July 28, 2004

Ms. Pamela B. Katz
Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Docket No. 272 - Middletown-Norwalk 345kV Transmission Line

Dear Ms. Katz:

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

With this filing, the Company has completed responding to all of the interrogatories requested during this proceeding.

Response to OCC-02 Interrogatories dated 06/30/2004
OCC - 008 , 009 , 010 , 011 , 012 , 013 , 014

Very truly yours,

Anne B. Bartosewicz
Project Director - Transmission Business

ABB/tms
cc: Service List

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Department of Public Utility Control**

Question:
The following questions (i.e., OCC-9 through OCC-14, inclusive) request specific information on the relative costs expected for the proposed transmission project on an overhead or an underground basis. In all instances, insofar as possible, please present both a construction cost estimate and a life cycle cost estimate (i.e., including repair and maintenance following initial construction). Finally, please treat this question (i.e., OCC-8) as a request to provide any further information (beyond that specifically requested in the questions below) that the Applicants believe would illuminate the subject under inquiry.

Response:
No answer required.

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Department of Public Utility Control**

Question:
The Application, at p. I-4 through I-6, estimates the initial capital cost of the proposed facility (with supported changes) as $603.6 Million, and the life cycle cost as $824.1 Million (2003 dollars).

(a) Is these estimates still accurate? If not, please provide an update.
(b) Please state the estimated allocation of the $603.6 Million and the 824.1 Million amounts (or of any updated amounts) among Segments 1 through 4, inclusive.

Response:

(a) As a result of ongoing system studies, equipment additions and modifications at the proposed East Devon Substation and equipment additions to the proposed modifications at the Norwalk Substation are being analyzed. Virtually every one of the twelve Middletown-Norwalk Project Study Cases listed by the Reliability and Operability Committee would require further modification of the type and amount of additional equipment at these sites. Consequently, firm cost estimates cannot be developed until these modifications are fully analyzed. Please note that changes in the cost estimates for these two locations, will not affect the estimated differential in cost between the proposed route and those described in questions OCC-013 and OCC-014.

(b) Please see the Attachment to Q-OCC-009

Attachment to OCC-009.xls

Proposed Route (with supported changes) per Volume 1 of the Application Cost breakdown per segment

Segment Number	Miles	Construction Cost Estimate ($ Mil) 2003 dollars	Estimated Life Cycle Cost ($ Mil) NPV to 2003
1	12.3	65.6	92.6
2	33.4	194.1	262.1
3	8.1	176.4	226.4
4	15.5	167.5	243
TOTAL	69.3	603.6	824.1

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Department of Public Utility Control**

Question:
The Applicants' proposed route (with supported changes) contains approximately 45 miles of overhead construction and 24 miles of underground construction.

(a) Please state the allocation of this route's estimated capital cost of $603.6 Million, and its estimated life cycle cost of $824.1 Million (or of any updated amounts) between overhead and underground sections.
(b) What would be the estimated costs (initial capital & life cycle) of this same route constructed entirely on an overhead basis?

Response:
(a) Please see the Attachment to Q-OCC-010.

(b) Please see the Attachment to Q-OCC-010. Please note that in the "all overhead" scenario, underground transmission lines would be installed from the Seaview Transition Station to Singer Substation. From Singer Substation the underground line would return to the Seaview Transition Station. The underground construction is necessary from Seaview to Singer because dense urban development precludes overhead construction.

Attachment to OCC-010.xls

Proposed Route (with supported changes) per Volume 1 of the Application

a) Cost breakdown overhead vs underground

Description	Miles	Construction Cost Estimate ($ Mil) 2003 Dollars	Life Cycle Cost Estimate ($ Mil) NPV to 2003
Overhead Transmission	45.7	160.7	261.4
Underground Transmission	23.6	208.1	346.7
ROW/Land Acquisition		10.5	
Stations		135.3	216
AFUDC		89	
TOTAL	69.3	603.6	824.1

b) Costs for an all overhead scenario (Alternative B)

Construction Cost Estimate	$601.80	Mil
Life Cycle Cost Estimate	$804.30	Mil

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Department of Public Utility Control**

Question:
Alternative A contains approximately 60 miles of overhead construction and 13 miles of underground construction.

(a) According to p. I-29 through I-31 of the Application, Alternative A's estimated capital cost is $620 Million, and its estimated life cycle cost is $804.6 Million. Please state the allocation of these dollar amounts between overhead and underground sections.
(b) What would be the estimated costs (initial capital & life cycle) of this same route constructed entirely on an overhead basis?

Response:
(a), (b) The estimated life cycle cost according to p. 1-31 of the application is $840.6.
Please see the Attachment to Q-OCC-011.
Please note that in the "all overhead" scenario, underground transmission lines would be installed from the Seaview Transition Station to Singer Substation. From Singer Substation the underground line would return to the Seaview Transition Station. The underground construction is necessary from Seaview to Singer because dense urban development precludes overhead construction.

Attachment to OCC-011.xls

Alternate A
per Volume 1 of the Application

a) See following table for Alternate A cost breakdown.

Description	Miles	Construction Cost Estimate ($ Mil) 2003 Dollars	Life Cycle Cost Estimate ($ Mil) NPV to 2003
Overhead Transmission	60	221	401.2
Underground Transmission	13	143.5	215.5
ROW/Land Acquisition		24.3	
Stations		139.3	223.9
AFUDC		91.9	
TOTAL	73	620	840.6

b) See following costs for all overhead scenario (Alternative B)

Construction Cost Estimate	$601.80	Mil
Life Cycle Cost Estimate	$804.30	Mil

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Department of Public Utility Control**

Question:
Alternative B contains approximately 72 miles of overhead construction and 2 miles of underground construction.

(a) According to p. I-42 through I-44 of the Application, Alternative B's estimated capital cost is $601.8 Million, and its estimated life cycle cost is $804.3 Million. Please state the allocation of these dollar amounts between overhead and underground sections.
(b) What would be the estimated costs (initial capital & life cycle) of this same route constructed entirely on an overhead basis?

Response:

(a) Please see the Attachment to Q-OCC-012.

(b) Please see the Attachment to Q-OCC-012. Please note that in the "all overhead" scenario, underground transmission lines would be installed from the Seaview Transition Station to Singer Substation. From Singer Substation the underground line would return to the Seaview Transition Station. The underground construction is necessary from Seaview to Singer because dense urban development precludes overhead construction.

Attachment to OCC-012.xls

Alternate B
per Volume 1 of the Application

a) See following table for Alternative B cost breakdown.

Description	Miles	Construction Cost Estimate ($ Mil) 2003 Dollars	Life Cycle Cost Estimate ($ Mil) NPV to 2003
Overhead Transmission	72	272.7	484.1
Underground Transmission	2	58.6	93.1
Acquisition		40.2	
Stations		141.4	227.1
AFUDC		88.9	
TOTAL	**74**	**601.8**	**804.3**

b) See following costs for all overhead scenario (Alternative B)

Construction Cost Estimate	$601.80	Mil
Life Cycle Cost Estimate	$804.30	Mil

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Department of Public Utility Control**

Question:
Please refer to the so-called "East Shore Alternative," defined for purposes of this question to include: (i) a new 345-kV line from Beseck Switching Station to East Shore Station and (ii) a line from East Shore to East Devon, either (a) all underground or (b) underground from East Shore to a transition station in Orange, and overhead from there to East Devon.

(a) Please estimate the costs (both construction and life cycle, if possible) of both such East Shore route variations (i.e., all underground versus partly underground, between East Shore and East Devon), assuming that it is technically feasible to construct these route variations just as proponents have requested. Also, please state what portion of this cost estimate is the incremental cost over and above the estimated cost to construct the comparable portion of the transmission facility as the Applicants have proposed (with supported changes). Please provide all specific detail necessary to support the summary dollar cost figures presented.
(b) Respecting both types of cost estimates given in subpart (a) of this question (that is, overall costs and incremental costs), please state with respect to each separate route variation identified there whether the Applicants expect that those costs will be determined under NEPOOL rules and procedures to be eligible for regional (i.e., New England-wide) cost support, or will be viewed as localized costs (i.e., not eligible for regional support).

Response:
(a) Please see the Attachment to Q-OCC-013.

(b) The Applicants do not expect this solution to be acceptable to ISO-NE because of the operability and reliability concerns associated with the installation of additional underground cable between East Shore in New Haven and East Devon in Milford. Without the ISO-NE's approval, the system cannot be built and the issue of recovery is moot.

If these concerns can somehow be overcome such that the ISO-NE did agree that this configuration would be operable and reliable, the Applicants expect that the differential cost between the Applicants' Proposed Route and the East Shore Alternative would most likely be localized.

Attachment to OCC-013.xls

			CL&P/UI Docket 272		
			OCC-013		
	Cost Comparison for Segment 1 and 2		pg 2 of 2	Attachment	
	East Shore Variations - Cost Estimates Explanation				
	All figures include 17.9% for project overheads and 17.3% for AFUDC				
Element #	**Element**	**Cost (000's)**	**Comments**	**Life-Cycle Costs (000's)**	
1	Segment 1 from Application (Overhead portions only, excludes substation cost)	$48,512	Note 1	$92.6	
2	Segment 2 from Application (Overhead portions only, excludes substation cost)	$145,163		$262.1	
3	OH Line Construction from Beseck to East Wallingford	$14,297	Note1	$21.6	
4	OH Line Construction from East Wallingford to East Shore	$31,665	Note 2	$48.0	
5	UG Line Construction from East Shore to East Devon	$231,575	Note 3	$333.2	
6	East Shore Transition/Switching Station	$62,776	Note 4	$89.2	
7	West Haven/Orange Transition/Switching Station	$37,636	Note 5	$53.5	
8	UG Line Construction from East Shore to West Haven/Orange Border	$97,328	Note 6	$140.0	
9	OH Line Construction from West Haven/Orange Border to East Devon Substation	$40,288	Note 7	$57.8	
10	East Devon Substation Modifications	$10,000	Note 8	$14.2	
			Cost Difference vs. Proposed Route		**Life-Cycle Cost Difference vs. Proposed Route**
	Cost of Proposed Route with Supported Changes (elements 1,2)	**$193,671**		$354.7	
	Cost of East Shore Alternative (All Underground) - East Shore Transition/Switching Station to East Devon Substation UG (Elements 1,3,4,5,6,10)	**$398,825**	$205,154	$598.8	$244
	Cost of East Shore Alternative (Partial Underground/Partial Overhead) - East Shore Transition/Switching Station to West Haven/Orange Transition/Switching Station UG, West Haven/Orange Transition/Switching Station to East Devon Substation OH (Elements 1,3,4,6,7,8,9)	**$332,503**	$138,832	$502.7	$148
Note 1:	Common to all estimates (Same as Proposed Route)				
Note 2:	13.6 miles @ $1.684 Million per mile - Same cost per mile as Beseck to East Wallingford Junction, same width ROW, same construction, see volume 10, Figure 5 of the Application				
Note 3:	13.8 miles @ $12.134 Million per mile - Assumed a multiplier of 1.6 times the proposed UG project estimate - 3 cable circuits are required for reliability, two trenches required for constructability				
Note 4:	Station must meet full NPCC requirements - equipment arranged in a breaker and one half configuration, estimate is based on 4 OH line termination, 3 UG line terminations, 3 variable reactors equipped with circuit breakers, GIS technology due to lack of space				
Note 5:	Station must meet full NPCC requirements - equipment arranged in a breaker and one half configuration, estimate is based on 1 OH line termination, 3 UG line terminations, 3 variable reactors equipped with circuit breakers, will be in 165' ROW, GIS due to lack of space				
Note 6:	5.8 miles @ $12.134 Million per mile - Assumed a multiplier of 1.6 times the proposed UG project estimate - 3 cable circuits are required for reliability, two trenches required for constructability				
Note 7:	8.2 miles of reconstructed ROW @ $3.553 Million per mile between West Haven/Orange border and East Devon Substation				
Note 8:	Assumes an additional bay with 4 circuit breakers for breaker failure protection, 3 cable terminations - 2 in the new bay, 1 replacing the proposed OH line, 3 variable reactors equipped with circuit breakers				

Witness: **Anne Bartosewicz; John J. Prete**
Request from: **Department of Public Utility Control**

Question:
Please refer to any town specific route variations that have been proposed to the Applicants, or submitted to the Applicants for consideration (other than company supported route changes identified in the municipal consultation process) that are in whole or in part underground, and which have been identified in sufficient detail to enable their cost to be estimated. Give the geographic location of each such variation, describe its linear length and other major components, and identify the proponent of the variation.

(a) Please estimate the costs (both construction and life cycle, if possible) of each such route variation, assuming that it is technically feasible to construct the variation just as its proponent has requested. Also, please state what portion of this cost estimate is the incremental cost over and above the estimated cost to construct the comparable portion of the transmission facility as the Applicants have proposed (with supported changes). Please provide all specific detail necessary to support the summary dollar cost figures presented.
(b) Respecting both types of cost estimates given in subpart (a) of this question (that is, overall costs and incremental costs), please state with respect to each separate route variation identified there whether the Applicants expect that those costs will be determined under NEPOOL rules and procedures to be eligible for regional (i.e., New England-wide) cost support, or will be viewed as localized costs (i.e., not eligible for regional support).

Response:
The Applicants are aware of two such routes, one in the Town of Woodbridge and one in the City of Milford. The route proposed by Woodbridge would transition from an overhead to underground configuration in the Cedar Road area of Woodbridge. It would then proceed underground across Amity Road, along Center Road, along Pease Road, along Johnson Road and then westward in the vicinity of Clearview Drive until it intersects the existing right-of-way near the Woodbridge/Orange Municipal Boundary.

The City of Milford proposed three routes. Two of them were determined not constructible because of their required collocation with the Iroquois Pipeline. The third route would exit the proposed East Devon Substation underground and proceed underground within the existing right-of-way to a transition/switching station on the northeast side of the Milford Parkway. There it would transition to an overhead configuration.

(a) Please see the Attachment to Q-OCC-014.

(b) Woodbridge Proposal: The Applicants do not expect this solution to be acceptable to the ISO-NE because of the operability and reliability concerns associated with the installation of additional cable between the two transition/switching stations in Woodbridge. Without the ISO-NE's approval, the system cannot be built and the issue of recovery is moot.
If these concerns can be somehow overcome such that the ISO-NE does agree that this configuration will be operable and reliable, the differential Applicants expect that the differential cost between the Applicants' Proposed Route and the Woodbridge Proposal would most likely be localized.

Milford Proposal: The Applicants do not expect this solution to be acceptable to the ISO-NE because of the operability and reliability concerns associated with the installation of additional cable between the proposed East Devon Substation and the transition/switching station in Milford.
If these concerns can somehow be overcome such that the ISO-NE does agree that this configuration will be operable and reliable, the Applicants expect that the differential cost between the Applicants' Proposed Route and the Milford Proposal would most likely be localized.

Attachment to OCC-014.xls

Woodbridge Proposal Cost Estimate				
			CL&P/UI Docket 272	
			OCC-014	
			pg 3 of 4	
All figures include 17.9% for project overheads and 17.3% for AFUDC				
Element #	**Element**	**Cost (000's)**	**Comments**	**Life-Cycle Costs (000's)**
1	UG Line Construction from ROW west of Clearview Drive to ROW north of Clark Road	$74,055	Note 1	$106,468
2	Transition/Switching Station west of Clearview Drive	$37,636	Note 2	$53,477
3	Transition/Switching Station north of Clark Road	$37,636	Note 2	$53,477
4	Cost of Proposed OH Construction along existing ROW between Transition/Switching Station Sites	$17,098	Note 3	$24,397
	Cost of Woodbridge Bypass (Elements 1,2,3)	**$149,327**		$213,422
	Difference between proposed OH and Woodbridge Bypass	**$132,229**		$189,025
Note 1:	Approximately 4 miles @ $13.387 Million per mile - Assumed a multiplier of 1.6 times the proposed UG project estimate - 3 cable circuits are required for reliability, two trenches required for constructability			
Note 2:	Station must meet full NPCC requirements - equipment arranged in a breaker and one half configuration, estimate is based on 1 OH line termination, 3 UG line terminations, 3 variable reactors equipped with circuit breakers, will be in 165' ROW, GIS due to lack of space			
Note 3:	3.48 miles of reconstructed ROW @ $3.553 Million per mile between Transition/Switching Station north of Clark Road and Transition/Switching Station west of Clearview Drive			

Milford Proposal Cost Estimate				
			CL&P/UI Docket 272	
			OCC-014	
			pg 4 of 4	
All figures include 17.9% for project overheads and 17.3% for AFUDC				
Element #	**Element**	**Cost (000's)**	**Comments**	**Life-Cycle Costs (000's)**
1	UG from Proposed East Devon Substation to Milford Proposal location of Transition/Switching Station	$26,845	Note 1	$38,595
2	Milford Proposal Transition/Switching Station	$37,636	Note 2	$53,477
3	East Devon Substation Modifications	$10,000	Note 3	$14,209
	Cost of Milford Proposal (elements 1,2,3)	**$74,481**		$106,281
	Cost of OH Construction along existing ROW between Proposed East Devon Substation and Milford Proposal Transition/Switching Station Site	**$7,124**	Note 4	$10,165
	Difference between proposed OH and Woodbridge Bypass	**$67,357**		$96,116
Note 1:	Based on using the existing ROW for 3 XLPE circuits in individual ductlines - approximate route length 1.45 miles - no reconstruction of existing 115-kV lines in that portion of the ROW, assume 1.6 multip;ier for individual ductlines and ductline reinforcement			
Note 2:	Station must meet full NPCC requirements - equipment arranged in a breaker and one half configuration, estimate is based on 1 OH line termination, 3 UG line terminations, 3 variable reactors equipped with circuit breakers, will be in 165' ROW, GIS due to lack of space			
Note 3:	Assumes an additional bay with 4 circuit breakers for breaker failure protection, 3 cable terminations - 2 in the new bay, 1 replacing the proposed OH line, 3 variable reactors equipped with circuit breakers			
Note 4:	1.45 miles of reconstructed ROW @ $3.553 Million per mile between Proposed East Devon Substation and Milford Proposal Transition/Switching Station Site			