Section B Project Need
(non-CEII)

Connecticut
Light & Power

A Northeast Utilities Company

CONNECTICUT SITING COUNCIL APPLICATION
Connecticut General Statutes Section 16-50*l*(a)(1)

For a Certificate of
Environmental Compatibility and Public Need

STAMFORD RELIABILITY CABLE PROJECT
Stamford, Connecticut

January 18, 2013

Submitted to:
Connecticut Siting Council
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New Britain, CT 06051

Submitted by:
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B. PROJECT NEED[1]

CL&P is proposing the Project to eliminate reliability criteria violations that affect the 115-kV transmission system serving the Stamford-Greenwich Sub-area and to ensure compliance with mandatory national and regional reliability standards. The Project would also extend the strong, reliable source of electric power that resulted from the construction of the Bethel to Norwalk 345-kV line, Middletown to Norwalk 345-kV line, and the Norwalk to Glenbrook 115-kV cables deep into the Norwalk-Stamford Sub-area, thereby bringing the benefits of these additional electric power supplies to the entire region west of the Norwalk Substation and, in particular, to the Stamford-Greenwich Sub-area.[2]

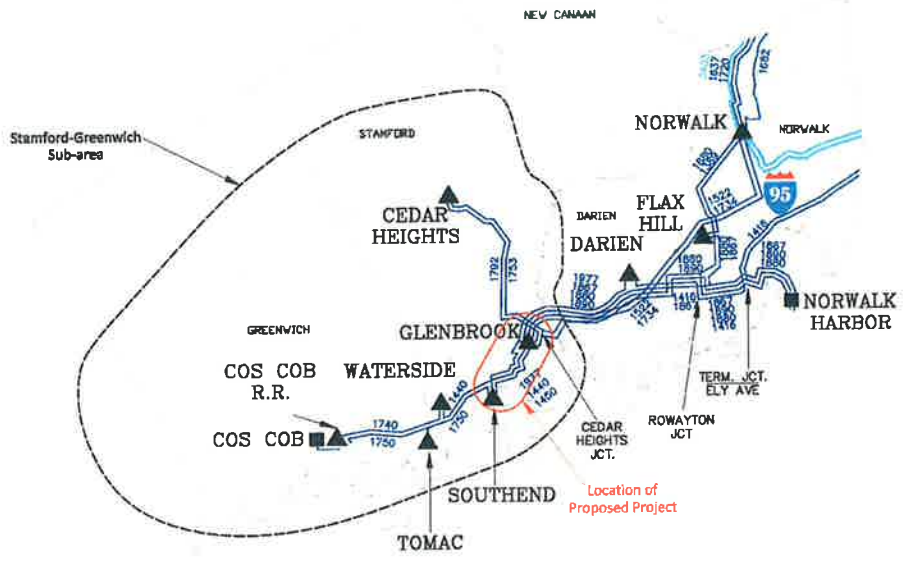

Figure B-1. Geographic Diagram of the Stamford-Greenwich Sub-area

[1] This analysis of Project Need has been redacted to avoid disclosure of information determined to be Critical Energy Infrastructure Information ("CEII"). CL&P will be filing a CEII Appendix under separate cover, along with a Motion for a Protective Order, pursuant to the Council's rules that preserve the confidentiality of CEII.

[2] 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.

B.1 BACKGROUND

B.1.1 The Existing SWCT Transmission System and its Limitations

Since 2002, the inadequacy of the electric supply system in Southwest Connecticut ("SWCT") and, in particular, of the Norwalk-Stamford Sub-area within SWCT, has been widely recognized. Connecticut's electric public utilities, CL&P and The United Illuminating Company ("UI"), have proposed and completed major system improvements to enhance the reliability and efficiency of the bulk power transmission system in SWCT.

In 2002, CL&P proposed to construct a new 345-kV transmission line between the Plumtree Substation in Bethel and the Norwalk Substation in Norwalk in order to increase the electric import capability into SWCT, particularly the Norwalk-Stamford Sub-area, and to remedy voltage problems on those portions of the electric system (see Council Docket No. 217). The Bethel to Norwalk 345-kV line was the second of three planned steps for constructing a 345-kV "loop" through SWCT. The Bethel-Norwalk 345-kV line was placed in service in 2006. The first segment of the SWCT 345-kV loop had been constructed between New Milford and Bethel in the 1970s.

In 2002, CL&P proposed to replace the existing 138-kV Long Island Cable from the Norwalk Harbor Station, Connecticut to the Northport Station, New York to reinforce the electrical connection between SWCT and Long Island, New York (see Council Docket No. 224). The new Long Island cables were placed in service in 2008.

In 2003, CL&P and UI proposed to construct a series of new 345-kV transmission lines from Middletown to Norwalk, which completed the SWCT 345-kV loop (see Council Docket No. 272). The newly installed 345-kV loop in SWCT facilitated the transport of electricity into the area, reduced the potential for 115-kV line overloads, improved efficiency with reduced line losses, improved system voltage performance, reduced high levels of available short-circuit current, and generally strengthened the entire New England electric grid by enhancing interconnections between SWCT and the rest of New England. The loop also unlocked existing generation in SWCT and enabled the siting of new generation in the region. The new Middletown-Norwalk 345-kV line was placed in service in 2008. In summary, 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.

In 2003, CL&P proposed to construct two 115-kV transmission cable circuits between the Norwalk Substation in Norwalk and the Glenbrook Substation in Stamford in order to increase the electric import capability into the Norwalk-Stamford Sub-area, and to remedy voltage problems in that part of the electric system (see Council Docket No. 292). The Glenbrook Cables Project extended this new strong source with its two cable construction into the Glenbrook Substation in Stamford. The new Norwalk-Glenbrook 115-kV cables were placed in service in 2008.

When the 345-kV loop was completed in 2008, the Norwalk Substation became a strong, reliable electric supply source. The Project is designed to build upon the strength created at Norwalk Substation and to extend the benefits of the SWCT 345-kV loop and the 115-kV Glenbrook cables farther west into the Stamford-Greenwich Sub-area portion of the Norwalk-Stamford Sub-area. The Stamford-Greenwich Sub-area is served by the Glenbrook Substation, Cedar Heights Substation, South End Substation, Tomac Substation, Waterside Substation and the Cos Cob Substation.

Construction of the Project would provide the additional transmission transfer capability needed to extend the benefits of the 345-kV loop from the Glenbrook Substation to South End Substation and, from there, throughout the Stamford-Greenwich Sub-area. This line will not only provide a new source of electric supply directly to the South End Substation, but also will allow the redistribution of power flows on the transmission lines that presently serve Stamford, including those serving the Tomac, Waterside, and Cos Cob Substations in the western portion of the Stamford-Greenwich Sub-area. In particular, the proposed Project will relieve post-contingency overloads on the 115-kV transmission lines serving these substations and increase system voltage levels, thereby providing more reliable power supplies to meet customer demands in the areas served by those substations.

B.1.2 Justification for the Proposed In-Service Date

As discussed more fully below, the reliability contingency analyses that were performed show potential voltage collapse and thermal overloads that could occur today, in violation of national reliability criteria standards. The projected in-service date for the Project is December 2014. This date represents the earliest date that the Project could be in service after taking into consideration the time required for siting, permitting, and constructing the proposed facilities.

B.1.3 Adequacy of the Current Transmission System With and Without the Project

As noted above, at the present time, without the Project, the transmission system could experience voltage collapse and thermal overload conditions. With the Project in service, analyses of the 2015 summer peak load (the first summer peak period that the Project would be available to provide the reliability benefits) demonstrate that the Project addresses these potential voltage collapse and thermal overload conditions. The Project is expected to continue to prevent these reliability criteria violations and provide more reliable electric transmission service for at least twenty years.

B.1.4 Identification of the Project in the Forecast of Loads and Resources Pursuant to Conn. Gen. Stat. §16-50r

The Project was listed in Table 4-1A: Proposed Transmission Line Projects in CL&P's *2012 Forecast of Loads and Resources For the Period 2012-2021*, dated March 1, 2012.

B.2 METHODOLOGY FOR ANALYZING SYSTEM RELIABILITY

B.2.1 ISO-NE Regional System Planning Process

The Federal Energy Regulatory Commission ("FERC") has given authority to the Independent System Operator - New England ("ISO-NE") to operate and perform regional system planning of the electric system in New England. This process is incorporated in the ISO-NE Open Access Transmission Tariff ("OATT" or "ISO-NE Tariff"). In 2007, ISO-NE took steps to adopt a regional transmission planning process in accordance with FERC Orders No. 890, 890-A and 890-B. This process is referred to as the "Regional System Planning Process" and is set forth in Attachment K of the ISO-NE OATT.

ISO-NE administers the Regional System Planning Process and has a number of responsibilities. For transmission, ISO-NE's primary functions are to: (1) conduct periodic needs assessments on a system wide or specific-area basis, as appropriate, (2) perform solution studies to develop alternatives and define the preferred project to address the identified needs; and (3) develop an annual regional system plan using a 10-year planning horizon. Needs assessments are designed to identify future system needs on the regional transmission system,

or within a sub-area of the system, with consideration of available market solutions. Where market solutions do not exist, or where system deficiencies exist even with market solutions incorporated, ISO-NE evaluates and determines preferred regulated transmission solutions, within the solution assessment planning process and the annual transmission planning process.

ISO-NE carries out the regional planning process through the requirements of the ISO-NE Tariff Attachment K as part of an open and transparent stakeholder process involving the Planning Advisory Committee ("PAC"), New England Power Pool ("NEPOOL") Reliability Committee, and other ISO-NE advisory committees. Membership of PAC includes market participants, public utility commissions, consumer advocates and Attorneys General, environmental regulators, and other interested parties. PAC provides input and feedback to ISO-NE regarding the first three phases of the regional system planning process, including the development and review of "needs assessments," the preparation of "solution studies," and the development of the Regional System Plan ("RSP"). Specifically, PAC serves to review and provide input on: (1) the development of the RSP; (2) assumptions for studies performed; (3) the results of needs assessments and solutions studies; and (4) potential market responses to the needs identified by ISO-NE through a needs assessment or the RSP. The fourth and final phase is the submittal of the Proposed Plan Application ("PPA") to ISO-NE by the project sponsor.

The annual RSP represents a compilation of the regional system planning process activities conducted by ISO-NE and stakeholders during a given year and presents the results and findings of the ongoing ISO-NE regional planning process. The RSP addresses system needs and deficiencies as determined by ISO-NE through its periodic needs assessments, with updates occurring on a continuing basis to: (1) account for changes in pool transmission facilities system conditions; (2) ensure reliability of the transmission system; (3) comply with national and regional planning standards, criteria, and procedures; and (4) account for market performance and economic, environmental, and other considerations.

"Needs Assessment" identifies the timing and details of system needs, with recognition of available or potential market solutions. Specifically, Attachment K requires that needs assessments will analyze whether the New England transmission system: (1) meets applicable reliability standards, (2) has adequate transfer capability to support local, regional and inter-regional reliability; (3) supports the efficient operation of the wholesale electric markets; and (4) is sufficient to integrate new resources and loads on an aggregate or regional basis. Needs

assessments identify the location and nature of any potential problems with respect to transmission facilities and situations that significantly affect the reliable and efficient operation of the New England transmission system, along with any critical time constraints for addressing the specified needs to facilitate the development of market responses and the pursuit of regulated transmission solutions.

"Solution Study" identifies the most cost-effective transmission solutions to system deficiencies identified through the needs assessment. ISO-NE may form targeted study groups to conduct the solutions studies, which would include project proponents, as well as representatives of affected stakeholder groups. Proposed regulated transmission solutions are made in consultation with PAC and identified solutions are reflected in the RSP.

"Proposed Plan Application ("PPA") Study" is a comprehensive analysis performed by the project sponsor for regulated transmission solutions that are reviewed by the NEPOOL Reliability Committee and approved by ISO-NE under Section I.3.9 of the OATT. These studies look at the overall impact of the project under study to determine if the reliability or operability of the New England power system is adversely impacted by the construction of the project.

B.2.2 ISO-NE Approval of the Project

An ISO-NE led working group ("SWCT Working Group") consisting of members from ISO-NE, NU, and UI was formed to study the SWCT area. The resulting need study was conducted in accordance with the regional planning process as outlined in Attachment K to the ISO-NE OATT. Starting in 2011, transmission needs for the Project were identified and included in the annual ISO-NE RSP.

The SWCT Working Group evaluated transmission alternatives to serve the Stamford-Greenwich Sub-area over a 10-year planning horizon, concentrating on the projected reliability of the transmission network. The SWCT Working Group scoped and performed a deterministic planning analysis for different operating scenarios, including North American Electric Reliability Corporation ("NERC") contingency events and basic transmission reliability criteria for planning, designing and operating the bulk power transmission system. The evaluation modeled stressed system conditions for the year 2018 summer peak load level. Subsequently, the SWCT Working Group identified and evaluated a series of potential transmission solutions and

identified the preferred transmission solution as a CL&P Project. With the ISO-NE presentation of a range of potential transmission solutions, including the proposed transmission solution, to the PAC on November 16, 2011, the project was identified as the proposed solution and its status changed to "proposed" in the RSP.

A detailed study scope for the PPA was developed for the NEPOOL Transmission Task Force and the Stability Task Force. CL&P then conducted an analysis consistent with the identified study scope and reviewed its results with these task forces. Once the task forces were satisfied, the project was forwarded to the NEPOOL Reliability Committee, which evaluated the project for a determination of no adverse impact on the New England transmission network (Section I.3.9 of the ISO-NE Tariff). The NEPOOL Reliability Committee voted to recommend approval to ISO-NE on June 20, 2012. In July 2012, ISO-NE issued a letter approving the application and reclassifying the Project from "proposed" to "planned" in the RSP project listing.

B.3 SYSTEM EVALUATION STUDY STANDARDS AND STUDY ASSUMPTIONS

B.3.1 CL&P Transmission Planning Process

CL&P's planning process is integrated with and coordinated by ISO-NE as part of its regional planning process and annual RSP. CL&P's System Planning Group evaluates the capacity and reliability of the electric transmission facilities in its service territory on a system-wide basis. As part of the system-wide planning process, CL&P investigates reliability needs at all load centers within the CL&P service territory, with specific emphasis on geographic sub-areas exhibiting distinctive transmission, generation, or distribution attributes. This helps to ensure that the particular load requirements of all areas within the CL&P electric system are reliably served. Within those areas, CL&P evaluates the adequacy of its transmission system starting with the high-voltage transmission systems and finishing with substation-level resources and requirements.

The assessment of system reliability conducted by CL&P's System Planning Group evaluates the system's performance under projected operating conditions over a 10-year period. CL&P employs analytical modeling software at the transmission system level to perform this evaluation. These models are designed to simulate various "what if" scenarios, load-flow patterns, and loading characteristics across the system under both normal and adverse

conditions. These studies analyze the impact of contingency events on the transmission system and test the effect of various adjustments that could be implemented to address any inadequacies discovered as a result of the contingency analysis. In addition, CL&P conducts various studies and evaluations in response to changes in conditions that affect the reliability of the system, such as the implementation of new demand resources or the announced retirement or new construction of generating units. Throughout the planning process, CL&P works in close coordination with the planning staff of ISO-NE.

B.3.2 Mandatory Reliability Standards

The following is a list of mandatory reliability standards.

FERC: The Federal Energy Policy Act of 2005 required the FERC to designate an entity to provide for a system of mandatory, enforceable reliability standards under FERC's oversight. This action was part of a transition from a voluntary to a mandatory system of reliability standards for the bulk-power system.

NERC: In July 2006, FERC designated the NERC as the nation's Electric Reliability Organization ("ERO"). The ERO is charged with improving the reliability of the bulk-power system by proactively preventing situations that can lead to blackouts, such as that which occurred in August 2003. Under this framework, NERC establishes a general set of rules and criteria applicable to all geographic areas. Electric utilities must adhere to reliability standards and criteria that are established under the purview of NERC, which has national authority to ensure the reliability of transmission systems across the United States. Failure to comply with these standards can result in FERC's imposition of financial penalties of up to $1 million per day for an instance of non-compliance.

NPCC: The Northeast Power Coordinating Council ("NPCC") is one of several regional reliability councils that, under the supervision of NERC, establish criteria for the design and operation of the bulk power system. NPCC's jurisdiction includes New York, New England, and eastern Canada. NPCC establishes a set of rules and criteria that are particular to its jurisdiction, but must be consistent with the more general NERC standards.

ISO-NE: The ISO-NE has responsibility for the planning and operation of the integrated New England transmission system. ISO-NE operates the various transmission systems owned by

electric utilities in New England as a single transmission system. ISO-NE has adopted planning criteria that must be consistent with the standards and criteria established by NERC and NPCC. They are designed to ensure that the electric power system serving New England, including the CL&P electric service territory, will provide an adequate and reliable electric power delivery system.

The national and regional standards and criteria applicable to the CL&P's transmission system are deterministic in nature in that the standards are designed to assess the performance of the CL&P's 69-kV, 115-kV, 138-kV, and 345-kV transmission elements under a series of defined contingency situations. Specifically, these standards and criteria dictate a set of performance tests or contingencies under which the CL&P electric system must perform without experiencing overloads or voltage problems.

B.3.3 Stamford-Greenwich Sub-Area - Projected Peak Load Forecasts

ISO-NE's regional peak load forecast for New England is produced on an annual basis and presented in the Regional System Plan report and is contained in the annual filing of the Capacity, Energy, Loads and Transmission ("CELT") report each spring. The forecast is derived by modeling load from participants for each of the New England states, based on load data from various sub-areas within the New England states, and summing the results to arrive at a New England regional forecast. The forecast is reviewed by the NEPOOL Load Forecast Committee, the NEPOOL Reliability Committee and the PAC. The ISO-NE 2012 CELT forecast was utilized as the basis for the load forecast for these sub-area analyses.

ISO-NE develops New England load forecasts that are used for electric system planning. To model loads in the Norwalk-Stamford Sub-area, a share of the projected New England load that is proportional to the Sub-area's historical share was assigned to it. An assumption of a uniform growth rate for all of New England is thus embedded in the modeling process. The peak load forecasts include forecasts based on both normal and "90/10" weather conditions. Under ISO-NE's design weather scenario, the peak-load forecast is modeled assuming that there is a 10% probability that peak load in the year represented will be higher than forecast (and a 90% chance that the actual peak load will be less than the forecast level). ISO-NE employs the design weather probability level for planning purposes in order to ensure the reliable operation of the grid under weather conditions that may be infrequent, but are reasonably foreseeable, in

terms of their potential to occur. This is consistent with the essential nature of having a highly reliable electric system and the overarching requirement that the system be designed with sufficient capability to meet heat-wave conditions consistent with historical experience. Moreover, the risk and consequences of having shortfalls and a constrained electric system are far more significant than having an electric system that has the flexibility to respond to both normal and reasonably foreseeable peak demands. The products of the ISO-NE annual forecast include collective forecasts for all of New England, forecasts for each state, and forecasts for specific locations such as the Norwalk-Stamford Sub-area.

CL&P follows the same basic approach as ISO-NE, but applies the approach in a more granular fashion to develop load forecasts of smaller areas such as distribution substations. As part of its transmission reliability planning process, CL&P develops a forecast of peak load for each substation for purposes of testing and evaluating the performance capabilities of the system. To analyze the need for the Project, CL&P used ISO-NE's recent peak forecast (2012 CELT) for New England and adapted it to determine peak loads over the planning horizon at each of the CL&P's substations serving Connecticut and including the Stamford-Greenwich Sub-area. Although CL&P's transmission planning process is closely aligned and integrated with that of ISO-NE, an important consideration that CL&P must factor into its area-specific analysis is unique peak load "granular" requirements in the Stamford-Greenwich Sub-area.

CL&P continuously monitors the real estate and commercial developments within Connecticut. These new developments can be significant at times and the new load must be considered in planning to ensure that an adequate electric grid is available to meet customer demands reliably. These changes in future load forecasts are generally incorporated in the ISO-NE forecast. In Stamford, City officials have undertaken efforts to encourage robust economic development and urban redevelopment, especially within the City's South End area. These efforts include:

- Building Land Technologies, LLC ("BLT") - Harbor Point Development: overall plans by BLT call for a total of 6 million square feet ("s.f.") of combined office space, retail leases, and residential uses, which include:
  - Bridgewater Associates World Headquarters: 750,000 s.f.

  - Harbor Points Retail Centers: a total of 400,000 s.f. of space at the renovated historic Yale & Towne site and at The Square, in the center of the Waterside community.
  - The Hotel and Spa at The Square: a total of 257,805 s.f. with 13 stories and 131 rooms.

- Malkin Properties, LLC - Metro Center II: 250,000 s.f. office space near the Stamford Transportation Center.
- Spinnaker Associates: redevelopment of the former Clairol site, a 32 acre site, being developed to house Chelsea Piers, a 346,000 s.f., multi-sport athletic facility, plus other key occupants including NBC Sports, NBC Olympics, NBC Sports Digital, NBC Sports Network and the Comcast Sports Management Group.
- Stamford Hospital Expansion: an 11-story medical specialty building addition, with an additional 33,500 s.f. central utility plant, to support the larger facility.
- Park Square West Phase I and II: four separate buildings with a total of 419 apartments.
- The Mill River Corridor/Park/Skating Rink: a 26-acre linear park, extending from South End north past Stamford's Downtown area, and including an outdoor ice skating rink, walking and bicycle trail, and additional housing units.

To analyze the need for the Project, CL&P used ISO-NE's 2012 CELT peak forecast for each of the CL&P's substations serving Connecticut and incorporated the passive and active demand resources in the Stamford-Greenwich Sub-area. Table B-1 includes the projected 2015 load and demand resource levels in megawatts ("MW") at the South End, Tomac, Waterside, Cos Cob and Darien Substations serving the Stamford-Greenwich Sub-area.

Table B-1: Projected 2015 Load and Demand Resource Levels (MW)

Substation	Gross Peak Load	Passive Demand Resources	Active Demand Resources	Net Load
South End	105.1	5.4	3.7	96.0
Tomac	52.2	2.7	1.8	47.7
Waterside	75.8	3.9	2.7	69.2
Cos Cob	160.0	8.3	5.7	146.0
Darien	69.7	3.6	2.5	63.6
Total	**462.8**	**23.9**	**16.4**	**422.5**

B.3.4 Incorporation of Energy Efficiency into the ISO-NE Planning Process

Demand Resources ("DR") are treated as capacity resources in the ISO-NE Forward Capacity Auctions. In accordance with Attachment K of the ISO-NE OATT, demand resources are modeled in the base case at the levels of the most recent Forward Capacity Auction ("FCA") and in this case FCA6. Demand resources are split into two major categories, passive and active demand resources.

Passive Demand Resource: Passive demand resources are largely comprised of energy efficiency ("EE") programs and are expected to lower the system demand during all hours and during designated peak hours in the summer and winter. In accordance with ISO-NE planning procedures, 100% of passive demand resources are modeled in the base case power flows.

Active Demand Resource: Active demand resources are commonly known as real-time demand response ("RTDR") resources and can be dispatched if a forecasted or real-time capacity shortage occurs on the system. In addition active demand resource can be contracted interruptible load when called upon by ISO-NE. In accordance with ISO-NE planning procedures, typically 75% of active demand resources are modeled in the base case power flows. The reduced level of capacity resource capability reflects the ISO-NE historical operating experience when dispatching such units in emergency system conditions.

Because DR was modeled at the low-side of the distribution substations in the power-flow model, all DR values were increased to account for the reduction in losses on the local distribution network (assumed to be 5.5% based on historical studies). Passive DR was

modeled by load zone and active DR was modeled by dispatch zone. Since Active DR is only reported by load zone, the active DR load zones were split proportionally to dispatch zones using the percentage of CELT load modeled in the dispatch zone to the total CELT load modeled in the load zone.

B.3.5 The SRCP Impact

The results of the contingency event analyses indicated reliability criteria violations in the Stamford-Greenwich Sub-area. The major conclusions from these contingency event analyses are:

- The transmission loading capability between the Glenbrook Substation and the South End Substation is insufficient to reliably serve the customer demands in the Stamford-Greenwich Sub-area under contingency events.
- The transmission loading capability from the South End Substation to the Waterside Substation and the Cos Cob Substation is insufficient to reliably serve the customer demands in the Stamford-Greenwich Sub-area under contingency events.

Due to the overloads on the transmission lines between the Glenbrook Substation and the South End Substation, CL&P is proposing to install a new cable circuit to increase the power flow loading capability between these two stations. This is the preferred transmission solution to address the reliability criteria violations. Contingency events were retested with the Project modeled in service to show the reliability benefits that would be realized by the Project. With the Project in service the transmission system serving the Stamford-Greenwich Sub-area would experience improved transmission reliability for the contingencies tested in conformance with the reliability standards and criteria established by NERC, NPCC and ISO-NE. The Project is a new transmission circuit, with the following approximate summer thermal ratings of Normal = 250 MVA (megavolt ampere), LTE = 450 MVA and STE = 475 MVA, that provides an alternative transmission path for power flows and relieves criteria violations on the limiting 115-kV transmission system in the Stamford-Greenwich Sub-area. With the Project in place, these criteria violations are eliminated. The reliability benefits that the Project serves are summarized below:

- The transmission transfer capability between the Glenbrook Substation and the South End Substation is increased to reliably serve the customer demands in the Stamford-Greenwich Sub-area under contingency events.

- The Project provides a new and alternate path to relieve power flows in the vicinity of the Waterside, Cos Cob and Tomac Substations to below LTE ratings under contingency events.

Some double-circuit tower contingency events cause a portion of the electric system between South End, Waterside, Tomac, and Cos Cob to interrupt load after the completion of this Project. These violations are on the 115-kV line segments serving Tomac, Waterside and Cos Cob. Such criteria violations can be resolved by the future construction of a new underground transmission line into that area of Greenwich.

B.4 NON-TRANSMISSION ALTERNATIVES

Regional transmission planning, under the guidance of ISO-NE, must take into account load growth and grid reliability, while also remaining flexible to allow market solutions to be considered (e.g., generation, demand response programs) to meet reliability needs. In assessing the need for new transmission to serve the Stamford-Greenwich Sub-area, CL&P first considered the following non-transmission alternatives.

Central Generation: The installation of central generating units constructed at the existing generating stations and new generating units at new sites, which could be provided by the marketplace and connected to the existing transmission system, are potential non-transmission alternatives to be evaluated on a case by case basis.

Energy Efficiency: Passive and active energy efficiency programs can be proposed by proponents to reduce peak load and thus reduce the additional power flow capability requirements for the existing transmission system. Passive demand resources could include conservation and load management and Connecticut Energy Efficiency Fund programs. Active demand resources could include the installation of small and dispersed generating units located on the existing distribution system to supply local load requirements and reduce the needed transmission requirements for additional power flow system capability. In addition customer load interruption programs, that would require customers to voluntarily interrupt load under the

direction of ISO-NE, could provide the necessary relief to ensure transmission system reliability.

Load Curtailment: The incorporation of planned contracted customer load curtailment could be used to reduce the need to maintain service requirements and thus reduce power flows on the transmission network.

Any of these options individually, or in combination, have the potential in some circumstances to defer or displace the need for upgrades to the existing transmission system while maintaining the same level of reliability. However, these alternatives are not currently available to meet the immediate reliability needs that the Project addresses.

The non-transmission alternatives that are identified in the following sections were evaluated on a system basis to determine whether they could be developed and sized to adequately address the transmission reliability requirements in the Stamford-Greenwich Sub-area. Because of the unlikelihood of the development of such alternatives sufficient to displace the pressing need for the Project, central generation energy, efficiency and load curtailment do not present practical alternatives to resolve the reliability criteria violations that the Project addresses.

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