STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

The Connecticut Light & Power Company Application for a Certificate of Environmental Compatibility and Public Need for the Stamford Reliability Cable Project, which consists of construction, maintenance, and operation of a new 115-kV underground transmission circuit extending approximately 1.5 miles between Glenbrook and South End Substations, Stamford, Connecticut and related substation improvements.	DOCKET NO. 435 July 22, 2013

POST-HEARING BRIEF OF THE CONNECTICUT LIGHT AND POWER COMPANY

The Connecticut Light and Power Company

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INTRODUCTION

The Connecticut Light and Power Company ("CL&P") filed an application for a Certificate of Environmental Compatibility and Public Need for the Stamford Reliability Cable Project (the "Project") on January 18, 2013. In its application, CL&P proposes to construct and operate a new 1.5 mile 115-kV underground transmission circuit, extending between CL&P's Glenbrook and South End Substations located in Stamford. The route proposed by CL&P, known as the Preferred Route With Canal Street Option (Updated), is primarily located within roadways. This route is also supported by officials of the City of Stamford (the "City"), East Side Partnership and the Connecticut Department of Transportation ("ConnDOT").

As part of the Project, CL&P also proposes modifications to the Glenbrook and South End Substations. These modifications would take place entirely within the fenced-in areas of the substations.

The Project is designed to strengthen the reliability of the Stamford-Greenwich Sub-area[1] transmission system by eliminating violations of national and regional reliability standards that occur today. The Project will also support increasing demand for electricity arising from the City's aggressive economic development efforts. Finally, the Project is part of a long-range plan for improving the Stamford-Greenwich Sub-area electric transmission system.

Based on CL&P's careful design, the construction and operation of the Project would not have any significant permanent adverse effects on the environment. Wherever possible, CL&P has incorporated measures into the Project construction to protect the environment. CL&P also

[1] The Stamford-Greenwich Sub-area, which comprises the City of Stamford and the Town of Greenwich, is a component of the Norwalk-Stamford Sub-area, which includes all or a portion of the following municipalities: Bridgeport, Darien, Easton, Fairfield, Greenwich, New Canaan, Norwalk, Redding, Ridgefield, Stamford, Trumbull, Weston, Westport and Wilton.

will file a Development and Management ("D&M") Plan that will provide further details concerning its proposed construction process and mitigation efforts.

Appendix A to this Brief lists conclusory findings that the Council is directed to make pursuant to the Public Utilities Environmental Standards Act ("PUESA") (Connecticut General Statutes § 16-50g et seq.) when issuing a Certificate and provides citations to the relevant paragraphs of CL&P's proposed findings of fact that provide support for the statutory findings.

DISCUSSION

I. CL&P SATISFIED OR EXCEEDED ALL PROCEDURAL REQUIREMENTS SET FORTH IN THE GENERAL STATUTES, REGULATIONS AND THE COUNCIL'S APPLICATION GUIDE

Section 16-50*l* of the Connecticut General Statutes ("Conn. Gen. Stats.") sets forth the procedural requirements for an application for a Certificate. CL&P has complied with these requirements as follows:

- Customer Bill Insert (all customers in Stamford);
- Municipal Consultation Filing;
- Publication of Legal Notices of the Application;
- Service of the Application Upon Federal, State and Local Officials; and
- Notice to Owners of Properties Abutting the Application.

(PFOF 5, 6, 8)

Additionally, CL&P complied with all pertinent provisions of the Regulations of State Agencies and of the Council's Application Guide for an Electric and Fuel Transmission Line Facility (April 2010), including providing notification to community groups and the Aquarion Water Company of the filing of the Application, and posting seven (7) signs in conspicuous locations that informed the public of the public hearing held in Stamford on March 28, 2013. *(PFOF 14)*

Furthermore, CL&P exceeded the public notice requirements with its extensive outreach efforts. CL&P conducted numerous meetings, over a period of about 12 months, with municipal and community leaders, provided an informational brochure to residents in the vicinity of the Project and held an open house prior to filing the Application. *(PFOF 10, 11; CL&P 1, Section J; CL&P 6, pp. 36-38)*

Finally, CL&P developed a project website, an e-mail address and a hotline to inform residents and stakeholders and to provide an opportunity to ask CL&P questions. *(PFOF 9)*

II. THERE IS A PUBLIC NEED FOR THE PROJECT FOR RELIABILE ELECTRIC SERVICE

A. The Project Is Needed to Ensure Reliable Electric Service To Southwest Connecticut (Conn. Gen. Stats. § 16-50p(a)(3)(A))

1. Background

The existing transmission system in southwest Connecticut ("SWCT") has been the subject of extensive studies over the past decade. These studies have identified serious limitations, and projects have been designed to address these limitations in a step-by-step, orderly fashion. Initially, CL&P concentrated its resources on strengthening the 345-kV "backbone" of the SWCT transmission system. Two major 345-kV transmission line projects, Bethel to Norwalk (Docket No. 217; completed in 2006) and Middletown to Norwalk (Docket No. 272; completed in 2008), together with an earlier project that had constructed a 345-kV line between New Milford and Bethel in the 1970s, established a 345-kV "loop" through SWCT. *(Council Admin. Notice 28, 29; CL&P 1, p. B-2)* This loop facilitates the transport of electricity into SWCT, reduces the potential for 115-kV line overloads, improves efficiency with reduced line losses, improves system voltage performance, reduces high levels of available short-circuit current, and generally strengthens the entire New England electric grid by enhancing

interconnections between SWCT and the rest of New England. Completion of the 345-kV loop strengthened the transmission system in the SWCT area and created a strong electric supply source at the Norwalk Substation. *(CL&P 1, p. B-2)*

Other projects also strengthened the SWCT transmission system. In 2008, CL&P replaced the existing 138-kV Long Island Cable from Norwalk Harbor Station to Northport Station, in New York (Docket No. 224) to reinforce the electrical connection between SWCT and Long Island. As indicated by Mr. Gagnon and Mr. Russo, these cables provide a means for emergency support to SWCT. *(Tr. 1, pp. 26-27)* Also in 2008, CL&P placed in-service two 115-kV transmission cable circuits between the Norwalk and Glenbrook Substations (Docket No. 292) to increase electric import capability into the Norwalk-Stamford Sub-area and to remedy voltage problems. *(Council Admin. Notice 30, CL&P 1, p. B-3)*

These projects created strong, reliable electric supply sources at the Norwalk Substation and at the Glenbrook Substation. The Project is the next step in the process – extending the benefits of SWCT 345-kV loop and the 115-kV Glenbrook cables to the west into the Stamford-Greenwich Sub-area, which is part of the larger Norwalk-Stamford Sub-area. *(CL&P 1, p. B-3)*

2. *The Project Will Resolve Critical Reliability Criteria Violations In Southwest Connecticut*

(a) Reliability Criteria Violations Exist Today

Based on the contingency analyses performed by the SWCT Working Group, the transmission lines between the Glenbrook and South End Substations could experience voltage collapse and thermal overload conditions, in violation of reliability standards. CL&P's CEII Appendix, subject to the Council's Protective Order of February 21, 2013, outlines reliability criteria violations that arise from N-1 contingency events and from N-1-1 contingency events. The analyses were conducted pursuant to the reliability standards, criteria and procedures

established by NERC, NPCC and ISO-NE. These analyses show that critical transmission system elements in the Stamford-Greenwich Sub-area would experience thermal overload conditions at today's peak load levels in violation of NERC, NPCC and ISO-NE reliability standards and criteria and that such conditions would increase during the planning horizon. In addition, certain contingency events would cause voltage collapse. *(CL&P 1, CEII Appendix)* Accordingly, the year of need is 2013; the projected in service date is December 2014, the earliest date the Project could be completed and energized, after considering the time period for siting, permitting and constructing the proposed facilities. *(CL&P 1, p. B-3)*

The national and regional reliability standards, criteria and procedures are "deterministic" in nature, designed to test the transmission elements under a series of prescribed contingency conditions. *(CL&P 1, p. B-9)* If the transmission elements under study would not operate under the conditions for which it must be tested, without experiencing thermal overloads or voltage collapse, then these elements could be damaged and/or service to customers could be lost. *(PFOF 30)* And, costs associated with the loss of service to customers due to a transmission failure could be significant as compared with the cost of strengthening the transmission infrastructure to promote greater reliability within a service area. *(Tr.1, pp. 51-52, 92)*

(b) The Project Would Prevent Reliability Criteria Violations In The Stamford-Greenwich Sub-area

The new underground transmission circuit would increase the power flow loading capability between the Glenbrook and South End Substations and provide an alternative transmission path for power flows in the vicinity of Waterside, Cos Cob and Tomac Substations. CL&P's contingency analyses with the Project in service demonstrate that the criteria violations on the 115-kV transmission system in the Stamford-Greenwich Sub-area that could occur today

would be eliminated. Therefore, the Project will improve transmission reliability for the contingencies tested in conformance with the reliability standards, criteria and procedures established by NERC, NPCC and ISO-NE, respectively. *(PFOF 32, 33, 58-60; CL&P 1, pp. B-13, B-14)*

In addition to the immediate benefits that the Project accomplishes, the Project is expected to achieve compliance with reliability criteria, thereby providing more reliable electric transmission service, for at least twenty years. *(PFOF 52; CL&P 1, p. B-4)*

3. There Are No Practical System Alternatives That Would Properly Resolve The Reliability Problems Addressed By The Project

(a) No Action

A "no action" alternative was rejected because doing nothing to eliminate violations of national and regional reliability standards and criteria would be inconsistent with CL&P's obligation to provide reliable electric service. *(PFOF 62; CL&P 1, Section B)* Significantly, CL&P, as a transmission owner, must comply with mandatory reliability standards and criteria. *(PFOF 40; CL&P 1, p. B-8)* In its load-flow analyses, CL&P found that critical system elements would experience overload conditions for the contingencies tested in conformance with the reliability standards and criteria established by NERC, NPCC and ISO-NE, and without the Project, such overloads would increase over time. *(CL&P 1, CEII Appendix, pp. B-23, B-24)* Accordingly, the "no action" alternative would not be prudent.

(b) Non-Transmission System Alternatives

CL&P considered central generation, energy efficiency and load curtailment as part of its analysis of non-transmission alternatives to the Project. CL&P's analysis is more fully outlined in the CEII Appendix filed in this docket under a protective order approved by the Council on February 21, 2013. Based on this analysis, CL&P concluded that there are no

practical non-transmission alternatives that would resolve the reliability criteria violations that the Project would address. *(PFOF 63, 64; CL&P 1, Section B and CEII Appendix)*

4. The CEAB Reviewed The Project and Decided To Issue an Exemption From Its RFP Process

Pursuant to Conn. Gen. Stats. § 16a-7, the Connecticut Energy Advisory Board ("CEAB") reviewed CL&P's Application for the Project, as filed with the Council. Section § 16a-7c authorizes the CEAB to determine that a request for proposal ("RFP") process to seek alternative solutions to the need addressed by a project subject to its jurisdiction "is unnecessary because the process is not likely to result in a reasonable alternative to the proposed facility." In this case, the CEAB concluded that an RFP was unnecessary, finding that the Project fell within its RFP exemption criteria as follows: "the Project is small, only 1.5 miles; the Project has a short lead time; the Project is urgently needed; and the Project is energy efficient and environmentally benign." *(CEAB Letter dated March 1, 2013)*

5. The Project Will Also Support The Aggressive Economic Development Projects Planned In Stamford

By strengthening the reliability of electric power in the Stamford-Greenwich Sub-area and by providing a more robust system, the Project will ensure that the electric grid is able to satisfy increased demand resulting from the aggressive economic development projects underway in Stamford. Those efforts include corporate office, retail and residential uses and cover a wide range variety of services, including a hotel/spa, sports broadcasting facilities, a hospital and outdoor recreation. *(PFOF 36, 37; CL&P 1, pp. B-10, B-11)* As noted in the December 2012 letter from Stamford's Mayor, Michael A. Pavia, Stamford has a vital role in the economy of the State and is a very attractive location for businesses due to its proximity to New York and its transportation system. The City recognizes the importance of a reliable system of

electric service and enthusiastically supports the Project. *(Letter of Mayor Pavia of December 13, 2012)*

B. The Project Conforms To A Long-Range Plan For Expansion Of The Electric Power Grid Of The Electric Systems Serving The State And Interconnected Utility Systems (Conn. Gen. Stats. § 16-50p(a)(3)(D))

As noted in Section B of the Application, the Project is another crucial step forward in the efforts to improve the inadequacies of the SWCT transmission system, which have been widely recognized since 2002. The Project provides an opportunity to further implement the benefits of CL&P's completion of the recent major system improvements in SWCT, including the Bethel-Norwalk 345-kV line, the Middletown-Norwalk 345-kV lines (with United Illuminating), the Long Island Replacement Cable Project and the Glenbrook Cables Project. Accordingly, the Project is a part of the long-range plan that has been on-going since 2002.

In addition, the Project also is part of the long-range plan that contemplates a new substation in Greenwich and additional transmission connections to this new substation. The new Greenwich Substation is currently planned for completion in 2017. The Project and the Greenwich Substation were listed in CL&P's 2012 and 2013 Forecast of Loads and Resources. *(PFOF 34, 35; Council Admin. Notice 77; CL&P Admin. Notice 1)* In addition, the Project and the Greenwich Substation have been listed in ISO-NE's Regional Service Plans since 2011. *(PFOF 55; Council Admin. Notice 10, 11; CL&P 6, p. 16)*

C. The Project Will Serve The Public Need For Economic Service And Serve The Interests Of System Economy (Conn. Gen. Stats. § 16-50p(a)(3)(D))

1. An Underground Route Is Economical And Socially Practical

(a) The Underground Route

As set forth more fully in Sections C and D of the Application and CL&P's Supplemental Filing and Supplemental Filing II, the underground route for the Project proposed

by CL&P, designated the Preferred Route With Canal Street Option (Updated) (the "Project Route"), more closely satisfies routing identification criteria and objectives than an overhead route. *(CL&P 1; CL&P 4; CL&P 10)* CL&P has proposed the Project Route primarily within local streets, to take advantage of the existing transportation corridor, thereby avoiding the need for a new utility corridor. Moreover, CL&P has followed the shortest feasible underground path between Glenbrook and South End Substations, despite a dense urban environment that features an elevated segment of Interstate 95 ("I-95"), the Metro-North Railroad ("MNRR") corridor and residential, commercial and industrial development.

Further, the Project Route was developed in close collaboration with City officials. Based on these consultations, CL&P designed a route that avoids significant interference with the City's on-going extensive roadway reconstruction and improvement project, known as the Stamford Urban Transitway ("SUT"); CL&P avoided the roadways involved in SUT Phase I (primarily Jefferson Street and Dock Street) for which work has been completed and the roadways re-paved. The only part of SUT Phase I that would be affected by the route that CL&P now proposes (the Project Route) is a short section of Canal Street. The Project Route also would avoid the majority of SUT Phase II, except for a segment that crosses East Main Street (Route 1). *(CL&P 1; CL&P 4; CL&P 10)*

After CL&P filed the Application, ConnDOT asked CL&P to avoid Atlantic Street, due to ConnDOT's plans to lower Atlantic Street as part of its MNRR Bridge Replacement Project. CL&P investigated a potential alternative that involved Canal Street, a road that the City had previously requested CL&P to avoid because of its involvement in SUT Phase I. CL&P received the City's permission to proceed and determined that the use of the Preferred Route With Canal Street Option was superior to its initial Preferred Route. The City

and ConnDOT notified the Council of their support for this route. *(CL&P 4; Comments from Mayor Michael A. Pavia, City of Stamford, dated March 25, 2013; ConnDOT Comments, dated April 8, 2013; PFOF 98-101)*

Further, as more detailed engineering information became available, CL&P discovered that the use of Manhattan Street could be entirely avoided and the use of Pacific Street could be substantially decreased by refining the underground route to locate it within CL&P-owned land directly beneath the South End Substation. *(CL&P 10)* This refinement is part of the route that CL&P proposes as the Project Route. CL&P was able to shorten the underground route for the Project by an additional 175 feet, avoid all underground utilities in Manhattan Street and in Pacific Street (except for the very short segment near the entrance to the South End Substation property), reduce soil disturbance and likely shorten the construction window. CL&P notified City officials and ConnDOT and reported their support to the Council. *(CL&P 10; Tr. 3, p. __)*

As noted by Council member Dr. Bell during the June 20, 2013 evidentiary hearing, the Project Route reflects CL&P's continuing flexibility in designing the underground route to address issues raised by the City and ConnDOT. *(Tr. 3, p. __)*

Finally, the Project Route is feasible, practical and capable of reliably meeting the objectives for the Project, and as compared with the cost of the overhead routes explained below, has the lowest cost. *(CL&P 1; CL&P 4; CL&P 9, Q-CSC-004; CL&P 10; CL&P 11, Q-CSC-004-SP01)*

(b) Costs Associated With The Underground Route

CL&P estimated the transmission line cost for the underground route for the Project to be $43.9 million. *(CL&P 1, p. ES-7)* Of that cost, approximately $19.2 million

consists of material and labor costs for the civil and site work for the duct bank, splice vaults and the cable. *(CL&P 9, Q-CSC-004)* These costs reflect the challenging dense urban environment, including narrow local roads and the proximity of an elevated I-95 and the MNRR corridor, as well as the costs for a jack and bore trenchless crossing under MNRR, near the Glenbrook Substation. *(CL&P 1, Appendix A, Project Mapping)*

The Office of Consumer Counsel, which participated as a party in this proceeding, did not present any testimony or expert witnesses to challenge the need for the Project or the cost of the underground route.

2. *Potential Overhead Routes Present Significant Construction Challenges And Are Not Cost-Effective*

(a) Overhead Routes

Originally, CL&P rejected the use of overhead routes based on overriding social or engineering constraints. An overhead route along I-95 was rejected because ConnDOT policies limit the longitudinal occupation of interstate corridors unless no other practical option exists and because I-95 is elevated along the majority of the path between Glenbrook and South End Substations. Use of the MNRR corridor was also rejected due to railroad policies limiting co-location of utilities, potential conflicts with existing land uses abutting the MNRR corridor and construction obstacles with above-grade and below-grade railroad crossings. *(CL&P 1, Section C.3)*

(b) Constructing New 1977 Line Structures With The 1977 Line And The 1151 Line

The concept of adding a second circuit onto the existing 1977 Line structures located within the MNRR corridor was similarly dismissed at an early stage – even before the detailed planning and engineering for this project commenced. *(Tr. 1, p. 45)* Prompted by Council member Ashton's line of questioning about the capabilities of the existing 1977 Line

structures to support a second circuit, after the March 28, 2013 evidentiary hearing, CL&P examined its historical records and found that although the 1977 Line structures were intended to be capable of supporting a second circuit, many of these structures, including four of seven located between Glenbrook and South End Substations that were analyzed, had been determined in 1977 to be incapable of doing so because of insufficient load bearing capability. *(CL&P 8, Q-CSC-008; CL&P 13)*

CL&P re-analyzed the load bearing capacity of the 1977 Line structures and determined, that 61% of the 1977 Line structures between Glenbrook and South End Substation could not support a second circuit under the then applicable 1960 National Electrical Safety Code ("NESC"), due to the failure of a critical element(s) (including base plate, anchor bolt embedment length or pole section), and in fact, 91% of the 1977 Line structures could not support a second circuit under the current 2012 NESC.[2] The results of this detailed current analysis were thus consistent with those of the analysis in 1977. Accordingly, the entire 1977 Line structures (23 structures) would have to be replaced to accommodate two circuits -- an extremely costly and challenging undertaking. *(CL&P 13; PFOF 82, 83; Tr. 3, p. __)*

Based on its consultations with MNRR and ConnDOT, CL&P identified significant challenges associated with overhead line work in the MNRR ROW. In summary, those challenges, which adversely affect both the construction schedule and project costs, include worker safety measures, a severely limited construction window, a slower pace of construction, suspension of work for a train on an adjacent track, cancellation of outages for MNRR priorities, lengthy MNRR approval processes, dependence on the availability of MNRR safety personnel, and required temporary relocation for MNRR supply circuits. Moreover, the need for 24 drill rig

[2] Not only would these structures fail with a 1272 kcmil ACSS conductor, but also with a lighter conductor. *(Tr. 3, p. __)*

platforms (for the 23 new structures plus a new dead-end structure) to be located in the MNRR corridor, elevated to the finished foundation ground level, and in South State Street (requiring closure of two lanes) would similarly slow the pace of construction, as would the need for a very high drilling platform where a high stone wall supports the railroad on South State Street near Atlantic Street. Finally, Culloden Road residents would be unduly disturbed by both night-time illumination and access to structures adjacent to their backyards. *(CL&P 13)*

Other factors also influenced CL&P's decision to propose an underground route in lieu of a more costly and challenging overhead route along the MNRR corridor. In particular, CL&P's 1967 easement for the 1977 Line structures provides that CL&P must relocate such structures, at CL&P's sole expense, if asked to do so because of plans for an additional rail. *(Tr. 1, pp. 45-47; CL&P 13, p. 10)* In addition, ConnDOT informed CL&P that it plans to expand the wing wall for Atlantic Street and move the wall along South State Street 15 feet. ConnDOT's projects are now being designed to accept a future additional rail although there is no present timetable for such a rail. However, siting the new circuit away from the railroad corridor avoids the risk of having to abandon and remove newer overhead line structures (which would have been constructed to replace the existing 1977 Line structures) and to relocate the new circuit outside the railroad corridor. *(CL&P 13, pp. 10-12)*

ConnDOT Office of Rails similarly does not favor use of the MNRR corridor in Stamford for utilities because it is already highly congested and such use would increase ConnDOT's construction costs for its ridership and reliability enhancements. *(CL&P 13, p. 9)* ConnDOT would also not favor use of the catenary structures for CL&P's new circuit because existing catenary structures are aging and require maintenance to meet MNRR's ever-increasing demands. And, ConnDOT informed CL&P that new catenary structures are not being designed

to support utility transmission lines, presumably due to the railroad corridor congestion and maintenance challenges. *(CL&P 13, pp. 9-10)*

Finally, the use of an underground route for the Project decreases other risks – safety and reliability. Construction in an active railroad corridor can be hazardous, even for MNRR-specially trained personnel as evidenced by the tragic accident in West Haven on May 28, 2013. Moreover, a train derailment, such as the one that occurred in a separate incident in Connecticut in May, has the potential to knock out electric power lines. And, taking the 1977 Line out of service during construction would potentially place approximately 47,500 customers (served by Cos Cob, Waterside, Tomac and South End Substations) at risk of a blackout during a single contingency event. *(CL&P 13, p. 11)*

(c) Costs Associated With Overhead Routes

CL&P estimated the capital cost for reconstructing the 115-kV 1440 and 1450 Lines on separate structures, excluding substation costs, to be approximately $100 million. *(CL&P 9, Q-CSC-004)* For the new 115-kV double circuit steel structures for the 1977 and 1151 Lines, CL&P estimated the capital cost, excluding substation costs, to be approximately $69.9 million. In contrast, the estimated capital cost for the underground transmission circuit is $43.9 million, which is $56.1 million less than the estimated cost for reconstructing the 1440/1450 Lines and $26 million less than the estimated cost for new structures for the 1977/1151 Lines. *(PFOF 208, 212; Tr. 1, p. 83; CL&P 9, Q-CSC-004; CL&P 11, Q-CSC-004-SP01)*

Furthermore, CL&P has a higher degree of confidence in its underground cost estimate because of its location in City roadways as compared with the variables that are associated with the overhead routes along an active railroad. *(CL&P 13, pp. 12-13)* And, CL&P would have greater control over the underground construction process; for the overhead routes,

the MNRR corridor construction would require the cooperation of MNRR, ConnDOT and CONVEX, as well as the City as to the installation and operation of the drill rigs along South State Street. *(CL&P 13, p. 15)*

3. *CL&P Expects The Costs Of The Underground Route To Be Eligible For Regionalization*

Moreover, CL&P expects the cost of the Project to be regionalized among all New England customers because of its ability to bolster the reliability of the entire transmission system by eliminating national and regional violations of criteria standards. If the costs are regionalized, Connecticut's electricity ratepayers would pay 25% of the regionalized costs for the Project. *(PFOF 215, 216; CL&P 6, p. 9; Tr. 1, p. 22; Tr. 3, p. __)*

III. THE PROJECT WILL NOT CAUSE ADVERSE ENVIRONMENTAL EFFECTS OR POSE AN UNDUE HAZARD (Conn. Gen. Stats. § 16-50p(a)(3)(B), (C) & (E))

As explained below, the nature of the effects of the Project facilities, by themselves and cumulatively with other existing facilities, will not conflict with the policies of the State of Connecticut that PUESA protects concerning "the natural environment, ecological balance, public health and safety, scenic, historic and recreational values, forests and parks, air and water purity and fish, aquaculture and wildlife". *(Conn. Gen. Stats. § 16-50p(a)(3)(B))* Therefore, there are no sufficient reasons to support a denial of CL&P's Application for a Certificate by the Council.

A. Construction And Operation Of The New 115-kV Underground Transmission Circuit Will Have No Significant Adverse Environmental Effects Or Pose An Undue Hazard

The construction and operation of the new 115-kV underground transmission circuit will have no significant adverse effects on environmental resources because the Project Route is located primarily within City of Stamford roads. Vegetation is sparse and consists of common

species. Adverse effects would be localized and temporary -- short-term construction effects, primarily related to noise and air quality. There would be no permanent adverse effects on any environmental resources. *(PFOF 163-187)*

Significantly, there are no wetlands, watercourses or vernal pools located within the boundaries of the Project. (There is an underground culvert containing a portion of a branch of the Rippowam River, which will be crossed by the cable.) No surface or groundwater resources, floodplains or coastal resources would be affected. There are no threatened, endangered or special concern species of plants or wildlife. Finally, no recreational or scenic resources would be disturbed, and there would not be any adverse visual effects or adverse impacts to historic or archeological resources. *(PFOF 173-185; CL&P 1, Sections F, G)*

Moreover, public health and safety would be protected at all times during construction and maintenance of the Project based on adherence to national and industry codes. *(PFOF 152; CL&P 1, p. G-13)* Once in operation, high-speed protective relaying equipment would detect abnormal system conditions and would send a protective trip signal that would remove the underground circuit from service if an insulation or conductor failure occurred. The Substations are also protected by smoke detection equipment, gates, and chain link fences with barbed wire, and warning signs are posted. *(PFOF 221-223; CL&P 1, p. H-1)*

In accordance with the Council's regulations, CL&P will provide a D&M Plan to manage and mitigate construction effects. It will include a Traffic Management Plan that will be developed in consultation with the City of Stamford and ConnDOT officials, which will address concerns that business owners expressed at the Council's public hearing about obstruction of access to their businesses during construction.

B. Substation Modifications Will Take Place Within The Respective Substation Fence Lines And Have No Permanent Environmental Effects

The Project includes proposed modifications to two existing substations – South End Substation and Glenbrook Substation. These modifications would be performed on CL&P-owned properties, entirely within the fence lines of the developed portions of these substation sites. The scope of work for each substation would include electrical and physical work and substation protection and control. *(PFOF 122-123, 125-126; CL&P 1, pp. D-17, D-18)*

There are no sensitive resources within the substations. *(PFOF 172-183; CL&P 1, Section F)* The tallest new structure to be installed at each substation would be well below the height of the tallest existing structures. At South End Substation, the tallest existing structure is approximately 100 feet; the new riser pole with lightning arrestors would be approximately 37 feet in height. At Glenbrook Substation, the tallest existing structure is approximately 65 feet; the new termination structure with lightning arrestors would be approximately 22 feet in height. *(PFOF 124, 127; CL&P 6, pp. 10-12)*

Accordingly, any environmental effects would be limited in time to the construction period and localized on site. Those effects would be mitigated by soil erosion and sedimentation controls, which would be maintained and replaced as necessary throughout the construction process. At the end of the construction process, final cleanup and restoration would occur. *(PFOF 161; CL&P 1, pp. E-8, E-9)*

C. CL&P's Proposed Mitigation Measures Will Effectively Protect The Environment

CL&P will minimize any construction effects by implementing the *Northeast Utilities Transmission Group Best Management Practices Manual for the State of Connecticut, Construction & Maintenance Environmental Requirements*, December 2011 and will adhere to

the detailed procedures and mitigation measures included in its D&M Plan. *(CL&P 1, p. G-1)* Those measures will include installation, inspection and careful maintenance of erosion controls, consistent with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control.* *(PFOF 149; CL&P 1, p. G-2)*

IV. UNDERGROUND CONSTRUCTION OF THE 115-kV CIRCUIT IS CONSISTENT WITH THE COUNCIL'S EMF BEST MANAGEMENT PRACTICES

The Project fully complies with the provisions of the Council's EMF Best Management Practices ("EMF BMP") that relate to underground electric transmission lines.

A. The Council's EMF BMP

In December of 2007, after a careful study of scientific consensus on potential health risks of exposure to transmission line electric fields ("EF") and magnetic fields ("MF"), the Council adopted its EMF BMP. The EMF BMP state:

> As the weight of scientific evidence indicates that exposure to electric fields, beyond levels traditionally established for safety, does not cause adverse health effects, and as safety concerns for electric fields are sufficiently addressed by adherence to the National Electrical Safety Code, as amended, health concerns regarding EMF focus on MF rather than EF.

(Council Admin. Notice 17, p. 1)

As to MF, the Council further recognizes that:

> A causal link between power-line MF exposure and demonstrated health effects has not been established, even after much scientific investigation in the U.S. and abroad. Furthermore, the Council recognizes that timely additional research is unlikely to prove the safety of power-line MF to the satisfaction of all. Therefore, the Council will continue its cautious approach to transmission line siting that has guided its Best Management Practices since 1993. This continuing policy is based on the Council's recognition of and agreement with conclusions shared by a wide range of public health consensus groups, and also, in part, on a review which the Council commissioned as to the weight of scientific evidence

> regarding possible links between power-line MF and adverse health effects. Under this policy, the Council will continue to advocate the use of effective no-cost and low-cost technologies and management techniques on a project-specific basis to reduce MF exposure to the public while allowing for the development of efficient and cost-effective electrical transmission projects.

(Council Admin. Notice 17, p. 4)

B. CL&P Has Fully Complied With The Council's EMF BMP

1. Health Research Update

The Council's EMF BMP note that the Council "will consider and review evidence of any new developments in scientific research addressing MF and public health effects or changes in scientific consensus group positions regarding MF." *(Council Admin. Notice 17, p. 5)* To that end, CL&P provided a research update from Exponent Inc. ("Exponent") on extremely low frequency electric and magnetic fields and health. *(CL&P 1, Appendix D. 4)* Most importantly, Exponent concluded that recent studies do not provide sufficient evidence to alter the basic conclusion of the World Health Organization and other health and scientific agencies that the research suggests that EMF exposure is not the cause of cancer or any other disease process at the levels we encounter in our everyday environment. *(Id. at 46)*

Moreover, Dr. William Bailey of Exponent, who is a well-qualified expert on such matters, in response to questions posed by Council member Wilensky at the evidentiary hearing on March 28, 2013, provided his expert opinion as to the absence of an MF health risk from the Project:

> MR. WILENSKY: ... because they're [Culloden Road] in such close proximity to the cables, do you see any effect on that or any adverse effect on the homes in that one particular area?
>
> DR. BAILEY: Well, if you look at the calculations, they show that the proposed underground installation will actually result in lower magnetic fields at distances as you go away from the cable. So directly over the cable for a distance of 25 feet around the cable the magnetic field is going to be higher. But once you

> get 25 feet away, going out toward 50 feet and beyond, then the field levels on the proposed project will be lower than what they are under the existing conditions. And the levels in any event, whether existing or proposed, at those distances are quite low, certainly in the range that you could find -- as was shown by the measurements along the walking routes in the range of, you know, 5 milligauss on average. And those levels will dissipate to that background level or lower.
>
> MR. WILENSKY: So...there isn't any danger as you can project for the homes or for the particular residents in that area or any of the homes?
>
> DR. BAILEY: Well as you have heard the testimony earlier, the field levels even above the cable are not at a level that science has determined does pose a health risk. And the current recommendations are from the World Health Organization that public exposures be kept below the guideline levels that were talked about earlier in the hearing today of 9,040 milligauss or 2,000 milligauss. So the -- the changes in the magnetic fields away from the cable at residences are very small and not at levels that have been determined to be of a health risk.

(Tr. 1, pp. 74-75)

2. *EMF Measurements And Calculations*

The Council's EMF BMP require measurements of existing EF and MF at the boundaries of certain facilities, with calculations of potential levels from the proposed project. CL&P provided EMF measurements and calculations, as well as the context for the same. *(CL&P 1, pp. I-7 to I-19 and Appendix D. 3)*

Those measurements and calculations demonstrate the following:

- MF levels directly over the cable for a distance of 25 feet will be higher. However, going out toward 50 feet the MF levels on the Project will be lower than existing conditions.
- The changes in the MF levels away from the underground cable at residences are very small and not at levels that have been determined to be of a health risk.
- Projected MF levels for the Project are well below the guideline levels of the International Commission on Non-Ionizing Radiation Protection (1998) and the International Committee on Electromagnetic Safety (2002).

(PFOF 198-200; CL&P 1, Appendices D.2 and D.3; Tr. 1, pp. 74-75)

3. Field Management Design Plan

The Council's EMF BMP also require the submittal of an Field Management Design Plan ("FMDP") that considers no-cost and low-cost MF mitigation measures "specifically where portions of the project are adjacent to residential areas, public or private schools, licensed child day-care facilities, licensed youth camps or public playgrounds." *(Council Admin. Notice 17, p. 4)* There are no such schools, day-cares, camps or playgrounds adjacent to the Project *(PFOF 200)*. The Council has previously found that "residential areas" refer to developed neighborhoods, not residentially zoned areas. *(Council Admin. Notice 29, Opinion, p. 15)* In this case, there are two areas that the Council could consider to be "residential areas", namely areas along Lincoln Avenue and Culloden Road. *(PFOF 202)* Therefore, CL&P submitted an FMDP. *(CL&P 1, Appendix D. 2)*

CL&P's FMDP reflects that the "no cost" MF mitigation options of close phase spacing and best phase designs were included in the Project. Such MF mitigation measures are consistent with the Council's EMF BMP. In addition, as noted in CL&P's FMDP, there were no low-cost MF mitigation measures that would provide significant reduction at or outside the edges of the roadway. *(PFOF 205, 206; CL&P 1, Appendix D.2; CL&P 6, p. 34)*

V. THE PROPOSED "PROJECT ROUTE" IS THE MOST APPROPRIATE ROUTE

As explained more thoroughly in Section II.C of this Brief, CL&P evaluated both underground and overhead routes for the Project. The overhead routes presented significant construction and social challenges and were much more costly than an underground route. Accordingly, CL&P focused its attention on a feasible and cost-effective underground route. The underground route originally proposed by CL&P was refined during the Application process

-- first, at the request of and with the support of ConnDOT, as well as the City, to avoid the use of Atlantic Street, and second, with the City and ConnDOT's support, to reduce the use of City streets by routing through the South End Substation property. *(CL&P 4; CL&P 10)*

Furthermore, the Project Route reflects the extensive outreach efforts undertaken by CL&P and its willingness to continue to evaluate options as the siting process evolved. Three separate entities, two governmental and one private, are on record supporting the Project Route, namely ConnDOT, the City and the East Side Partnership.

Additionally, the Project Route is the most appropriate route because it presents the shortest feasible underground route between South End and Glenbrook Substations, minimizes underground utility disruption, avoids schools and day care facilities and, significantly, avoids the construction complexities posed by Atlantic Street and reduces the overall impact on City roadways. Finally, this route requires less excavation and trenching and likely requires less time to construct and fewer traffic disruptions, as well as potentially lower costs associated with materials and construction. *(PFOF 103-106; CL&P 4; CL&P 10)*

Thus, all of these factors, construction, social and cost, compel the conclusion that the proposed Project Route is the most appropriate route to address the demonstrated need and create a more reliable electric transmission system.

CONCLUSION

The overriding purpose of PUESA is to balance the need for the adequacy and reliability of public utility company services, including electric transmission, with the protection of environmental resources. The Stamford Reliability Cable Project achieves this purpose. The proposed underground transmission circuit will continue the long-range plan to increase the reliability of electric service in Southwest Connecticut – an area that substantially drives the economy of Connecticut.

The Record reflects CL&P's careful design process. The construction of the circuit primarily within Stamford's roads will avoid permanent environmental effects. Localized, short term environmental effects during construction can and will be mitigated. Further, the Project resolves the reliability criteria violations at the lowest cost.

CL&P has demonstrated that the Project complies with all governing statutes and regulations, as well as the requirements and standards of the Council. Therefore, CL&P respectfully asks that the Council approve CL&P's Application by granting a Certificate of Environmental Compatibility and Public Need for the Project, based on the route designated the Preferred Route With Canal Street Option (Updated), as well as the associated modifications for the Glenbrook and South End Substations. CL&P also asks that the Council incorporate the statutory findings listed in Appendix A attached hereto in its decision documents.

Respectfully submitted,

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NOTICE OF SERVICE

I hereby affirm that a copy of this Post-Hearing Brief of The Connecticut Light and Power Company with Appendix A was sent to each Party on the service list dated March 7, 2013, with method of service to each party listed via e-mail on July 22, 2013.

Dated: July 22, 2013

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APPENDIX A

Statutory Findings

There is a public need for the Stamford Reliability Cable Project. (See CL&P's Proposed Findings of Fact [PFOF] 28-61, and provisions of the Record cited by those Findings.) CGS § 16-50p(a)(3)(A)

The nature of the probable environmental impact, including EMF, of the facility alone and cumulatively with other existing facilities has been reviewed by this Council in approving this facility. (See PFOF 163-207, and provisions of the Record cited by those Findings.) CGS § 16-50p(a)(3)(B)

The Council has examined the policies of the State concerning the natural environment, ecological balance, public health and safety, air and water purity, and fish, aquaculture and wildlife, together with all other environmental concerns, and balanced the interests in accordance with CGS § 16-50p(a)(3)(B) and CGS § 16-50p(a)(3)(C). (See PFOF 163-207, 221-223, and provisions of the Record cited by those Findings.)

The environmental effects that are the subject of CGS § 16-50p(a)(3)(B) can be sufficiently mitigated and do not overcome the public need for the facility approved by the Council in the Opinion, Decision and Order. (See PFOF 163-207, and provisions of the Record cited by those Findings.)

The facility approved by the Council in the Opinion, Decision and Order conforms to a long-range plan for expansion of the electric power grid of the electric systems serving the State of Connecticut and its people and interconnected utility systems and will serve the interests of electric system economy and reliability. (See PFOF 28-61, 207, and provisions of the Record cited by those Findings.) CGS § 16-50p(a)(3)(D)(ii)

The underground circuit approved by this Council in its Opinion, Decision and Order is cost effective and the most appropriate based on a life-cycle cost analysis of the facility and complies with the provisions of CGS § 16-50p. (See PFOF 208-212, and provisions of the Record cited by those Findings; see also Opinion, Decision and Order.) CGS § 16-50p(a)(3)(D)(iii)

CL&P has designed the Project in compliance with the Council's EMF BMP. (See PFOF 194-200, and provisions of the Record cited by those Findings.) (CL&P 1, Section I) CGS § 16-50p(a)(3)(D)(iii)

In compliance with the Council's EMF BMP, CL&P furnished a Field Management Design Plan for the Project. (PFOF 202; Council Admin. Notice 17, pp. 4-5, CL&P 1, Appendix D. 2)

The location of the facility approved by this Council in its Opinion, Decision and Order will not pose an undue hazard to persons or property along the area traversed by the underground circuit. (See PFOF 221-223, and provisions of the Record cited by those Findings; see also Opinion, Decision and Order.) CGS § 16-50p(a)(3)(E)