request TOWN-01
||Dated 7/18/2017
||Q-TOWN-042, Page 1 of 1

Alternate Modified Project - Estimates (\$M)	
Estimate Category	Total
Material	\$2.3
Construction Labor & Equipment	\$3.9
Project Support (Engineering/Siting/Permitting)	\$3.2
Indirects/Escalation/AFUDC	\$1.9
Contingency	\$1.2
Subtotal Project Costs	\$12.7

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-043
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Ex. B, p. A-17, section A.6. State with specificity the basis for the estimate that the cable system in the Alternate Modified Project will cost approximately \$57.1 million, \$52.5 million for transmission and \$4.6 million for distribution, provide an itemized breakdown of the work to be done, and the costs for each specific item. Identify all documents, including estimates and quotes from third-parties, used to arrive at those figures.

Response:

Please see attached for a breakdown of the estimates. Eversource objects to providing a more granular breakdown because it involves confidential and commercially sensitive information, the disclosure of which would disadvantage the applicant from seeking competitive bid for the construction of the project.

Alternate Modified Project - Estimates (\$M)		
Estimate Category	Transmission	Distribution
Material	\$13.1	\$1.6
Construction Labor & Equipment	\$17.6	\$1.9
Project Support (Engineering/Siting/Permitting)	\$7.8	\$0.2
Indirects/Escalation/AFUDC	\$9.5	\$0.4
Contingency	\$4.6	\$0.5
Subtotal Project Costs	\$52.5	\$4.6

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Provide a detailed list of all estimated costs associated with the Alternate Modified Project, including a description of each item of cost, an explanation for how you arrived at the estimated cost, and copies of all documents upon which you relied to arrive at the estimated cost, including estimates and quotes from third-parties, broken down as follows:

- a) trenching and conduit installation (including the costs of temporary restoration and proofing of ducts);
- b) splice vaults;
- c) installation of conduit across 1-95 (including all costs associated with installing ducts and the means by which the ducts are to be installed);
- d) crossing the water at Davis Avenue (including all costs associated with installing ducts and the means by which the ducts are to be installed);
- e) relocating existing utilities;
- f) materials including cables, cable accessories, and lightning arresters at the Cos Cob Substation and the proposed substation;
- g) pull cable, splice cable, and terminate cable;
- h) costs, including labor, involved in installing cables and cable accessories;
- i) maintenance and protection of traffic (including police detail);
- j) additional costs associated with construction at night;
- k) permanent restoration; and
- l) all other estimated costs.

Response:

The applicant objects to this question because it seeks confidential and commercially sensitive information, the disclosure of which would disadvantage the applicant from seeking competitive bid for the construction of the project.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

For each of the Proposed Modified Project and the Alternate Modified Project, provide a detailed list of the estimated costs associated with general conditions, including a description of each item of cost, an explanation for how you arrived at the estimated cost, and copies of all documents upon which you relied to arrive at the estimated cost, including estimates and quotes from third-parties, broken down as follows:

- a) insurance;
- b) constructing and maintaining field offices, storage facilities or other temporary facilities;
- c) on-site oversight and supervision of construction;
- d) on-site support staff;
- e) inspection and testing;
- f) monitoring of existing facilities;
- g) documentation and blueprinting; and
- h) all other estimated costs.

Response:

The applicant objects to this question because it seeks confidential and commercially sensitive information, the disclosure of which would disadvantage the applicant from seeking competitive bid for the construction of the project.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-046
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Ex. 8, p. A-17, section A.6. State with specificity the basis for the estimate that the proposed substation in the Alternate Modified Project will cost approximately \$29 million with transmission totaling approximately \$12.3 million and distribution \$16.7 million, and provide an itemized breakdown of the work to be done, and the costs for each specific item. Identify all documents, including estimates and quotes from third-parties, used to arrive at those figures.

Response:

Please see attached for a breakdown of the estimate. Eversource objects to providing a more granular breakdown because that would disclose confidential and commercially sensitive information, the disclosure of which would disadvantage the applicant in seeking competitive bids for the construction of the project.

Alternate Modified Project - Estimates (\$M)		
Estimate Category	Transmission	Distribution
Material	\$1.9	\$6.2
Construction Labor & Equipment	\$0.6	\$3.3
Project Support (Engineering/Siting/Permitting)	\$6.1	\$0.7
Indirects/Escalation/AFUDC	\$2.9	\$4.6
Contingency	\$0.8	\$1.9
Subtotal Project Costs	\$12.3	\$16.7

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-047
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

For the 115-kV transmission lines in each of the Proposed Modified Project and the Alternate Modified Project, identify and provide copies of all constructability studies upon which Eversource relied to develop its cost estimates for each of the projects.

Response:

Constructability walkdowns were undertaken. No written "constructability" reports were prepared.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-048
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify with specificity all estimated costs of the Proposed Modified Project that are attributable to working in the proximity of the MNRR right-of-way. Specifically, identify how much the same set of circuits would have cost to construct if, instead of the construction's proximity to the Town of Greenwich's force main and the active MNRR tracks, the circuits would be located in an unencumbered right of way, the underground portion did not require night work, and the construction did not involve highly congested streets such as Railroad Avenue between Steamboat Road and Arch Street.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-049
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Please state whether Eversource intends to create a paved thoroughfare in the MNRR right-of-way to facilitate traversing it with trucks, equipment and personnel during construction of the Proposed Modified Project. If not, identify all measures Eversource will take to keep public roads free of mud and other droppings generated by equipment and vehicles when they exit the right of way during construction of the Proposed Modified Project, and the estimated cost of those measures.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-050
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

With respect to the Proposed Modified Project, state the total cost for:

- a) any required purchase of real property;
- b) any payments to be made to MNRR; and
- c) for each of (a) and (b), state whether such costs are included in your \$78 million estimate identified on page 11 of the Pre-Filed Testimony.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-051
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference p. 11 of the Pre-Filed Testimony. Explain in detail the cost savings between your Preferred Route in Docket 461 (the "2015 Preferred Route") and each of the Proposed Modified Project and the Alternate Modified Project realized as a result of Eversource's current proposal to not make any modifications to the Byram Substation.

Response:

In the \$140M cost of the "2015 Preferred Route", approximately \$200k was estimated for equipment removals at Byram and was included with the distribution costs.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Reference Lines 333-339 at p. 11 of the Pre-Filed Testimony. Now that the price of the 115-kV transmission circuit feeding the proposed new substation has been reduced from \$72 Million (see FOF # 465), please answer the following:

- a) Is the sole basis for the reduction in cost related to the elimination of horizontal directional drilling?
- b) If there are other cost savings, please identify them.
- c) Describe how solid XLPE cables could be more expensive than fluid filled HPFF cables, and whether that is the case for this project.

Response:

- a) As this question applies to the Proposed Modified Project, the question is no longer relevant.
- b) As this question applies to the Proposed Modified Project, the question is no longer relevant.
- c) The most economical cable technology depends on the route and project specifics.

Originally, the project team determined HPFF would be the most cost-effective solution since historically our solid dielectric circuits have a slightly higher unit cost per mile compared to our HPFF circuits. Some key areas where HPFF installations are less expensive than solid dielectric installations are: horizontal directional drilling (HDD's) would have a smaller bore annulus, double circuit HPFF can be installed in a common vault, the size of the trench excavation is generally smaller, and there are no SVL's and grounding link boxes associated with a HPFF installation. Some of these cost savings are offset by the cost of the pumping plant in an HPFF installation which is not required for solid dielectric circuits.

In this case, the elimination of horizontal directional drilling is the most significant factor in reducing the cost of the currently proposed route, as compared to the originally proposed route. As indicated above, there are many other factors that can make XLPE cables both more and less costly than HPFF cables for specific applications. Identifying the impact of each upward and downward influence on cost would require a major effort that would not yield relevant information; to that extent, Eversource objects to this question as overly burdensome.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-053
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Eversource's Response to Q-LF-003 dated October 6, 2015. Since Eversource submitted that response, Eversource has reduced its estimated cost for a hybrid underground/overhead transmission line to a new substation on Railroad Avenue from approximately \$50 million to \$36.7 million, a reduction of 36.2%. During the same time period, the estimate for the all-underground line has been reduced from \$72 million to \$57.1 million, a reduction of only 26%. Please list all the items and identify the cost reduction of each, which resulted in the cost savings of the hybrid scheme in the present application.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-054
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference FOF #465, which identifies the cost of the transmission line portion of the 2015 Preferred Route as \$72 million. In the current Petition, the transmission line portion of the Alternate Modified Project is estimated to have a cost of \$57.1 million. See Petition, Ex. B, p. A-17, section A-6. Provide a detailed list of each deletion, addition or change made to the design of the 2015 Preferred Route (such as directional drilling, cable material costs, duct bank material costs, pedestrian bridge costs, cable installation costs, etc.), that explains the reduction in the estimated cost for the transmission line portion of the Alternate Modified Project. For each such deletion, addition or change, please identify the estimated cost of the affected item for each of the 2015 Preferred Route and the Alternate Modified Project so as to permit an accurate comparison of the two different design alternatives and their respective costs on a "line by line" basis.

Response:

This question is no longer relevant as Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-055
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Lines 363-367 at p. 12 of the Pre-Filed Testimony. Identify the costs of all temporary easements required for the Proposed Modified Project, and state whether such costs are included in your \$78 million estimate.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-056
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Exhibit A, Section A.4.1.1, Figure 2 at p. A-10. Identify the manufacturer of the 3500-kcmil cable depicted. In addition, please explain whether the depiction of the cable as being 4.5 inches in diameter is accurate, or whether your statement in Petition, Exhibit B, Section A.3.1, p. A-8 is accurate, where you state that "Each cable would be approximately 4.6 inches in diameter." What is the accurate diameter of each cable for each of the Proposed Modified Project and the Alternate Modified Project?

Response:

The underground cable has not yet been procured, therefore the exact diameter of the cable is not presently known. We would expect the cable to have an approximate outside diameter of 4.5 inches. This dimension can vary slightly depending on the cable manufacturer.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-057
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Pre-Filed Testimony, Attachment A, at p. 26. In the Proposed Modified Project, the permissible load capacity of the proposed substation is approximately 50% of the load capacity of the proposed substation in the 2015 Preferred Route. However, the size and capacity of the copper conductors in the proposed 115-kV transmission lines in the Proposed Modified Project remain the same, at 3500-kcmil. Explain why the size and capacity of the conductors in the proposed 115-kV transmission lines in the Proposed Modified Project were not reduced accordingly.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-058
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Petition, Exhibit A, Section A.4.2, "Line Design Voltage and Capacity", at p. A-12. The underground cable portion has been described as having 192 MVA of capacity and the overhead line has been described as having 225 MVA of capacity. For each of the Proposed Modified Project and the Alternate Modified Project, please explain why such values are appropriate for the proposed new substation, which will have a capacity of 60 MVA.

Response:

The 192 MVA capacity of the underground cable associated with the Project is based on the following set of design assumptions. Greenwich Substation is being designed for two 60 MVA bulk substation transformers. The design includes provisions to upgrade the two original 60 MVA transformers to 80 MVA transformers in the future as needed. The 115-kV transmission underground cable will be sized to accommodate the potential future installation of the 80 MVA transformers because it is prudent to design and install cable that can accommodate future expansion without exposing the area to additional underground construction. The 192 MVA of 115-kV underground cable capacity provides an alternative supply for Cos Cob load. If an emergency occurred requiring Cos Cob load to be transferred to Greenwich, the two 80 MVA transformers could serve 120%, or 192 MVA, of their normal rating for up to two hours.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

Reference Petition, Exhibit B, Section A.3.1, Figure A-3 at p. A-9.

- a) Please state whether the 6" pipes depicted in Figure A-3 are accurate, or whether you intend to use 8" pipes as stated on p. 7 of the Petition, and state which cost you assumed in your \$100 million estimate for the Alternate Modified Project. See Pre-Filed Testimony at p. 19.
- b) Please state whether you intend to include the "Dynamic Temperature Sensing" for the Alternate Modified Project, and if so, what the cost is, and whether that cost is included in your \$100 million estimate for the Alternate Modified Project.
- c) In the Alternate Modified Project, please state whether your trenches for the underground duct bank will be 3' 7 1/8" wide as depicted in Exhibit B, Figure A-3, or 3' 6" wide as stated in Exhibit A, Section A.4.4.1 at p. A-13.
- d) In your \$100 million estimate for the Alternate Modified Project, did you assume your trenches for the underground duct bank would have a width of 3' 7 1/8" as depicted in Exhibit B, Figure A-3?
- e) In your \$78 million estimate for the Proposed Modified Project, did you assume your trenches for the underground duct bank would have a width of 3' 6" as stated in Exhibit A, Section A.4.4.1 at p. A-13?

Response:

- a) The project proposes to use 6 inch PVC pipes for the solid dielectric cable installation, and that was assumed in the AMP estimate.
- b) Dynamic temperature sensing is included in the Alternate Modified Project budget estimate. The direct costs associated with this equipment installation is \$231k.
- c) The proposed underground duct bank will be approximately 3 feet 7 1/8 inches, per Exhibit B, Figure A-3.
- d) The estimate assumed a 3 foot ,7 1/8 inch wide trench.
- e) This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-060
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Railroad Avenue between Steamboat Road and Arch Street is one of the most congested streets in Greenwich with a myriad of buried utilities, including electric, gas, water, cable television, sewer, both mains and laterals. Please describe what provisions are included in the costing for the underground portion of the Proposed Modified Project to address these conditions? Is this same route to be used in the Alternate Modified Project?

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn. The AMP route will not be located along Railroad Avenue between Steamboat Road and Arch Street.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-061
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Identify what customer outages, if any, have been caused by transformer failures in any of the following substations:

- a) Prospect
- b) Byram
- c) Tomac
- d) North Greenwich
- e) Mianus

Response:

There have not been any power transformer failures at the Prospect, Byram, Tomac, North Greenwich, or Mianus substations in the last five years.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-062
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Outages on the 13.2-kV circuit identified as "11R3" impact Parsonage Road, the street where The Nathaniel Witherell, the Town's nursing and long term care facility, is located. Assuming no damage to the Cos Cob, North Greenwich or Mianus Substations, please explain how a new substation on Railroad Avenue would reduce the outage time on circuit 11R3, and on Parsonage Road as well, in the event of a weather-related outage?

Response:

The customers on the Parsonage Road including the Nathaniel Witherell long term care facility are fed by the Cos Cob 35K4 circuit. This circuit is fed by the 35K-6X 115kV/13.2kV transformer. Assuming that Cos Cob substation is not affected, these customers will not lose power. For a failure of the 35K-6X transformer, the 11R-5X transformer will pick up all the customers on the 35K4 circuit automatically.

In the event of a fault occurring on the 35K4 circuit first and/or second zones, the Parsonage Rd customers would be backup by North Greenwich 27K1 circuit.

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference the diagram entitled "Simplified 13.2kV Proposal" attached to Eversource's Response to Q-CSC-024 dated June 12, 2017. Please provide a revised diagram indicating the circuit identifying numbers (e.g., "11R3") for each circuit identified on the diagram.

- a) Other than the new exit feeders coming out of the proposed substation, what changes will be made to the 13.2-kV circuits on this diagram?
- b) Identify all differences between the "Simplified 13.2kV Proposal" attached to Eversource's Response to Q-CSC-024 dated June 12, 2017, and the diagram entitled "Simplified Greenwich 13.2KV System Proposed Design" attached to Eversource's Response to Q-OCC-058 dated December 22, 2015. Aside from not combining the existing Byram Substation and the existing Prospect Substation into a new substation, on a marked up drawing with descriptions, describe all the differences between Eversource's responses to Q-OCC-04 and Q- OCC-058 in 2016 and Eversource's responses to Q-CSC-01 and Q-CSC-024 dated June 12, 2017.

Response:

The circuit identifying numbers to the attachment to response Q-CSC-024 is Confidential Energy Infrastructure Information and will be disclosed only pursuant to an appropriate protective order.

a) There are two existing manual ties (22E10 and 11R3) that will be converted to automatic ties in the future. Eversource has a state-wide resilience program to address zones with no automatic backup or zones with more than 1000 customers exposed to a single potential event. These two circuits are part of prioritization list.

b) The diagram of the simplified Greenwich 13.2kV system dated June 12, 2017 reflects the existing Byram 13.2 kV system (no modifications) and the Prospect 13.2kV system with the proposed modification by which it would be fed by the new proposed substation. The diagram of the simplified Greenwich 13.2kV system dated December 22, 2015 shows changes to the loop scheme configurations of the existing Byram and Prospect 13.2kV systems and 2 new feeder positions from the new substation proposed in the original docket. The applicant objects to the request to create new drawings because it is overly burdensome and irrelevant.

Witness: **Witness Panel**
Request from: **Town of Greenwich**

Question:

In the description of the new substation proposed in the 2015 Preferred Route, the existing Byram and Prospect Substations were shown as being merged into a single new substation on Railroad Avenue. That new substation was shown to have nine 13.2-kV feeders exiting from it. Under the present scheme, the existing Byram Substation is to remain as is, and a new substation on Railroad Avenue will take the place of the existing Prospect Substation. Eversource's responses to Q-CSC-01 and Q-CSC-024 dated June 12, 2017 show three 13.2-kV feeders exiting Byram Substation, but now seven feeders exiting the new substation that is to replace the existing Prospect Substation. That is a total of ten 13.2-kV feeders exiting the two substations, where only nine presently exist. Please explain the purpose of the addition of this tenth circuit. Please show all costs associated with adding this tenth circuit, and explain whether this circuit is part of either the Proposed Modified Project or the Alternate Modified Project.

Response:

There are currently a total of 10, not 9, 13.2kV circuits exiting the two substations. The existing Byram substation has three 13.2kV circuits that exit the substation. They will remain. The existing Prospect substation has seven 13.2kV circuits exiting the substation. These circuits will be relocated to exit from the new Greenwich substation; the quantity of 13.2-kV circuits will not change

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-065
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Eversource's Response to Q-CSC-027 dated June 12, 2017. In your communications with the manufacturers, did you specifically request that the manufacturers "custom design" to meet your specifications (including tap changers), to fit within the existing space in the Cos Cob Substation? Provide copies of all such communications between Eversource and the manufacturers.

Response:

Eversource requested dimensional information from manufacturers based on the transformer specification which includes the requirement for a load tap changer. We did not ask that the manufacturers redesign their products to fit within the dimensions of the available space for each transformer.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-066
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference the diagram entitled "Vertical Steel Pole Design" attached to Eversource's Response to Q-CSC-029 dated June 12, 2017. Please provide a revised diagram that (a) depicts the location of the existing force main, and (b) accurately draws the vegetation to-scale.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-067
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference the diagrams attached to Eversource's Response to Q-CSC-036 dated June 12, 2017. Describe Eversource's process for preserving the existing force main in light of the construction depicted on those diagrams, including how Eversource will address the effects on the force main of vibrations from drilling in its vicinity. In addition, please:

- a) Identify and produce the results of all geotechnical analyses, including soil boring investigations and tests of subsurface strata, in the area in or around the existing force main and the proposed force main;
- b) Identify how you will protect the existing force main, including the impacts of drilling and vibration during construction; and
- c) Identify and produce the result of all studies and testing you performed in order to conclude that the Proposed Modified Project will not interfere with either the existing force main or the proposed force main.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn .

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-068
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Eversource's Response to Q-CSC-039 dated June 12, 2017. Please provide:

- (a) all specifications and drawings relating to the infrastructure of the Stamford, CT sewer main referenced in Eversource's response, including the piping materials used in that sewer main, and
- (b) an accurately-dimensioned diagram, depicting as-built conditions showing the relationship between the Caisson foundations and the sewer main referenced in Eversource's response.

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-069
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Eversource's Response to Q-CSC-042 dated June 12, 2017. Provide copies of all communications with CDOT where CDOT indicated it is "heavily opposed" to this attachment.

Response:

Meeting minutes from the March 15, 2017 meeting with ConnDOT Highway are attached.

**Greenwich Substation and Line Project
ConnDOT Highway Meeting Minutes
March 15, 2017
Meeting Called by ConnDOT**

||Docket No. 461a
||Data Request TOWN-01
||Dated 7/18/2017
||Q-TOWN-069, Page 1 of 1

Attendees

- Chris Soderman – Eversource Energy
- Jason Cabral – Burns & McDonnell
- Eric Leu - Burns & McDonnell
- Vinny Montemurro – Burns & McDonnell
- Andrzej Mysliwicz – CTDOT Utilities
- Susan Libatique – CTDOT Highway Design
- Nilesh Patel – CTDOT Highway Design
- Peter Talarico – CTDOT Highway Design
- Xiuyan Cai – CTDOT Utilities
- Sohrab Afrazi – CTDOT Highway

Meeting Minutes

1. Current State of Project

- 1.1. Eversource reiterated, that since the last meeting with ConnDOT Highway on 1/6/2017, the hybrid route (now called the Proposed Modified Project) would be presented as the proposed route in the Petition for Reconsideration

2. ConnDOT Highway Concerns

- 2.1. ConnDOT voiced their concerns about the proposed transmission structures possibly being located within ConnDOT Highway property
 - 2.1.1. Eversource indicated that the transmission structures would not be located within ConnDOT Highway property and that if I-95 were to expand, appropriate measures would be taken to protect the affected transmission structures that would be located just off of the highway taking line.
- 2.2. ConnDOT Highway expressed their concern about the effect of the proposed overhead transmission line on an existing drainage swale on ConnDOT Highway property.
 - 2.2.1. Eversource indicated that during and after construction, existing drainage flows would be maintained. Eversource also indicated that additional details would be made available during the D&M phase of the project to indicate where permanent access roads may be needed

3. Encroachment Agreement process

- 3.1. Eversource indicated that an encroachment agreement from ConnDOT Highway would be necessary in order to permanently place structure arms and wires in ConnDOT Highway property
 - 3.1.1. ConnDOT indicated that it in some cases an encroachment agreement could take up to 18 months to be secured from the time all documents are received
 - 3.1.2. ConnDOT also indicated that an encroachment agreement would be required for the underground portion of the Proposed Modified Route that crosses CT Hwy 742

4. Alternate Modified Route Discussion

- 4.1. ConnDOT indicated that they are heavily opposed to attaching to the Indian Field Road Overpass, as it poses safety and accessibility concerns. It was also communicated that ConnDOT maintains the bridge superstructure that crosses I-95, however the Town of Greenwich maintains the paving/maintenance of the Indian Field Road roadway surface
- 4.2. ConnDOT also indicated that they would prefer a jack and bore (or similar trenchless crossing type) crossing of I-95

5. Action Items

- 5.1. Andy Mysliwicz to meet with ConnDOT Office of Maintenance, Office of ROW, and the FHWA to make them aware of this project and pass along any of their concerns to Eversource
- 5.2. Regularly scheduled meetings with ConnDOT/Eversource to occur once the project is in the D&M phase

CL&P dba Eversource Energy
Docket No. 461A

Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-070
Page 1 of 1

Witness: Witness Panel
Request from: Town of Greenwich

Question:

Reference Eversource's Response to Q-CSC-057 dated June 12, 2017. Explain why the "Distribution Feeder Relocation" for the Alternate Modified Project is \$4,586,275, but for the Proposed Modified Project, it is \$2,890,743. Please provide drawings showing the length of the feeders in question.

Response:

The distribution feeder relocation cost differences between the AMP and PMP are mainly due to the longer length of the duct banks and feeders required for the AMP and two additional manholes required for the AMP. The provided attachment illustrates this point.

----- PMP Duct A: approximately 160' long with 3 circuits

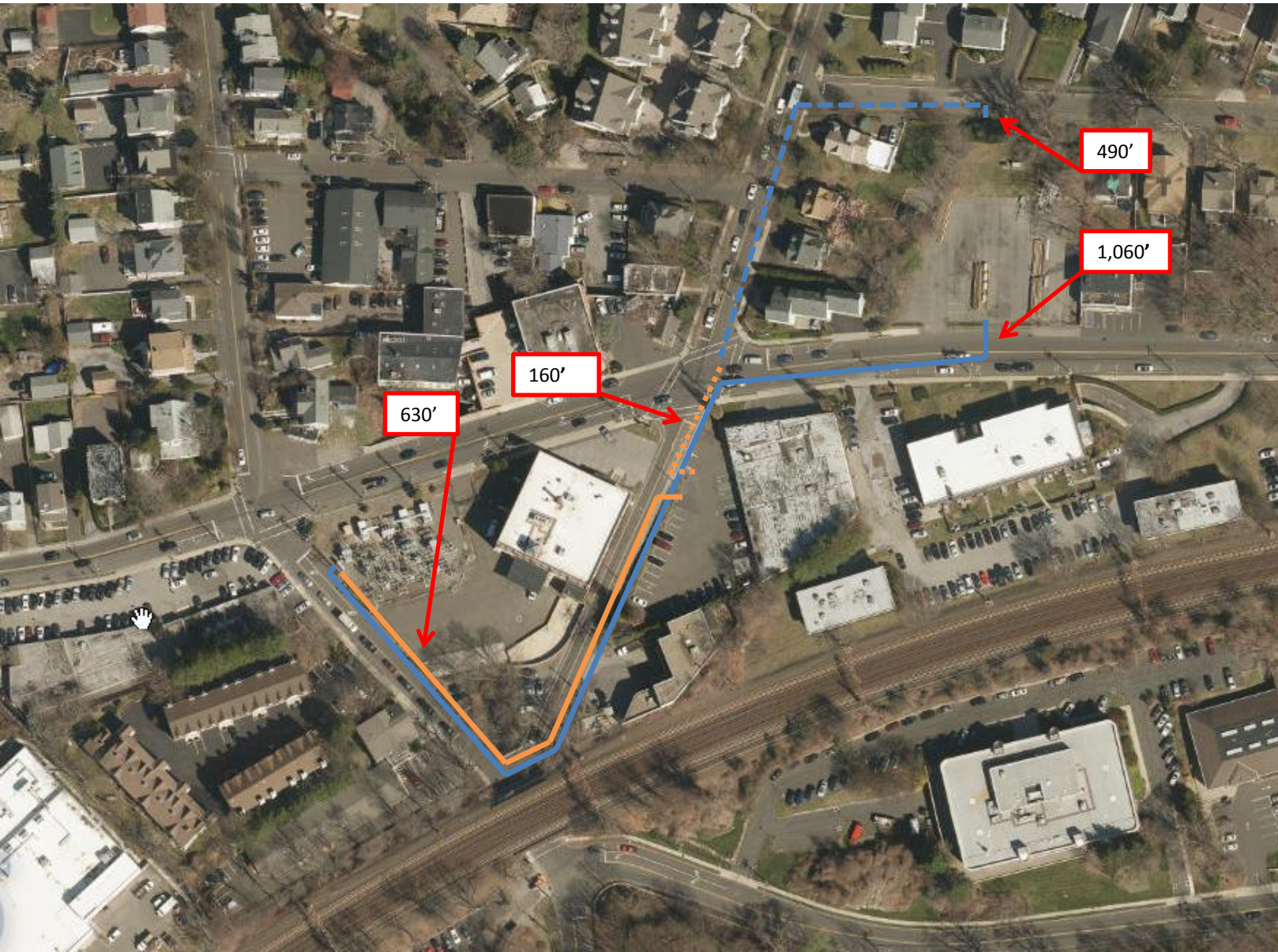
———— PMP Duct B: approximately 630' long with 4 circuits

- - - - AMP Duct A: approximately 490' long with 3 circuits

———— AMP Duct B: approximately 1,060' long with 4 circuits

*All circuits constructed of 1000kcmil CU and reflect cable up to circuit breaker

||Docket No. 461a
||Data Request TOWN-01
||Dated 7/18/2017
||Q-TOWN-070, Page 1 of 1



**CL&P dba Eversource Energy
Docket No. 461A**

**Data Request TOWN-01
Dated: 07/06/2017
Q-TOWN-071
Page 1 of 1**

**Witness: Witness Panel
Request from: Town of Greenwich**

Question:

Working in the MNRR right-of-way will require every contractor doing work in those environs to have railroad protective liability insurance. Does Eversource intend to incur this cost for each of its contractors and subcontractors? How has the cost for this insurance coverage been included in the cost estimate for the various components of the Proposed Modified Project? What have you estimated the cost of this coverage to be?

Response:

This question is no longer relevant because Eversource's request to approve the Proposed Modified Project has been withdrawn.