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February 14, 2008

Daniel F. Caruso, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: **DOCKET NO. 352** The Connecticut Light and Power Company application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a proposed substation located at 264 Rood Avenue and 25 Shelley Avenue, Windsor, Connecticut.

Dear Chairman Caruso:

In connection with Docket No. 352, enclosed please find the original and twenty (20) copies of CL&P's pre-filed testimony of Kenneth B. Bowes and Michael Libertine. In addition, please find an updated list of items to be administratively noticed. Copies of these documents will also be filed electronically.

Very truly yours,

Robert S. Golden, Jr.

RGS/mkw
Enclosures
cc: Service List

STATE OF CONNECTICUT

SITING COUNCIL

THE CONNECTICUT LIGHT AND POWER COMPANY APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF A PROPOSED SUBSTATION LOCATED AT 264 ROOD AVENUE AND 25 SHELLEY AVENUE, WINDSOR, CONNECTICUT.	:	DOCKET NO. 352 FEBRUARY 14, 2008

DIRECT TESTIMONY OF KENNETH B. BOWES
REGARDING PLANNING MATTERS CONCERNING
THE PROPOSED ROOD AVENUE, WINDSOR, CONNECTICUT SUBSTATION

INTRODUCTION

Q. Please identify yourself and the other members of the panel who will respond to cross examination regarding planning and environmental matters concerning the proposed Rood Avenue Substation and related facilities (the "Project").

A. I am Kenneth B. Bowes, Vice President – Customer Operations, employed by The Connecticut Light and Power Company ("CL&P" or the "Company"). With me on this panel is NUSCO employee, Marcella Ferrara, Project Manager. Our resumes are attached as Exhibit A.

Q. Does the Company expect to call on any other personnel to respond to planning or environmental issues?

A. NUSCO employees, whose resumes are attached as Exhibit A, including Robert E. Carberry, Gregory J. Oberst, Kris Aberg, Peter Kozun and Scott Marotta, may

be called upon to respond to questions relating to specific siting, engineering, design or environmental topics. In addition, CL&P may call on Dr. William H. Bailey, Ph.D., Principal Scientist from Exponent, New York Office.

Q. What responsibility have you had in connection with the Application to the Siting Council?

A. I have supervised the preparation and submission of the Application and interrogatory responses with the assistance of Marcella Ferrara and Robert Carberry. The Application was compiled under our supervision by NUSCO staff, environmental consultants and others.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide an overview of the proposed Rood Avenue Substation. I will cover eight primary topics pertaining to planning matters:

1. Overview and General Location of the Project;
   1-A. Description of the Facility;
2. Line Connections;
3. Need;
4. Review of Siting Criteria;
5. Electric and Magnetic Fields;
6. Safety and Reliability;
7. Municipal Consultations;
8. Notices.

Further direct testimony on environmental matters concerning the Project will be provided by Michael Libertine of Vanasse Hangen Brustlin, Inc., CL&P's consultant.

1. OVERVIEW AND GENERAL LOCATION OF THE PROJECT

Q. Please describe the Project.

A. CL&P proposes to construct a bulk power 115- to 23-kilovolt ("kV") Substation ("Rood Avenue Substation" or "Substation") on its property located north of Rood Avenue and west of Shelley Avenue in Windsor, Connecticut ("Property"). The Project will add delivery-system capacity to serve the growing electric power demands in Windsor, a town that does not currently have its own bulk power substation source. By connecting a new 115- to 23-kV, 60-Megavolt-Ampere ("MVA") power transformer to an existing 115-kV transmission line and to the local 23-kV distribution system, CL&P will be able to meet Windsor's existing and foreseeable future service needs.

Q. Please briefly describe the existing service capabilities in Windsor.

A. Currently, CL&P's electric load in the Town of Windsor is served from four existing bulk power substations located in Bloomfield, North Bloomfield, Windsor Locks, and Northwest Hartford that lack the capacity and reliability to efficiently meet growing distribution system peak-load demands. A new bulk power substation in Windsor will create a more reliable system that will serve the growing needs of the Town while effectively alleviating loads on the existing substations.

Q. Please describe generally the location of the proposed Substation.

A. The proposed Substation is planned for an approximately 20-acre parcel of land in the southern portion of the Town near Interstate Highway I-91. The property is traversed by two existing 115-kV transmission lines, a 345-kV transmission line and is the site of a 23-kV distribution line switching station.

Q. How does the Company intend to access the proposed Substation?

A. The Substation would be accessible from Rood Avenue by a gravel access drive that extends northward from Rood Avenue to the existing switching station.

Q. Approximately how many vehicle trips to the site would occur per month?

A. Normally three to four.

1-A. DESCRIPTION OF THE FACILITY

Q. What will be the dimensions of the proposed Substation within the fence line?

A. The proposed Substation area within the fence will be approximately 219 by 137 feet.

Q. What do you propose for the surface of the Substation?

A. The surface area would be covered with trap rock.

Q. What equipment will be located within the proposed Substation?

A. The Substation within the fenced area would consist of:

- one 60-MVA power transformer,
- a disconnect switch for a future 60-MVA power transformer, if needed,
- a disconnect switch to be used for a mobile transformer,
- a metal-clad switchgear enclosure, approximately 27 feet long, 14 feet wide and 14 feet high will be installed to house the switching equipment for four 23-kV distribution feeders,
- a 48-foot by 14-foot by 14-foot high enclosure that will house protective relaying and control equipment,
- a 24-foot by 14-foot by 14-foot high enclosure that will house the Substation battery, charger and equipment used to operate the transmission portion of the Substation, and
- two new line-terminal structures, each of which would also support a 115-kV line disconnect switch.

In addition, two new wood-pole structures (structures #10142A and #10143A) for 115-kV line entries, each consisting of three wood poles would be located not far outside of the fenced area.

Q. Please describe the distribution feeders.

A. The metal-clad switchgear is designed for four 23-kV distribution feeders. Three feeders will be activated initially. Cables for each distribution feeder will exit the Substation via underground conduits and be connected to existing overhead distribution lines already on the Property. Consistent with the present feeder configuration, two of these initial feeders from the Substation will follow the general route of the access drive

to Rood Avenue, and one feeder will exit the Property on an existing right-of-way ("ROW") to the north.

2. LINE CONNECTIONS

Q. Could you briefly describe how the Substation will be connected with the 115-kV line?

A. The interconnections between the Substation and the existing 115-kV transmission line designated as the 1751 Line would be accomplished by separating this 115-kV line and looping it in and out of the Substation via short new line sections. This requires installing two new steel line-terminal structures within the Substation, each of which support a 115-kV line disconnect switch, and a connecting section of 115-kV bus within the Substation. In addition to the two new line-terminal structures inside the Substation, two new wood-pole structures, #10142A and #10143A (described earlier), will be added outside the Substation. Existing wood-pole structure #10143 would be relocated about 70 feet to the west. From new wood-pole structure #10142A a new section of line conductors would connect to one of the line-terminal structures located inside the Substation's fenced area. From the re-located wood-pole structure #10143 a new section of line conductors will be connected to the new wood-pole structure #10143A and then to the second line-terminal structure located inside the fenced area. Both new line sections will cross under the circuits' conductors supported on the steel-pole transmission line.

Q. Will the Substation have room to add more power transformers if needed in the future?

A. Yes, the Substation is large enough to accommodate two more 60-MVA power transformers.

Q. Will the Substation have the capability for an additional temporary transformer?

A. Yes. The Substation would also contain a 115-kV circuit switcher and a disconnect switch to facilitate the installation of a mobile power transformer in case the permanently installed transformer needs to be removed from service for a prolonged time.

Q. What is the estimated cost of the Project?

A. $13.8 million. Of that cost approximately $9.1 million will be allocated to transmission system costs and $4.7 million will be allocated to distribution system costs.

Q. What is the service life of the equipment?

A. In excess of 40 years.

Q. How long do you anticipate the construction phase of the project to take?

A. Construction is expected to take between 10 and 12 months.

Q. What is the tentative in-service date?

A. June of 2009.

Q. What will be the general operation of the proposed Substation?

A. The proposed Substation will operate on a 24-hour per day basis.

Q. Will staff be on site?

A. No, not normally. The equipment will be designed so it can be monitored remotely, and personnel will be dispatched for unusual or emergency situations and for routine/scheduled maintenance or inspections.

3. NEED

Q. What is the purpose of the Project?

A. The purpose of the Project is to increase electric distribution-system capacity and to improve reliability in Windsor by establishing a new bulk power substation in the Town of Windsor. Currently, the electric load in Windsor is served from four bulk power substations in other towns: Bloomfield Substation and North Bloomfield Substation located in Bloomfield; Windsor Locks Substation in Windsor Locks; and, Northwest Hartford Substation in Hartford. The current configuration, which relies on the sharing of Windsor's load by distribution feeders from these four substations, is not a viable long-term option for reliably meeting the Town of Windsor's growing peak-load demands. Development of the Rood Avenue Substation would effectively alleviate loads on the four existing substations by adding a new capacity source to the distribution

system. The addition of the Rood Avenue Substation to the distribution system, and the resultant load redistribution in Windsor, is essential for creating a stronger and more reliable distribution system.

Q What is the present situation in the Windsor area?

A. In the Windsor area, electric power demand has grown steadily. Since 1981 to 2005 the area has experienced a 53.6% kilowatt-hour increase.

Moreover, there is significant potential for additional industrial/ commercial development, specifically in the Pigeon Hill Road/Day Hill Road area of Windsor, further increasing peak loads and the need for a dedicated power source in the Town. A number of larger projects were recently completed and a number are planned or in various stages of construction within the Town of Windsor that will increase the projected load by 41 megawatts (MW) by 2010.

Q. How does this affect CL&P's ability to meet this new demand?

A. The demands of increased load growth have taxed the ability of the four existing substations to supply Windsor's growing needs and maintain service reliability. Interim measures to delay the need for a new facility have been nearly exhausted. For instance, the load on the Bloomfield Substation nearly reached the substation's permissible load rating of 120 MVA in 2006 and was projected to exceed this rating in 2007. To alleviate the immediate need, a Forced Load Transfer ("FLT") scheme has been instituted at the Bloomfield Substation using two separate 23-kV circuits. The FLT scheme allows the emergency transfer of approximately 14 MVA of load off of

Bloomfield Substation (to the North Bloomfield and Northwest Hartford Substations), thus increasing the permissible load rating of this substation by 14 MVA and providing the necessary time window to construct the Rood Avenue Substation for operation beginning in 2009.

Q. How will the proposed Substation improve reliability?

A. Construction of the proposed Substation in Windsor would add necessary capacity to the system through the installation of a 60-MVA, 115- to 23-kV, bulk power transformer. This new 23-kV distribution power source would allow peak loads to be reduced by 30.8 MVA at Bloomfield Substation and would add up to approximately 56 MVA of new capacity to the distribution system. Once the Rood Avenue Substation is operative and the Bloomfield Substation has been off-loaded, a new 23-kV circuit would be created from Bloomfield Substation to provide 11 MVA of permanent load relief for North Bloomfield Substation.

Based on current load forecasts and implementation of these proposed remedies, the next projected substation overload is anticipated to occur in 2012. Installing a third bulk power transformer at North Bloomfield Substation at that time would add 42 MVA of new capacity to the distribution system.

Q. Was the Substation identified in the Council's "Review of The Ten-Year Forecast of Connecticut Loads and Resources 2007-2016?"

A. Yes. This Project was identified in the *Connecticut Siting Council Review of the Connecticut Electrical Utilities Ten-Year Forecast of Loads and Resources,* published in 2005, 2006, and in 2007.

Q. What ISO New England (ISO-NE) approvals has the Project received?

A. On September 27, 2007, the Project received ISO-NE approval per *Section I.3.9 of the ISO New England Inc. Transmission, Markets and Service Tariff* for the Rood Avenue Substation.

Q. Did CL&P examine system alternatives?

A. Yes. CL&P considered alternative system options, but available options would produce a distribution system serving Windsor that is not as reliable and flexible as the system which will result from the proposed Project. None of the considered alternative systems would eliminate the need for the proposed facility to meet system capacity projections. Rood Avenue Substation is preferable to any of the alternatives explored because of its proximity to customer load, improved customer reliability with decreased feeder length and improved capability for temporary load transfers during feeder outages.

Q. Did CL&P explore other system alternatives such as distributed generation and demand response solutions?

A. Yes. None of these options would create a distribution system serving Windsor that is as reliable and flexible as one produced by the proposed Project and, ultimately, would not eliminate the need for the proposed facility to meet system capacity projections.

Q. Has CL&P undertaken efforts at conservation and load management both generally and in the specific areas driving the need for the Rood Avenue Substation?

A. Yes.

Q. What was your experience with load response programs in the area?

A. CL&P has contacted a number of customers in Windsor and surrounding towns to participate in the ISO-NE Load Response program. Below is a table summarizing the amount of interruptible load available from the Load Response Contracts that CL&P has signed with customers in Bloomfield, Hartford, Windsor and Windsor Locks.

Anticipated Load Reduction Savings for Load Response as of January 2008	
TOWN	kW
Bloomfield	814
Hartford	12,941
Windsor	7,574
Windsor Locks	3,221
TOTAL	24,550

Customers in the Towns of Bloomfield, Hartford, Windsor and Windsor Locks are currently served by the Bloomfield, North Bloomfield, Northwest Hartford and Windsor Locks Substations. If approved, the future Rood Avenue Substation would be available to serve customers in Windsor and relieve these other substations to serve their growing loads.

Q. Please give us a brief overview of other programs that are available to these customers to lessen demand.

A. In addition to the above-mentioned ISO-NE Load Response program, CL&P also offers an array of traditional energy efficiency or demand side management ("DSM") programs through the Connecticut Energy Efficiency Fund ("CEEF") to these residential, commercial and industrial customers.

Since 2005, CL&P estimates that through participation in these CEEF programs, customers in these four towns have achieved peak-demand savings of approximately 16 MW and will save approximately 1,480,235,609 kWh of energy over the life of the installed measures.

Q. Please tell the Council about CL&P's energy reduction efforts for residential customers.

A. CL&P Residential Energy Efficiency Programs include:

- The Home Energy Solutions ("HES") is a comprehensive in-home services program. HES includes advanced weatherization, duct sealing and the installation of energy efficient light bulbs. HES participants are offered coupons for the replacement of older less efficient appliances, incentives for insulation upgrades and energy

efficiency loans. The HES Program also provides incentives for the installation of high efficiency central air conditioning and heat pump systems including incentives for the proper installation of geothermal heating and cooling systems.

- The Weatherization Residential Assistance Partnership Program helps low-income customers (renters or owners) with conservation services.

- The New Construction Program helps achieve the greatest level of energy efficiency in new homes by offering rebates for high performance insulation, efficient equipment and lighting. Federal tax credits are leveraged to push homes to performance levels well beyond those required by current building codes and standards.

- The Room Air Conditioner Replacement Program offers incentives for the replacement of older, less efficient window air conditioners with new Energy Star models.

Q. Please explain CL&P's energy reduction efforts for commercial and industrial customers.

A. CL&P Commercial/Industrial Energy Efficiency Programs include:

- The Energy Opportunities Program to improve the energy efficiency of a customer's existing facility by capturing retrofit opportunities. The Program provides an initial, no-cost, facility walk-through assessment and, if necessary, a Focused Study.

- The Energy Conscious Blueprint Program to encourage customers to install energy-efficiency measures when they are most cost-effective -- at the time of construction. The Program pays the average incremental costs associated with more expensive, energy-efficient equipment.

In addition, CL&P:

- Provides turnkey, energy-saving products and services for small business customers. There are no up-front customer costs. CL&P pays substantial incentives for retrofit lighting measures and other eligible energy-efficiency measures.

- Helps customers understand how much demand (kW) they use at different times of the day to provide insight on potential load reduction

opportunities and development of a facility-specific strategy to reduce kW demand.

- Reduces energy consumption by providing technical assistance and incentives to perform waste-eliminating maintenance procedures on HVAC and industrial production systems.

- Provides an interest-free loan for the installation of electric energy-saving measures. Maximum loan is $100,000; minimum $5,000 with up to a six-year loan payback period.

Q. Please summarize CL&P's experience with conservation and load management programs in the area to be served by the Rood Avenue Substation.

A. In the Rood Avenue Substation area, CL&P continues to pursue conservation and load management programs throughout its system and offers programs to customers located in the areas that will be served by the Rood Avenue Substation.

Below is a table summarizing by town the summer peak kW savings achieved through residential, commercial and industrial DSM (Energy Efficiency) Programs.

Sum of all CL&P CEEF Summer Peak kW saved and accumulated over 36 months (2005, 2006, 2007)	
TOWN	kW
Bloomfield	1,908
Hartford	7,824
Windsor	4,893
Windsor Locks	1,838
TOTAL	16,463

Q. Could you briefly elaborate on Distributed Generation (DG), or Combined Heat Power, and Emergency Generation (EG) programs CL&P has embarked on in the area where the proposed substation is planned?

A. As part of Public Act 05-01, An Act Concerning Energy Independence, the Connecticut Department of Public Utility Control (Department) established a program to award monetary grants for capital costs of customer-side distributed resources (Grant Program) to install on-site generation, including EG and DG. The Grant Program is designed to reduce costs borne by Connecticut electric consumers that are associated with the region's competitive generation market.

The Grant Program has been a successful program. In CL&P's overall service territory, 191 customers filed applications with the Department, and 161 of the applications (representing 205 MW) have been approved. Specifically regarding projects in Windsor, eight projects (29 MW) have been approved by the Department consisting of six EGs (25 MW) and two DGs (3.9 MW). To date, none of the eight projects in Windsor have been completed. Also, CL&P is aware that three projects (representing 13 MW) may not continue in the Grant Program. Because the Department has terminated the EG portion of the Grant Program and because it is most likely that the best opportunities for the installation of DG projects have been proposed already, CL&P does not expect a significant level of future DG projects in this area.

Further, even if all of these customer-side projects planned for Windsor become operational, they would not diminish the pressing need for the Substation because they would not provide enough relief for the Town of Windsor. The two DG units, or base load units, will only reduce load during the peak periods by about 3.9 MW.

Moreover, the six EG commitments, which are required to participate in the ISO-NE Load Response program, will operate only when called upon during ISO-NE, Operating Procedure 4. Operating Procedure 4 is implemented only if the demand for electricity exceeds operable limits; and therefore, this Procedure serves to reduce system peaks for a limited number of hours only. As noted in an earlier answer, just the several industrial/commercial projects that have either recently been completed or are under construction in the Town of Windsor will increase load by more than 41 MW by 2010.

4. REVIEW OF SITING CRITERIA

Q. Please review the siting criteria that were used to identify the proposed Substation site.

A. The criteria used to evaluate site alternatives and to select the best location for the proposed Substation were: sufficient space for needed facilities; proximity to the existing 115-kV transmission line; central location with respect to local distribution (customer) load area; proximity to neighbors and other surrounding features; natural resource and cultural resource constraints; zoning and present land use; access from a public road; earthwork requirements based on existing topography, and availability of property, if not owned by the Company, for purchase or, at a minimum negotiable for purchase.

Q. Who was involved in the identification and evaluation process?

A. Company engineers and land planners conducted the identification and evaluation process.

Q. What other locations were considered?

A. As discussed in Section I of the Application, Volume 1 of 2, seven other locations were considered including different locations on the Company's existing Rood Avenue property.

Q. Why was this location selected?

A. This location was selected because it more fully satisfied the major siting criteria and effectively balances the Project goals while minimizing adverse environmental effects.

5. ELECTRIC AND MAGNETIC FIELDS

Q. What are Electric and Magnetic Fields?

A. Electric fields ("EF") are produced when a voltage is applied to a conductor. The level of an electric field at a given location near to a power line depends on the magnitude of the voltage applied, the spacing of the conductors and the distance from the conductors to the location.

Magnetic Fields ("MF") are produced when electric current flows on a conductor. The level of a magnetic field at a given location near to a power line depends on the magnitude of the current, the spacing of the conductors, and the distance from the conductors to the location.

EF and MF are collectively referred to as "EMF". Levels of each field fall off quickly as the distance from the conductor source is increased. Objects such as trees

or building walls weaken or block electric fields, but magnetic fields are not affected by most materials. In the case of parallel lines of circuit conductors, the levels of EF and MF also depend upon the phasing of the circuit conductors and the directions of current flow.

Q. Will the Rood Avenue Substation produce electric and magnetic fields nearby?

A. Yes. Fields produced by the Rood Avenue Substation equipment will decrease in level rapidly with distance, reaching very low levels at short distances beyond the fenced area. Typical background magnetic field levels in residences range up to 4 milligauss ("mG"), and the magnetic fields off the property of this proposed substation due to currents in the substation equipment will commonly be in this same range. Like most other substations, the highest levels of electric and magnetic fields around the perimeter fence of the Rood Avenue Substation will be produced by the transmission and distribution lines entering and leaving the substation.

Q. Do magnetic fields currently exist at the property lines of the proposed substation?

A. Yes. The predominant sources of existing power-frequency electric and magnetic fields ("EMF") at and beyond the boundaries of the Property are the existing transmission lines (115-kV circuits numbered 1751 and 1779 and 345-kV circuit numbered 395) and 23-kV distribution lines (circuits 3B11 and 3B12). The transmission lines cross boundaries of the Property at Rood Avenue and at Matianuck Avenue, and

they are near to the south boundary of the Property, which abuts the Hope Circle subdivision. A two-circuit 23-kV distribution line (circuit 3B11 and 3B12) coming east from Bloomfield Substation runs parallel to and north of these transmission lines, crossing the same property boundaries, and one of these distribution circuits also connects on site to a branch line which crosses over the north property line.

Q. Have you made any measurements of existing electric and magnetic field levels along the Rood Avenue property boundaries?

A. Yes. Measurements of electric and magnetic fields were taken along Rood and Matianuck Avenues in June, 2007. The locations of these EMF measurements are depicted on Figure M-1, Volume 1 of 2 of the Application. In accordance with an industry standard, these measurements were made at one meter above grade over a path on the Property that is perpendicular to the existing transmission lines. The result is called a lateral profile of magnetic fields. The highest magnetic field level recorded was 44.6 mG, and the highest electric field recorded was 2.23 kV/m at locations close to the centerline. During peak-load periods of a year, the line currents would likely be higher than they were during the measurement period in June, 2007, and so magnetic field levels would also be somewhat higher. These measurement results should be considered only as an example of the existing conditions on the Property.

Q. Have you made calculations to project what changes to the electric and magnetic fields at the boundaries of the property are anticipated?

A. The electrical equipment to be placed in the proposed Substation will be more than 140 feet away from the closest property line. At such a distance, the Substation equipment within the fenced area will not cause any noticeable change to existing electric or magnetic field levels along or beyond the property lines. Therefore, no model calculations were performed for the proposed Substation itself.

Q. Will there be any changes to the magnetic field levels, for any other reason, at points along the existing property boundaries?

A. Yes. The magnetic field will be higher or lower than background levels, at certain points along existing property boundaries due to physical changes that will be made to the 1751 transmission line circuit to interconnect it with the Substation. In addition, there will be changes to magnetic field levels at certain points along the existing property boundaries due to shifts in currents flowing on the 115-kV transmission circuits and the 23-kV distribution circuits.

CL&P made projections of the magnetic field levels on the property lines using projected peak-day line currents for a period extending through the year 2014, or five years after the Substation's in-service date. These projections were made both with and without the project. Generally, the magnetic field levels with the project in service will increase at the line crossing over Rood Avenue and decrease at the line crossing over Matianuck Avenue. (See the graphs on page M-11 and M-12 of Volume 1 of 2 of the Application.) The highest magnetic field level along the southerly boundary with Rood Avenue, with the proposed substation in service, is projected to be 65 mG directly under a 115-kV line. This level is higher than it would be without the substation in service.

The level without the proposed substation in service is projected to be 57.7 mG. The highest magnetic field level along the westerly property line on Matianuck Avenue, with the proposed substation in service, will be 41.7 mG. This level was calculated for a location directly under the combined 345/115-kV line and under the modeled peak-load condition. This level is lower than it would be without the proposed project in service. Using the same peak-load conditions, the highest magnetic field level without the project in service is 53.2 mG, directly under the 115-kV line.

Q. What effect will this have on abutting property owners?

A. Under the modeled peak-load condition in 2014, the abutting residence at 288 Rood Avenue is close enough to the existing transmission line to experience a 2.3-mG increase in the portion of the home nearest to the transmission line. All other abutting residences on Rood Avenue, Shelley Avenue, Hope Circle, Matianuck Avenue and Sunnyfield Drive will either experience no change or reduced magnetic fields from CL&P's facilities. Please see CL&P's response to the Council's Pre-Hearing Interrogatory, Set One, Question 11, for the details of this analysis.

Q. Has the Company considered the Council's EMF Best Management Practices?

A. Yes. The location of the Substation will incorporate field management practices which are consistent with the Connecticut Siting Council's Electric and Magnetic Field Best Management Practices For the Construction of Electric Transmission Lines in Connecticut December 14, 2007. The projected changes to

magnetic fields described above are also consistent with the requirements of this guideline.

Q. Has the Company complied with State and Federal EMF standards?

A. There are no State or Federal limits to electric or magnetic field levels at the property line of a substation; however, the IEEE International Committee for Electromagnetic Safety (ICES) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) have issued guidelines for long-term public exposures to magnetic fields. The ICES reference level is 9,040 mG; the ICNIRP reference level is 833 mG.

Q. How will the MF from the proposed substation compare with those guidelines?

A. The existing and proposed levels of magnetic fields at and beyond the property lines of the substation are well below these limits and typical for all similar substations. Based on these aforementioned guidelines and reviews of EMF research by the World Health Organization and other national and international scientific and health agencies, these magnetic field exposure levels will not pose a safety or health hazard to persons or property at or adjacent to the Property.

6. RELIABILITY AND SAFETY

Q. How would reliability be maintained?

A. The Substation would be equipped with measures to ensure continued service in the event of outages or faults on transmission or substation equipment. Protective relaying equipment would automatically detect abnormal system conditions (e.g., a faulted overhead transmission line) and would send a protective trip signal to circuit breakers to isolate the faulted section of the transmission system.

Additional protection will be provided by a Supervisory Control and Data Acquisition system ("SCADA"). The SCADA system allows for remote control and equipment monitoring by the Connecticut Valley Electric Exchange System Operator, and would be housed in a weatherproof, environmentally-controlled electrical enclosure. Moreover, the "loop-through" design configuration for the 115-kV line helps ensure operational reliability.

Q. Would the proposed Substation pose any safety risk to the public?

A. The proposed Substation would not pose a safety threat or create any undue hazard to the general public. The proposed Substation would be designed and constructed in accordance with all applicable national, electric utility industry, state and, to the extent practical, local codes. Importantly, the perimeter of the proposed Substation would be surrounded by a seven-foot high chain-link fence with an additional foot of barbed wire on top. A locked gate would be installed across the driveway entrance. Visitors would never be left alone on the Substation property. They would be accompanied by Company employees and required to adhere to prescribed safety

standards including, when required, the wearing of protective clothing and safety glasses. The steel support structures would be constructed using steel I-beams rather than utilizing a steel lattice type design. Structures constructed from steel I-beams are not easy to climb.

Q. What fire protection systems will be maintained at the proposed Substation?

A. CL&P incorporates Institute of Electrical and Electronic Engineers ("IEEE"), American National Standards Institute ("ANSI") and National Fire Protection Association ("NFPA") standards for fire protection in its substation design and operates these facilities to minimize the occurrence or impact of fire. CL&P also trains its employees and the local fire department on the safe methods to deal with a substation fire. The relay/control enclosure would be locked and equipped with fire extinguishers, and also equipped with smoke and heat detectors that would be monitored from a remote location. Fire/smoke detection would automatically activate an alarm at CONVEX and the system operators would then take appropriate action. Additionally, Windsor Fire Department officials attended several meetings that CL&P held with the Town of Windsor and such officials did not express any concerns with the Project.

Q. Could you describe worker protection at the proposed Substation?

A. In addition to the careful design and construction of the Substation in accordance with all applicable national, electric utility industry, state and, to the extent

practical, local codes, strict procedures and training for worker safety will be maintained when employees and contractors are on the site.

7. MUNICIPAL CONSULTATIONS

Q. Did you consult with officials of the Town of Windsor? If so, please provide details of those consultations.

A. Yes. On many occasions over the past eighteen months, CL&P has consulted with Town of Windsor officials, including the Town Manager, Peter P. Souza, and the Assistant Town Manager, Emily Moon, regarding the electric service provided by CL&P to the Windsor community and CL&P's desire to improve the reliability of that service. CL&P officials also met with the Chief Elected Official, Mayor Donald Trinks.

Q. Have local land-use agencies reviewed the Project?

A. Yes. CL&P filed "Location Review" submissions with the Windsor Inland Wetlands and Watercourses Commission (the "IWWC") and the Planning and Zoning Commission (the "P&Z"). Both the IWWC and the P&Z unanimously approved the proposed substation location. The IWWC approved the location on June 5, 2007 for placement of a substation on the Property and, on June 12, 2007, the P&Z also unanimously granted location approval to CL&P for development of a substation on the Property.

8. NOTICES

Q. What measures were undertaken to inform the public and the property owners in the vicinity of the Project?

A. As more fully described in Section Q of the Application, Volume 1 of 2, the legal notice for the Project was published on November 2, 2007 and November 5, 2007 in the Hartford Courant, a daily newspaper circulated in the Town of Windsor. Additionally, notices were sent by certified mail to all abutters and nearby owners.

CL&P representatives also conducted a door-to-door public outreach and mailed notices to the abutters and nearby neighbors of the Town meetings regarding this Project.

Q. Does this conclude your testimony?

A. Yes.

List of Exhibits

A. Witness Resumes

Kenneth B. Bowes

Vice President, Customer Operations

Connecticut Light & Power Company

Berlin, Connecticut

RESUMES

Kenneth B. Bowes
Vice President, Customer Operations
Connecticut Light & Power Company
Berlin, Connecticut

RESUME

Vice President, Customer Operations, 2008 - Present

- Responsible for the electric operations of the Connecticut Light & Power Company (CL&P) including the division operations, System Operations Center, new service, street lighting. Responsible for the meter operations for CL&P and Yankee Gas.

Director, Transmission Projects, 2004 - 2007

- Responsible for the project management of transmission projects in the three-state service area for Northeast Utilities. Development of the scope definition, budget and schedule for >$1 billion of transmission projects. Responsible for the administration of Transmission contracts and project cost & scheduling departments.

Director, Transmission Construction, Test & Maintenance, 2002 - 2004

- Responsible for the field construction, test and maintenance of the transmission system for Northeast Utilities. Development and staffing of the new 150 employee organization to assume transmission O&M functions including safety and environmental programs and compliance for the Transmission Business.

Director, Transmission & Distribution Maintenance, 1999 - 2002

- Responsible for the operation and maintenance of the transmission system, substation facilities, and the underground network system for CL&P. Process Owner of Maintenance for Northeast Utilities System. Direct management of 375 employees including: union line workers, electricians, general utility workers, underground cable splicers, test personnel, central maintenance workforce, and the Technical Services department. Provide expert testimony in lawsuits and regulatory proceedings.

Manager, Technical Services, 1997 - 1999

- For the Retail Business Group, manage a technical support department with staff of 55 employees and annual budget of $4 million. Responsible for: environmental operations, telecommunication network systems, process computers, mobile radio, paging, radio control, SCADA, telemetry systems, distribution automation, chemistry laboratory, corrosion control, and support services for the Northeast Utilities System.

Team Leader, Market Management Industrial Accounts, 1995 - 1997

- For the Retail Marketing Group, establish the strategic direction of the Industrial Market Segment, including the preparation of marketing plans, development of value-added services, strategic partnerships, sales and marketing materials, and direct sales support.

Senior Engineer and Section Lead - Laboratory Services, 1993 - 1995

- For the Technical Services Department, establish and define the section workload, assign, schedule and track activities and expenditures. Represent the electric utility industry on national technical committees and panels. Perform complex power engineering assignments requiring a high standard of professional technical competence including: new energy conservation technologies, power conditional equipment, electric vehicles, railway electrification, and transmission and distribution grounding studies.

Engineer - Laboratory Test, Standards Laboratory, 1984 - 1985, 1986 - 1992

- For the System Test Department, primarily responsible for power quality investigations to determine the causes of power system disturbances and their cost effective mitigation. Other duties include the metrology of the electrical standards used for the corporation. Inter-laboratory comparisons with the National Institute of Science and Technology, manufacturers, and other utilities.

Assistant Engineer - Area Operations, 1985-1986

- Performed engineering assignments in the support of the design, analysis, construction, operation, and maintenance of the electric distribution system. Customer relations skills were developed through the coordination and scheduling of customers, contractors, and other utilities for the installation and maintenance of electric service.

EDUCATION

M.S.E.E. 1990, Concentration in Telecommunications and Information Processing

- Rensselaer Polytechnic Institute, Hartford, Connecticut

B.S.E.E. 1984, Electronic Systems Option

- University of New Hampshire, Durham, New Hampshire
  Grant State Honor Scholarship

PUBLICATIONS

- IEEE Working Group on Nonsinusoidal Situations, "Practical Definitions for Powers in Systems with Nonsinusoidal Waveforms and Unbalanced Loads: A Discussion", 95 WM 040-6 PWRD, 1995
- IEEE Working Group on Nonsinusoidal Situations, "A Survey of North American Electric Utility Concerns Regarding Nonsinusoidal Waveforms", 95 WM 036-4 PWRD, 1995
- Bowes, K. B., "The Effects of Temporary Overvoltage (TOV) on Consumer Products", POWER QUALITY '91 USA, Official Proceedings of the Third International Power Quality Conference, Universal City, CA, September 22-27, 1991
- Bowes, K. B., Lorusso, A., "Harmonic and Power Characteristics of Electronic Ballasts for Fluorescent Lighting Applications", POWER QUALITY '90 USA, Official Proceedings of the Second International Power Quality ASD Conference, Philadelphia, PA, October 21, 29, 1990
- Anderson, L.M., Bowes, K.B., "The Effects of Power-line Disturbances on Consumer Electronic Equipment", IEEE Transactions on Power Delivery, Volume 5, Number 2, pp. 1062-65, April 1990
- Bowes, K. B., "The Effects of Power-line Disturbances on Electronic Products", POWER QUALITY '89 USA, Official Proceedings of the First International Power Quality Conference, Long Beach, CA, October 15-20-1989 (Also edited and reprinted in Power Quality Magazine - Premier V Issue)

PROFESSIONAL AFFILIATIONS

- Edison Electric Institute, Transmission Committee – Chairman, 2007
- IEEE Working Group on Nonsinusoidal Situations, 1993 - 1998 (Winner of 1998 IEEE Working Group Award)
- National Fire Protection Association (NFPA), National Electrical Code, Subcommittee on Nonlinear Loads, 1993

Marcella Ferrara
Transmission Project Manager
Northeast Utilities System
Berlin, Connecticut

RESUMES

Marcella Ferrara
Transmission Project Manager
Northeast Utilities System

107 Selden Street
Berlin, CT 06037
ferramc@nu.com

Background

Ms. Ferrara is a Project Manager in the Transmission Group at Northeast Utilities (NU) in Berlin, Connecticut. She manages all facets of project development, from siting and permitting to the construction of electric transmission projects. Prior to joining the Project Management group, Ms. Ferrara held various management, operations, regulatory and financial positions at NU.

Professional History

Northeast Utilities (October 1987 – Present)

Project Manager – Transmission (02/06 – Present)
Ms. Ferrara serves as Project Manager for numerous electric transmission system replacement projects. Examples include replacement of existing breakers and other equipment in both MA and CT at substation facilities throughout the Northeast Utilities' service territory. Responsibilities include project budget management and reporting; obtaining local and state permits; coordination with stakeholder agencies; management of engineering and design efforts; and construction oversight.

Operations Manager - Conservation & Load Management (C&LM) (6/03-02/06)
Planning & Evaluation Manager – C&LM (09/01 - 06/03)
Directed project management activities and initiatives for the Commercial & Industrial C&LM team and oversaw general business management for all C&LM programs.

Regional Supervisor, Materials Management (12/00 – 9/01)
Managed storeroom operations in multiple districts. Established and developed working relationships with other organizations to enhance the efficiency of company operations.

Senior Business Group Analyst, Retail Business Group (RBG) (9/98 - 12/00)
Prepared and presented operational and financial reports for senior management. Established and improved working relationships and communications between RBG and other corporate organizations.

Various Regulatory & Financial Positions (10/87 - 9/98)
Responsibilities included regulatory, financial reporting & analyses.

Education

B. S., Business Administration (Accounting); Central Connecticut State University, New Britain, CT; August, 1987
Completed Certified Public Accountant exam; November, 1995
Center for Creative Leadership – Leadership Development Program; May, 2004

Robert E. Carberry

Manager – Transmission Siting and Permitting

Northeast Utilities Service Company

Hartford, Connecticut

RESUMES

Robert E. Carberry
Manager – Transmission Siting and Permitting
Northeast Utilities Service Company
Hartford, Connecticut

April, 2007

Education:

Bachelor of Science in Electric Power Engineering, June, 1972, Rensselaer Polytechnic Institute, Troy, NY

Master of Engineering in Electric Power Engineering, June 1973, Rensselaer Polytechnic Institute, NY

Management Development Program, Hartford Graduate Center, 1989

Experience:

June 1973 to March 1974 - Bechtel Associates Professional Corp., electrical design of Midland nuclear plant including load flow and voltage studies.

March 1974 to March 1975 - NUSCO, Protection Engineering Section. Performed relay settings and assisted Transmission Line Engineering.

March 1975 to March 1984 - NUSCO, Transmission Line Engineering. Standards, investigations and studies for permanent and temporary grounding, radio and audible noise, electrical/biological effects of AC fields, special insulation, thermal rating studies and research projects, high phase order, HVDC, compact line design, insulated shield wires, and lightning performance.

March 1984 to April 1985 - NUSCO, Substation Project Engineering. Project conceptual development and management plus associated studies and standards activities.

April 1985 to March 1988 - NUSCO, Substation Project Engineering Manager.

March 1988 to November 1992 - NUSCO, Manager of Substation Engineering and Design.

December 1992 to June 1997 - NUSCO, Manager of Transmission Line and Civil Engineering.

June 1997 to October 2000 - NUSCO, Manager of T&D Asset Strategy.

October 2000 to September 2001 - NUSCo, Manager of Transmission Engineering.

September 2001 to March 2003 - NUSCO, Project Manager – Bethel to Norwalk Transmission Project.

March 2003 to October 2004 - NUSCO, Project Director – Bethel to Norwalk Transmission Project.

October 2004 to Present – NUSCO, Manager – Transmission Siting and Permitting.

NU's EMF expert 1975- present and leader of the NU EMF Task Force established in 1990.

Other Experiences:

Adjunct Faculty Member, University of Hartford, College of Engineering, January to May, 1987. Conducted portions of course in Power Systems Analysis.

T&D Emergency plan assignment as First Deputy to the Director, Electric, a liaison position with the CT Office of Emergency Management, 1985 to 2002.

Member of Advisory Committee serving the Connecticut Interagency EMF Task Force, 1991 to present.

Professional Engineering Registration: Connecticut and Massachusetts

Industry and Professional Society Activities/Senior Member, IEEE (1983)

IEEE Power Engineering Society, Transmission and Distribution Committee memberships.

1) Corona and Field Effects (C&FE) Subcommittee, Member 1976 to present, Vice Chairman 1983 to 1985.

2) C&FE Working Groups on AC Fields and Audible Noise, 1976 to present.

3) Chairman of C&FE Working Group on Design and Environmental Considerations, 1977 to 1985.

4) Secretary and Vice Chairman of Administrative Subcommittee's Coordinating Group on Environment, Safety and Public Affairs, 1981 to 1984.

IEEE Power Engineering Society, Substations Committee memberships

1) Substations Committee, member 1987 to 1995

2) Environmental Subcommittee and Associated Working Groups, member 1985 to 1995.

3) Various Working Groups of the Distribution Substations Subcommittee and the Gas Insulated Substations Subcommittee, member 1985 to 1995.

Edison Electric Institute - Chairman of the Electric Light and Power group delegation to the American National Standards Committee C63 on Electromagnetic Compatibility, 1980 to 1985.

Electric Power Research Institute - Industry advisor on project RP1591, Assessment of AC Transmission Line Field Effects, 1982 to 1984. NU representative on Transmission Line Business Unit Council, October, 1995 to December, 1996, and on EMF/RF Area Council, 2005-present.

International Electrotechnical Commission, CISPR C - Member of an advisory group assisting the Technical Advisor to the U.S. National Committee of the IEC on matters pertaining to interferences from overhead power lines, 1980 to 1988.

Edison Electric Institute - EMF Task Force, 1990 to present: EMF Steering Committee 1995 to 2003.

Professional Recognitions:

IEEE PES Working Group Recognition and/or Prize Paper Awards

- AC Fields Working Group (1992)
- Working Group on Design and Location of Substations for Community Acceptance (1992)
- Substation Security Working Group
- "A Survey of Methods for Calculating Transmission Line Conductor Surface Voltage Gradients," 1980
- "Corona and Field Effects of AC Overhead Transmission Lines: Information for Decision Makers," 1986

Gregory J. Oberst, Jr.

Transmission Line & Civil Engineering, Senior Engineer

Northeast Utilities Service Company

Berlin, Connecticut

RESUMES

Resume

Gregory J. Oberst, Jr.

Summary

More than 30 years experience in all aspects of transmission line engineering & design including: routing/siting, right-of-way requirements, structural analysis & design, project coordination, material specification & procurement, cost estimating, scheduling, construction specification development, and expert testimony at municipal and state administrative hearings. Developed programs for scheduled maintenance and identifying need for maintenance. Provided forensic engineering for transmission material failures to identify trends and needed preventative maintenance. Conducted and oversaw engineering studies and R&D related to transmission lines.

Home Address

172 Brimfield Road, Wethersfield CT, 06109

Education

Bachelor of Science in Engineering with a Concentration in Structures & Mechanics, Old Dominion College, Norfolk, VA,1969

Experience

- 2003 – Present: Northeast Utilities Service Company
  Transmission Line & Civil Engineering, Senior Engineer
- 2001 – 2003: Obersthaus Associates, LLC
  Owner/Principal, performed transmission line engineering and studies
- 1982 – 2001: New York State Electric & Gas
  Transmission Engineering Department, various positions of increasing responsibility from Senior Engineer to Engineering Supervisor
- 1969 – 1982: General Public Utilities at Jersey Central Power & Light
  Transmission Engineering Department, various positions of increasing responsibility from entry level engineer to Senior Engineer

Professional Affiliations:

- American Society of Civil Engineers (ASCE), Member
- Structural Engineering Institute (SEI), Member
- Northeast Transmission Group Member 1987 – present, Chairman 1995 -1996

Professional Qualification:

Registered Professional Engineer:
New Jersey, New York, Pennsylvania, Vermont, Virginia

Publications:

- *Pole Materials: One Engineer's View of What's Out There* Presented: Northeast Pole Conference, Binghamton, NY, October 2000
- *Lattice Tower Ground Line Corrosion and Mitigation: A Case Study* Presented: ESMO98, and the Northeast Pole Conference 2000
- *Structure Inspection Practices* Discussion leader at the Pennsylvania Energy Association

Kris Aberg

Project Engineer/Circuit Breaker Specialist

Northeast Utilities

Hartford, Connecticut

Kris Aberg

73 Boulder Circle, Glastonbury, CT 06033 • (860) 633-5058 • kaberg@snet.net

SUMMARY Over 16 years of experience in the field of substation power engineering, project management and regulatory approvals. Presently employed as a Senior Engineer and Team Leader in Northeast Utilities Service Company's Substation Engineering and Design group. Serving as Circuit Breaker Specialist for the Northeast Utilities transmission and distribution systems since 1992. Responsible for specifying, ordering and approving substation power circuit breakers, circuit switchers and reclosers applied at operating voltages ranging from 4.8 kV to 345 kV.

EXPERIENCE

PROJECT ENGINEER/CIRCUIT BREAKER SPECIALIST
9/86 to present Northeast Utilities, Hartford, Connecticut, USA

2003 Promoted to **Project Engineering Manager** with continued managerial responsibility for the Senior Designers as well as complete project responsibility for major substation projects.

2002 Named **Team Leader** with direct managerial responsibilities, incl. Annual Performance Reviews, for four Senior Electrical Designers.

1998 Promoted to **Senior Engineer** in July 1998.

1992 Named **Circuit Breaker Specialist** in January 1992 with responsibilities which include preparation of technical specifications, bid evaluation, review of approval drawings, approval of circuit breaker suppliers and maintaining contact with manufacturers of outdoor power circuit breakers, circuit switchers and reclosers applied at operating voltages ranging from 4.8 kV to 345 kV for the NU transmission and distribution systems.

1990 Promoted to **Engineer** in November 1990

1989 Named **Back Up Circuit Breaker Specialist**

1988-1998 **Associate Engineer** Promotion included the following added the responsibilities:

- Maintenance and publication of thermal ratings for the Northeast Utilities Transmission system. Chaired a 1998 comprehensive task force review of the thermal ratings applied throughout the NU System.
- Substation Transformer Noise Specialist responsible for performing sound studies, arranging sound measurements, evaluating compliance with local and state noise regulations, and recommending mitigation if necessary.

Project Engineer for major substation projects with cash flows exceeding $5,000,000. Project Engineering responsibilities includes the responsibility for obtaining all required regulatory approvals which involves coordinating contributions from the Legal Department, the Environmental Planning Department as well as participating at public hearing and testifying in front of local and State Agencies.

1986-1988 **Assistant Engineer** , Substation Engineering Group. Responsibilities included:

- Preparation of technical specifications, project scope and cost estimates for substation projects.
- Budget development, scheduling and management of substation projects.

1985 - 1986 **PROJECT ENGINEER/PROJECT MANAGER**
Brown Boveri Corporation (now ABB) Bergen, Norway.

Employment with this multinational Swiss corporation began as a **Project Engineer** responsible for the engineering of control systems for power generation plants and substations.

EDUCATION **Master of Business Administration** (1990) University of Hartford, West Hartford, Connecticut.

Bachelor of Science in Electrical Engineering (1984) South Dakota School of Mines and Technology, Rapid City, South Dakota.

AFFILIATIONS Member Toastmasters International since 1990, CTM. Member IEEE.

Peter J. Kozun
Senior Circuit Owner – Asset Management
The Connecticut Light and Power Company
Simsbury, Connecticut

RESUMES

Peter J. Kozun

Senior Circuit Owner – Asset Management
The Connecticut Light and Power Company
Simsbury, Connecticut

Education:

1986 **Trinity College,** Hartford, Connecticut
Bacholor of Science: Engineering, with a concentration in Electrical Engineering

Experience:

1986 - Present **The Connecticut Light and Power Company**, Berlin, Connecticut

1998 – Present **Senior Circuit Owner**, Asset Management, Simsbury Area Work Center

- Team Leader responsible for overseeing and coordinating the work of the Simsbury Circuit Owners.
- Perform annual load forecasting and contingency planning on all area distribution circuits.
- Identify project need in support of the CL&P Capital Program.
- Prepare engineering studies as needed to improve the reliability of the distribution system, to ensure the system is operating within required voltage parameters, and to fulfill DPUC commitments.
- Perform annual patrols on the worst performing area distribution circuits.
- Responsible for the timely execution of duties associated with TD-941, 'Preparing for Summer Peak Loading and Managing Distribution System Performance During Heat Waves.'

1992 – 1998 **Engineer**, Central Regional Systems Engineering, Hartford, CT

- Distribution Project Manager. Identify project need; prepare estimate and develop budget; design and write work orders; schedule and manage project; reconcile project.
- Provided engineering and technical assistance in the form of direct buried (DB) audits, motor start calculations, impedance calculations for conversions, reliability studies, protection studies, and voltage complaint studies.
- Compiled six year load projections for Central Region.

1988-1992 **Associate Engineer**, Area Operations, Simsbury Area Work Center

- Designed and prepared overhead, underground, and direct buried work orders to accommodate customer service projects, area work center projects and State/Town highway projects.

1986-1988 **Assistant Engineer**, Central Regional Operations, Hartford, CT

- Assisted in the preparation of the first Transmission and Distribution Reliability Performance (TDRP) Report.
- Modeled distribution circuits using PTI PSS/U computer software for the Conservation Voltage Reduction (CVR) program.
- Coordinated the PCB capacitor replacement program for Central Region.

Computer Skills:

- Microsoft Word, Excel, Visio, and PowerPoint as well as CL&P systems software such as Colt, DARS, MIB, PTI PSS/U, TCIAS, AIS, DAA, LEAP, SPL OMS, and Storms.

Scott A. Marotta

Environmental Scientist-Transmission Siting and Permitting

Northeast Utilities Service Company

Berlin, Connecticut

RESUMES

Scott A. Marotta

Environmental Scientist-Transmission Siting and Permitting
Northeast Utilities Service Company
Berlin, Connecticut

Education:

May 1998 — ***University of Massachusetts Amherst*** — *Amherst, MA*
Bachelor of Science: Environmental Sciences
Minor: Plant and Soil Sciences — Overall GPA 3.2 — Graduated-Cum Laude

University of Connecticut — *Hartford, CT*
Pursuing a Masters in Business Administration

Experience:

September 2003 to Present — ***Northeast Utilities Service Company, Inc*** — *Berlin, CT*
Environmental Scientist

Current responsibilities:

- Provide natural resource expertise to Project Managers on the siting and permitting of transmission projects
- Obtain permits for transmission projects and ensure approval conditions are satisfied
- Provide land planning, land management and other services related to the existing and potential uses of Transmission system real estate
- Develop procedures and guidance documents to aid in the siting and permitting of transmission projects

Past responsibilities:

- Lead a team that instituted a company wide Waste Management System that is currently available to all NU employees via NUnet
- Manage the treatment, storage and disposal of all wastes including Hazardous and Non- Hazardous
- Developed over six procedures and guidance documents to aid in NU's waste handling
- Conduct contractor and employee safety audits

July 1999 to August 2003 — ***Consolidated Edison Company of New York, Inc*** — *Rye, NY*
Senior Environmental & Safety Specialist

- Supervised 12 departmental employees
- Responsible for the daily EH&S performance of over 30 contractors working for Electric Operations
- Conducted over 150 environmental and safety inspections of electrical distribution crews
- Secured municipal wetland approvals relating to the operation of the electrical system
- Generated numerous technical documents pertaining to Environmental and Safety Issues
- Educated operating organizations on the importance of Wetland and Watercourse Conservation
- Trained over 100 people on numerous Environmental and Safety compliance topics
- Supervised over 80 electrical related environmental cleanup projects

June 1998 to July 1999 — ***Groundwater & Environmental Services, Inc*** — *Windsor, CT*
Environmental Scientist/Case Manager

- Managed four field technicians
- Managed over $400,000 dollars of environmental work at twenty-seven Mobil service stations in CT
- Analyzed laboratory chemistry results and prepared technical reports such as Phase I & II environmental site assessments, discharge monitoring reports and underground storage tank closure reports
- Performed field activities such as sampling and testing of air, soil and groundwater
- Designed and performed operation and maintenance of site specific water and soil remediation systems

September 1997 to June 1998 — ***Environmental Compliance Services, Inc*** — *Agawam, MA*
Environmental Analyst/Field Environmental Technician

- Prepared the EPA required Quality Assurance Project Plan
- Advanced soil borings and installed monitoring wells
- Conducted atmospheric and soil screening utilizing various EPA approved field based instruments
- Performed soil and groundwater sampling

Professional Qualifications:

- Certified Wetland Delineator from the Institute for Wetland & Environmental Education & Research, Inc
- Certified CTDEP Municipal Inland Wetland Commissioner
- Certified American Society of Safety Engineers Incident Investigator and Root Cause Analysis Investigator
- Certified North American Transportation Management Institute Accident and Incident Investigator

Professional Recognitions:

- Received a Northeast Utilities Employee Spot Recognition
- Recipient of an EH&S Excellence Award that was presented to me by Kevin Burke the CEO of Con Edison
- Recipient of an outstanding EH&S performance recognition at an honorable luncheon with Mike Evans President and CEO of Con Edison

Other Experiences:

- Currently Serve on the Town of Watertown's Town Council
- Former Member of the Town of Watertown, Connecticut's Inland Wetland and Watercourse/Conservation Commission

Computer Skills: AutoCAD, ArcGIS, Microsoft: Word, Excel, Visio, Outlook, Access, PowerPoint, Project, Mind Manager, Lotus Notes

William H. Bailey, Ph.D
Principal Scientist and Director, New York Office
Exponent
New York, New York

RESUMES

Exponent

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William H. Bailey, Ph.D.

Principal Scientist and Director, New York Office

Professional Profile

Dr. William H. Bailey is a Principal Scientist in Exponent's Health Sciences practice and Director of the New York office. Before joining Exponent, Dr. Bailey was President of Bailey Research Associates, Inc., the oldest research and consulting firm with specialized expertise in electromagnetic fields and health. Dr. Bailey specializes in applying state-of-the-art assessment methods to environmental and occupational health issues. His 30 years of training and experience include laboratory and epidemiologic research, health risk assessment, and comprehensive exposure analysis. Dr. Bailey has investigated exposures to alternating current, direct current, and radiofrequency electromagnetic fields, 'stray voltage', and electrical shock, as well as to a variety of chemical agents and air pollutants. He is particularly well known for his research on potential health effects of electromagnetic fields and has served as an advisor to numerous state, federal, and international agencies. Dr. Bailey was one of the scientists invited from the U.S. and 9 other countries to evaluate possible health hazards of exposures to static and extremely low frequency (ELF) electric and magnetic fields for the International Agency for Research in Cancer in 2002. Most recently, he has been invited to participate in the International Workshop on EMF dosimetry and biophysical aspects relevant for setting exposure guidelines, organized by the International Commission on Non-ionizing Radiation Protection (ICNIRP). He also participated in a working group that advises a committee of the World Health Organization on risk assessment, perception, and communication. Currently, he is involved in research on respiratory exposures to ultrafine- and nanoparticles. Dr. Bailey is a visiting scientist at the Cornell University Medical College and has lectured at Rutgers University, the University of Texas (San Antonio), and the Harvard School of Public Health. He was formerly Head of the Laboratory of Neuropharmacology and Environmental Toxicology at the New York State Institute for Basic Research, Staten Island, New York, and an Assistant Professor and NIH postdoctoral fellow in Neurochemistry at The Rockefeller University in New York.

Credentials and Professional Honors

Ph.D., Neuropsychology, City University of New York, 1975
M.B.A., University of Chicago, 1969
B.A., Dartmouth College, 1966

Sigma Xi; The Institute of Electrical and Electronics Engineers/International Committee on Electromagnetic Safety (Subcommitee 3, Safety Levels with Respect to Human Exposure to Fields (0 to –3 kHz) and Subcommitte 4, Safety Levels with Respect to Human Exposure to Radiofrequency Fields (3 kHz to 3 GHz); Elected member of the Committee on Man and Radiation (COMAR) of the IEEE Engineering in Medicine and Biology Society (1998-2001);

Invited Speaker, First Institute of Neurological Sciences Symposium in Neurobiology, University of Pennsylvania (1980); Invited Speaker, National Heart and Lung Institute (1977).

Prior Experience

Bailey Research Associates, Inc., President, 1991-2000
Environmental Research Information, Inc., Vice President, 1987-1990
New York State Institute for Basic Research, Head of Laboratory of Environmental Toxicology and Neuropharmacology, 1983-1987
The Rockefeller University, Assistant Professor, 1976-1983

Publications

Bailey, WH, Erdreich, L. Accounting for human variability and sensitivity in setting standards for electromagnetic fields. Health Phys 2006 (in press).

Bailey, WH, Nyenhuis, JA. Thresholds for 60-Hz magnetic field stimulation of peripheral nerves in human subjects. Bioelectromagnetics 2005; 26:462–468.

Bracken TD, Senior RS, Bailey WH. DC electric fields from corona-generated space charge near AC transmission lines. IEEE Transactions on Power Delivery 2005; 20:1692-1702.

Bailey WH. Dealing with uncertainty in formulating occupational and public exposure limits. Health Phys 2002; 83: 402–408.

Bailey WH. Health effects relevant to the setting of EMF exposure limits. Health Phys 2002; 83:376–386.

Kavet R, Stuchly MA, Bailey WH, Bracken TD. Evaluation of biological effects, dosimetric models, and exposure assessment related to ELF electric- and magnetic-field guidelines. Applied Occupational and Environmental Hygiene 2001; 16:1118–1138.

Bailey WH. ICNIRP recommendation for limiting public exposure to 4 Hz–1 kHz electric and magnetic fields. Health Phys 1999; 77:97–98.

Bailey WH. Principles of risk assessment with application to current EMF risk communication issues. In: EMF Risk Perception and Communication, Repacholi MH, Muc, AM (eds.), World Health Organization, Geneva, 1999.

De Santo RS, Bailey, WH. Environmental justice tools and assessment practices. Proceedings, 1999 American Public Transit Association, 1999.

Bailey WH, Su SH, Bracken TD. Probabilistic approach to ranking sources of uncertainty in ELF magnetic field exposure limits. Health Phys 1999; 77:282–290.

Bailey WH. Field parameters. Proc. EMF Engineering Review Symposium, Status and Summary of EMF Engineering Research, Bracken TD, Montgomery JH (eds.), Oak Ridge National Laboratory, Oak Ridge, TN, April 28–29, 1998.

Bailey WH. Policy implications. Proceedings, EMF Engineering Review Symposium, Status and Summary of EMF Engineering Research, Bracken TD, Montgomery JH (eds.), Oak Ridge National Laboratory, Oak Ridge, TN, April 28–29, 1998.

Bailey WH. Probabilistic approaches to deriving risk-based exposure guidelines: application to extremely low frequency magnetic fields. In: Non-Ionising Radiation, Dennis JA and Stather JW (eds.), Special Issue of Radiation Protection Dosimetry 1997; 72:327–336.

Bailey WH, Su SH, Bracken TD, Kavet R. Summary and evaluation of guidelines for occupational exposure to power frequency electric and magnetic fields. Health Phys 1997; 73:433–453.

Bracken TD, Senior RS, Rankin RF, Bailey WH, Kavet R. Magnetic field exposures in the electric utility industry relevant to occupational guideline levels. Appl Occupat Environ Hyg 1997; 12:756–768.

Blondin J-P, Nguyen D-H, Sbeghen J, Goulet D, Cardinal C, Maruvada P-S, Plante M, and Bailey WH. Human perception of electric fields and ion currents associated with high voltage DC transmission lines. Bioelectromagnetics 1996; 17:230–241.

Bailey WH, Charry JM. Acute exposure of rats to air ions: effects on the regional concentration and utilization of serotonin in brain. Bioelectromagnetics 1987; 8:173–181.

Bailey WH, Charry JM. Measurement of neurotransmitter release and utilization in selected brain regions of rats exposed to dc electric fields and atmospheric space charge. Proceedings, Twenty-Third Hanford Life Sciences Symposium, Interaction of Biological Systems with Static and ELF Electric and Magnetic Fields, 1987.

Pavildes C, Aoki C, Chen J-S, Bailey WH, Winson J. Differential glucose utilization in the parafascicular region during slow-wave sleep, the still-alert state and locomotion. Brain Res 1987; 423:399–402.

Bailey WH, Charry JM. Behavioral monitoring of rats during exposure to air ions and DC electric fields. Bioelectromagnetics 1986; 7:329–339.

Charry JM, Shapiro MH, Bailey WH, Weiss JM. Ion-exposure chambers for small animals. Bioelectromagnetics 1986; 7:1–11.

Charry JM, Bailey WH. Regional turnover of norepinephrine and dopamine in rat brain following acute exposure to air ions. Bioelectromagnetics 1985; 6:415–425.

Bracken TD, Bailey WH, Charry JM. Evaluation of the DC electrical environment in proximity to VDTs. J Environ Sci Health Part A 1985; 20:745–780.

Gross SS, Levi R, Bailey WH, Chenouda AA. Histamine modulation of cardiac sympathetic responses: a physiological role. Fed Proc 1984; 43:458.

Gross SS, Guo ZG, Levi R, Bailey WH, Chenouda AA. 1984. Release of histamine by sympathetic nerve stimulation in the guinea pig heart and modulation of adrenergic responses. Circulation Res 1984; 54:516–526.

Dahl D, Bailey WH, Winson J. Effect of norepinephrine depletion of hippocampus on neuronal transmission from perforant pathway through dentate gyrus. J Neurophysiol 1983; 49:123–135.

Guo ZG, Gross SS, Levi R, Bailey WH. Histamine: modulation of norepinephrine release from sympathetic nerves in guinea pig heart. Fed Proc 1983; 42:907.

Bailey WH. Biological effects of air ions on serotonin metabolism: Fact and fancy. In: Conference on Environmental Ions and Related Biological Effects, pp. 90–120, Charry JM (ed.), American Institute of Medical Climatology, Philadelphia, PA, 1982.

Weiss JM, Goodman PA, Losito BG, Corrigan S, Charry JM, Bailey WH. Behavioral depression produced by an uncontrollable stressor: Relationship to norepinephrine, dopamine, and serotonin levels in various regions of rat brain. Brain Res Rev 1981; 3:167–205.

Bailey WH. Ion-exchange chromatography of creatine kinase isoenzymes: A method with improved specificity and sensitivity. Biochem Med 1980; 24:300–313.

Bailey WH, Weiss JM. Evaluation of a 'memory deficit' in vasopressin-deficient rats. Brain Res 1979; 162:174–178.

Bailey WH, Weiss JM. Effect of ACTH 4-10 on passive avoidance of rats lacking vasopressin (Brattleboro strain). Hormones and Behavior 1978; 10:22–29.

Pohorecky LA, Newman B, Sun J, Bailey WH. Acute and chronic ethanol injection and serotonin metabolism in rat brain. J Pharmacol Exper Therap 1978; 204:424–432.

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Bailey WH, Weiss JM. Effect of ACTH 4-10 on passive avoidance of rats lacking vasopressin (Brattleboro strain). Eastern Psychological Association, April 1976.

Academic and Research Appointments

- Visiting Fellow, Department of Pharmacology, Cornell University Medical College, New York, NY (1986–present)
- Visiting Scientist, The Jackson Laboratory, Bar Harbor, ME (1984–1985)
- Head, Laboratory of Neuropharmacology and Environmental Toxicology, NYS Institute for Basic Research in Developmental Disabilities, Staten Island, NY (1983–1987)

- Assistant Professor, The Rockefeller University, New York, NY (1976–1983)
- Postdoctoral Fellow, Neurochemistry, The Rockefeller University, New York, NY (1974–1976)
- Dissertation Research, The Rockefeller University, New York, NY (1972–1974)
- CUNY Research Fellow, Dept. of Psychology, Queens College, City University of New York, Flushing, NY (1969–1971)
- Clinical Research Assistant, Department of Psychiatry, University of Chicago; Psychiatric Psychosomatic Inst., Michael Reese Hospital, and Illinois State Psychiatric Inst, Chicago, IL (1968–1969)

Teaching Appointments

- Lecturer, University of Texas Health Science Center, Center for Environmental Radiation Toxicology, San Antonio, TX (1998)
- Lecturer, Harvard School of Public Health, Office of Continuing Education, Boston, MA (1995, 1997)
- Lecturer, Rutgers University, Office of Continuing Education, New Brunswick, NJ (1991–1995)
- Adjunct Assistant Professor, Queens College, CUNY, Flushing, NY (1978)
- Lecturer, Queens College, CUNY, Flushing, NY (1969–1974)

Advisory Positions

- National Institute of Environmental Health Sciences/ National Institutes of Health, Review Committee, Neurotoxicology, Superfund Hazardous Substances Basic Research and Training Program (2004)
- National Institute of Environmental Health Sciences, Review Committee Role of Air Pollutants in Cardiovascular Disease (2004)
- Working Group on Non-Ionizing Radiation, Static and Extremely Low-Frequency Electromagnetic Fields, International Agency for Research on Cancer (2000–2002)
- Working Group, EMF Risk Perception and Communication, World Health Organization (1998–2005)
- Associate Editor, Non-Ionizing Radiation, *Health Physics* (1996–present)

- Member, International Committee on Electromagnetic Safety, Subcommittee 3 - Safety Levels with Respect to Human Exposure to Fields (0 to 3 kHz) and Subcommitee 4 - Safety Levels with Respect to Human Exposure (3kHz to 3GHz) Institute of Electrical and Electronics Engineers (IEEE) (1996–present)
- Invited participant, National Institute of Environmental Health Sciences EMF Science Review Symposium: Clinical and *In Vivo* Laboratory Findings (1998)
- Working Group, EMF Risk Perception and Communication, International Commission on Non-Ionizing Radiation Protection (1997)
- U.S. Department of Energy, RAPID EMF Engineering Review (1997)
- Oak Ridge National Laboratory (1996)
- American Arbitration Association International Center for Dispute Resolution (1995–1996)
- U.S. Department of Energy (1995)
- National Institute for Occupational Safety and Health (1994–1995)
- Federal Rail Administration (1993–1996)
- U.S. Forest Service (1993)
- New York State Department of Environmental Conservation (1993)
- National Science Foundation
- National Institutes of Health, Special Study Section—Electromagnetics (1991–1993)
- Maryland Public Service Commission and Maryland Department of Natural Resources, Scientific Advisor on health issues pertaining to HVAC Transmission Lines (1988–1989)
- Scientific advisor on biological aspects of electromagnetic fields, Electric Power Research Institute, Palo Alto, CA (1985–1989)
- U.S. Public Health Service, NIMH: Psychopharmacology and Neuropsychology Review Committee (1984)
- Consultant on biochemical analysis, Colgan Institute of Nutritional Science, Carlsbad, CA (1982–1983)
- Behavioral Medicine Abstracts, Editor, animal behavior and physiology (1981–1983)

- Consultant on biological and behavioral effects of high-voltage DC transmission lines, Vermont Department of Public Service, Montpelier, VT (1981–1982)
- Scientific advisory committee on health and safety effects of a high-voltage DC transmission line, Minnesota Environmental Quality Board, St. Paul, MN (1981–1982)
- Consultant on biochemical diagnostics, Biokinetix Corp., Stamford, CT (1978–1980)

Professional Affiliations

- The Health Physics Society (Affiliate of the International Radiation Protection Society)
- Society for Risk Analysis
- New York Academy of Sciences
- American Association for the Advancement of Science
- Air and Waste Management Association
- Society for Neuroscience/International Brain Research Organization
- Bioelectromagnetics Society
- The Institute of Electrical and Electronics Engineers/Engineering in Medicine and Biology Society

STATE OF CONNECTICUT

SITING COUNCIL

THE CONNECTICUT LIGHT AND POWER COMPANY APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF A PROPOSED SUBSTATION LOCATED AT 264 ROOD AVENUE AND 25 SHELLEY AVENUE, WINDSOR, CONNECTICUT	:	DOCKET NO. 352
	:	FEBRUARY 14, 2008

DIRECT TESTIMONY OF MICHAEL LIBERTINE
REGARDING ENVIRONMENTAL MATTERS
CONCERNING THE PROPOSED ROOD AVENUE SUBSTATION

EXECUTIVE SUMMARY

Q. Please identify yourself and the other members of the panel who will respond to cross examination regarding environmental matters concerning the proposed Rood Avenue Substation ("Substation") and related facilities (the "Project").

A. I am Michael Libertine, a licensed environmental professional and Director of Environmental Services in the Middletown, Connecticut office of Vanasse Hangen Brustlin, Inc. ("VHB"). A copy of my resume is attached as Exhibit A to this testimony. In addition, Northeast Utilities Service Company employees and specialized Project consultants may be called upon to respond to questions that require knowledge of specific topics.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to summarize the environmental factors that were considered during the development of plans for the Project, factors which will continue to be important as the Project design, certification, permitting, and construction proceed.

My testimony will cover the following three topics:

1. Approach used to compile baseline environmental data;

2. Environmental studies; and

3. Environmental resources.

1. APPROACH USED TO COMPILE BASELINE ENVIRONMENTAL DATA

Q. What types of data were collected to characterize existing environmental conditions in the Project area?

A. Environmental data for the Project was compiled in accordance with the specifications of the Council's June 2007 Electric Substation Facility Application Guide, and involved the collection and analysis of information to support the environmental documents in the Application, including the performance of field investigations and consultations with state, federal, and local agencies.

Information was compiled from published sources such as the Connecticut Department of Environmental Protection ("CTDEP") files, soil surveys, U.S. Geological Survey maps, Federal

Emergency Management Agency maps and municipal land-use plans. In addition, agencies such as the CTDEP Natural Diversity Data Base and the State Historic Preservation Office ("SHPO") were consulted regarding specific resources within the Project area.

Field surveys were conducted of wetlands, watercourses and wildlife habitats. Baseline noise studies were performed to characterize conditions in the vicinity of the existing switching station and the proposed Substation.

2. ENVIRONMENTAL STUDIES

Q. Please describe the wetland and watercourse studies.

A. As more fully described in Exhibit 2, *Environmental Assessment Report*, of the Application (Volume 2 of 2), wetlands and watercourses located in proximity to the proposed Substation footprint were inspected and delineated in the field by professional soil scientists during the first and second weeks of April 2007. VHB wetland scientists identified wetland boundaries based on both Federal criteria (defined at 33 CFR 328-329) and State criteria set forth in the Connecticut Inland Wetlands and Watercourses Act (sections 22a-36 through 22a-45 of the Conn. Gen. Stats.). Wetland areas not in proximity to the proposed Substation footprint were delineated previously in 2006; those delineations were reviewed by VHB and found to be substantially correct. As depicted on Figure H-1 of the Application, *Existing Conditions Map* (Volume 1 of 2) six wetland areas were identified on the Substation property (the "Property").

Q. Are there any direct or indirect impacts to wetlands from the construction of the Project?

A. Yes, construction activities will necessitate minimal temporary and permanent impacts to one wetland. Approximately 490 square feet of the Substation footprint would be located in Wetland 3, a previously disturbed area of the Property. Wetland 3 (comprising ± 0.8 acre) occurs in a forested area of the Property east of the access drive. This wetland had historically been farmed, and portions have been partially buried by native soil materials that were either deposited as sediment or graded over the original soil. Wetland 3 gently slopes to the east where it drains into a culvert that flows under Shelley Avenue. The hydrology of this wetland is driven by surface runoff and throughflow held above slowly permeable lakebed deposits. Wetland 3 would also experience ± 575 square feet of temporary impacts associated with vegetation clearing around the perimeter of the Substation to facilitate construction activities and for technical and safety reasons. Significantly, historical disturbances to Wetland 3 have diminished its function and value.

Q. Is there another location on the Property for the Substation that would avoid wetlands?

A. No. Alternative substation footprints (size and configuration) and locations were evaluated for placement of the facility and it was determined that the alternative locations would

have greater impacts on wetlands. The alternative locations were evaluated based on proximity to: existing utility infrastructure (to accommodate interconnections and required line profile separations); neighboring homes; existing vegetation; and wetland resources. Since an existing 115-kV circuit and access road extend through the central portion of the site, this general area was determined to be the most viable location for development of the Substation. The proposed footprint location and configuration was ultimately selected because it best balances technical and safety requirements; provides adequate buffers for neighboring properties, and limits direct effects to existing natural resources by minimizing tree clearing, earthwork, and alteration of wetlands.

Q. Are there any direct or indirect impacts to wetlands from the installation of the proposed new structures necessary for connecting the existing 115-kV transmission line to the Substation, or the removal of the three (3) existing poles and the 23-kV switching station?

A. Yes. Connecting the existing 115-kV 1751 transmission line to the Substation would require the installation of three (3) wood poles, each with five-foot diameter caissons (foundations) and eight (8) associated guy-wire anchors within Wetland 1, resulting in approximately 40 square feet of permanent impacts and 2,228 square feet of temporary impacts. Removal of a wood-pole angle structure from Wetland 1 at the western turn of the 115-kV line would require minimal temporary impacts (290 square feet). Replacement of the angle structure

west of Wetland 1 will result in temporary impacts (approximately 1,190 square feet) to cross this wetland via 14-foot wide timber mats to allow for construction access to this location. In total, the work associated with these transmission line modifications would result in 40 square feet of permanent wetland impacts and 3,708 square feet of temporary wetland impacts. Areas temporarily disturbed by construction activities would be restored with native shrubs, grasses and forbs as appropriate. The relatively small area of permanent impacts resulting from the new utility poles is not expected to adversely impact the principal functions or values of Wetland 1. This wetland area is primarily occupied by disturbed emergent and scrub/shrub habitat and such habitat would be maintained post-construction.

Removal of the 23-kV switching station and installation of wood poles would require work in proximity to Wetlands 1 and 2 but will not result in any direct temporary or permanent impacts on those wetlands.

Q. Will there be any substantial impacts on the environment after construction of the Project is complete?

A. No. After construction is complete, the Project will have no permanent adverse effects on the environment. CL&P will take the following steps to ensure this:

- All disturbed/exposed areas would be stabilized and revegetated. These areas would be dressed with topsoil and seeded with a New England conservation/wildlife mix, to establish a cover of grasses, forbs, wildflowers and legumes that would provide both soil stability and wildlife habitat value.

- Erosion controls would remain in place until final site stabilization is achieved.

- The power transformer within the Substation would contain insulating fluid. Surrounding the transformer will be secondary containment, consisting of a polyvinyl-lined sump, designed to hold 110% of the transformer's fluid capacity, with an Imbiber Beads® drain protection system.

- Although the Property provides substantial vegetative buffers from neighbors, CL&P will develop and incorporate a landscape plan into its D&M Plan to further mitigate for any potential views of the Substation.

- Plantings will be strategically clustered along the western and northern ends of the Substation to provide an additional visual buffer as well as a habitat for resident and migratory wildlife.

- Restoration of disturbed areas and supplemental plantings will mitigate the effects of temporary disturbances during construction.

Q. Are there any direct or indirect impacts to watercourses?

A. No. There are no watercourses located on the Property.

Q. Will the construction activities have any significant long-term adverse effect on vegetation, wildlife or habitat values?

A. No. Construction would not have significant adverse effects on vegetation, wildlife or habitat values. The majority of the Substation site would occupy what is currently upland forest habitat with a small portion of the Substation footprint occurring in a forested wetland. Permanent and temporary wetland impacts associated with connections and improvements to the existing transmission line corridor occur primarily within the emergent and

scrub-shrub wetland areas. A vegetation and wildlife survey of the Property conducted by Maguire Group Inc. determined that the most significant wildlife attribute of the Property is its function as a wildlife corridor, which is a feature that will be maintained post construction. Therefore, the Project would not have an adverse effect on wildlife due to maintenance of the wildlife corridor feature and the Substation footprint's immediate proximity to similar habitats that would allow for natural relocation of potential wildlife from the construction zone.

Q. Does the site serve as habitat for any "Threatened Species," "Endangered Species" or "Species of Special Concern"?

A. No. There are no threatened, endangered species or species of special concern of plant or animal life on the site.

Q. Will the construction activities have any effect on Federal or State-listed species?

A. No.

Q. SHPO has reviewed the Project, could you please summarize the SHPO's response?

A. SHPO has determined that the Project will have no adverse effect on historic, architectural or archaeological resources on or eligible for inclusion on the National Register of Historic Places. A letter of "no effect" was issued by the SHPO on September 6, 2007. A copy

of the SHPO Determination Letter is included in CL&P's Application, Volume 2 of 2, Exhibit 6 (*SHPO Determination Letter).*

Q. Please describe the results of the noise analysis.

A. The noise analysis that was performed determined that the Substation will not generate noise impacts in excess of State noise control regulations or the Town of Windsor's Noise Control Ordinance. During construction some large construction equipment will be in use and activities conducted that will generate noise. To the largest extent possible, general site construction hours would be limited to 7 am to 5 pm, Monday through Friday. Because of the difficulty of scheduling outages for interconnecting to the transmission system, there could be relatively short periods when some work will need to take place on a weekend or hours beyond the 7 am to 5 pm period.

Q. Have you reviewed local, State and federal land use plans, particularly with respect to existing and future development?

A. Yes.

Q. Will the Project be consistent with the land uses and policies presented in these plans?

A. Yes. In particular, the Windsor Zoning Regulations permit public utility structures or facilities in any zone as a special use.

3. ENVIRONMENTAL RESOURCES

Q. Will the Project have any adverse effect on any water supply areas?

A. No. The closest water supply wells are part of the Windsor Locks Wellfield (a State-designated Preliminary Aquifer Protection Area), located approximately 4.5 miles north of the proposed Substation. Based on design considerations and the physical distance of the water supply wells to the Substation, the Project would have no adverse environmental effect on the aquifer.

Furthermore, the design of the facility will protect ground water from any adverse effects. As noted, amongst other things, there will be containment and sump protection associated with the oil-filled transformer; a gravel base within the Substation to help reduce surface water runoff; a post-construction restoration plan to re-vegetate disturbed areas of ground; and very limited activity at the site after the Substation becomes operational. Moreover, the Town of Windsor Planning and Zoning Commission and Inland Wetlands and Watercourses Commission have reviewed and approved the location of the Substation. In addition, the First Selectman of the Town of Windsor wrote to CL&P that the Town supports the Project and siting of the Substation on the Rood Avenue Property. (Application, Volume 2 of 2, Exhibit 7)

Q. How would the environment be protected from the insulating oil used for the transformer?

A. The transformer has secondary containment, consisting of an underlying and surrounding polyvinyl-lined sump, capable of holding 110% of the transformer's oil capacity. In addition, an Imbiber Beads® drain protection system will be installed in a secondary containment structure. This design has been approved by CTDEP and incorporated into other operational substation designs by CL&P.

Q. How would the sumps be protected from storm-water infiltration?

A. The top of the sump extends above the surface level of the gravel base within the Substation, so that any surface water accumulation cannot enter directly into the sump.

Q. Will the sumps be inspected and maintained on a regular basis?

A. Yes. The design of these sumps requires minimal maintenance. Annual maintenance inspections are performed to assess accumulations of silt and debris that could inhibit water from discharging through the system.

Q. Approximately how many trees six (6) inches or greater in diameter will be removed in connection with the construction of the Substation?

A. Approximately 46 trees six inches or greater in diameter will be removed to enable construction of the Substation footprint.

Q. What efforts were undertaken to minimize tree removal?

A. The layout of the Substation and driveway were selected to balance overall potential environmental impacts, and only those trees directly within construction areas would be removed. CL&P intends to use the current access drive, which was previously constructed to gain entry to CL&P's existing facilities, thereby substantially reducing additional clearing typically required for access purposes.

Q. What efforts will be implemented to mitigate the loss of trees?

A. CL&P expects to include in its D&M Plan landscaping features as mitigation measures.

Q. Do the affected trees provide significant wildlife habitat value?

A. No. Further, the Property would maintain most of its original habitat characteristics after the Substation is constructed.

Q. Will the loss of trees result in substantial visibility of the Substation to the neighbors?

A. No. The design of the Substation, its strategic location in the center of an approximately 20 acre property and the combination of remaining vegetation and D&M Plan landscaping features will all serve to minimize direct sight lines into the Substation and effectively screen the Substation from nearly all the neighboring parcels through out the seasons.

Q. Does this conclude your testimony?

A. Yes.

Exhibit A

Resume of Michael Libertine

Michael Libertine, LEP

Director of Environmental Services

Mike Libertine is a Licensed Environmental Professional in Connecticut with over 25 years of professional experience, including 17 years of engineering consulting in the environmental field. His primary responsibilities at VHB are managing the environmental staff in our Middletown office and overseeing the environmental science and engineering projects in Connecticut. His experience includes site assessments and field investigations for property transfers, regulatory compliance, remedial strategy development, environmental due diligence and permitting support, environmental assessments for NEPA compliance, RI/FS investigations, Brownfields redevelopment projects, and remedial investigations at RCRA facilities, state and federally recognized hazardous waste sites, and Manufactured Gas Plant (MGP) sites. Mike has been Project Manager on over 1600 environmental site assessments (ESAs) and field investigations for property transfers in Connecticut, Rhode Island, New Hampshire, Massachusetts, Vermont, New Jersey, New York, Washington, D.C., Florida, Kansas, and Canada. Representative projects are summarized below.

On Call Environmental Services, Northeast Utilities Transmission Group

Program Manager in support of various Connecticut projects, including assessment and permitting of bulk power substations and other facilities, transmission lines/structures, underground utility installations, and environmental investigations of existing facilities. Services include pre-acquisition due diligence activities, conducting site development feasibility assessments, natural resources inventories of existing flora and fauna, habitat evaluations, wetland delineations, noise and EMF analysis, hazardous waste investigations, remedial planning and design, site layout and design drawings, landscape architecture, preparation of technical documents, coordination with State and local agencies, and permitting support.

Certificates of Environmental Compatibility and Public Need, Various Sites, Connecticut

Mr. Libertine has served as Project Manager in support of numerous Applications to the Connecticut Siting Council (CSC) for the permitting of new electrical substations throughout Connecticut. These projects require extensive coordination of numerous team members, including client's in-house discipline managers and engineers, consultants, legal counsel, VHB staff, and subcontractors. VHB was responsible for overseeing Site data collection and analysis, site/civil layout, and drafting of municipal documents and the Application to the CSC. Services included conducting natural resources inventories of existing flora and fauna, habitat evaluations, wetland delineation, noise and EMF analyses, hazardous waste investigations, site layout and design drawings, Site access evaluation and road design, landscape architecture, preparation of technical documents, coordination with State and local agencies, and

permitting. Mike's team has also provided environmental monitoring for adherence to the CTDEP's General Permit for Construction Activities and environmental requirements set forth in the Client's contract documents and specifications.

Regulatory Permitting, Barbour Hill Substation Modifications, South Windsor, Connecticut
Project Manager responsible for the preparation of a Petition to the Connecticut Siting Council for a determination that no Certificate of Environmental Compatibility and Public Need was required for the proposed modifications to the Barbour Hill Substation in South Windsor, Connecticut. The project included the replacement and expansion of an existing facility and the modification of line interconnections. Responsibilities included conducting natural resource inventories, wetland delineation, noise study, soil and groundwater sampling, preparation of site/civil design drawings, supporting graphics, photo-simulations, and local and state permit documents. Under Mr. Libertine's supervision, VHB also supported CL&P during its contractor selection process and developed a site-wide soil and water management plan for implementation during construction activities.

Environmental Services for Wireless Telecommunications Clients, New England
Program Manager for environmental due diligence and permitting services in support of various telecommunications clients throughout New England and New York. Mr. Libertine has worked directly with the major licensed PCS carriers since 1997 and has assisted in the permitting of more than 500 wireless telecommunication facilities in New England during the past ten years. Project management includes coordination and oversight of preliminary site screenings, compliance documentation and environmental assessments to fulfill NEPA requirements, land use evaluations, Phase I ESAs, Phase II field investigations, remedial planning and oversight, wetland assessments, vegetative/biological surveys, noise analyses, visual resource analyses, graphic support, preparation of regulatory applications and permitting support (including representation at municipalities and Connecticut Siting Council hearings).

Former Remington Rand Facility, Middletown, CT
Project Manager of Remedial Investigations at former industrial manufacturing complex to determine nature and extent of soil/groundwater contamination, remedial alternatives, and their associated costs in preparation for adaptive site reuse. This project required coordination with the City of Middletown, the Connecticut Department of Economic and Community Development and the Connecticut Department of Environmental Protection as part of the Urban Sites Redevelopment-Brownfields Program.

EA/FONSI for State Routes 7 & 15 in Norwalk and Wilton, CT
Project Manager of Final Environmental Assessment/Section 4(f) Evaluation (EA) for Finding of No Significant Impact (FONSI) on two state projects along Routes 7 and 15 in Norwalk and Wilton, Connecticut (1998-1999). These projects, completed for ConnDOT,

involved the evaluation of seven different build/no build alternatives involving two interchanges and a proposed freeway extension. The evaluation included assessments of current conditions, potential impacts of alternatives, analysis of impacts associated with proposed actions, and development of mitigation techniques to be employed during design and construction. The Final EA document was submitted to the Federal Highway Administration, which provided a determination of FONSI in March 2000.

On-Call Services for Connecticut Department of Transportation
Task Manager for Connecticut Department of Transportation (ConnDOT) On-Call Environmental Services contract (1993-1997). Project task management included coordination and oversight of corridor land use evaluations, preliminary site evaluations, surficial and exploratory site investigations, and emergency response procedures. Representative projects included identification and characterization of hazardous materials, chemicals, and oils within ConnDOT highway project areas.

Ashland Mills Demolition, Griswold, CT
Project Manager of Phase II/III Field Investigation, demolition oversight, and soil remediation at the former Ashland Mills facility. This project was completed in separate phases, including the demolition and removal of several site structures damaged by fire, excavation and removal of UST's, soil remediation, asbestos abatement, and additional site investigation work to determine compliance with Connecticut Remediation Standard Regulations. The goal was to prepare the site for future redevelopment opportunities. This project required coordination with municipal officials, CTDEP, DPH, and EPA.

Windham Mills Remedial Investigation, Willimantic, CT
Project Manager of Phase III Investigation and Remedial Alternatives program at the Windham Mills redevelopment project located. Areas of concern on this project included characterization and delineation of a coal ash landfill and fuel-oil impacted soils, UST's, PCB's and management of environmental compliance issues. This mill restoration, redevelopment and adaptive reuse project required coordination with both the Connecticut Department of Economic and Community Development and the CTDEP as part of the Urban Sites Redevelopment - Brownfields Program.

Garment Facility, Norwich, Connecticut
Project Manager for solvent-contaminated soil remediation at former garment manufacturing facility. In addition to soil contamination associated with historic discharges to a dry well, this project also involved site characterization and removal of diesel and waste oil UST's impacted soils, quarterly groundwater monitoring programs, and coordination with the CTDEP Property Transfer Group.

RCRA facility investigation, Kansas
Field Team Leader for a RCRA facility investigation at a cement factory in Kansas that burns hazardous waste-derived fuels. This project includes investigation on the extent and degree of contamination due to releases of hazardous constituents at eight solid waste management units. These include three landfills, waste treatment ponds, fuel storage areas, and miscellaneous waster transfer systems. Responsibilities also include the preparation of the Phase I Field Investigation technical report, the Phase II Work Plan for EPA review, and the Phase II Field Investigation technical report.

MGP Sites, New York
Performed groundwater, surface and subsurface soils sampling activities for Remedial Investigation/Feasibility Studies (RI/FS) at over 10 MGP sites in New York State, Pennsylvania, and Vermont. The majority of these programs were conducted under State regulatory overview while another was conducted under EPA Region II overview.

Installation/Restoration Study, Naval Submarine Base, Groton, CT
Assisted on a field investigation for an Installation/Restoration Study at the Naval Submarine Base in Groton, Connecticut for the U.S. Navy. This Superfund site includes RI/FS investigations at four former waste disposal/release site and several additional potential waste disposal sites.

Publications
The Newly Adopted Connecticut Remediation Standard Regulations Coincide with Brownfields Legislation, February 1996, Brogie, Martin and Libertine, Michael.

Education	University of Connecticut, B.S. Natural Resources Management, December 1990 Stonehill College, B.A. Marketing, May 1981
Certifications/ Licenses	Licensed Environmental Professional, State of Connecticut, LEP No. 345 OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Training (29 CFR 1910.120)

STATE OF CONNECTICUT

SITING COUNCIL

THE CONNECTICUT LIGHT AND POWER COMPANY APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF A PROPOSED SUBSTATION LOCATED AT 264 ROOD AVENUE AND 25 SHELLEY AVENUE, WINDSOR, CONNECTICUT.	:	DOCKET NO. 352 FEBRUARY 14, 2008

ADDITIONAL ITEMS FOR ADMINISTRATIVE NOTICE

1. EMF, Electric and Magnetic Fields Associated with the Use of Electric Power, Questions and Answers, NIEHS, 2002.

2. The United Illuminating Company's Load Forecast and Transmission Plan, UI, March 15, 2006.

3. Energy Plan for Connecticut Prepared by the Connecticut Energy Advisory Board, Connecticut Energy Advisory Board, February 6, 2007. Link: http://www.ctenergy.org/

4. An Assessment and Report of Distributed Generation Opportunities in Southwest Connecticut, Institute for Sustainable Energy at Eastern Connecticut State University with assistance from XENERGY, January 14, 2003.

5. Distributed Generation Market Potential: 2004 Update/Connecticut and Southwest Connecticut, Institute for Sustainable Energy at Eastern Connecticut State University with assistance from XENERGY, March 15, 2004.

6. ISO-New England Southwestern Connecticut Reliability Study, A Comparative Analysis of the 345-kV Plumtree-Norwalk Overhead Line Versus Two 115-kV Cables from Plumtree-Norwalk, ISO-New England.

7. Connecticut Department of Public Utility Control, Docket No. 02-14-12, DPUC Investigation into Possible Shortages of Electricity in Southwest Connecticut During Summer Periods of Peak Demand, DPUC.

8. Working Group on SWCT, Comprehensive Assessment and Report, Part I, prepared pursuant to Public Act No. 02-05 and Executive Order No. 26.

9. Connecticut Department of Public Utility Control, Docket 05-07-17RE01, DPUC Review of the Development of a Program to Provide Monetary Grants for Capital Costs of Customer-Side Distributed Resources, final decision dated September 25, 2007.

ITEMS OF NOTICE WE INCLUDED IN THE APPLICATION

1. Connecticut Siting Council Review of the Connecticut Electric Utilities Ten-Year Forecast of Loads and Resources, 2004, 2005, 2006, and 2007

2. Connecticut Guidelines for Soil Erosion and Sediment Control 2002

3. Connecticut General Statutes Section 16-243 and Sections 16-11-134, and 135 of the Regulations of Connecticut State Agencies (and by reference, the National Electrical Safety Code ANSI C2, 2002 Edition)

4. Current Status of Scientific Research, Consensus, and Regulation Regarding Potential Health Effects of Power-Line Electric and Magnetic Fields (EMF), January 2006

5. Connecticut Siting Council's draft document, Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Facilities in Connecticut, May 22, 2007.

6. Interagency Task Force Studying Electric and Magnetic Fields, Connecticut 1998 Report on Task Force Activities to Evaluate Heath Effects from Electric and Magnetic Fields, January 1998