DOCKET NO. 398 - Northeast Utilities Service Company, on behalf of The Connecticut Light and Power Company
Application for a Certificate of Environmental } Siting
Compatibility and Public Need for the Construction,
Maintenance, and Operation of the Sherwood Substation } Council located at 6 New Creek Road, Westport, Connecticut }

April 28, 2010

## **Proposed Findings of Fact**

## Introduction

- 1. The Connecticut Light and Power Company (CL&P), in accordance with the provisions of Connecticut General Statutes (CGS) § 16-50g et seq., and § 16-50j-1 et seq. of the Regulations of Connecticut State Agencies (RCSA), applied to the Connecticut Siting Council (Council) on December 29, 2009 for the construction, operation, and maintenance of a bulk power substation to be known as the Sherwood Substation (the "Substation") at 6 New Creek Road, Westport, Connecticut (the "Property"). (CL&P 1, Vol. I, p. A-1)
- 2. The purpose of the proposed facility is to improve reliability and add needed distribution delivery-system capacity to serve the growing electric power demands in the Greens Farms section and immediately adjacent portions of the southeast area of Westport. In addition, the Sherwood Substation would eliminate the need for temporary equipment now in use. (CL&P 1, Vol. I, p. A-1)
- Pursuant to CGS § 16-50m, the Council, after giving due notice thereof, held a public hearing on March 31, 2010 beginning at 3:00 p.m. and continuing at 7:00 p.m. at the Westport Town Hall, 110 Myrtle Avenue, Westport, Connecticut. (Council's Hearing Notice dated February 17, 2010; Transcript 1 March 31, 2010 at 3:00 p.m. [Tr. 1], p. 3; Transcript 2 March 31, 2010 at 7:00 p.m. [Tr. 2], p. 3)
- The Council and its staff made an inspection of the proposed site on March 31, 2010, beginning at 2:00 p.m. (Council's Hearing Notice dated February 17, 2010) (Record)
- 5. The party in this proceeding is the Applicant. (Tr. 1, p. 4)
- 6. Pursuant to CGS § 16-50*l* (b), public notice of the application was published on behalf of CL&P in <u>The Westport News</u> on December 18, 2009 and December 23, 2009, and in the <u>Norwalk Hour</u> on December 17, 2009 and December 22, 2009. (CL&P 1, Vol. I, p. Q-4; CL&P 1, Vol. II, Exh. 8)

- 7. On March 16, 2010, 4 foot by 6 foot signs were posted on behalf of CL&P at two locations: near the edge of the Property's existing driveway and near the property line closest to where the relocated driveway is proposed. Both signs included the Applicant's name, type of facility proposed, the date and location of the public hearing, the availability of application documents and contact information for the Council. (CL&P 5, p. 29 & Attach. 6)
- Pursuant to CGS § 16-50*l* (b), notice of the application for the Sherwood Substation was provided to all abutting property owners and other property owners proximate to the Property via certified mail, return receipt requested. (CL&P 1, Vol. I, p. Q-5; CL&P 1, Vol. II, Exh. 9)
- 9. Pursuant to CGS § 16-50*l* (b), CL&P provided notice to all federal, state and local officials and agencies listed therein. (CL&P 1, Vol. I, pp. Q-3-Q-4; CL&P 1, Vol. II, Exh. 7; CL&P 5, p. 8; CL&P 8)
- Pursuant to CGS § 16-50*l* (a) (2), the project is exempt from the Connecticut Energy Advisory Board (CEAB) mandatory request for proposal process. CL&P notified the CEAB of the project on October 14, 2009. (CL&P 1, Vol. I, p. R-2)

## **State Agency Comment**

- Pursuant to CGS § 16-50*l*, on February 17, 2010, the following State agencies were solicited by the Council to submit written comments regarding the proposed facility: Department of Environmental Protection (DEP), Department of Agriculture (DOA), Department of Public Health (DPH), Council on Environmental Quality (CEQ), Department of Public Utility Control (DPUC), Office of Policy and Management (OPM), Department of Economic and Community Development (DECD), Department of Transportation (DOT), and Department of Emergency Management and Homeland Security (DEMHS). (Record)
- 12. The Council received comments from the DEP on March 16, 2010. (DEP letter dated March 16, 2010)
- The following agencies did not respond with comment on the application: DOA, DPH, CEQ, DPUC, OPM, DECD, DOT, and DEMHS. (Record)

## Municipal Consultation

- 14. CL&P representatives began discussing local electric reliability issues with Town of Westport officials in 2008. After deciding a new substation was the only viable option, on May 14, 2009, CL&P filed location review submissions with the Westport Conservation Commission (ConComm) and with the Westport Planning and Zoning Commission (P&Z). (CL&P 1, Vol. I, p. O-1)
- On May 19, 2009, CL&P sent out 28 letters to abutters and immediate neighbors to the Substation alerting the recipients to the upcoming ConComm and P&Z meetings that included a telephone number and an e-mail address for CL&P's contact person. Door hangers were placed on three homes on Increase Lane. A letter was sent to the actual owner of 64 Maple Street who does not live in that residence. (CL&P 1, Vol. I, p. R-1; CL&P 1, Vol. II, Exh. 10; Tr. 1, pp. 48-49)
- 16. A joint site walk was held by the ConComm and P&Z with CL&P representatives on June 8, 2009. On June 9, 2009, the Town's conservation analyst provided written comments to CL&P. CL&P responded to these comments by letter dated June 17, 2009. (CL&P 1, Vol. I, pp. O-1-O-2; CL&P 1, Vol. II, Exh. 6)
- On June 9, 2009, CL&P presented the Substation to Greens Farms Academy (CL&P 1, Vol. I, p. R-1; CL&P 5, p. 29; Tr. 2, pp. 49-50)
- On June 11, 2009, CL&P gave a presentation to the P&Z at its regular meeting. At its next working session on June 25, 2009, the P&Z discussed and agreed upon its preliminary findings and subsequently provided a recommendations letter (dated June 26, 2009) to the Council. CL&P responded to the P&Z comments on September 23, 2009. (CL&P 1, Vol. I, p. O-2; CL&P 1, Vol. II, Exh. 6)
- 19. On June 17, 2009, CL&P presented the Substation to the ConComm. The ConComm indicated that the minutes of their meeting would serve as its comments. CL&P responded to the ConComm comments on September 23, 2009. (CL&P 1, Vol. I, p. O-2; CL&P 1, Vol. II, Exh. 6)
- 20. On July 14, 2009, CL&P met with the Westport Architectural Review Board (ARB) to present the Substation. The ARB expressed a preference for painting the control enclosures an earth tone color (either green or brown), incorporating dense, tall plantings into the site landscaping, and inclusion of a decorative gate at the site entrance. (CL&P 1, Vol. I, p. O-2)
- 21. On September 29, 2009, CL&P preliminarily distributed copies of the municipal consultation filing (MCF) to Westport's chief elected official (its First Selectman), P&Z, ConComm, Department of Public Works and the Town librarian. (CL&P 1, Vol. I, p. Q-3)
- 22. On October 14, 2009, CL&P filed the MCF pursuant to CGS § 16-50l (e), a technical report explaining the proposal, with Mr. Gordon Joseloff, First Selectman, and the CEAB. (CL&P 1, Vol. I, p. Q-4)

- On November 5, 2009, CL&P met with First Selectman Joseloff, Police Chief Al Fiore, and Assistant Fire Chief to discuss energy security issues. (CL&P 1, Vol. I, p. O-2)
- 24. After the filing of the MCF, the ConComm provided its comments regarding the MCF on October 13, 2009. CL&P responded in writing to the ConComm's comments in a letter dated November 16, 2009. (CL&P 1, Vol. I, pp. O-2-O-3)
- 25. At First Selectman Joseloff's request, on November 18 and 19, 2009, CL&P attended public meetings of the ConComm and P&Z, respectively. CL&P provided an overview and addressed all issues raised by Commission members. No members of the public spoke in favor or opposition to the project when provided the opportunity. (CL&P 1, Vol. I, p. R-1; CL&P 1, Vol. II, Exh. 10)
- 26. By letter dated November 20, 2009, the ConComm informed CL&P that it was prepared to support the project upon filing of updated plans and review of the relocated driveway by the Engineering Department. CL&P filed such plans and satisfied the Engineering Department. The P&Z commended CL&P for its excellent responses to the Town's questions raised throughout the process. (CL&P 1, Vol. I, p. O-3; CL&P 1, Vol. II, Exh. 10; CL&P 4, Q005)
- 27. On December 7, 2009, P&Z notified the Council that it was satisfied with the project as presented. (P&Z Letter of December 7, 2009; CL&P 1, Vol. II, Exh. 6)
- 28. On March 31, 2010, the ConComm notified the Council that it found the revised planting plan acceptable and that the erosion and sediment plan accomplished adequate protection of the on-site wetland resources and that it supported implementation of both plans. (ConComm Letter of March 31, 2010)
- 29. First Selectman Joseloff submitted a letter in support of the project to CL&P dated December 10, 2009. (CL&P 1, Vol. II, Exh. 6)
- 30. First Selectman Joseloff testified at the hearings in support of CL&P's application, recognizing the need for the Substation, and acknowledged the town's active involvement with CL&P in the process of siting the proposed Substation. (Tr. 1, pp. 6-8; Tr. 2, pp. 6-7)

#### **Project Need**

The proposed Substation would increase electric distribution system capacity and improve reliability in the Town of Westport by establishing a new bulk power substation in the New Creek Road and Greens Farms Road area. It would replace CL&P's aging Greens Farms Substation and the temporary Sasco Creek Substation transformer, while providing new capacity for future demand and also strengthen the reliability of Westport's entire electric distribution system by providing a source of electricity in closer proximity to the load, decreasing feeder lengths and utilizing new state-of-the-art equipment. (CL&P 1, Vol. I, p. G-1)

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- 32. Westport is now being served from two small distribution substations in Westport, and three bulk power substations, two in Westport and one in Weston. The two small distribution substations receive power at 27.6 kV via distribution feeders and supply electricity to Westport customers at 13.8 kV. The two small distribution substations are:
  - Greens Farms Substation, located on Post Road East, east of Colonial Road, and
  - Westport Substation, located on Main Street, north of Canal Street. (CL&P 1, Vol. I, p. G-1)
- 33. The three bulk power substations receive power directly from the 115-kV transmission system (which accounts for their designation as "bulk power" substations) and also supply electricity to customers at 13.8 kV. The bulk power substations are:
  - Compo Substation, located off Compo Road South, between Interstate 95 ("I-95") and the railroad,
  - Sasco Creek Substation, located on Clayton Street, off Maple Lane, on property operated by Metro-North Railroad (Metro-North) and owned by the DOT, and
  - Weston Substation, located off Weston Road, opposite Timber Mill Lane, in Weston.

(CL&P 1, Vol. I, pp. G-1-G-2)

- 34. Presently, reliability is maintained by a series of temporary solutions to relieve the Greens Farms Substation which experienced the failure of a 12.5-MVA transformer caused by overloading on August 2, 2005. (CL&P 1, Vol. I, pp. G-2, G-5)
- In addition to repairing the failed power transformer and placing it back into service, two temporary modifications were performed to off-load Greens Farms Substation before the 2006 summer load peak. These temporary modifications are still in use and will remain in place until a permanent solution (new bulk substation) is complete. (CL&P 1, Vol. I, p. G-5)
- The first temporary modification was the installation of a 9.375-MVA, 27.6- to 13.8-kV power transformer in May 2006 at Greens Farms Substation, to increase capacity. (CL&P 1, Vol. I, p. G-5)
- 37. The second temporary modification was the installation of a 17.9-MVA, 115- to 13.8-kV power transformer at Sasco Creek Substation in July 2006 to off-load Greens Farms Substation. (CL&P 1, Vol. I, p. G-5)

- 38. CL&P received permission from Metro-North/DOT to install the power transformer only on a temporary basis at Sasco Creek Substation, until a permanent solution was put in place. Because Metro-North/DOT requires the space occupied by CL&P's transformer for railroad purposes, CL&P planned to remove its transformer from Sasco Creek Substation by no later than 2012. (CL&P 1, Vol. I, p. G-5; CL&P 1, Vol. II, Exh. 10)
- 39. In May 2007, CL&P also installed a temporary 20-MVA, 27.6 to 13.8-kV power transformer at Weston Substation to address future overloads there and to provide back-up to Greens Farms Substation. (CL&P 1, Vol. I, p. G-5)
- 40. All of these measures are temporary to alleviate the strain on Greens Farms Substation and to keep the system operating in a reliable manner but these measures do not address load growth in Westport due to increased demand for electricity. (CL&P 1, Vol. I, pp. G-5-G-6)
- 41. Peak electric demand increased substantially from 2004 to 2006 for the load serving Westport. Based on conservative planning projections of 2% increases per year, peak demand will increase as illustrated in revised Table G-2 below:

Table G-2: Estimated Peak Electric Demand in MVA (Revised)							
	(Peak)	Est	Est	Est	Est	Est	Est
Substation	2006*	2010	2011	2012	2013	2014	2015
Greens Farms	17.40	17.75	18.10	18.47	18.83	19.21	19.60
Sasco Creek	11.30	11.53	11.76	11.99	12.23	12.48	12.73
Westport**	17.60	14.95	15.25	15.56	15.87	16.18	16.51
Compo	40.80	44.62	45.51	46.42	47.35	48.29	49.26
Weston	27.30	27.85	28.40	28.97	29.55	30.14	30.74
Total	114.40	116.70	119.02	121.41	123.83	126.30	128.84
*Projections based on highest 5-year peak and 2% annual load growth							
**2010 estimate reflects 3 MVA off-load of Westport 13.8 KV due to overload							

(CL&P 1, Vol. I, p. G-6; CL&P 5, p. 13)

- 42. The Sherwood Substation would allow for a permanent solution that would replace the temporary measures spread throughout the existing substations and would be consolidated nearer to the load. The Substation would compensate for the loss of the Sasco Creek Substation to Metro–North/DOT use, replace the 50 year old space-constrained Greens Farms Substation and address future demand growth in Westport. (CL&P 1, Vol. I, pp. G-5-G-7, G-9)
- Construction of the proposed Sherwood Substation would add capacity to the system through the installation of two 60-MVA, 115- to 13.8-kV, bulk-power transformers. This new 13.8-kV distribution power source at the Sherwood Substation would add 47.1 MVA of new capacity to the distribution system. (CL&P 5, p.10)

- 44. The Sherwood Substation would provide much needed capacity and strengthen the reliability of electric service throughout Westport in the following ways:
  - provide a new 115- to 13.8-kV bulk power substation located closer to the load;
  - replace the aging 27.6- to 13.8-kV Greens Farms Substation;
  - eliminate the need to rely on temporary measures including the temporary transformers at Sasco Creek and Weston Substations;
  - reduce distribution feeder length thereby creating fewer opportunities for prolonged outages resulting from damage to feeders caused by weather events, motor vehicle accidents and animal contacts;
  - create an effective back-up so that power could be restored instantaneously if one transformer failed; and
  - utilize new, state-of-the-art equipment. (CL&P 1, Vol. I, p. G-7)
- The proposed project received technical approval from ISO-NE (New England's independent system operator) on January 7, 2009. (CL&P 5, p. 11 & Attach. 2)
- This project was identified in the Connecticut Siting Council Review of the Connecticut Electrical Utilities Ten-Year Forecast of Loads and Resources, published since 2007 (in 2009 by reference to the 2008 report). (CL&P 1, Vol. I, p. A-4)

## **System Alternatives**

47. CL&P considered alternative system upgrades to meet the electrical demands in the Town of Westport but determined that the alternatives evaluated would not produce a distribution system as reliable and flexible as the system that will result from the proposed Sherwood Substation, nor would the alternatives eliminate the need for the Sherwood Substation to meet projected system capacity requirements. None of the alternatives examined would provide a permanent solution to the reliance on temporary equipment. (CL&P 1, Vol. I, p. G-8; CL&P 5, p. 11)

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- 48. The Sherwood Substation is the preferred solution based, in part, on the following:
  - Proximity to existing 115-kV transmission system;
  - Proximity to customer load; and
  - Proximity to existing distribution feeders. (CL&P 1, Vol. I, p. G-8)
- 49. The following existing substations were examined and all were unsuitable because of site and system constraints as shown in Table G-4:

**Table G-4: System Alternative Summary Table** 

Substation	Capacity	Site Constraints	System Constraints
Greens Farms	25 MVA	No room for expansion	Distribution feeder positions, substation capacity, supply feeder capacity
Westport 4.8 kV 13.8 kV	6.75 MVA 12.5 MVA	No room for expansion	Distribution feeder positions, substation capacity, supply feeder capacity
Compo	55 MVA	No room for expansion	Distribution feeder positions
Weston 13.8 kV 27.6 kV	45 MVA 82 MVA	Little room for expansion	Distance from load center
Sasco Creek	17.9 MVA	Temporary location (ConnDOT property)	NA

(CL&P 1, Vol. I, pp. G-9-G-11)

50. Distributed Generation (DG) is not a viable alternative to the proposed Sherwood Substation. For DG proposals to reduce load, an adequate number of generators would be needed, reliable interconnections to the distribution network would need to be established, and integration with multiple power supply sources carefully planned. In addition, protective devices on distributed generators and CL&P's distribution feeders would be required. Currently, Westport's customer base

- does not meet this profile, and there are no known DG projects under consideration by Westport customers. (CL&P 1, Vol. I, pp. G-11-G-12)
- 51. Demand response programs have produced limited results in reducing peak demand as noted in Table G-5:

TABLE G-5: CL&P Demand Response - Westport

<b>Demand Response</b>	2006	2007	<u>2008</u>
Summer Peak MW	0.35	0.96	0.64

(CL&P 1, Vol. I, p. G-12)

- 52. The Department of Public Utility Control, as part of Connecticut Public Act 05-01, An Act Concerning Energy Independence administered a program to award monetary grants for capital costs of customer-side distributed resources to support the development of DG and emergency generation projects but these grants are no longer available. (CL&P 1, Vol. I, p. G-13)
- CL&P offers a number of energy efficiency programs to both its residential and commercial/industrial customers that include conservation and load management that incorporates a combination of incentive programs through the Connecticut Energy Efficiency Fund (CEEF). (CL&P 1, Vol. I, p. G-14, CL&P 1, Vol. II, Exh. 2; CL&P 5, pp.14-16)
- 54. CL&P develops and manages an array of traditional energy efficiency and Demand-Side Management (DSM) programs statewide through the CEEF. In the Westport area, the most recent summer peak savings achieved through residential, commercial and industrial DSM (Energy Efficiency) Programs are shown in Table G-7 below:

TABLE G-7: CL&P Energy Efficiency

2006	2007	2008	Grand Total
1,933,881	1,560,983	1,647,794	5,142,658
31,234,174	19,330,389	17,747,476	68,312,039
0.544	0.478	0.136	1.158
\$298,061	\$933,751	\$380,559	\$1,612,371
	1,933,881 31,234,174 0.544	1,933,881 1,560,983 31,234,174 19,330,389 0.544 0.478	1,933,881     1,560,983     1,647,794       31,234,174     19,330,389     17,747,476       0.544     0.478     0.136

(CL&P 1, Vol. I, p. G-14)

Measures implemented under the Energy Efficiency, Demand Response and Distributed Generation programs in 2008 reduced peak demand in the Westport area by the following:

1.	Connecticut Energy Efficiency Fund		1.2 MW
2.	Demand Response		0.6 MW
3.	Distributed Generation		<u>0 MW</u>
		Total	1.8 MW

(CL&P 1, Vol. I, p. G-14; CL&P 5, p. 16)

- Participation in these programs declined from 2007 to 2008 and the economic incentives previously provided through the Department for Distributed Generation are no longer available. (CL&P 1, Vol. I, p. G-15; CL&P 5, p. 16)
- 57. These programs combined represent approximately 2% of the capacity provided by the Substation. (CL&P 1, Vol. I, p. G-15; CL&P 5, p. 16)
- Based on CL&P's alternatives analysis, construction of a new bulk substation in Westport is the best solution to create a more reliable electric distribution system in Westport with capacity to meet future demand. (CL&P 1, Vol. I, p. G-15; CL&P 5, p. 16)

## **Site Alternatives**

- 59. Six site locations in Westport were identified and evaluated by CL&P to determine their potential viability for development of the new Substation. Five of those locations were rejected and the reasons for their rejection are as follows:
  - a. Terminus of Post Office Lane (between I-95 and Metro-North Railroad): site would require connections to existing distribution network and bundling several new overhead circuits onto one existing line on Greens Farms Road; parcel is not large enough for a third transformer position for locating a mobile transformer in emergency circumstances; potential wetland impacts would exist; parcel would require an access/utility easement from third party and that easement is not available; and parcel is not available for purchase.
  - b. Interstate Right-of-Way, north of Sherwood Island Connector: site is located west of load pocket; site would have poor connection possibilities to existing distribution network; substantial earthwork would be required for Substation development; and site has limited access from the highway ramp.
  - c. West of existing Sasco Creek Substation: site was constructed for the sole purpose of supplying traction power to Metro-North; DOT will

- not allow permanent use of the Sasco Creek site for another purpose; several neighboring residences are located in close proximity to site.
- d. Saugatuck Avenue at Exit 17, south side of I-95: connection to existing transmission circuits would require extensive new infrastructure; numerous neighboring residences are located immediately to the south of the site; development of the site would impact operation of an existing business.
- e. Wooded Lot across from #247 Greens Farms Road: connection to the existing 115-kV circuit would require extensive new infrastructure; the site would have poor connection possibilities to the existing distribution network; substantial clearing and earthwork would be required; and several residences are located in the immediate area.

(CL&P 1, Vol. I, p. I-1-I-8)

60. A comparative analysis of the sites considered for the Project provided in Table I-1 below. The Table confirms that the proposed site at 6 New Creek Road is the most suitable location for locating the Substation.

Table I-1: Sherwood Substation Site Alternative Analysis Matrix

Review Criteria	Location 1 6 New Creek Road Proposed Site	Location 2 Terminus of Post Office Lane	Location 3 Interstate Right-of- Way	Location 4 West of Sasco Creek Substation	Location 5 Saugatuck Avenue	Location 6 Wooded Lot Greens Farms Road
Close Proximity to Distribution Load Area and Existing Feeders	1	√ 		<b>V</b>		
Close Proximity to Existing Transmission Circuits	V	1		V		,
Ease of Access	$\sqrt{}$			<b>√</b>	√ 	√ 
Minimal Earthwork Requirements		V		V	1	
Sufficient Size and Shape	1		√	√	√	√
No Zoning and Adjacent Land Use Constraints	1		1			
No Environmental Constraints	<b>√</b>			√	√ 	1
Sufficient Distance from Public Watershed/ Aquifers	V	V		√		<b>√</b>

(CL&P 1, Vol. I, p. I-9)

## **Description of Proposed Project**

- The 2.56-acre Property is owned by CL&P and consists of a residential house parcel located at 6 New Creek Road. The Property is zoned "AAA", which is defined by the Town of Westport as a "Residential District." (CL&P 1, Vol. I, p. F-1; CL&P 1, Vol. I, p. H-1)
- Land use surrounding the Property consists of an interstate highway, railroad, residential and undeveloped properties. The site is located immediately south of a multi-use transportation and energy infrastructure corridor, consisting of two existing overhead 115-kV transmission lines, railroad catenary structures, four railroad tracks, three commuter parking lots and I-95. The existing commuter railroad is located along the northern Property boundary at a grade approximately 10 to 12 feet above the Property. The nearest residence is 479 feet from the proposed Substation location. (CL&P 1, Vol. I, p. H-1; CL&P 1, Vol. I, Fig. H-2; CL&P 1, Vol. I, Fig. A-2; CL&P 1, Vol. I, p. M-2; CL&P 1, Vol. II, Exh. 1, C-1)
- 63. The Substation would be accessible from New Creek Road and would be located to the south of the existing overhead transmission line and railroad corridor. Two 115-kV circuits (#1130 & #1890) exist within this corridor. The Substation would occupy an irregularly shaped area of 21,370± square feet (measuring approximately 137 feet by 160 feet at its longest dimensions) to be covered with a trap rock surface and secured by a seven-foot high chain link fence topped with one foot of barbed wire (three strands). The Property would accommodate the construction and operation of the Substation while allowing adequate space for extensive landscaping. (CL&P 1, Vol. I, p. F-1)
- At present, the 1130 and 1890 circuits are routed west to east with respect to the Property. The centerline of the 1890 circuit is approximately 35 feet to the north of the Property's northerly border and the centerline of the 1130 circuit is approximately 100 feet to the north of the Property's northerly border. The existing 1890 circuit would be rerouted into the Substation. The segment of the existing 1890 circuit to the east of the Property would be renamed the 1578 circuit; the remaining segment of the existing circuit to the west of the Property would remain the 1890 circuit. (CL&P 1, Vol. I, p. F-1)
- 65. Two new steel monopoles similar in height to the transmission structures currently occupying the transmission line corridor will be installed to connect the Substation to the existing 1890 circuit. (CL&P 1, Vol. I, p. F-3)
- 66. The interconnections between the Substation and the new transmission line poles would be accomplished by installing two new line-terminal structures (approximately 50 feet in height) within the Substation. (CL&P 1, Vol. I, p. F-3)

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- The Substation equipment would include a circuit breaker, seven disconnect switches, five circuit switchers, two 60-Megavolt-Ampere (MVA) power transformers that would step down the voltage from 115 kV to 13.8 kV, a third transformer position would be provided to accommodate a temporary, mobile transformer for emergency conditions, four metal switchgear enclosures, each approximately 21 feet long, 14 feet wide and 14 feet high, to provide the switching equipment, relaying and control equipment as well as the battery and charger associated with the distribution equipment, a metal control enclosure, approximately 48 feet long by 14 feet wide by 14 feet high, to be installed at the east end of the Substation to house the protective relaying and control equipment as well as the battery and charger associated with the transmission equipment. (CL&P 1, Vol. I, p. F-3)
- 68. A new, approximately 15-foot wide access drive originating from New Creek Road to the Substation would be established in the eastern portion of the Property. The existing residential driveway would be used during construction and ultimately eliminated and its associated pavement removed. The existing residence located on the Property would also be removed as part of the project. (CL&P 1, Vol. I, p. F-3; CL&P 1, Vol. II, Exh. 1, Site Plan Drawings)
- 69. Development of the Substation requires protective relay system changes within the existing control enclosures at Norwalk Harbor, Glenbrook, and Sasco Creek Substations. These upgrades are required for the safe and proper operation of the Sherwood Substation. (CL&P 1, Vol. I, p. F-4)
- 70. The construction phase of the project is expected to take approximately 12 to 18 months, with a tentative in service date of January 2012. (CL&P 1, Vol. I, pp. K-6, N-1)
- 71. The Substation equipment and supporting infrastructure would have a service life of approximately 40 years and would be capable of capacity increases during this time. (CL&P 1, Vol. I, p. F-4)
- 72. The estimated cost for the siting, design, and construction of the Substation and supporting infrastructure is approximately \$20.1 million. (CL&P 5, p. 7)

## **Environmental Considerations**

- 73. The development of the Sherwood Substation would not have any long-term adverse effects on the existing environment and ecology, nor would it affect the scenic, historic and recreational values of the vicinity. (CL&P 1, Vol. I, p. K-1; CL&P 1, Vol. I, Fig. K-1)
- 74. The Sherwood Substation would be designed to applicable CL&P, industry, State, and local codes and standards and would not pose a safety concern or create undue hazard to the general public. The Substation would not consume any raw materials, produce any by-products and would contain appropriate signage

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- alerting the general public of the dangers of high voltage associated with the Substation, and be surrounded by a seven-foot tall chain-link fence topped with one foot of barbed wire (three strands). CL&P has no plans to store fuels or hazardous materials at the Substation. (CL&P 1, Vol. I, p. K-1)
- 75. The project is consistent with local, State, and federal land use plans and has been designed to meet the intent of local land use regulations. (CL&P 1, Vol. I, p. K-1)
- 76. The Sherwood Substation would benefit the community by improving electrical service for existing development in the Town and surrounding areas, as well as supporting additional development through enhanced reliability and the capacity to serve additional load. (CL&P 1, Vol. I, p. K-3)
- A new 15-foot wide paved driveway would be installed to serve as the sole entry/egress from New Creek Road to the Substation. A bituminous concrete apron would be provided at the entrance of the Property along New Creek Road, south of the railroad overpass and west of the entrance to the Metro-North commuter station parking lot. The existing driveway would be used only during construction; anti-tracking mats would be installed to prevent tracking of soil onto local streets. (CL&P 1, Vol. I, p. K-4)
- 78. No direct impacts to on-site wetlands would occur as a result of construction or operation of the Substation. No portion of the 21,370+ square foot Substation fenced compound would be located within wetlands, and none of the Substation components/structures would be situated within 50 feet of the on-site wetlands. A small section of the Substation's northwest corner (consisting of trap rock and fencing) would fall within 50 feet of the wetlands. No impacts to the tidal wetland system located across New Creek Road would occur. (CL&P 1, Vol. I, p. K-4)
- 79. The Substation would occupy what is currently a developed residential building lot. Construction of the Substation would require the removal of several existing trees and landscape shrubs, but would not have significant adverse effects on vegetation, wildlife or habitat values. (CL&P 1, Vol. I, p. K-5)
- 80. CL&P estimates that approximately 70 trees that are six inches or greater at breast height may be removed primarily within the footprint of the Substation while preserving the line of trees along New Creek Road and other larger trees on the Property. (CL&P 1, Vol. II, Exh. 1; CL&P 4, Q001; Tr.1, p. 26)
- Any effects on wildlife and wildlife habitat would be minimal and limited to temporary disturbances during construction. The Property is currently used by wildlife species that are typically generalists, commonly found in the area, and adaptable to habitat modifications. (CL&P 1, Vol. I, p. K-5)
- 82. The wetland habitat found on the Property would remain intact and the adjoining upland area to its east would be enhanced, ultimately increasing its wildlife value. (CL&P 1, Vol. I, p. K-5)

- 83. Based on the habitat types found on the Property and surrounding area, species diversity and abundance should be maintained after the Substation is completed. (CL&P 1, Vol. I, p. K-5)
- No state or federally endangered, threatened or special concern species have been identified on the Property. Based on current the DEP NDDB review criteria, the proposed project does not present a potential conflict with a listed or significant natural community. CL&P received confirmation in writing on June 19, 2008 that no known extant populations of federal or state endangered, threatened, or special concern species occur at the Property. (CL&P 1, Vol. I, p. K-5; CL&P 1, Vol. II, Exh. 4)
- 85. There are no known public water supply wells located in the vicinity of the Property. (CL&P 1, Vol. I, p. K-6)
- 86. The transformers at the Sherwood Substation would contain mineral oil. However, this equipment would have secondary containment and accidental spill prevention provisions in place. Based on these design considerations, the project would have no adverse environmental effect on the water resources. (CL&P 1, Vol. I, p. K-6)
- 87. Based on the consultation with the State Historic Preservation Office, the Property lacks historical and architectural importance. As a result, no impacts to historic/cultural resources are anticipated. (CL&P 1, Vol. I, p. K-6; CL&P 1, Vol. II, Exh. 5)
- 88. After the Substation is placed in service, infrequent impulse noise would be generated from switching and circuit breaker opening and closing. The impulse noise levels and steady-state transformer noise levels are not expected to exceed the levels permitted at the Property line by the DEP's noise control regulations. (CL&P 1, Vol. I, p. K-6)
- 89. In general, construction hours would be from 7 a.m. to 5 p.m., Monday through Friday. Site preparation, including grading and installation of foundations, would take place during the initial six months of construction and involve the use of earth-moving equipment and construction vehicles. (CL&P 1, Vol. I, p. K-6)
- 90. The installation and testing of equipment would take approximately nine months and would involve the use of cranes to unload and install structural elements and large equipment. The installation of the 115-kV line and Substation terminal structures, interconnection of the supply lines to the Substation, and connections to the distribution system would occur outside of normal work hours because these activities necessitate taking critical transmission and/or distribution equipment out of service. As a result, this work would be scheduled for off-peak electrical demand hours and coordinated with the Town. (CL&P 1, Vol. I, pp. K-6-K-7)

- 91. Although portions of the Site are located within the 100-year floodplain and 500-year floodplain, the activities associated with the Substation would be located entirely outside of these areas. (CL&P 1, Vol. I, p. K-7)
- 92. The proposed Substation would meet or exceed the State Building Code, which includes requirements concerning seismic loading, wind loading, and snow and ice loadings, among others. (CL&P 1, Vol. I, p. K-7)
- 93. The Sherwood Substation would have low-level lighting for safety and security purposes. These lights would be recessed or activated manually to minimize visual effects at night. Lighting would not affect existing residences in the vicinity of the Property. Lighting would be available within the Substation yard to facilitate work at night under emergency conditions and during inclement weather. Lighting would not extend beyond the limit of the fenced area. (CL&P 1, Vol. I, pp. K-7, L-4; CL&P 1, Vol. II, Exh. 1, Reference Drawings Concept Planting Plan)
- 94. No adverse effects are anticipated on natural resources occurring at and/or nearby the Property. (CL&P 1, Vol. I, p. K-7)
- 95. The site falls within the Coastal Area Management Boundary, as defined by CGS § 22a-94 (a). No tidal wetlands/watercourses or coastal resources are located on the Site. (CL&P 1, Vol. I, p. K-8)
- 96. The on-site freshwater wetland is not subject to tidal influence due to its elevation. The project would not result in adverse impacts to coastal resources as defined in the Connecticut Coastal Management Act. (CL&P 1, Vol. I, p. K-8)

## **Visibility**

- 97. The project is located approximately 1,000 feet from the nearest coastal resource and would not degrade the visual quality of the area. The project consists of demolishing an existing residential structure and constructing the Substation in the eastern portion of the site. The Substation would be located at a ground elevation approximately 4 to 8 feet lower than what exists today in the applicable portion of the site. Planned landscaping would incorporate earthen berms and extensive vegetative screening, resulting in the lower portions of the Substation being largely out of view. (CL&P 1, Vol. I, p. K-10)
- 98. CL&P's design of the Substation promotes its compatibility with the surrounding environment through the collaboration of CL&P's staff, consultants and Town staff. The design includes the input of the Town Conservation Director and ConComm, cooperation with the abutting neighbor to the west, and input from Greens Farms Academy. (CL&P 6, p. 9)
- 99. CL&P's combined design elements will create a finished project that reasonably blends into the existing landscape and is consistent with surrounding land uses. The Substation addresses visibility issues as follows:

- Substation footprint elevation that will be lower than existing grade by as much as nearly nine feet in some locations, which when combined with landscaping, would result in the perimeter fencing and lower portions of internal equipment being largely out of sight;
- berms around portions of the Substation to further enhance the "sunken" effect of the Substation footprint;
- a comprehensive landscaping plan that effectively screens a substantial portion of the site, particularly as the plantings mature;
- the relocation of the driveway so as to minimize direct lines of sight into the Substation from locations south;
- the preservation of mature trees along New Creek Road to the extent feasible; and
- plantings for further screening on the adjoining property to the west. (CL&P 6, p. 10; CL&P 1, Vol. II, Exh. 1, C-3 and Reference Drawings Concept Planting Plan; Tr.1, pp. 9-10)
- 100. The Substation would be visible from the thruway. Other than the pole structures leading into the Substation from the passing transmission lines, the Substation would not be visible from Greens Farms Road. (Tr. 1, pp. 92-94)

## **Magnetic Field Levels**

- The project has been designed in a manner consistent with the Council's *Electric* and Magnetic Fields Best Management Practices for the Construction of Electric Transmission Lines in Connecticut, dated December 14, 2007 (BMP). (Council Administrative Notice Item 3; CL&P 1, Vol. I, p. M-12)
- At and beyond the Property boundaries of the Substation, the predominant existing sources of power-frequency magnetic fields (MF) are the 1130 and 1890 transmission line conductors, which are routed west to east with respect to the Property. The centerline of the 1890 Line's conductors, which are mounted on the railroad catenary structures, is approximately 35 feet to the north of the Property's northerly border; the centerline of the 1130 Line's conductors is approximately 100 feet to the north of the Property's northerly border. The two circuits as they are constructed and used today utilize phasings such that the canceling interaction of their power-frequency MF is optimum. (CL&P 1, Vol. I, p. M-2)
- 103. The currents on the 1130 and 1890 transmission circuits would remain predominantly east to west but would change slightly because distribution loads would be moved from the new Substation. (CL&P 1, Vol. I, p. M-9)

# 104. Projected MF levels are shown in Table M-2 below:

Table M-2: Projected Magnetic Field Levels in 2017

	Line West	
Location along Perpendicular Path – Line West	Magnetic Field (mG) Levels at Projected Seasonal Peak Circuit Currents in 2017	Magnetic Field (mG) Levels at Projected Seasonal Peak Day Average Currents in 2017
300 feet north of the northernmost transmission circuit (1130)— North of the Property	0.55	0.48
Beneath northernmost transmission circuit (1130)	14.66	12.32
Beneath southernmost transmission circuit (1890)	16.79	13.72
300 feet south of the southernmost transmission circuit (1890) – West of the Property	0.28	0.24
	Line East	
300 feet north of the northernmost transmission circuit (1130) – North of the Property	0.57	0.49
Beneath northernmost transmission circuit (1130)	13.55	11.44
Beneath southernmost transmission circuit (1578)	11.01	9.18
300 feet south of the southernmost transmission circuit (1578) – East of the Property	0.25	0.21

(CL&P 1, Vol. I, p. M-11)

105. The fence of the Substation would be approximately 40 feet at its closest point from any Property line, specifically the northerly Property line. At this distance, and because the line conductors and electric railroad lines are sources of MF on the north side, the Substation equipment within the fenced area of the Substation would not noticeably contribute to any change in MF along the Property lines. (CL&P 1, Vol. I, p. M-9)

- 106. There would be a small change to the existing MF levels at points on and beyond the Property lines due to the change in loads flowing in the looped transmission line into the Substation. (CL&P 1, Vol. I, p. M-9)
- 107. The house located at 1 Beachside Avenue that is to the west of the proposed Substation, at varying times, would experience a slight increase or decrease in MF with potential increase likely to be between very close to zero to as much as one mG, because of its proximity to the transmission lines. (Tr. 1, pp. 43-45; CL&P 1, Vol. I, Fig. H-2; CL&P 5, p. 22)
- 108. The properties along Maple Lane, that are 500 feet southeast of the Substation, would experience very minor fluctuations in MF or nothing noticeable at all. (Tr. 1, pp. 44-45; CL&P 1, Vol. I, Fig. H-2)
- 109. CL&P's design of the Substation is consistent with the BMP which incorporates field management practices as follows:
  - The Substation has been located very close to an existing transmission line so that the length of Substation entry spans is very short.
  - Optimum transmission circuit phasing would be retained to enhance magnetic field cancellation. Under the modeled system conditions specified in the BMP, the magnetic field levels would increase at peak load by 0.08 mG at a point 300 feet south along Line West, and decrease by 0.12 mG at this same point during the seasonal peak average load, five years after the Substation is placed in service.
  - The Substation equipment has been located at a sufficient distance from Property lines so that this equipment makes no noticeable contribution to MF levels along these Property lines.

(CL&P 1, Vol. I, p. M-12; Tr. 1, pp. 14-15; Council Administrative Notice Item 3)

## Safety and Reliability

- 110. Construction of the Substation would be performed in full compliance with the standards of the National Electrical Safety Code. (CL&P 1, Vol. I, p. J-1)
- 111. In the event of equipment failure, protective relaying equipment would remove the equipment from service, thereby protecting the public and other equipment within the Substation. (CL&P 1, Vol. I, p. J-1)
- 112. The Substation would be remotely controlled and monitored using digital metering systems and a Supervisory Control and Data Acquisition system (SCADA) connected to the Connecticut Valley Electric Exchange (CONVEX) System Operator. This equipment would be housed in a weatherproof,

- environmentally-controlled electrical equipment enclosure. (CL&P 1, Vol. I, pp. J-1-J-2)
- 113. CL&P incorporates IEEE/ANSI and NFPA standards for fire protection in its substation design and operates these facilities to minimize the impact of fire, in the unlikely event it occurs. (CL&P 1, Vol. I, p. J-2)
- 114. CL&P also trains its employees and the local fire department on the safe methods to deal with a substation fire. (CL&P 1, Vol. I, pp. J-2, M-13)
- 115. CL&P met with law enforcement and emergency response personnel in Westport to discuss the Substation and coordination of efforts to protect its security. (CL&P 1, Vol. I, p. M-13; CL&P 5, p. 23)
- On November 5, 2009, project team members, along with CL&P's Southern Division Safety Administrator, met with First Selectman Joseloff, Police Chief Al Fiore, and Assistant Fire Chief Jonathan Gottfried at which time CL&P provided a briefing on the lay-out of the Substation and site features. (CL&P 1, Vol. I, p. M-13; CL&P 5, p. 23)
- 117. The perimeter of the Substation would be enclosed by a seven-foot high chain link fence topped with an additional foot of three strands of barbed wire to discourage unauthorized entry and/or vandalism. Appropriate signage will be posted at the Substation alerting the general public of high voltage facilities located within the Substation. (CL&P 1, Vol. I, pp. J-2, M-13)
- 118. The Substation entrance would be gated and locked. (CL&P 1, Vol. I, pp. J-2, M-13)
- 119. CL&P would install sumps to serve as oil-spill containment reservoirs around the proposed transformers. The sumps would be sized with sufficient capacity to contain a spill in the event of an inadvertent release of oil. CL&P plans to install an Imbiber Beads Drain Protection System® for the sump, similar to containment systems installed at other CL&P substations. (CL&P 1, Vol. I, p. J-2)

## Public Outreach/Town Outreach

- 120. CL&P conducted public outreach efforts including letters to abutters and immediate neighbors with information regarding local land use meetings, CL&P's telephone number and e-mail contact, hung door hangers at Increase Lane houses and sent a letter to an owner's home address in another town (CL&P 1, Vol. II, Exh. 10; Tr. 1, pp. 48-49, Gagnon)
- 121. CL&P held meetings with Greens Farms Association and Greens Farms Academy. (CL&P 1, Vol. I, p. R-1)

- 122. CL&P filed a preliminary MCF with the First Selectman, ConComm, Department of Public Works, and Town Librarian. (CL&P 1, Vol. I, p. Q-3)
- 123. Certified letters were sent by CL&P to abutters and nearby residents regarding the application filing. (CL&P 1, Vol. II, Exh. 9)
- 124. CL&P met with Turkey Hill South Road neighbors on a Sunday to address their concerns. (Tr. 2, p. 12, Burke)
- 125. CL&P participated in meetings with town agencies, meeting agendas were posted, public hearings held, and all meetings at Town Hall were televised, including meetings with the ConComm and P&Z. (CL&P 1, Vol. I, Sec. O; Tr. 2, pp. 49-50, Dubuque)

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> Figure 1 Site Location

Figure A-2: Site Location Map, Aerial



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> Figure 2 Site Layout

(CL&P 1, Vol. II, Exh. 1, C-3)

