APPLICATION TO THE

CONNECTICUT SITING COUNCIL

FOR THE CONSTRUCTION OF A 115-kV BULK SUBSTATION FACILITY IN TRUMBULL, CONNECTICUT

BY

THE UNITED ILLUMINATING COMPANY

June 30, 2006

Volume 1 of 2

The United Illuminating Company

Application for a Certificate
of Environmental Compatibility and Public Need

Trumbull Substation
3-7 Wildflower Lane
Trumbull, Connecticut

June 30, 2006

Submitted to:
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut

Submitted by:
The United Illuminating Company
157 Church Street
New Haven, Connecticut

The United Illuminating Company

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I. EXECUTIVE SUMMARY

The United Illuminating Company ("UI" or "Company") proposes to construct and operate a new 115,000/13,800 volt ("115/13.8-kV") electric substation and associated facilities in the Town of Trumbull ("Trumbull"), Fairfield County, Connecticut (the "Trumbull Substation" or the "substation"). An existing 115-kV transmission line (UI line #1730) will be reconfigured to connect to the new substation. The substation will be located on UI-owned property at 3-7 Wildflower Lane, immediately west of the Connecticut State Route 8/Nichols Avenue (State Route 108) interchange. A layout of the UI property and the fenceline at the substation is provided in Figure 1.

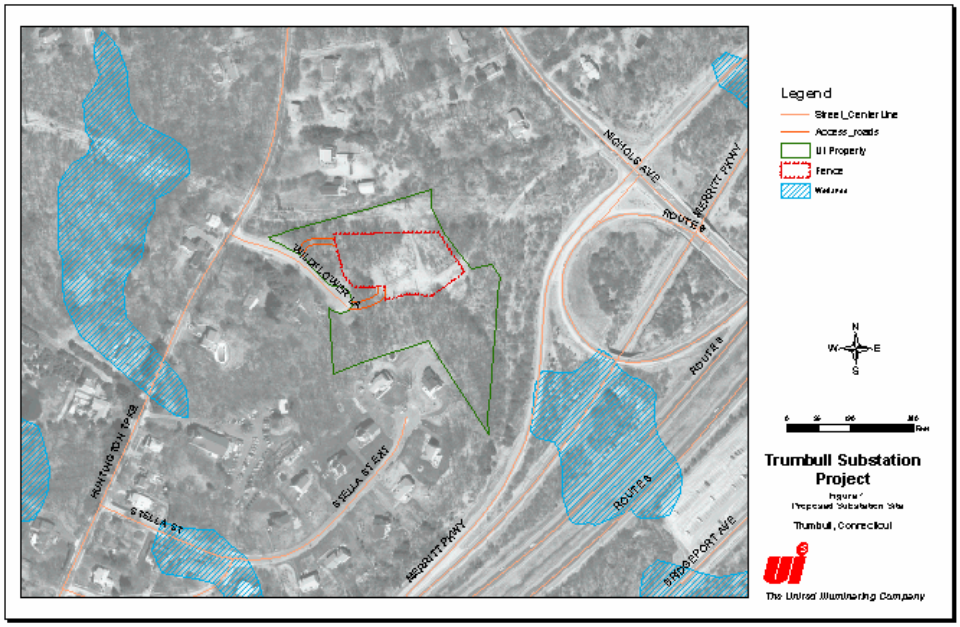

Figure 1 – UI property lines and proposed fenceline

The Trumbull Substation is needed to maintain reliability of electric service to customers. Currently two substations serve Trumbull, Trap Falls Substation in Shelton and Old Town Substation in Bridgeport. After the summer peak of 2007, these substations will no longer be able to meet the capacity needs of the growing load in the greater Trumbull region. The substation will provide the distribution capacity in the greater Trumbull area necessary for UI to reliably serve the growing load. The substation will allow UI to meet the growing capacity requirements of this area while remaining in compliance with UI's design criteria. UI's design criteria stipulate that a substation must be able to serve load at or below the substation's rating under a single contingency (loss of one component/N-1).

The substation will be located on property owned by the Company. A portion of the property previously has been cleared and was formerly used as a training facility for the Company's line workers. This site is irregular in shape and is comprised of three parcels with a total area of 4.85 acres. One of the three parcels has been owned by UI since 1960 when the 115-kV Trumbull Junction tap was constructed. In 1992, the Company purchased two additional parcels. The property is situated on a cul-de-sac at the easterly terminus of Wildflower Lane within a triangular area bounded by Huntington Turnpike, Nichols Avenue and Route 8. The northerly portion of the site includes a portion of CL&P 1710 and 1730 line right-of-way ("ROW"). The easterly portion of the site is coincident with the UI 1710 and 1730 line ROW.

The environmental effects from construction and operation of the Trumbull Substation are expected to be minimal. The substation will not impact residential, commercial, industrial, educational, governmental, institutional, or recreational land

uses. No known or recorded cultural resources will be adversely impacted by the construction or operation of the substation. The substation will have no adverse impacts on water resources, other natural resources or federal or state protected plant and animal species and their habitats. Further information on the environmental impact of the substation can be found in Section X of this application and in the Environmental Report (see Exhibit B).

Two residences on the north side of the existing CL&P ROW (north of the substation) will have mostly unobstructed views of the substation. One residence, to the northwest of the existing ROW, will have an unobstructed view of a new transmission structure. See Exhibit A, Figure 2.4. These two residences currently have obstructed views of the transmission structures. Abutting residences, located to the south, east and west will have obstructed to seasonally obstructed views of portions of the substation. UI anticipates no visual impacts to non-abutting area residences, due to vegetation and topography. The Company has developed mitigation alternatives that will make the substation more visually appealing. See Section XII. Figure 2 illustrates property lines abutting the substation property.

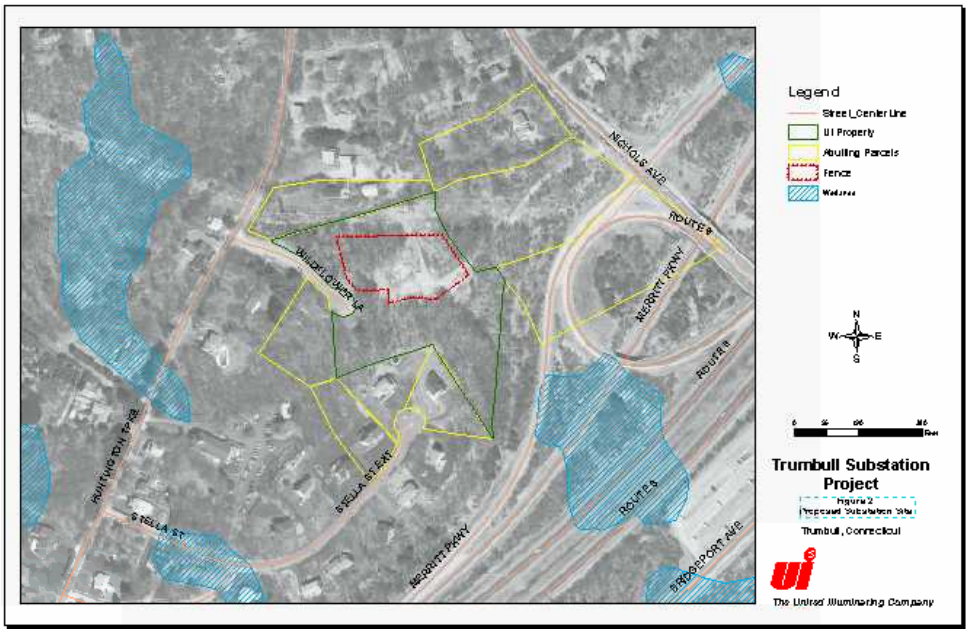

Figure 2 Property lines abutting the substation

See Exhibit A for photo renderings of the existing conditions and of the substation superimposed on the subject property and Exhibit L for a rendering key.[1]

Presently there is no bulk substation in Trumbull. UI's Old Town Substation (located on Kaechele Place in Bridgeport) and Trap Falls Substation (located on Armstrong Road in Shelton), which are both 115/13.8-kV distribution substations, supply over 95% of Trumbull's electric load. The locations of the Old Town Substation and the Trap Falls Substation are shown on Figure 3.

[1] The visual simulations do not include final landscaping detail which will be provided in the Development & Management Plan ("D&M Plan").

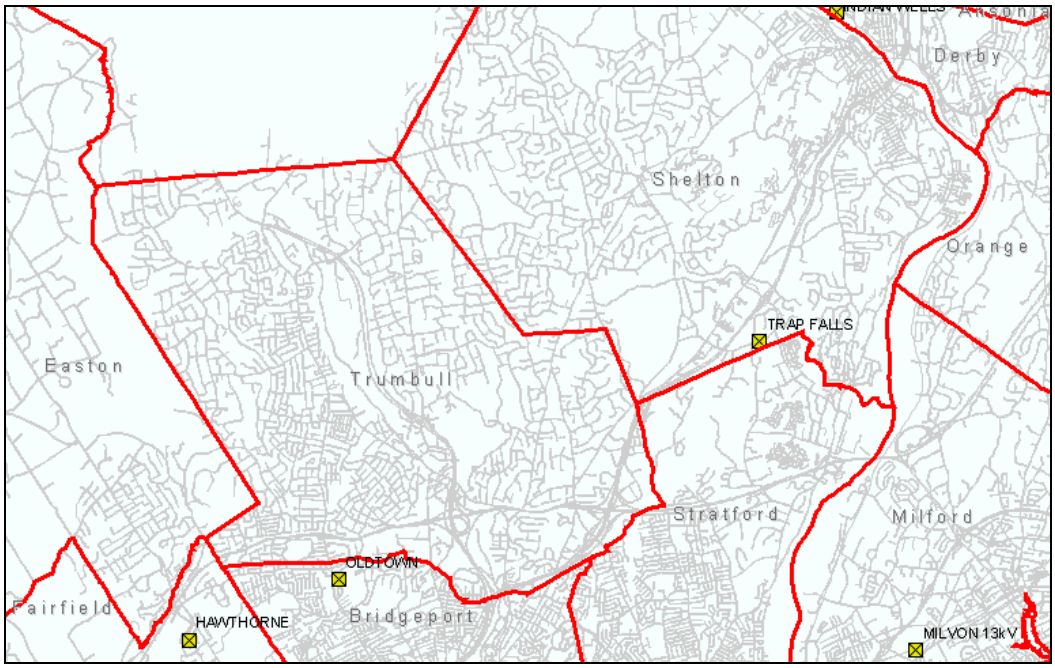

Figure 3. Location of Old Town Substation and Trap Falls Substation

The two substations reached the following loading levels during the summer of 2005:

- Old Town Substation. 83.3 MVA, which is 97% of its maximum rated capacity of 86.5 MVA.
- Trap Falls Substation. 77.3 MVA, which is 101% of its maximum rated capacity of 76.5 MVA.

A. Design Criteria

UI's design criteria require substations to be built with two transformers. The criteria stipulate that one transformer must be able to carry the load of the substation through one 24-hour load cycle and remain within the transformer rating. The peak load at Trap Falls is currently above the transformer rating, and continues to grow. If one substation transformer at Trap Falls Substation failed during summer peak load conditions, the remaining transformer would be overloaded. This would require

immediate load shedding to avoid unacceptable thermal overloading and degradation of the remaining transformer.

If this were to occur, several thousand customers in Trumbull, Shelton, Stratford and Bridgeport would be at risk of experiencing multiple hour outages until one or all of the following emergency restoration steps occurred:

- UI's mobile transformer is connected at the site
- The transformer that failed is restored
- The Trap Falls Substation load dissipates below the rating to a level that would allow the load to be restored.

Exposing customers to this risk of outages violates the Company's design criteria.

B. Capacity Issues

The capacity problems at both Old Town and Trap Falls Substations will increase in severity by the summer of 2007 due to the addition of new customer load, including a new 5 MW customer on Research Drive in Shelton, with further load increases expected in the next five years. The following graphs illustrate the forecast load growth at Old Town and Trap Falls over the next 5 years.

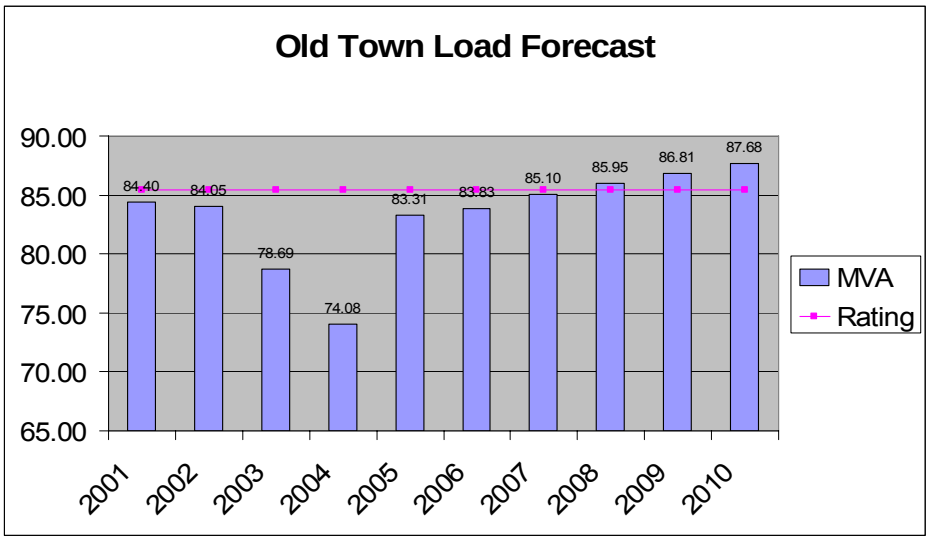

Figure 4. Forecast Load Growth at Old Town, 2001 – 2010

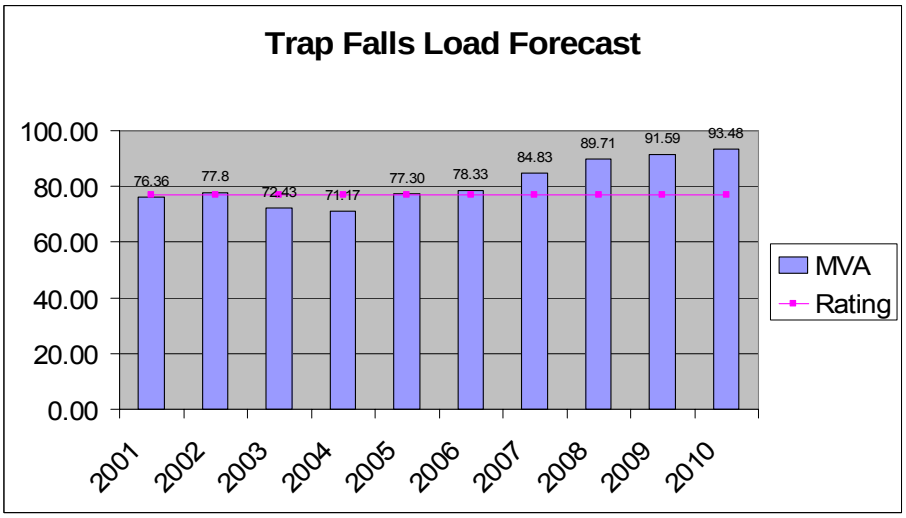

Figure 5. Forecast Load Growth at Trap Falls, 2001 - 2010

The construction of Trumbull Substation will provide the needed capacity to support customer demand in this region. During the summer of 2008, Trap Falls Substation is expected operate at 117% of its rating. Over the past several years, the

Company has used distribution load transfers to defer construction of the Trumbull Substation. Most of the opportunities for distribution load transfers have now been implemented. UI has identified the potential for an additional 8 MVA of temporary load transfers from Trap Falls. Temporary measures will need to be taken in the summers of 2006 and 2007 to cascade load from Trap Falls to other neighboring substations if loads approach their forecast levels. Cascading load in this manner reduces system performance and reliability by increasing feeder lengths and degrading voltage levels. Although these temporary load transfer measures are expected to allow UI to continue to provide service to customers in the short-term while the substation is being constructed, these measures are unsustainable in the long-term.

With the new Trumbull Substation, approximately 18 MVA of load can be transferred permanently from Old Town Substation and approximately 17 MVA of load can be transferred permanently from Trap Falls Substation (35 MVA total) to the new substation. This eliminates the overload concerns at both existing substations and provides a capacity margin of 23 MVA for future growth in the greater Trumbull region.

C. Alternatives to New Substation

Alternatives to building a new substation were investigated. These alternatives included (1) distribution load transfers to adjacent substations; (2) replacing the existing substation transformers with larger units; (3) the installation of a modular substation in the region; (4) distribution automation; (5) distributed generation; and (6) conservation and load management. None of these alternatives would produce the required capacity increase in the greater Trumbull region. See Exhibit C, pp. 24-26.

The new substation will be designed with sufficient short circuit duty margin to enable it to accept the additional short circuit current contributions from customer owned generation.

In order to mitigate the likelihood of needing to shed load if a contingency occurs at summer peak loading conditions, the new substation should be in service by December 31, 2007.

II. PURPOSE OF THE APPLICATION

In this Application, UI is requesting that the Connecticut Siting Council ("Siting Council") issue a Certificate of Environmental Compatibility and Public Need ("Certificate") for the Trumbull Substation.

The Substation will provide increased distribution system capacity to ensure electric distribution service reliability in Trumbull and surrounding communities. The substation will alleviate the risk of overload conditions at UI's existing Old Town and Trap Falls Substations. Old Town and Trap Falls Substations are presently operating over or near capacity. Overload conditions during a contingency that result in the transformers operating above their rating, would require load shedding. This could mean service outages of varying durations in Trumbull and surrounding areas. The substation allows UI to maintain performance reliability of the electric system by providing the necessary capacity to meet anticipated load growth. The proposed substation will reduce the number of voltage sags, thereby improving power quality for customers fed from the Old Town and Trap Falls substations as well as the new Trumbull substation.

III. STATUTORY AUTHORITY

UI is making this Application pursuant to the Public Utility Environmental Standards Act, Section 16-50g et seq. of the Connecticut General Statutes ("Conn. Gen. Stat.") and Section 16-50j-1 et seq. of the Regulations of Connecticut State Agencies ("RCSA"). This application follows the Connecticut Siting Council Application Guide for Electric Substation Facilities, September 19, 2000.

IV. LEGAL NAME AND ADDRESS OF APPLICANT

The legal name of the applicant is The United Illuminating Company. UI is a specially chartered Connecticut corporation.

UI's permanent place of business is located at:

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Mailing Address: P.O. Box 154
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www.uinet.com

V. APPLICANT'S CONTACTS

Correspondence and other communications with regard to the Trumbull Substation project are to be addressed to, and notices, orders and other papers may be served upon the following:

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VI. DESCRIPTION OF PROPOSED FACILITY

This section provides a description of the proposed substation, including a site description and technical details.

A. Site Description

The substation will be located on UI-owned property at 3-7 Wildflower Lane, immediately west of the Connecticut State Route 8/Nichols Avenue (State Route 108) interchange. The property is situated on a cul-de-sac at the easterly terminus of Wildflower Lane within a triangular area bounded by Huntington Turnpike, Nichols Avenue and Route 8 in Trumbull. The junction of UI's 1710 and 1730 transmission lines with CL&P's 1710 and 1730 lines occurs at the site. A map of the proposed substation site is included as Exhibit L.

There are currently two transmission structures on the site that include two sets of motor operated disconnects switches that allow the lines to be sectionalized after a fault. Over half of the proposed site is within UI's existing transmission line ROW. UI's existing transmission line ROW and switch structure border the eastern section of the site. UI's ROW is 200 feet wide and supports its 115-kV transmission lines (1710 and 1730) on a double circuit monopole structure in a vertical configuration and a double circuit switch lattice structure in a horizontal configuration. CL&P's existing transmission line ROW borders the northern portion of the site. CL&P's ROW is 110 feet wide and supports CL&P's 115-kV transmission lines (1710 and 1730) on lattice structures in a vertical configuration.

Most of the proposed site is flat, with some rock outcroppings. Grasses and low brush comprise the groundcover under UI's existing 115-kV transmission lines. The

eastern section of the site slopes gently to the south. Several years ago, UI cleared a portion of the western section of the site and installed wood poles, which were used for line worker training. These poles will be removed as part of this proposed substation. The western edge of the site, near Wildflower Lane, is wooded.

B. Description of Substation Facilities

The proposed substation will consist of an outdoor, air-insulated, low profile 115-kV switchyard and includes the following equipment:[2]

- Two 24/32/40 MVA, 115/13.8-kV power transformers with load tap changers
- One 13.8-kV bus duct system connected to the power transformers
- Low profile 115-kV aluminum tubular bus work supported by station post insulators
- Three 115-kV SF6 gas insulated circuit breakers
- Five vertical break disconnect switches
- Six center break disconnect switches
- Instrument transformers
- Three tubular steel H-frame takeoff structures within the fenced switchyard
- Miscellaneous steel structures for equipment and bus work support to be installed on concrete-filled drilled pier foundations
- Four shielding masts for lightning protection
- One control/switchgear building
- Two single pole tubular steel dead-end structures

UI proposes to erect a single-story prefabricated control/switchgear building on the western edge of the proposed site. The 13.8-kV metal-clad switchgear, the protection, control and metering equipment and the alternating current ("AC") and direct current ("DC") power equipment will be located in the control/switchgear building. The building height will be approximately 15 feet above grade. The building, transformers, circuit breakers, and station post insulators will be specified with an American National Standards Institute ("ANSI") light gray exterior color.

[2] Plan and section views of this proposed substation are located in the pocket part at the end of Volume 2 of this Application.

C. Public Health and Safety

Construction and operation of the proposed substation will not have any impact on public health and safety. Operation of the substation will not significantly increase the magnetic field levels within the proposed site. See Section XIII for discussion of electric and magnetic fields.

D. Overhead Take-off Design, Appearance and Heights

The proposed substation's lightning shielding masts will extend approximately 55 feet above grade, and the takeoff structures will extend approximately 48 feet above grade. The three takeoff structures will be designed as tubular steel H-frame structures. The switchyard high voltage (115 kV) bus will be approximately 26 feet above grade. A new single pole tubular steel dead-end structure, located within the substation fenceline, will be approximately 75 feet above grade. A second new single pole tubular steel dead-end structure will be approximately 85 feet above grade and will be located within CL&P's existing transmission line ROW.

E. Transmission Connections and Distribution Feeders/Length of Interconnections to Transmission and Distribution

No additional ROW will be required to complete the proposed substation. The configuration of the UI 1710 line will remain unchanged A one line diagram of the existing and proposed configurations of the 1710 and 1730 lines is given below as Figure 6.

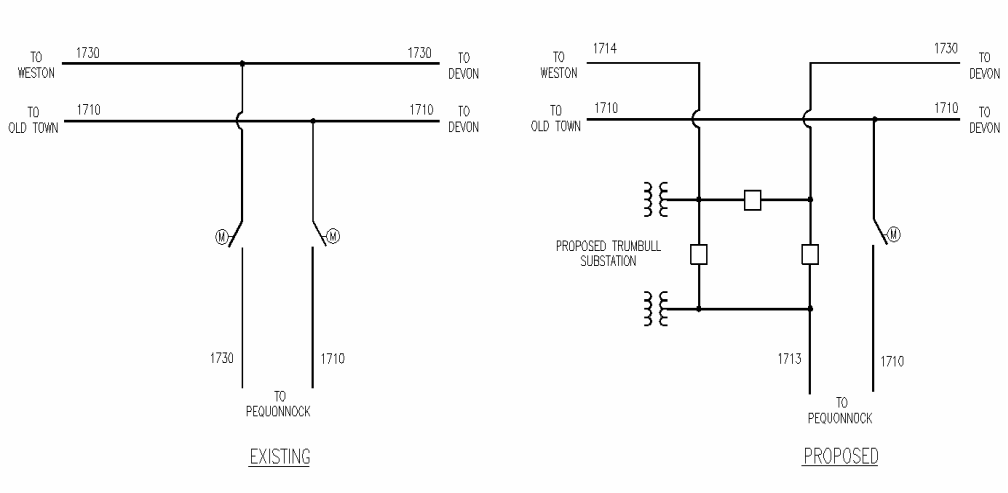


Figure 6 – Existing and Proposed One Line Diagram

1. Transmission Line Sectionalizing

Because the site is located at the junction of CL&P's east/west section and UI's north/south section of the 1730 line, constructing the substation at the proposed site provides the substation with the unique opportunity of breaking down the existing three terminal 1730 line into three two terminal lines without significant investment in transmission infrastructure to route the junction to a new site. The existing three terminals are located at Devon, Pequonnock and Weston. Sectionalizing the transmission line this way provides a reliability benefit by reducing the overhead transmission line exposure to outages for roughly half of the customers fed from the new Trumbull Substation from 20.4 miles to 12.6 miles.

2. Equipment Maintenance

This arrangement also provides a greater level of flexibility and operability in performing line and equipment maintenance. Due to present line loading on the 1710

and 1730 lines, the majority of 115-kV line and equipment maintenance opportunities associated with the greater Trumbull area 115-kV lines are limited to light load periods in the fall, spring or weekends and at times at night or on the weekends. By breaking down the tap on the 1730 line into three two terminal transmission lines, an alternative path for power flow is created. This increases the opportunity to conduct maintenance on the greater Trumbull area 115-kV lines without unacceptably impairing the capacity or reliability of the system.

The existing UI 1730 transmission line will be routed into and out of the substation. The proposed design will break down the existing three terminal tap on the 1730 line and will effectively create three transmission lines from the existing 1730 line. These new lines will be created by adding 115-kV breakers at the north-south and east-west junction of the 1730 line. The transmission lines will be re-numbered after the substation is completed. The substation will have a 3-position ring bus that is fed by three 115-kV transmission lines. Line 1714 to Weston and line 1730 from Devon (Milford) will enter the substation from the north, and line 1713 to Pequonnock (Bridgeport) will enter the substation from the south.

From the existing tap structure (833A) in CL&P's ROW, CL&P's 1730 transmission line will be routed south for approximately 115 feet to one of the two proposed takeoff structures inside of the north side of the substation. The line will be routed through a sectionalizing circuit breaker and then exit the proposed substation through the second takeoff structure inside the substation. To reconnect to CL&P's transmission line, the line will span approximately 115 feet from the north takeoff structure to the new single pole tubular steel dead-end structure (833B) to be located

within the CL&P ROW. (A rendering of this structure is included in the Environmental Report [Exhibit B] at page 5-9.)

UI's 1730 transmission line will exit the substation from the southeast takeoff structure and span approximately 80 feet to UI's existing ROW via a new single pole tubular steel dead-end structure (NB 31A).

Both the CL&P 1730 line and UI 1730 line will transition from a vertical configuration to a horizontal configuration as the lines approach the substation's north takeoff structures. The lines will then descend to the substation's bus work. The lines will be connected to and pass through the switchyard using rigid aluminum bus work and stranded jumper conductors. The total length of the re-routed transmission lines from the existing transmission line to the three new takeoff structures is approximately 240 feet.

These reliability and maintenance benefits are not reasonably achieved at the other potential sites considered for the substation. To provide similar benefits, the alternatives would require the addition of underground transmission infrastructure from the proposed site to the alternative site with an incremental cost of $10 - 25 million.

F. Safety

The substation will be constructed in accordance with the standards of the National Electric Safety Code, and good utility practice.

G. Provisions for Emergency Operations and Shutdowns

The proposed substation will be built to assure continued electric service in the event of outages or faults on transmission or substation equipment. The "loop through" design configuration for existing overhead 115-kV transmission lines, transformer

protection, and redundant automatic protective relaying equipment will assure continued reliability.

The substation will use three circuit breakers to allow a “loop through” design in a ring bus configuration. This design will create three shorter transmission lines from the existing three terminal 1730 line at Trumbull Junction. This will improve power quality of customers served from the 1730 line, improve power flows in the region during maintenance and contingency conditions and provide UI and CL&P with more frequent opportunities to perform maintenance on the line. In the event of a fault, circuit breakers will open to isolate the fault. The substation will be equipped with protective relaying equipment to automatically detect irregular system conditions and send a protective trip signal to the circuit breakers at each end of a line to segregate the faulted section of the transmission line. The protective relaying measures incorporate fully redundant primary and backup equipment.

The protective relaying and related equipment as well as a SCADA system for remote control and equipment monitoring will be located in the switchgear and control house. Smoke detectors will be installed in the switchgear and control house, and will be monitored from a remote location. The control house will be equipped with fire extinguishers.

The proposed substation will be installed within a 14 foot high chain link fence. The substation will have sufficient lighting to ensure that emergency work can proceed during nighttime or in bad weather. The lighting will generally be turned off. Routine, outdoor work at the substation will generally be scheduled for daylight hours.

Additionally, the substation will be equipped with security cameras and motion detectors so the Company can monitor unauthorized access to the substation.

H. ROW and Accessway Acquisition

The construction and operation of the proposed substation will not require the acquisition of any property by UI.

I. Estimated Costs

The following table presents estimated costs for the siting, design and construction of the substation and supporting infrastructure.

Description	Costs
Material and Equipment	$9,049,000
Land Acquisition	$0
Permitting, Engineering and Construction Management	$2,481,000
Construction	$5,770,000
Total	$17,300,000

J. Facility Service Life

The service life of the substation equipment is expected to be 40 years or more.

K. Service Area

The following two figures represent the current distribution supply area of the substations in the Trumbull area and the proposed distribution circuits to be served from Trumbull Substation upon completion.

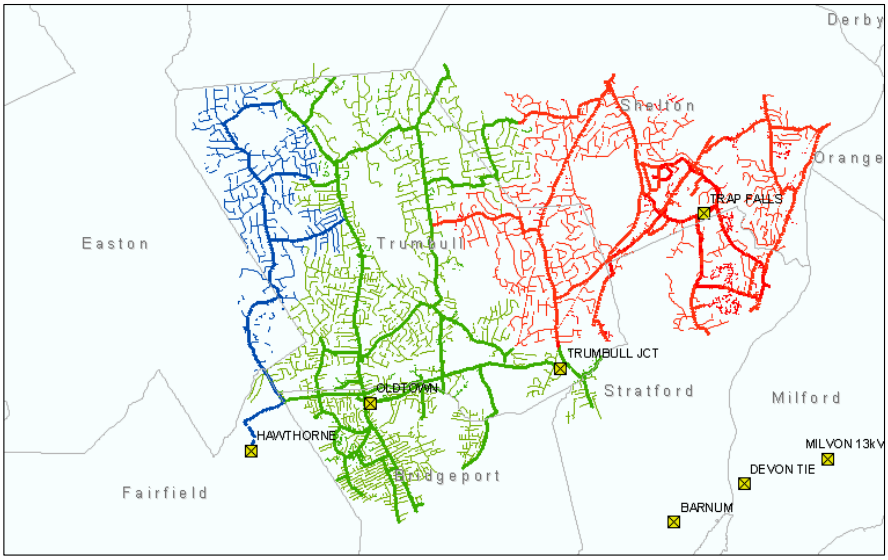
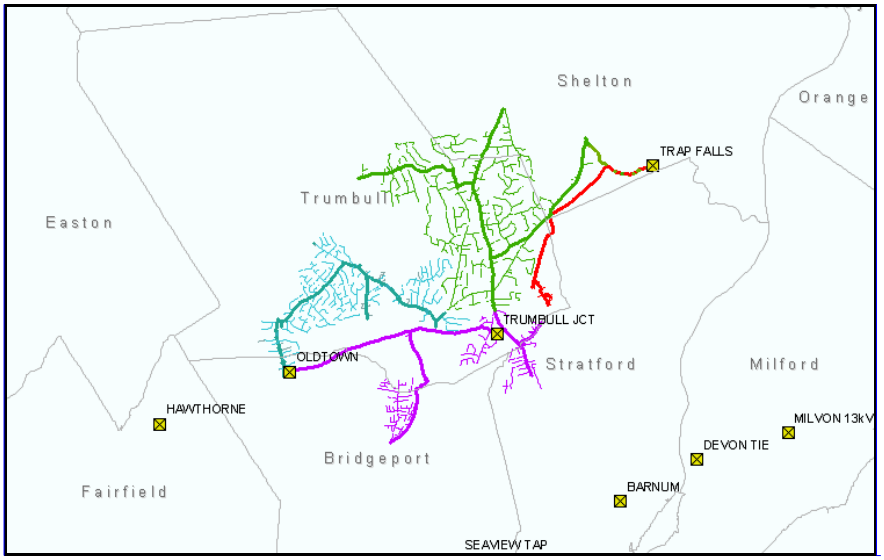


Figure 7 - Distribution Supply Area of Trumbull Area Substations



Comment [CE1]: Need to remove aerial and UG cables returing to substation

Figure 8. The Proposed Distribution Circuits to be served from Trumbull Substation Upon Completion

VII. NEED FOR PROJECT AND PROJECT'S CONFORMANCE WITH LONG RANGE PLAN FOR EXPANSION OF THE GRID

The substation is needed to provide the necessary substation capacity to meet the growing needs of the greater Trumbull region. Construction of the substation will eliminate the growing risk of overloads and associated load shedding and thereby maintain the overall system reliability in the greater Trumbull area.

This section discusses the critical need for the proposed substation and the benefits the substation will provide.

A. Need

UI presently has no substation located in Trumbull. Two substations, one in Bridgeport and one in Shelton, serve most customers in and around the Trumbull area. The 115/13.8-kV Old Town Substation, located on Kaechele Place in Bridgeport, supplies power to approximately half of Trumbull and the northernmost part of Bridgeport. The 115/13.8-kV Trap Falls Substation, located on Armstrong Road in Shelton, serves the easternmost section of Trumbull, the southern half of Shelton and the northernmost section of Stratford as shown in Figure 7 above.

Old Town and Trap Falls Substations supply over 95 percent of Trumbull's electric demand[3] and provide electric service to approximately 85 percent of Trumbull's customers. These substations are currently operating over or near capacity. The construction of Trumbull Substation will provide the needed capacity to support customer loads in the greater Trumbull region. During the summer of 2008, Trap Falls Substation is expected to operate at 117% of its rating. Over the past several years, the

[3] Approximately 5% of load is supplied by the Hawthorne Substation in Fairfield which serves the western edge of Trumbull.

Company has used distribution load transfers to defer construction of the Trumbull Substation. Most of the opportunities for these types of load transfers have been implemented, leaving little remaining marginal capacity available that can be tapped without significant distribution expenditures.

UI has identified the potential for 8 MVA of additional load transfers that could be implemented to keep the station from exceeding its rating at peak load. This nonstandard operating procedure will need to be implemented in 2006 and 2007 to cascade load from Trap Falls to other neighboring substations if loads approach their forecast levels. Cascading load in this manner reduces system performance and reliability by increasing feeder lengths and degrading voltage levels. This increase in feeder length increases the potential for outages. The increased impedance of the longer lines also degrades voltage levels. Although these measures will allow the Company to continue to provide service to customers in the short term, they do not provide the necessary capacity to meet customer needs in the long term.

1. Load Growth

Load is growing in the Trumbull area, and is expected to continue to grow in the future. The graphs below illustrate UI's actual loads 2001-2005 and projections for load growth at Old Town and Trap Falls between 2006 and 2010 without construction of the Trumbull Substation.

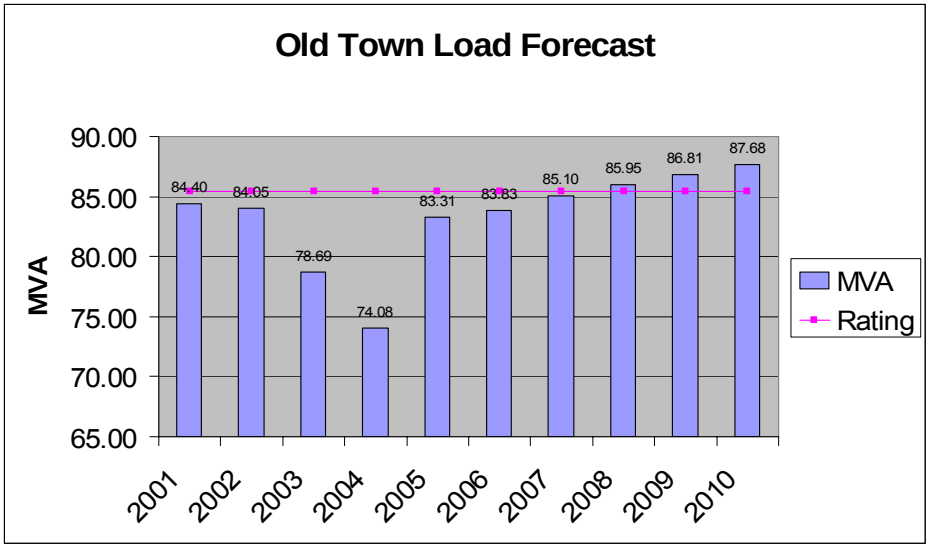


Figure 9. Forecast Load Growth at Old Town, 2001-2010

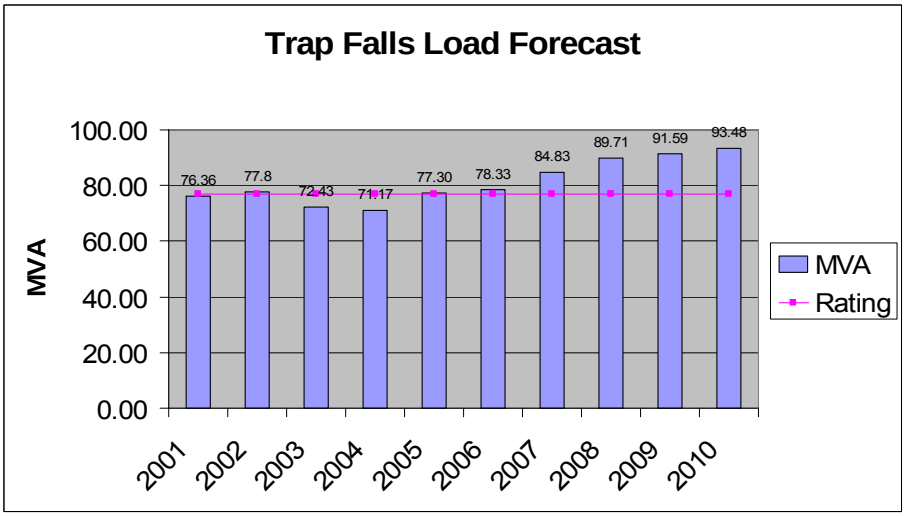


Figure 10. Forecast Load Growth at Trap Falls, 2001-2010

The starting point for the forecast portion of the graph (2006 and beyond) is the substation peak loads that occurred during the NEPOOL system peak on July 27, 2005. At the 2005 system peak, ISO-New England's Load Response Program resulted in a

load reduction on the UI system of approximately 32MW. The peak load for each substation was calculated by adding the curtailed customer load (load reductions) back into each substation's metered peak load. This approach accounts for the possibility that the curtailed load may not be present at any peak hour in the future.

Forecasted load growth is based on specific forecasted load increases for 2006, 2007, and 2008. The specific load increases used in the 2006-2008 time-frame come from either customer load expectations or from UI's Economic Development's Quarterly Major Project Forecast. From 2009 on, the forecast is based upon a 1.0% per year increase in load, which is the system sales forecast for extreme weather conditions as proposed in the March 15, 2006 filing to the Connecticut Siting Council in Docket F-2006.

2. Overload/Load Shedding Issues

Trap Falls Substation exceeded its firm rating in the summer of 2005 and will continue to exceed the rating in the future based on its current feeder configuration. Old Town is expected to exceed its firm rating by 2008. The potential to cover additional growth in load through distribution load transfers with minimal investment in the distribution system is diminishing rapidly. The Company has identified approximately 8 MVA of additional capacity in the region through short term temporary load cascading when the system approaches peak conditions. Load transfers beyond this limit will require significant distribution infrastructure investment to reach the Trumbull region from neighboring stations that have existing marginal capacity. Even then, extending feeders for substation load transfers does not provide additional substation capacity in

the region. The remaining alternative is load shedding to reduce the substation load below the station rating.

3. Reliability Measures: System Average Interruption Duration Index/ System Average Interruption Frequency Index

UI is required by statute to maintain reliability at 1998 levels. Contingencies at Old Town and Trap Falls substations, such as a transformer failure, would likely impact both the System Average Interruption Duration Index ("SAIDI") and System Average Interruption Frequency Index ("SAIFI"). Load shedding would increase both the duration and the frequency of outages, thereby degrading reliability of service to customers.

B. Justification for In-Service Date

Construction of the proposed substation is scheduled to start in the first quarter of 2007, with a target operation date of December 31, 2007 prior to the summer peak of 2008.

C. Length of Time Existing System is Adequate With and Without the Substation

The transformers at the existing Old Town and Trap Falls substations are operating over or near capacity. The loss of a transformer at Old Town or Trap Falls could result in load shedding. The Company has identified the reasonable potential for temporary load transfers of 8 MVA. Additional load transfers would require significant distribution infrastructure investment. The graph below illustrates the existing marginal capacity in the Trumbull region served by Trap Falls and Old Town. This marginal capacity is calculated by summing the ratings of Trap Falls and Old Town Substation and subtracting the sum of the peak loads expected at these substations on an annual basis. The result is illustrated in Figure 11 below.

Comment [CE2]: Need to improve this graphic

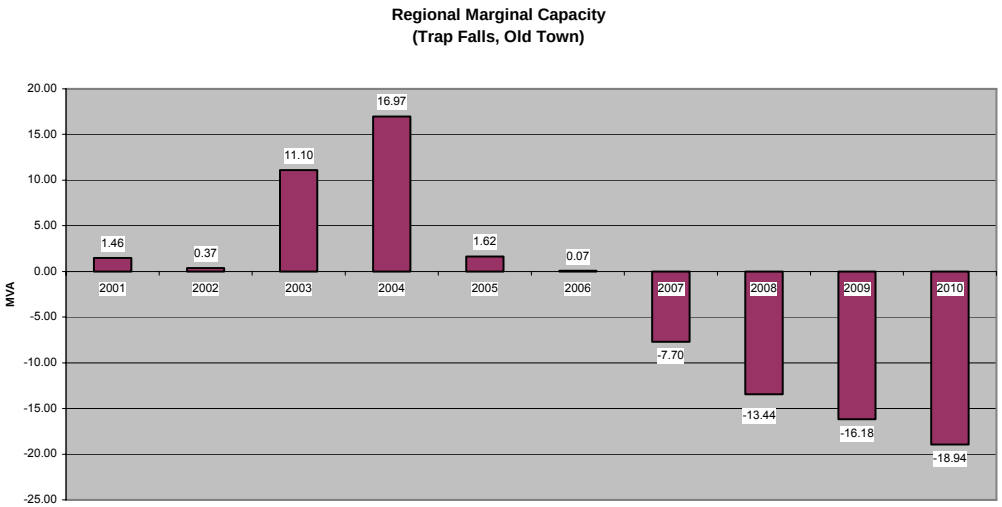


Figure 11. Existing Marginal Capacity in Trumbull Region

In the summer of 2007 the capacity deficit in the Trumbull region will be 7.7 MVA. The Company has the ability to temporarily transfer 8 MVA to neighboring substations. If the station is not completed before the summer peak of 2008, load shedding would be required if a transformer at Trap Falls fails during peak load conditions. This likelihood increases as time goes on, as load grows in the greater Trumbull region. Accordingly, there is a serious threat to the reliability of the existing system without the construction of the proposed substation.

The construction of the proposed substation provides 58 MVA of needed capacity margin for the Old Town and Trap Falls Substations and the greater Trumbull region.

D. System Alternatives

UI and its consultants evaluated several alternatives to building the new substation. The following alternatives were investigated and rejected:

- Transfer load from Old Town and Trap Falls Substations to other substations
- Install 40 MVA modular substation at the Trumbull Substation site
- Replace transformers at Old Town and Trap Falls substations with larger units
- Feeder enhancement/distribution automation
- Distributed generation
- Conservation and load management
- Complementary combinations of the alternatives listed above
- Take no action

A summary of these alternatives is presented below. More detailed discussion is contained the Capacity Expansion Alternatives Report (Exhibit B).

1. Transfer Load from Old Town and Trap Falls Substations to Other Substations.

The Company has deferred construction of the substation since it was originally identified in 1992 through the use of distribution load transfers. This is not a feasible long term alternative. UI has identified only 8 MVA of potential distribution load transfers remaining without significant distribution investment. The load growth in the area will exceed this margin by the summer peak of 2008. Transferring load to other substations creates additional problems. Transferring load results in longer feeders, which increases losses, degrades voltage performance and increases the likelihood of outages. Feeder load transfers cannot provide the capacity margin of a new substation, yet the total cost associated with transferring load to other substations has a cost comparable to the cost of building a new substation, without the reliability benefits from additional substation capacity.

2. Install 40 MVA Modular Substation at the Trumbull Substation Site

A modular substation consists of one transformer fed from a single transmission line and does not provide the reliability of UI's standard two transformer design fed from two transmission lines. To offset this risk to reliability performance, the installation of a single 40 MVA modular substation could be integrated with distribution automation to simulate the reliability performance of a traditionally designed UI substation. Presently, UI's electric system does not have the necessary infrastructure to accommodate distribution automation on this scale. Moreover, implementing distribution automation requires significant pre-planning and training programs for operating personnel. UI does not have any experience with distribution automation. Accordingly, this option is not practicable by the summer of 2008. This option also does not provide the transmission power quality/reliability or maintenance flexibility benefits of the preferred option.

3. Replace Transformers at Old Town and Trap Falls with Larger Units

An obvious alternative to consider when transformers are overloaded is to replace the transformers at the existing substations with larger units. There are two primary areas to consider in evaluating this alternative: (i) voltage stability; and (ii) regional capacity.

Voltage Stability - In addition to not violating the rating of transformers, the total system load should not exceed the level which will cause voltage collapse. Voltage collapse can sometimes occur during the loss of one transformer because the remaining transformer immediately picks up the entire substation load. This results in a possible transient or long-term (steady-state) low voltage supply on the distribution

system. Electric motor loads on the distribution system respond to this reduction in voltage by drawing more current, which further reduces the voltage. Under certain circumstances, this situation can "run away" and result in voltage collapse. The table below illustrates the station MVA ratings and voltage collapse limits. Note that the Trap Falls voltage collapse limit is slightly above the substation rating.

	Old Town	Trap Falls	Hawthorne
Substation Rating	85.5	76.5	99.6
Voltage Stability	65.0	77.0	65.0
Transformer Rating	36/48/60	30/40/50	42/56/70

The voltage collapse issue can be avoided by operating the substation with an open bus tie arrangement and then picking up any dropped load in a manner that gives the load tap changer the opportunity to stabilize the voltage as load is added. In the case of Trap Falls, UI's largest single point source customer operates with four parallel feeders that require the Company to operate the substation with the bus ties closed. This limits the load that the system can support at Trap Falls Substation to 77 MVA. As a result, the regional capacity gained by replacing the 36/48/60 MVA transformers at Old Town with 42/56/70 MVA units is only 14 MVA. The load in the region will exceed this margin by 2009. As a result, UI eliminated this option.

4. Feeder Enhancement/Distribution Automation

Feeder enhancement refers to combinations of distribution automation, feeder length reduction and feeder reliability improvement programs. These programs can be

used to counteract the negative reliability impacts associated with extending feeders to bring capacity from more highly loaded substations into the operating regions of heavily loaded stations. This type of solution provides only modest amounts of capacity improvement and does not avoid load shedding because transformer capacity is unchanged. Accordingly, UI eliminated this option.

5. Distributed Generation

In order for UI to fulfill its franchise obligation to provide reliable electric service, the Company must have the infrastructure in place to meet the load demands of customers. In 2005, the UI system had an average system availability index ("ASAI") of 99.988%. This means that the average UI customer had electric service available from the UI system for 8758.95 hours of the 8760 hours in 2005. A single installation of distributed generation would not maintain this level of availability. To achieve this level, would require multiple installations of generation and duplication of capacity, making the cost per MVA of distributed generation capacity with an availability index of 99.988%, much greater than that of a substation. It will substantial time and money to address the technical and operating challenges in order to install such a large amount of generation on a distribution system that was originally designed to be operated radially. Although UI recognizes the potential benefits of distributed generation, it is not a reasonable substitute for this substation. For these reasons, the distributed generation alternative was removed from consideration.

6. Complementary Combinations

UI explored the possibility of implementing "feeder enhancement" and "additional transformer capacity." However, combining these two options requires implementation

and acceptance of distribution automation. UI is not currently able to integrate the benefits of distribution automation. Accordingly, this alternative was rejected.

7. Conservation and Load Management

UI is a leader in offering its customers a variety of conservation and load management programs. While these programs have delivered load reductions from commercial and industrial customers served by Trap Falls and Old Town Substations, C&LM programs will not provide the required capacity margins to defer the need for a new substation.

8. Take No Action Alternative

Doing nothing to deal with overloads and the possibility of load shedding is not acceptable. The conditions at Old Town and Trap Falls substations will not meet UI's Design Reliability Criteria (DEG 1.0). A single contingency at either substation could result in load shedding and the potential for sustained customer service outages.

E. Benefits of the Substation

The substation will provide the required substation capacity to meet the growing capacity needs of the greater Trumbull region.

1. Improvements to System Reliability

The substation will eliminate the risk of overload at the Trap Falls and Old Town substations, and therefore will eliminate the associated risk of required load shedding. The substation will also meet the capacity need resulting from the projected growth in the area. Building the substation will reduce the number of voltage sags, thereby improving power quality for customers fed from the Old Town and Trap Falls Substations as well as Trumbull Substation. Additionally, the new substation will

provide capacity margin allowing for growth in the greater Trumbull region. Constructing the substation at the preferred location provides it with the unique opportunity of breaking down the existing three terminal 1730 line into three two terminal lines without significant investments in transmission infrastructure. Sectionalizing the line in this way provides a reliability benefit by reducing the overhead transmission line exposure to outages for about half of the customers fed from the new Trumbull Substation from 20.4 miles to 12.6 miles.

The proposed configuration also provides a greater level of flexibility and operability in performing line and equipment maintenance. Due to present line loading levels on the 1710 and 1730 lines, the majority of 115-kV line and equipment maintenance opportunities associated with the greater Trumbull area 115-kV lines are limited to light load periods in the fall, spring, and at times, on the weekends. By breaking down the tap on the 1730 line into three two terminal transmission lines, an alternative path for power flow is created, increasing the opportunity to perform line or equipment maintenance on the greater Trumbull area 115-kV lines.

VIII. SITE IDENTIFICATION AND EVALUATION PROCESS

A. Overview of the Site Comparison Methodology

The substation has been proposed to meet the growing substation capacity needs in the greater Trumbull region. An additional benefit provided by constructing the substation at the proposed site is the ability to break down the existing three terminal 1730 transmission line into 3 separate transmission lines in order to provide the power quality and maintenance benefits described above.

In order to provide a like comparison between alternative sites and the proposed site, a common design and outcome was selected. Two choices were possible:

- a design that provides the substation capacity solution at each of the sites; or
- a design that provides both the transmission and substation capacity solution at each of the sites.

Providing the transmission benefit at each of the alternative sites would require extension of the transmission system to the alternative sites. This extension would be underground and would have an incremental cost of approximately $9 million per mile (based on information provided in the Siting Council's Lifecycle 2006 proceeding). Because the substation is needed to provide substation capacity for the greater Trumbull area and because there is an ancillary transmission benefit provided by the proposed site, the Company has compared the alternative sites on the basis of solving the substation capacity need only. As a result, the design basis for comparison of the preferred site with the alternative sites is a conventional, single breaker tapped substation.

B. Summary of Benefits of Site 1

The optimal site for the Trumbull Substation is at 3-7 Wildflower Lane ("Site 1"). Of the eleven potential sites that UI examined, only Site 1 meets all of the four considerations that the Company used in evaluating these locations, as follows:

Transmission and Distribution Considerations

- A crucial factor in this analysis is the transmission line constraints.[4] Site 1 is the best suited site for both transmission and distribution system access.
- Based on the comparison assumption of a conventional single breaker substation design, Site 1 is the only site that does not require new dead end tap structures. The substation can tap directly into the existing UI 1730 transmission line due to the immediate accessibility of the existing CL&P dead end tap structure (833A) and the UI line switch structure NB30.
- Since Site 1 is immediately adjacent to Wildflower Lane, no distribution ductline ROW is required to exit the substation property and meet the public ROW on Wildflower Lane. Further, as compared to the other locations, Site 1 requires the least amount of ductline construction since it is within three hundred feet of the existing distribution feeders on Huntington Turnpike. The primary access to the distribution system is by ductline, extending approximately three hundred feet along Wildflower Lane to Huntington Turnpike.
- Site 1 has the lowest combined total transmission and distribution costs of all the evaluated sites.

[4] Please refer to the Site Selection Study (Exhibit D) for a description of these constraints.

- Operating a substation on Site 1 meets the Trumbull region's long-term electric infrastructure needs, as discussed above in Section VII.
- Like other evaluated sites, Site 1 provides access to the existing overhead distribution line on the CL&P ROW.
- Every site situated south of the CL&P 1730 transmission line, including Site 1, requires a line crossing structure.

Substation Construction and Access Considerations

- Vehicles can access Site 1 directly by existing street frontage on Wildflower Lane. Unlike other sites, Site 1 does not require the construction of access roads to the substation.
- Site 1 requires the least preparation and development work, as compared to the other locations, due to its advantageous topography and existing improvements.

Environmental Considerations

- There are no wetlands or streams on or adjacent to Site 1.
- Site 1 requires neither the construction of access roads nor the relocation of the distribution line to the north of the CL&P ROW, thus minimizing environmental disturbances. The site derives the same benefit from the existing CL&P transmission line support structure and a UI transmission switching structure.
- Although there are two residences near Site 1 with otherwise unobstructed views (as well as other nearby residences with seasonally obstructed views), Site 1 has adequate area to provide visual screening. UI proposes using mature plantings around the outer perimeter of the substation to mitigate the visual effects of the substation project. One residence, to the northwest of the existing ROW, will

have an unobstructed view of a new transmission structure. See Exhibit A, Figure 2.4.

Real Estate Considerations

- UI is the current owner of Site 1. The site requires no additional land or access ROWs, eliminating the expenditures and uncertainties that accompany real estate transactions or property condemnation. By contrast, all of the other identified sites require the purchase of property and the acquisition of land rights for the associated ROW, both of which have the potential to delay substation construction.

In addition, substation construction at Site 1 will cost at least $1.4 million less than at each of the other eleven identified sites.

As a secondary matter, UI concluded that Site 4B, as described below, is a suitable alternate site for the Trumbull Substation although it lacks many of the significant advantages of Site 1.

C. UI's Evaluation Process

UI conducted a Site Selection Study for the Trumbull Substation (Exhibit D in Volume 2 of the Application), a summary of which is included in this Section VIII. To promote its aim of alleviating the loading at Trap Falls (Shelton) and Old Town (Bridgeport) substations, UI considered in its study only sites in Trumbull.

UI initially identified the general territory within which a new substation is required. The geographical site selection area for the new substation is the area within this territory which includes all possible economically viable substation sites. UI defined this area to be that outside of which all geographical points have a combined estimated

transmission and distribution cost exceeding that of Site 1—the geographical point with the least transmission and distribution costs—by $2.5 million or more. UI determined that Site 1 had these minimum costs due to the proximity of the existing on-site transmission and distribution facilities to Wildflower Lane and Huntington Turnpike. UI excluded from consideration land areas comprised of portions of at least one residential parcel where the substation would be in the immediate proximity of a residence.

Using this process, UI identified nine potential sites that (1) are within the geographical site selection area, (2) provide the required site size (a fence line approximately two hundred feet by two hundred feet, at a minimum), and (3) appear to be unoccupied or not actively used. These locations (Sites 1 to 9) are as follows:[5]

Sites	**Address**	**Ownership**	**Total Land Acres**
1	3-7 Wildflower Lane	UI	4.85
2	Connecticut Route 8	State of Connecticut	1.00
3	2878 Nichols Avenue	Private	3.73
4A 4B	Huntington Turnpike	Trumbull	13.08
5	1446 Huntington Turnpike	Private	23.30
6A 6B 6C	Rocky Ridge Drive	Trumbull	20.60
7A	330-336 White Plains Road	Private	4.82
7B	364 White Plains Road	Private	2.52
8	Unity Park	Trumbull	34.41
9	Huntington Turnpike	State of Connecticut	1.00

[5] The subdivisions for Sites 4, 6, and 7 indicate that UI evaluated more than one potential substation location at these sites.

Subsequently, UI evaluated the two additional properties listed below (Sites 10 and 11). The pastor of the Armenian Church of the Holy Ascension, Inc., suggested Site 10, while the residents of Stella Street and Wildflower Lane, members of the Trumbull Town Council, and the First Selectman suggested Site 11 during the municipal consultation process.

Sites	Address	Ownership	Total Land Acres
10	1460 Huntington Turnpike	Private (Armenian Church of the Holy Ascension, Inc.)	2.8
11	Quarry Road, 1.21 miles west of Wildflower Lane	Trumbull	3.8

UI systematically compared Site 1, and its extensive benefits, with the eleven alternative sites listed above.[6] UI conducted this comparison in two distinct phases, a preliminary phase and a more detailed phase, in order to focus its efforts and thoroughly analyze its best options. In both phases, UI utilized the four criteria described above: (1) transmission and distribution considerations; (2) substation construction and access considerations; (3) environmental considerations; and (4) real estate considerations.

D. Advantages of Site 1 Over Alternatives: Preliminary Analysis

In its preliminary analysis, UI concluded that Site 1 is far superior to Sites 2, 3, 5, 7B, 8, 9, 10, and 11 for the reasons described below and for the additional reason that constructing a substation at Site 1 would cost at least $2 million less than to do so at

[6] After UI completed its formal site evaluation process, UI agreed to examine a new location for placing the substation on Site 6 ("Site 6D"), as Wildflower Lane residents and Trumbull town officials suggested to UI during a meeting on May 10, 2006. See Section VIII.E, below.

any of these eight sites. (This differential is $6 million at Site 11 and $7 million at Site 10 for the required underground transmission route.) UI therefore eliminated these eight sites from further consideration.

1. Transmission and Distribution Considerations

A key advantage of Site 1 is that it is the only site that does not require constructing a dead end tap structure, as the substation can tap directly into the existing UI 1730 transmission line. Site 1 also has easy ductline access to the distribution system. By contrast, many of the sites examined in the preliminary analysis would require more extensive and expensive structural configurations to access the transmission and distribution systems. Site 7B would require a 250-foot transmission line extension from the CL&P ROW, as well as extensive distribution ductline construction in residential streets near the site. Site 11 would require two much larger and heavier single-circuit dead end tap structures for the transmission line interconnection to the substation due to the height of the transmission line in this area. The substation transmission tap and switchyard at Site 8 would be near municipal outdoor recreational facilities, and the most viable transmission route to Site 9 would extend from a line tap at Site 6. Like Site 1, Sites 2, 3, and 10 would require new line crossing structures.

In stark contrast to the simple arrangement at Site 1, the route of the double circuit transmission line supply at Site 10 would require either occupying public roadways or crossing residential properties. The only feasible overhead route would require installation of a new overhead ROW traversing undeveloped residential property, and the most direct route from a line tap would traverse Sites 4 and/or 5. Both

options require easements which may be difficult to obtain. UI considered an underground route for this site, which proved to be cost prohibitive. The routing at Site 11 is similarly complicated. A direct ductline route to the distribution system on White Plains Road is impractical due to the Pequonnock River, wetlands, and athletic fields, while an alternative with a ductline interconnection along Quarry Road southward toward Old Town Road and overhead cables toward Huntington Turnpike would cost $3.6 million more than at Site 1.

2. Substation Construction and Access Considerations

In contrast to Site 1, the size and shape of which is well-suited for a substation and which requires minimal site preparation, Sites 2, 3, and 7B are extremely sloped with probable rock ledges (Sites 2 and 3 are situated on a 70-foot deep basin) and have extraordinarily high estimated site preparation costs. These three sites therefore are not acceptable options for substation construction. Other sites are also unacceptable: Site 9 has a marsh and a stream where the substation would be situated; it would be difficult to place a substation on Site 10 without demolishing the existing church building due to the site's slope and irregular configuration; and portions of Sites 8 and 11 are or may be within a designated floodplain.

Unlike Site 1 with its vehicular access from the street and its adequate street frontage, Site 5 would have access only along a residential access road, and the access ROW at Sites 2, 3, and 9 would not provide adequate street frontage. Due to its extreme slope, the vehicular and distribution access routes would be unsuitable at Site 7B.

3. Environmental Considerations

Site 1 has no wetlands or streams and has already been partially developed. Almost all of the alternatives in the preliminary analysis have protected environmental features. UI would have to divert streams at Sites 2 and 3 and drain a pond at Site 2; most of the southern area of Site 5 is a designated inland wetland, and its northern portion (where the substation would be situated) contains a residence, two sizable ponds, and a stream; the usable part of Site 8 is next to designated wetlands, ponds, and watercourses; eighty percent of Site 9 is located on designated inland wetlands, and building the substation and access would require wetland encroachment and stream relocation; and Site 11 is in the proximity of wetlands and the Pequonnock River. A stream and sizable inland wetland area are in close proximity to Site 10, and this stream crosses the site within an underground culvert. Wetlands entirely encumber the one-half acre portion of Site 10 fronting along Stella Street.

As at Site 1, a substation would be visible to one or more nearby residences at Sites 3, 7B, 8, and 10 (at Site 10, primarily at higher elevations). At Site 5, a substation with direct transmission supply access would be next to a residence. However, Site 1 has adequate area to provide visual screening. UI proposes using mature plantings to mitigate the visual effects of the substation project and to embellish the existing woody tree cover. One residence, to the northwest of the existing ROW, will have an unobstructed view of a new transmission structure. See Exhibit A, Figure 2.4.

4. Real Estate Considerations

A crucial advantage of Site 1 is that UI owns the site. By contrast, all of the alternative sites require real estate reconfigurations such as easements, subdivisions,

or land acquisition. Locating the substation on Sites 2 or 9 would require the State to release property, and locating the substation on Site 8 would require a release from the Town. Neither release is likely. Other sites would require UI to contend with private landowners: Sites 3 and 5 would require subdivisions, and the owners may not be interested in selling land; Site 7B likewise would require a transmission line ROW and a subdivision, and a portion of the parcel is a church parking area. Site 9 would require the acquisition of ROWs on Site 6 and residential properties.

Unlike Site 1, other sites are situated in or near particularly sensitive areas that are incompatible with substation placement. Most prominently, Site 8 is currently used as a public park, with the prime site location used as a baseball field and near a playground. In addition, it is unlikely that the State would consider placing a substation close to Route 8 at Site 2 or near the Merritt Parkway at Site 9. It is not even clear that the necessary property at Site 2 falls outside the official Route 8 non-access lines. Finally, the street frontage at Site 7B is on a "paper street," meaning that it is not yet developed (a "paper street" can range from a dirt path to a greenfield). UI therefore would have to coordinate with Trumbull when constructing on-site.

Particularly difficult real estate issues and the resulting potential costs burden Sites 10 and 11. The overhead route scenario for Site 10 would require a new overhead ROW and easements on residential properties which may not be forthcoming; also, there would likely be neither excess land to resell nor sufficient Huntington Turnpike frontage for residential development. The underground scenario for Site 10 (assuming the resale of remaining residential property encumbered by an easement) would cost approximately $7 million more than constructing on Site 1. At a Trumbull

Town Hall meeting, the owner of Site 11 indicated that he might be interested in entering into a 99-year lease on the site. UI declined since it builds infrastructure only on UI-owned land to allow for long-term electricity supply planning. When UI inquired about a potential asking price, the owner suggested that UI make an offer although he had previously expressed a lack of interest in selling the property. Since siting a substation on this parcel would cost approximately $6 million more than doing so on Site 1, UI has not pursued Site 11 as a viable alternative.

E. Advantages of Site 1 Over Alternatives: Detailed Analysis

UI conducted a more detailed analysis of the three remaining properties at Sites 4, 6, and 7A in comparison to Site 1. These three sites are potentially feasible since the owners of Site 7A expressed a willingness to sell the necessary land, and those at Sites 4 and 6 expressed a tentative willingness to do so. UI identified two possible substation placement areas at Site 4 (4A and 4B) and three areas at Site 6 (6A, 6B, and 6C), for a total of six specific sites (including Site 7A) as alternatives to Site 1.

The following chart provides the costs for each site in excess of those for Site 1:

Site	Marginal Total Costs	Marginal Distribution Costs	Marginal Transmission Costs	Marginal Site Preparation Costs	Marginal Vehicular and Distribution Ductline ROW Preparation Costs	Marginal Land Acquisition Costs	Marginal ROW Acquisition Costs
4A	$2,117,000	$324,000	$1,118,000	$5,000	$90,000	$500,000 minimum	$80,000
4B	$1,441,000	$300,000	$486,000	$70,000	$45,000	$500,000 minimum	$80,000
6A	$1,557,000	$540,000	$486,000	$5,000	$16,000	$500,000 minimum	$10,000
6B	$2,317,000	$564,000	$1,118,000	$25,000	$60,000	$500,000 minimum	$50,000
6C	$1,434,000	$348,000	$486,000	$70,000	$20,000[7]	$500,000 minimum	$10,000
7A	$1,861,000	$720,000	$486,000	$25,000	$90,000	$500,000 minimum	$40,000

At the close of this detailed evaluation process, UI concluded that, as compared to these six alternatives, Site 1 is by far the best location to construct the substation.

1. Sites 4A and 4B

a) Transmission and Distribution Considerations

Sites 4A and 4B provide direct transmission system access to the substation. At Site 4A, the CL&P 1730 Line would dead-end and be redirected to the substation with a 115-kV crossing structure. Site 1 similarly requires a line crossing structure. Sites 4A and 4B would require the construction of a dead end tap structure to access this transmission line. By contrast, a key advantage of Site 1 is that it is the only site that does not require a dead end tap structure, as the substation can tap directly into the existing UI 1730 transmission line.

Ductline would provide primary access to the distribution system at Sites 4A and

[7] This figure corresponds to access roadway costs.

4B. The most direct route—which would extend by ROW approximately eight hundred feet at Site 4A and four hundred feet at Site 4B to the street frontage on Huntington Turnpike—would cross a designated wetlands area. This is a distinct disadvantage of Sites 4A and 4B; by contrast, there are no wetlands or streams on or adjacent to Site 1. Further, Site 1 requires no ductline ROWs. Like Site 1, Sites 4A and 4B provide access to the existing overhead distribution line on the CL&P ROW.

b) Substation Construction and Access Considerations

While the size and shape of Site 4A are more than adequate for the substation and required property line setbacks, the most direct vehicular access route, which would extend approximately eight hundred feet by ROW from the substation to the street frontage on Huntington Turnpike, would cross a portion of a designated wetlands area. Site 1 has no such environmental constraint. The size and shape of Site 4B are more than adequate for the substation and required property line setbacks, and the most direct vehicular route would extend approximately four hundred feet by ROW from the substation to the street frontage on Huntington Turnpike.

c) Environmental Considerations

Site 4A is within fifty feet of a pond and within one hundred feet of a stream; Site 4B is immediately adjacent to designated wetlands. At both sites, vehicular and distribution ductline traffic would cross through designated wetlands. Site 4B provides little area for visual screening from residential properties on Rocky Ridge Road. By contrast, Site 1 is neither on nor adjacent to streams or wetlands and can provide for some visual screening for residential properties.

d) Real Estate Considerations

Trumbull owns Sites 4A and 4B. Substation placement would require purchasing a minimum of two acres of land from the Town, and UI would have to acquire vehicular and distribution ROWs at both sites. UI may also have to purchase the six acres situated south of the transmission line which would be encumbered by the existing ROWs and the wetlands. In 2002, Trumbull tentatively indicated a willingness to discuss selling a portion of the property at Sites 4A and 4B. Site 1 shares none of these real estate challenges and concomitant costs since UI owns the site.

2. Sites 6A, 6B, and 6C

a) Transmission and Distribution Considerations

Sites 6A, 6B, and 6C provide direct transmission system access to the substation. At Site 6B, a 115-kV line crossing structure would dead end and redirect the 1730 line. Site 1 similarly requires a line crossing structure. Sites 6A, 6B, and 6C would require the construction of a dead end tap structure to access this transmission line. By contrast, a key advantage of Site 1 is that it is the only site that does not require a dead end tap structure, as the substation can tap directly into the existing UI 1730 transmission line.

At all three sites, as at Site 1, ductline would provide primary access to the distribution system and provide access to the existing overhead distribution line on the CL&P ROW. The most direct ductline route would extend approximately one hundred feet for Site 6A and five hundred feet for Site 6B by ROW across the site to the easterly terminus of Quail Trail and continue along Leffert Road to Unity Road. At Site 6C, the most direct route extends by ROW approximately one hundred feet through a small

vacant parcel of private land fronting on Rocky Ridge Road and then along this road to Huntington Turnpike. An alternate route—which would extend by ROW approximately one thousand feet through Site 4 to Huntington Turnpike—crosses a wetlands area. As compared to these complicated configurations, Site 1 requires no ductline ROWs and the least amount of ductline construction.

b) Substation Construction and Access Considerations

The size and shape of all three sites are more than adequate for the substation and the required property line. At Sites 6A and 6B, the most direct vehicular access route would extend approximately one hundred feet for Site 6A and five hundred feet for Site 6B by ROW from the substation to Quail Trail; vehicles then would access Unity Road via Leffert Road. The most direct route at Site 6C would extend approximately one hundred feet by ROW through a small private parcel of vacant land (0.44 acres) fronting on Rocky Ridge Road. UI's purchase of this parcel would provide the substation with adequate street frontage. An alternate route, which would extend by ROW one thousand feet through Site 4 to Huntington Turnpike, crosses a wetlands area. By contrast, substation placement on Site 1 would provide vehicles direct access from existing street frontage and would eliminate the need for complicated and expensive ROW extensions. Also, Site 1 requires no wetlands crossings.

c) Environmental Considerations

Site 6B is within fifty feet of a pond and one hundred feet of a stream, and designated wetlands are in the path of direct vehicular and distribution ductline access at the site. Site 1 has no such impediments. Sites 6A and 6C are in close proximity to residential properties on Oakridge Road and on Rocky Ridge Road, respectively, and

will increase traffic on residential streets. While Site 1 likewise has nearby residential properties, Site 1 has adequate area in which to mitigate visual impacts using mature plantings.

d) Real Estate Considerations

Trumbull owns Sites 6A, 6B, and 6C. Substation placement would require purchasing a minimum of two acres of land from the Town. All three sites also would require UI to acquire vehicular and distribution ROWs. In 2002, Trumbull tentatively indicated a willingness to discuss selling a portion of the property at Site 6. UI did not approach the owner of the small parcel on Rocky Ridge Road about selling this parcel. At Site 6B, UI may also have to purchase the six acres situated south of the transmission line which would be encumbered by the existing ROWs and the wetlands. No such purchase is necessary for substation placement at Site 1 since UI owns the site.

3. Site 7A

a) Transmission and Distribution Considerations

Site 7A provides access to the existing overhead distribution line on the CL&P ROW. It also provides direct transmission system access to the substation; single pole dead end tap structures would redirect the 1730 line. By contrast, a key advantage of Site 1 is that it is the only site that does not require a dead end tap structure, as the substation can tap directly into the existing UI 1730 transmission line.

At Site 7A, primary access to the distribution system would be by ductline. Due to the elevation differential between the site location and the White Plains Road frontage, distribution access to the substation would likely be by ROW extending

approximately two hundred feet to Foster Avenue, a portion of which is a “paper street.” The ductline would continue along Leffert Road and end at Unity Road. This route is likely impracticable due to the site’s topography and the access rights required. By contrast, the Site 1 transmission system design is not only feasible but simple with its direct supply from the adjacent UI 1730 transmission line.

b) Substation Construction and Access Considerations

The size and shape of Site 7A are more than adequate for the substation and the required property line setbacks. Due to the elevation differential between the site location and the White Plains Road frontage, vehicular access to the substation would likely be by ROW extending approximately two hundred feet to Foster Avenue and then along Leffert Road to Unity Road. Since a portion of Foster Avenue is a “paper street,” it would likely require development according to Trumbull standards. By contrast, Site 1 requires a minimum of development work and easy vehicular access via existing street frontage.

c) Environmental Considerations

Site 7A is adjacent to a designated wetland; Site 1 does not suffer from this infirmity. Site 7A abuts residential properties on Oak Ridge Road, and, in contrast to Site 1, can offer only limited visual screening due to insufficient space. Finally, a substation at Site 7A would increase traffic on residential streets.

d) Real Estate Considerations

Although the owner of Site 7A in 2002 expressed a willingness to sell the entire property and buildings as well as the companion 0.29-acre parcel for $495,000, the current market value of this property is likely at least $1 million. Since UI would

subdivide the land and retain two acres for the substation, UI would have a net land cost of at least $500,000 in addition to vehicular and distribution ROWs acquisition costs. UI's ownership of Site 1 eliminates the difficulties and uncertainties associated with a property purchase.

F. Alternate Site

UI concluded that Site 4B is the most suitable alternate site although it lacks many of the significant advantages of Site 1. UI narrowed down the field to Sites 4B and 6C since they have somewhat lower costs than the other sites, and none of the other sites have any particular advantages. While Site 4B is close to a designated inland wetland and its vehicular and distribution access road and ductline would cross the wetland area, Site 6C has greater disadvantages. Site 6C is close to a stream and a pond; is within fifty feet of a residence; would require substation construction and maintenance traffic through a residential area; and has a higher elevation than Site 4B. On balance, UI concluded that Site 4B is an appropriate alternate site.

G. Site 6D

During a meeting on May 10, 2006, Wildflower Lane residents and Trumbull town officials suggested placement of the substation at a new location on Site 6 ("Site 6D"). UI's field review indicates that a substation on Site 6D would be located in a pristine, heavily wooded area in the vicinity of a stream. The area also has foot trails that are apparently used by local residents. Situating a substation on Site 6D would require the clear-cutting of trees situated on approximately 2.38 acres (96,000 square feet) of land. This acreage represents a significant portion of Site 6 and includes 2.23 acres for the substation and 0.15 acres for an access road from Quail Trail. This clear-cutting would

substantially alter the existing character of the site. Moreover, the existence of the stream means that the substation cannot be located further east and away from residences on Quail Trail and Rolling Wood Drive. In contrast to Site 6D, Site 1 has already been partially developed, has no streams or wetlands, and does not require access roads since it provides for direct access from Wildflower Lane.

Site 6D has the additional disadvantage of a rocky and uneven terrain. If the terrain prevents the substation from sitting against the side of an on-site ravine, then it would have to be located further west resulting in the substation being sited closer to the residential neighborhoods of Quail Trail, Leffert Road, and Oak Ridge Drive. By contrast, a majority of Site 1 is relatively flat and level, with a gentle southern slope at the site's eastern portion, thereby allowing for easier and less expensive substation siting. Thus, Site 1 appears to UI to be a substantially better choice for substation placement than Site 6D.

IX. EXISTING CONDITIONS

This section describes the existing environmental conditions on and in the vicinity of the preferred site and provides background for the following section's discussion of impacts to the environmental resources from the proposed substation.

A. Existing Use

The proposed site is located at 3-7 Wildflower Lane in Trumbull. This property is owned by UI, and was previously used for line maintenance training. The site is next to and includes a portion of UI's transmission line ROW. Additionally, CL&P's transmission line ROW borders the site to the north. The location is most often referred to as Trumbull Junction – the junction point of the UI North/South transmission ROW and the CL&P East/West transmission ROW. Connecticut State Route 8 is located to the east and southeast of the site while private properties are located to the west and south of the site. Since the substation area has been disturbed in the past and portions of the site are covered with abandoned wood chips, herbaceous ground cover is sparse.

B. Topography, Geology and Soils

Trumbull is located at the southern edge of the Western Uplands (one of three regions into which the Connecticut landscape is divided) on the Coastal Slope. The Coastal Slope is the area where the topography slopes abruptly to Long Island Sound. The substation site is approximately 165 feet above sea level and the total relief is about 65 feet. The area where the proposed substation will be located has approximately 10 feet in relief. The land elevates toward the north and the terrain to the west, north and east is rather hilly. The south side of the substation site slopes sharply toward Long Island Sound. Field observations and the Soil Survey of Fairfield County

(Wolf, 1981) indicated that soil at the substation site is comprised of Charlton-Hollis fine sandy loam. This soil is well drained, stony, and shallow, often with exposed bedrock. This type of land is unsuitable for farming. Additionally, certain private and commercial development is nearly impossible due to the shallow soil and bedrock.

C. Groundwater and Surface Water

Groundwater is probably non-existent or located at a significant depth based on the shallow depth to bedrock.

D. Watercourses

The substation site is located in an elevated area that drains into unnamed drainages that eventually empty into the Yellow Mill Channel of Bridgeport Harbor, or Johnson Creek that flows to Bridgeport Harbor. The Pequonnock River, which lies approximately 1.25 miles from the substation's site, will not be affected by the construction activities.

E. Lakes and Ponds

There are no lakes or ponds on the substation site. Thrush Wood Lake and Frog Pond are located within a mile of the site to the north of the Merritt Parkway. Beaver Dam Lake, Dogwood Lake, Pinewood Lake and Success Lake are located more than a mile from the substation site. No water drainage from the substation site reaches these lakes because of their small surrounding watershed.

F. Coastal Zone

The substation site is not located within Connecticut's Coastal Zone Management area and is not subject to coastal zone management regulations administered by the Connecticut Department of Environmental Protection ("CTDEP").

G. Floodplains

The substation site is not located in or near any designated floodplain. The closest floodplain is approximately 1.25 miles west of the proposed site along the Pequonnock River where the elevation is approximately 75 feet above mean sea level. The proposed substation site is situated on an elevated escarpment at an elevation of approximately 165 feet.

H. Wetlands

No regulated wetland areas were identified on the proposed site. The site was investigated by UI's consultant, a wetland/soil scientist who is qualified under state and federal regulations to certify the presence or absence of regulated wetlands and watercourses. The consultant's finding was confirmed by consultations with Trumbull's Inland Wetlands and Watercourses Officer and an examination of the Inland Wetlands and Watercourses Bridgeport Map. Additionally, it should be noted that the U.S. Army Corps of Engineers does not have jurisdiction over the substation since no wetlands or waters of the United States (which would be subject to the Clean Water Act) are present on the proposed site.

I. Vegetation and Wildlife

Herbaceous and shrub vegetation indicative of severe disturbance dominate the site. Scattered areas of the site are barren while in other areas sparse growth of weedy species such as love grass and prostrate knotweed are supported by rocky soil. Goldenrod and biennial mugwort exist where the soil is slightly deeper. Dense thickets of blackberry and smooth sumac are common, and poison ivy is widely scattered in open areas as well as on the ground or vining in the surrounding woodlands.

Dandelion, common plantain, spotted knapweed, giant foxtail and evening primrose are present in open spaces on the site.

The site is surrounded by narrow woodlots. There are a few trees that are approximately 15-20 inches in diameter, but most of the trees are much smaller. Northern red oak, black oak, pignut hickory and red maple are present on the site. The shrub layer in these areas is generally dense with saplings representative of the canopy, but just as common are blackberries, burning bush and mock-orange. Vines are plentiful and include greenbriar, poison ivy and Japanese honeysuckle. In certain areas, other ground cover has been eliminated by dense honeysuckle.

J. Wildlife

A few birds (common crow, starling and pigeon) have been observed at the proposed site. However, wildlife is practically non-existent at the substation site. The major highway and residential area near the site probably impede movement of wildlife through the area. Additionally, the vegetation on the site contains limited forage resources. As such, the site is of little value to wildlife except for species common to urban environments (raccoon, opossum, skunk, squirrel and songbirds).

K. Special Status Areas and Species

None of the species of animals (amphibians, reptiles, birds and mammals) listed as threatened, endangered or of special concern by the Connecticut DEP exist in the vicinity of the proposed substation site.

The proposed site does not provide sufficient habitat to support any federal or state listed protected species.

L. Surrounding Land Use

1. Residential

A residential area now surrounds the proposed site. See Exhibit L. In total six parcels abut the substation site. The closest abutting residential property is a single family house located on Wildflower Lane about 220 feet west of the fence line of the proposed substation site. Approximately 250 feet south of the proposed site are two residential parcels, each with a single family home, on the Stella Street cul-de-sac. The two single family houses on the private drive off Huntington Turnpike are approximately 250 and 300 feet respectively to the north of the substation site on the north side of CL&P's ROW, with the ROW providing a 110 foot separation between the proposed fence line and the residential parcels. The CL&P transmission lines that run in an east/west direction have been in existence since 1950. The UI transmission lines that run in a north/south direction have been in existence since 1961.

The residential property located on Wildflower Lane is separated from the preferred site by approximately 20 to 40 feet of woody vegetation. As seen in Exhibit A, Figures 1.1 and 1.2, the residence's viewshed will be minimally impacted by the construction of an open air substation surrounded by a chain link fence. To help address the homeowners' concerns, the Company has designed the substation with two entrances, both of which are routed in such a manner as to block a straight view to the substation equipment. The residential properties located on Stella Street are separated from the preferred site by approximately 120 feet of woody vegetation. As seen in Exhibit A, Figures 1.3 and 1.7, the residences' viewsheds will be minimally impacted by

the construction of an open air substation surrounded by a chain link fence, especially if the Company were to maximize mitigation through the use of mature plantings.

The residential parcels to the north of the CL&P ROW would have the most visual impacts of any closely located or abutting residential properties. The view from the residential parcel closest to the preferred proposed location is shown in Exhibit A, Figure 1.4. Other viewsheds from the same location, utilizing various design and/or mitigation techniques, are shown in Exhibit A, Figures 2.4, 3.4, and 4.4.

There are no abutting or closely located tracts of land that could accommodate new residential subdivision developments near the proposed site. The most recent residential development, on Stella Lane, was constructed in the late 1990s. There are small scattered parcels and lots that might accommodate individual house construction.

2. Commercial/Office

There are no commercial or office establishments adjacent to the substation site. A commercial nursery is located approximately 0.25 miles north of the site on the east side of Nichols Avenue. Office buildings on Penny Avenue and Nicholas Avenue are located 0.3 and 0.4 miles, respectively, from the site. Approximately 0.4 miles southeast of the site is a convenience store/gas station located on Nichols Avenue. A large commercial development, Hawley Lane Shopping Center, is located south and east of Nichols Avenue and State Route 8. Several large multi-story office buildings and a Marriott Hotel are also located in this area which is within one mile of the substation site. The site is separated from these commercial/hotel/office land uses by the four-lane limited access State Route 8 and its major interchanges with Nichols Avenue and the Merritt Parkway.

3. Industrial

There are no industrial or manufacturing facilities near the proposed site. The nearest industrial complex, Trumbull Industrial Park, is approximately 0.7 miles northeast of the site and park is separated from the proposed site by State Route 8 and the Merritt Parkway. This industrial park consists of several new office buildings in a campus-style development.

4. Parks/Recreation/Open Space

There are no parks, designated recreational open spaces or open space areas, maintained by Trumbull or the state which either abut or are located near the proposed site.

Abraham Nichols Memorial Park, the closest recreation facility to the substation site, is approximately 0.8 miles north of the site. The park is located north of the Merritt Parkway to the east of Shelton Road. The park contains a small picnic area, two tennis courts, one ball field and horseshoe pits. The Trumbull Historical Society is also located at the park.

5. Government and Institutional

Schools and Daycare Facilities:

There are no schools or daycare facilities abutting the preferred site. The closest daycare is the All in One Nursery, located 700 feet away. The only school located within one mile of the proposed site is St. Catherine of Siena School on Shelton Road (.97 miles). Next to the school is a playground and recreation area. The Christian Heritage School, immediately north of the Merritt Parkway on White Plains Road, is located over one mile west of the proposed site.

Hospitals and Group Homes: There are no hospitals or group homes within 2 miles of the facility.

Government Facility:

A Connecticut Department of Transportation ("CDOT") maintenance yard and garage, located approximately 0.3 miles northeast of the proposed site, is the closest government facility. This CDOT facility is next to and immediately southwest of the Merritt Parkway/State Route 8 interchange (#52). Approximately 0.5 miles north of the substation site is Trumbull's Senior Center, located on Priscilla Place, just to the north of the Merritt Parkway. Across from the Senior Center is the Fairchild-Nichols Library, which is approximately 0.5 miles from the proposed site.

Churches: The Armenian Church of the Holy Ascension is the closest church to the substation site. The property consists of the church, a parking lot, a small residence near to the rear of the church and a daycare facility located on the ground floor of the church. The southern edge of the proposed site is approximately 450 feet from the residence, approximately 500 feet from the church parking lot and approximately 700 feet from the back of the church. The Christ Redeemer Lutheran Church is approximately 0.2 miles from the substation site.

6. Transportation

State Route 8 and the Merritt Parkway (State Route 15), both four-lane highways, are major transportation arteries within the area of the substation. State Route 8 and the exit/entry ramp to Nichols Avenue (State Route 108) are immediately east of and next to the property and transmission line ROW. The travel lanes of State Route 8 are approximately 900 feet from the proposed site. Between the proposed site

and State Route 8 are unused sections of lands owned by UI and the State of Connecticut that remain in their natural state and are wooded. The Merritt Parkway is approximately 0.4 miles north of the proposed site.

Other federal and state highways are: (1) U.S. Interstate 95, over three miles south in Bridgeport and Stratford; (2) U.S. Highway 1, over two miles south in Bridgeport; (3) State Route 108 (Nichols Avenue), approximately 700 feet east; (4) State Route 127 (White Plains Road), approximately one mile west; and (5) State Route 25, over one mile west.

Huntington Turnpike and Nichols Avenue (State Route 108) are the primary north-south arteries within 1 mile of the substation.

There are no railroads or airports within one mile of the proposed site. Railroad facilities are located to the south in Bridgeport and east in Milford. Approximately 5 miles south of the proposed site in Stratford is Bridgeport Municipal Airport.

Greater Bridgeport Transit Authority provides scheduled bus service in Trumbull. There is no bus service on Huntington Turnpike and Nichols Avenue, the closest streets to the substation site. The closest bus route is east of the proposed site on State Route 8.

7. Land Use Planning

Trumbull does not have a comprehensive master plan or generalized land use plan. Trumbull's Planning and Zoning Commission uses its current zoning ordinance to oversee the growth of the town.

8. "Statutory Facilities"

Exhibits L shows the substation site in relation to "settled areas, parks, recreational areas and scenic areas, residential areas, private or public schools, licensed child day care facilities, licensed youth camps, and public playgrounds and showing existing transmission lines within one mile of the proposed route or site" as required by Conn. Gen. Stat. § 16-50*l* ("statutory facilities"). There is one day care center located approximately 700 feet away from the proposed site (All in One Nursery School, 1460 Huntington Turnpike).

M. Zoning

Electric utility facilities are not included in any of Trumbull's zoning categories. The proposed site is currently zoned "Residence AA".[8] UI's current use of the site is predominantly for the existing transmission ROW and the junction of the east/west and north/south transmission lines. Residence AA requires a one-acre minimum lot size for residential development and stipulates minimum road frontage, minimum floor area, maximum building height and minimum yard depths. The land surrounding the substation site is generally zoned Residence AA. A small parcel located to the south of the site on Stella Street is zoned "Residence A".

N. Noise

Existing hourly background sound levels in the vicinity of the proposed site were typical of urban residential areas and ranged from a median of 46 dBA to 54 dBA at the monitoring locations. UI's consultant conducted noise monitoring on September 10 and 11, 2002 and May 4, 5 and 6, 2005 at three specific locations in the vicinity of the

[8] The Project site was zone "Residence AA" at the time the Company operated its linemen's school.

substation site: (1) on the east side of the cul-de-sac on Wildflower Lane; (2) near the CL&P transmission line structure near Huntington Turnpike; and (3) at the UI gate along Nichols Avenue near its intersection with State Route 8 next to the residential property at 2911 Nichols Avenue. The monitoring locations were selected to capture an acoustical environment representative of the nearby residences. All three measurement locations were near residential locations. Location 1 was on the east side of the Wildflower Lane cul-de-sac, and was selected to represent the ambient noise level at the residence on Wildflower Lane. Location 2 was close to the CL&P transmission line structure near Huntington Turnpike. It was selected due to the inaccessibility of the residential property located to the northwest of the CL&P ROW. It was approximately the same distance from the substation as the residential southeast boundary. Location 3 was at the facility gate along Nichols Avenue near the intersection of Route 8, adjacent to the residential property at 2911 Nichols Avenue.

Trumbull's noise ordinance, which is more restrictive than the state's noise regulations, specifies a limit of 55 dBA for daytime and 45 dBA for nighttime for areas zoned "Residence AA".[9] With the use of low noise transformers, the substation will meet Trumbull's noise ordinances. Subsequent to the meeting with residents and town officials, the results of the noise assessment study were extrapolated to the nearby residences. The noise assessment study determined that the noise emitted from the substation had no appreciable impact on nearby homes. A 3 dB change in continuous

[9] Daytime hours are between 7:00 am and 8:00 pm, Monday through Friday and 9:00 am through 8:00 pm on Saturday, Sunday and all federal and state holidays. Nighttime hours are between 8:00 pm and 7:00 am, Sunday through Friday and the hours between 8:00 pm Saturday and 9:00 am Sunday. During a state or federal holiday, the weekend schedule is in effect from the previous evening through the end of the holiday.

broadband noise is generally considered “just barely perceptible” to the average listener. The maximum “Median Hourly Daytime Background Sound Pressure Level” increase at the nearest residential locations was predicted to be 1 dB. The maximum “Median Hourly Nighttime Background Sound Pressure Level” increase at the nearest residential locations was predicted to be 3 dB. The maximum “Lowest Hourly Nighttime Background Sound Pressure Level” increase at the nearest residential locations was predicted to be 7 dB. See Exhibit E, Table 5-4.

O. Visual and Aesthetic Characteristics

To the west of the substation site and Huntington Turnpike is a large wooded area, which is crossed by a CL&P overhead double circuit 115-kV transmission line built on self-supporting lattice steel structures. The ROW is cleared and approximately 110 feet wide.

P. Historic and Cultural Resources

There are no known and recorded historic and archeological sites, features, district and/or other cultural resources at or near the proposed site. This was confirmed by the State Historic Preservation Office.

X. POTENTIAL ENVIRONMENTAL EFFECTS

Construction and operation of the proposed substation will have minimal or no impacts to environment, ecology, and scenic, historic and recreational values. UI retained Black & Veatch to assess potential environmental effects. Black & Veatch's report is attached as Exhibit B. This section discusses the potential effects and mitigation measures associated with the construction and operation of the proposed substation.

A. Topography, Geology and Soils

There will be minor disturbance to topography and soil on the proposed site. The site has been partially cleared and some sections have been graded. Additional grading will be required, but impact to the topography is expected to be minimal. Likewise, impacts to the soil will be negligible.

Concrete foundations and tower footings will be required for some equipment for the proposed substation. Additional fill material, if necessary, will be certified free of any toxic or hazardous substances. To stabilize the soil on the site, disturbed areas not covered with crushed stone will be re-vegetated after construction. UI will take measures to prevent sedimentation caused by stormwater runoff. As such, any excavated materials will be stockpiled on site and contained by straw bale barriers, fabric filter fences or other appropriate methods.

B. Wetlands/Floodplains

There are no federal or state designated wetlands or watercourses located on the proposed site. A survey of the site confirmed the absence of wetlands or watercourses. This is consistent with the mapping of the Inland Wetlands and

Watercourses Commission ("IWWC") for the area and the opinion of Trumbull's IWWC Officer.

There will not be impacts to floodplains from the proposed substation as there are no designated floodplains in the vicinity of the proposed site.

C. Wildlife and Vegetation

1. Vegetation

UI intends to preserve as many trees as possible to provide natural screening for the substation. Construction of the substation will have minimal impact on vegetation and wildlife. Approximately 0.6 acres of trees and other vegetation will be cleared from the 4.85-acre site. Overall, less than one acre of trees and other woody vegetation will be impacted by the substation.

A portion of the proposed site has been cleared and contains weeds and other invasive vegetation. A small wooded area on the northern and eastern sides of the site will be cleared to accommodate the substation. Additionally, two areas of trees (approximately 12 feet by 130 feet each) will be cleared to provide an access driveway for the substation. Additional trees may need to be removed to accommodate equipment construction or line clearance.

Construction of the new single pole tubular steel structure near UI's existing structure number 30 is likely to require clearing of woody vegetation. Removal or selective clearing of some larger woody vegetation between the substation's southern takeoff structure and this new light angle structure may be required. After construction is completed, the area beyond the perimeter of the that which was affected by

construction will be landscaped and re-vegetated to prevent soil erosion, provide screening and enhance the area's appearance.

2. Wildlife

There will be no significant impacts to wildlife from construction of the proposed substation. Small mammals and birds, temporarily displaced by construction activities, are expected to repopulate the proposed substation area.

The proposed site is of minimal forage value as it is located in a mostly residential area and the vegetation is already degraded. Additionally, the existence of dense residential communities and a highway next to the transmission line corridor impedes wildlife movements. Accordingly, the addition of the proposed substation within the transmission line corridor is unlikely to create any adverse effects to wildlife movements.

3. Rare and Endangered Species and Species of Special Concern

There will be no impacts to protected species or habitat. No federal or state special status areas are located in the vicinity of the proposed site. Additionally, no federal or state special status plants and animals species are known to exist at or in the vicinity of the proposed site. A survey of the substation site confirmed there is insufficient habitat to support threatened, endangered or other species.

D. Water Supply Areas

1. Groundwater

Construction and operation of the substation will not impact groundwater in the vicinity of the substation. The substation will be designed to minimize any unforeseen

operational events. For example, transformer foundations will be designed to contain transformer oil in the unlikely event of an oil leak or transformer failure.

2. Watercourses

Construction and operation of the substation will not affect watercourses.

3. Lakes and Ponds

The substation's construction and operation will not impact lakes and ponds due to their distance from the substation and the intervening topography, vegetation and land use developments.

4. Coastal Zone Management Area

The proposed substation will not be located in a coastal zone management area so there will be no impacts

5. Stormwater Management

Soil disturbance associated with construction of the proposed substation would be confined to the 4.85-acre site. During construction, appropriate measures will be taken to ensure that excavated and fill materials are protected from erosion due to rain. UI will register for a General Permit from the CTDEP for the discharge of stormwater associated with disturbance of an acre or more of land.

E. Local, State and Federal Land Use Plans

The proposed site lies in an area zoned "Residence AA". UI uses the site primarily for the existing transmission line ROW and junction of the east/west and north/south transmission lines. Trumbull officials indicated that a zoning change will not be required for the substation.

F. Existing and Future Development

Construction and operation of the proposed substation will enhance and will not impede existing and future development in the area. Trumbull does not have a master plan, but the Greater Bridgeport Regional Planning Agency has indicated that the area in the vicinity of the site will continue to be used for single-family residences. Additionally, UI already owns the property on which the substation will be constructed.

G. Residential/Commercial/Industrial Facilities

Residences in proximity to the proposed substation will not be physically impacted by construction and operation of the substation. The closest occupied residence is approximately 220 feet west of the proposed site on Wildflower Lane. Residences to the south of the site, on Stella Street, are approximately 250 feet from the proposed site. Two occupied residences to the north of the existing CL&P transmission ROW are approximately 250 feet and 300 feet from the proposed site and one occupied residence to the northeast is approximately 400' from the proposed site.

There will be no impact to commercial or office facilities as there are none near the proposed substation. Similarly, there will be no impacts to industrial activity as there are no industrial or manufacturing facilities near the substation.

H. Roads

The primary transportation routes in the vicinity of the substation will not be significantly impacted by the construction and operation of the substation. There will be minor and short-tem effect on vehicular traffic during construction as trucks access the proposed site.

1. Connecticut State Route 8

Connecticut State Route 8, located southeast of the substation will not be affected by the construction and operation of the substation. Other than that limited area, the substation will not be visible to passing motorists due to the existing vegetation and elevation changes of the various entry/exist ramps and through lanes. Additionally, the CDOT has indicated that there are no plans to widen State Route 8 in the Trumbull area.

2. Merritt Parkway

The substation will not impact the Merritt Parkway.

3. Local Roads

Nichols Avenue (State Route 108) and Huntington Turnpike are the local north-south thoroughfares in the vicinity of the proposed site. Neither of these roads will be physically impacted by construction and operation of the substation. Additionally, vehicles traveling to the proposed substation site should not adversely affect daily traffic flow. Commercial trucks use Huntington Turnpike frequently. UI expects that during construction vehicles delivering materials to the site and supporting construction activities will use Huntington Turnpike to get to the substation site. Occasionally, traffic may slow or stop briefly as vehicles turn off Huntington Turnpike onto Wildflower Lane to access the site.

The substation site is on Wildflower Lane, which is a residential street with a cul-de-sac. There is one residence on Wildflower Lane so daily traffic is minimal. During construction of the proposed substation there will be increased truck traffic along Wildflower Lane during normal working hours. UI plans to create an access drive to the

proposed substation at the end of the cul-de-sac. Occasionally, when the proposed substation is in service, UI's trucks will use the lane to access the substation for maintenance and during emergencies.

I. Archaeological and Historic Resources

There are no known and recorded historic and archaeological sites on or near the proposed substation site. The Connecticut Commission on Culture and Tourism, formerly the Connecticut Historical Commission, has indicated that "the proposed undertaking will have no effect on historic, architectural or archaeological resources listed on or eligible for the National Register of Historic Places." See Section 8 of Exhibit B. In the event prehistoric archaeological and/or historic resources are discovered during construction of the substation, UI will stop work in the immediate area and notify the State Historic Preservation Officer.

J. Parks/Recreation/Open Space

Construction and operation of the proposed substation will not impact Trumbull's parks, recreational areas and open spaces. None of Trumbull's parks are located near the proposed site. The closest park, Abraham Nichols Memorial Park, is approximately 4,100 feet (0.8 mile) north of the site. The proposed substation will not be visible from the park because of vegetation, topography and land uses between the park and the site. Users of the park should not hear any noise from construction vehicles traveling to the site via Shelton Road. Any construction associated noise audible at the park should be short-term and intermittent.

Similarly, users of recreational facilities at Trumbull schools will not be affected by construction and operation of the proposed substation. The closest school

recreational facilities are located one mile north of the proposed site at St. Catherine of Siena School and Church.

K. Visual and Aesthetic Resources

Impacts to visual and aesthetic resources from the construction and operation of the proposed substation will be minimal. The proposed substation will not be visible to the majority of residents and motorists in the area. The sole residence on Wildflower Lane will have seasonally obstructed views of the proposed substation. Two residences located north of the existing CL&P ROW will have unobstructed views of the substation year-round and one of these residences will have an unobstructed view of a new transmission structure. The residence to the northeast of the substation will have seasonally obstructed views of the project through some 400' of dense woody vegetation. To the south of the substation, residences and visitors to the Armenian Church of the Holy Ascension will have seasonally obstructed views of sections of the substation. However, the residences and church are approximately 35-40 feet lower than the proposed substation so only the tops of some of the structures will be visible from these locations. Moreover, views from these residences will be uphill through approximately 500 feet of dense and mature deciduous trees. The dense foliage and topography should block any views of the substation for most of the year. UI plans to further minimize any visual impacts by adding natural vegetative screening.

The substation should not be visible to motorists on Huntington Turnpike or the Merritt Parkway. Motorists on Nichols Avenue and travel lanes and entry/exit ramps of State Route 8 would have seasonally obstructed views of the substation. These views

would be similar to existing views of CL&P and UI transmission lines and UI switch structure that are next to the proposed site.

L. Noise

Residences in proximity to the proposed site will experience some degree of noise and possibly fugitive dust during site preparation and construction. Substation construction noise is similar to street or building construction activities in an urban environment. UI will minimize the noise impacts by limiting construction to normal working hours during the week. Additionally, all construction vehicles will have proper engine mufflers in good working condition. A buffer of trees and other vegetation on the west and south of the proposed site will reduce construction noise levels and minimize dust. [State Route 8, southeast of the proposed site, produces a significant amount of background traffic noise 24 hours a day.]

Operation of the substation will not increase noise in the surrounding area except for a very slight increase during the quietest nighttime hours. UI's consultants, Black & Veatch, performed an environmental noise survey to evaluate the existing acoustical environment in the area. A copy of the report is attached as Exhibit E. The existing acoustical environment is typical of urban residential areas. Transformers and the control/switchgear building cooling equipment are expected to be the predominant noise sources associated with the substation. Black & Veatch conducted noise modeling to determine the noise emissions associated with the proposed substation and evaluated the noise emissions based on Trumbull's noise regulations.

UI will install low-noise transformers at the substation to ensure the substation complies with Trumbull noise regulations and reduces any impact to nearby residences.

Operation of the substation will increase the median hourly nighttime background sound by only 0-3 dBA. A 3 dBA change in background noise is considered “just barely perceptible to the average listener”.

XI. MITIGATION MEASURES FOR THE PROPOSED SUBSTATION

Based on the existing conditions of the property and the proposed design of the substation, the construction and operation of the substation will not have any significant permanent adverse effects on the environment. UI has incorporated measures into all phases of development and implementation to ensure that the environment is protected in accordance with federal, state, and local requirements.

Prior to construction, UI will prepare and submit to the Council for review and approval a development and management plan ("D&M Plan"). The D&M Plan will include details as to steps UI will take to minimize or eliminate potential adverse environmental effects which may result from construction activities. The D&M Plan will include specific procedures and details on erosion control, spill prevention and control, construction staffing and hours, traffic control (if needed) and restoration and landscaping after construction. Prior to construction, UI will install erosion controls at the limits of the work area in accordance with the approval project plans, the D&M Plan and the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

All construction activities will be conducted in compliance with the Siting Council-approved D&M Plan. UI has sited and designed the substation to minimize the grading and earth work associated with construction of the substation.

Natural areas and sensitive areas will not be affected as the substation is not located in or near any natural or sensitive areas. As discussed in Section X, there are no wetlands, watercourses, floodplains, protected species or wildlife on the proposed site. Moreover, the proposed site has been partially disturbed by activities performed by UI. To the extent that construction of the substation impacts the existing environment,

UI will use appropriate measures, described in Section X, to eliminate or minimize any such impacts. These include:

1. Construction techniques designed specifically to minimize adverse effects on natural areas.

2. Special routing or design features made specifically to avoid or minimize adverse effects on natural areas and sensitive areas.

3. Establishment of vegetation proposed near residential, recreational and scenic areas.

4. Methods for preservation of vegetation for wildlife habitat and screening.

5. UI will construct an oil containment pit around each proposed transformer, which is designed to contain 110% of the volume of transformer oil. The transformers will be filled with non-polychlorinated biphenyl mineral oil. The sumps will have adequate capacity to contain a spill in the event of an unintentional release of oil.

In addition to evaluating alternative sites, the Company evaluated alternative design configurations to minimize effects on the surrounding environment and in particular the visual impacts of the substation on a small number of residents.

A. Open Air Bus Configuration with Architectural Wall

This alternative design configuration involves the construction of a solid architectural wall around all sides of the substation. A visual simulation of the architectural wall option is presented in Exhibit A. The incremental cost of this configuration over the Company's proposed configuration is $1,200,000.

B. GIS Configuration with Architectural Wall

This design involves the construction of a solid architectural wall around all sides of the substation (as discussed above) but also entails the use of indoor Gas Insulated Substation ("GIS") technology. This technology is used in situations where space, airborne contamination, arc free switching or aesthetics is a prime design consideration

(for example, UI will be utilizing GIS technology in connection with the Singer Substation recently approved by the Siting Council in Docket 272.) For the substation, the 115-kV substation equipment would be enclosed on all sides by a building to minimize visual impacts. The GIS enclosure height would be 24 feet. The GIS enclosure would most likely consist of a cast-in-place concrete floor and precast metal wall panels. A visual simulation of the architectural wall/GIS option is presented in Exhibit A. The incremental cost of this configuration over the Company's proposed configuration would be $3,100,000.

C. GIS Enclosed in a "Barn" or Similar Outbuilding

In this configuration, the PDS and GIS buildings are surrounded by a building that resembles a barn or similar outbuilding. The building shields the transformers from view from the northern abutting parcels. The substation is surrounded by a 14' high chain link fence. A visual simulation of this option is presented in Exhibit A. The incremental cost of this configuration over the Company's proposed configuration would be $2,300,000.

Alternative	**Incremental Cost**
Open Air Bus Configuration with Architectural Wall	$1,200,000
GIS Configuration with Architectural Wall	$3,100,000
GIS enclosed in a barn or similar outbuilding with a 14' Chain Link Fence Surrounding the Substation	$2,300,000

XII. THE SUBSTATION'S LOCATION WOULD NOT POSE AN UNDUE SAFETY OR HEALTH HAZARD TO PERSONS OR PROPERTY AT THE SITE OF THE SUBSTATION

The substation's location will not pose an undue safety or health hazard to persons or property. A 14 foot chain-link fence will enclose the substation yard to prevent unauthorized access to the site. The substation yard will also be gated and locked and monitored with motion detection and security cameras at UI's system operations center in Shelton. Appropriate signage would be posted at the substation informing the public of the high voltage facilities within the substation. If equipment experiences a failure, protective relaying will removed the equipment from service, thereby protecting the public and the equipment within the substation. Other devices installed within the substation will monitor the equipment to alert UI to abnormal or emergency situations.

Because of the location of the substation and the limited number of residential properties, construction and operation of the substation will not interfere with local traffic. Once the substation is constructed it will be operated remotely with personnel onsite only for periodic inspections, maintenance and emergency work.

The proposed substation's design is consistent with the Siting Council's Best Management Practices for Electric and Magnetic Fields ("EMF BMPs"). After completion of the two 345-kV projects in Southwest Connecticut and following construction of the substation, there will be a reduction of the loading of the 115-kV transmission lines near the substation which will result in lower magnetic fields.

In order to comply with the EMF BMPs, UI undertook the following activities:

- Obtained baseline (preconstruction) measurements of EMF levels at the proposed site

- Performed project-specific assessment of EMF levels
- Recognized completed and ongoing scientific EMF research
- Considered reduced EMF design and non-structural alternatives
- Considered EMF exposure levels and durations with respect to existing and planned uses
- Considered project-specific exposure limits for EMF

A. EMF Assessment

UI's consultant, Enertech Consultants, analyzed electric and magnetic field levels for the substation. These findings are documented in the report attached as Exhibit F and illustrate that the primary source of EMFs are and will be the transmission lines. The measured and calculated EMF levels for the existing transmission lines at the existing Trumbull Junction as well as calculated EMF levels for the proposed substation are lower than the 50/60 Hz adverse health effects guidelines provided by the International Commission on Non-Ionizing Radiation Protection and the American Conference of Governmental Industrial Hygienists.

The Trumbull Substation EMF assessment modeled four operating cases, which take into account future changes in the transmission system based on existing, Post-Trumbull Substation, Post-Bethel/Norwalk and Post-Middletown/Norwalk loading conditions. A comparison of the magnetic field results for measured and calculated levels at thirteen reference points are presented in Table 4 of Exhibit F.

B. Electric Field

The measured electric field ranged from approximately 89 to 390 V/m. The highest calculated electric field was approximately 521 V/m for the existing transmission line configuration. This occurs at a location beneath the UI transmission lines that is in close proximity to where the maximum measured electric field was recorded (390 V/m). Calculations were performed to evaluate future electric fields once the substation is

constructed and in operation. For the proposed substation configuration, the peak electric field was calculated to be approximately 768 V/m. This corresponds to the locations at the fenceline where the 115-kV lines pass overhead.

C. Magnetic Fields

The measured magnetic field at the substation's fence line ranged from approximately 1 to 71 mG. The highest calculated magnetic field at the fence line for the existing transmission line configuration (Case 1, as described in Exhibit F) was 72 mG, and corresponds to the location at the fence line where 71 mG was measured. Using the same transmission line loading as on the day of the measurements (May 7, 2003), the proposed Trumbull Substation was added to the model (Case 2). The calculated peak magnetic field along the fence line increased from 72 mG (without the substation) to 78 mG with the substation. The slight increase in the strength of the magnetic field is attributable to the geometric relationship of the altered transmission line configuration at this location, which is along northern edge of the substation's fence line that crosses the UI transmission line ROW. These calculations support the previous determination that the primary magnetic field sources are the transmission lines, not the substation.

The in-service date for the proposed Trumbull Substation is December 2007. The transmission system loading was modified to reflect projected changes associated with the completion of two phases of the 345-kV transmission line expansion in Southwest Connecticut which will affect the transmission line flows in the 115-kV system. The first phase of the expansion is the Bethel/Norwalk 345-kV Project (Bethel/Norwalk) which extends the 345-kV transmission system into Norwalk, with an

in-service date of December 2006. Case 3 modeled the proposed Trumbull Substation after the completion of Bethel/Norwalk. The second phase of the 345-kV system expansion, the Middletown/Norwalk 345-kV Project (Middletown/Norwalk), is scheduled for completion in December 2009. Case 4 modeled the proposed Trumbull Substation after the completion of Middletown/Norwalk. In both Cases 3 and 4, the system load was modeled at Normal (15 GW) and Peak (27.7 GW) system loading conditions.

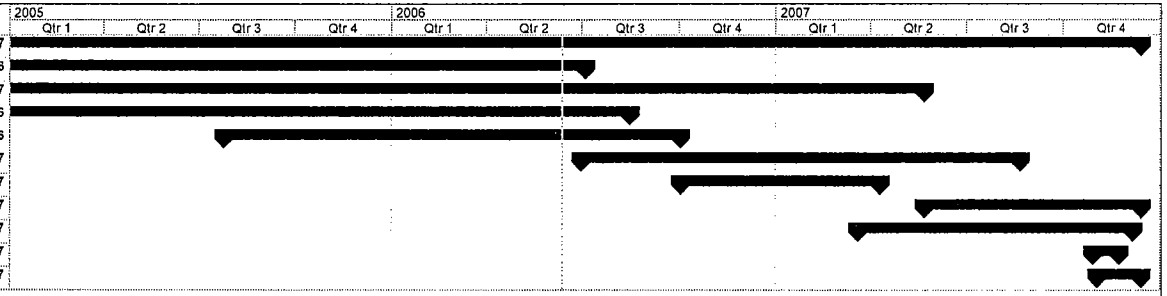
The maximum magnetic field calculated for Case 3 under normal loading conditions was 61.2 mG. The maximum magnetic field calculated for Case 3 under peak loading conditions was 108.6 mG. The maximum magnetic field occurred along the fence line on the north side of the substation where the transmission lines exit the substation. The maximum magnetic field calculated for Case 4 under Normal loading conditions was 38 mG. The maximum magnetic field calculated for Case 4 under Peak loading conditions was 65.1 mG. Once again, the maximum magnetic field occurred along the fence line on the north side of the substation where the transmission lines exit the substation. The impact of the completion of the Middletown/Norwalk project is to reduce the 115-kV transmission line loadings, resulting in lower magnetic fields.

Based on the assessment undertaken for the substation, and the identification of the transmission lines as the primary source of electric and magnetic fields, UI is not recommending any design changes for substation, specific to reducing electric and magnetic fields, nor is UI recommending any project specific exposure limits for EMF.

XIII. PROJECT SCHEDULE

The following chart provides a generalized overall schedule for the construction of the substation, installation of the transmission poles, testing and commissioning. The construction is anticipated to begin in the first quarter of 2007 with an in-service date of December 31, 2007.

ID	Task Name	Duration	Start	Finish
1	Trumbull Substation Project	1404.9 d	7/29/02	12/14/07
2	Preliminary Tasks	1026.9 d	7/29/02	7/4/06
13	Licensing and Permitting	1226.9 d	9/9/02	5/22/07
46	Conceptual Design	1057 d	7/29/02	8/15/06
76	Detail Design	310.5 d	7/25/05	10/2/06
137	Procurement	297.15 d	6/30/06	8/21/07
188	Construction Contractor Procurement	135.9 d	10/3/06	4/10/07
195	Construction - Transmission & Substation	148 d	5/22/07	12/14/07
265	Trumbull Substation Distribution - UI	187 d	3/20/07	12/6/07
289	Construction Complete	19 d	10/29/07	11/23/07
297	Project Complete	30 d	11/2/07	12/14/07



Project: Trumbull Substation Project
Date: 6/12/06

Task
Critical Task
Progress
Milestone
Completed Milestone
Summary
Rolled Up Task
Rolled Up Progress
Split
External Tasks
Project Summary
External Milestone
External Milestone
External Milestone
External Milestone
External Milestone
External Milestone
Deadline

Trumbull Substation Project

Project Manager: Eugene Kaltaur, PE, PMP

XIV. BULK FILING OF MUNICIPAL DOCUMENTS

A bulk filing of the municipal zoning, planning, planning and zoning, conservation and inland wetland regulations and by-laws of Trumbull, Bridgeport and Stratford will be provided to the Council by a separate filing.

XV. ADMINISTRATIVE NOTICE, PUBLIC AND ABUTTERS NOTICE, SERVICE AND OTHER FILING REQUIREMENTS

The Company's affidavits of service and newspaper notice and copies of the letters to abutting property owners are provided in Exhibit H.

A. Administrative Notice

The Company requests administrative notice of the following documents:

1. Connecticut Siting Council Electric and Magnetic Field Best Management Practices, February 11, 1993.

2. Connecticut Siting Council Review of the Connecticut Electric Utilities Ten-Year Forecast of Loads and Resources, 2005.

3. Connecticut Siting Council Review of the Connecticut Electric Utilities Ten-Year Forecast of Loads and Resources, 2004.

4. Connecticut Guidelines for Soil Erosion and Sediment Control, 2002.

5. Connecticut Siting Council Electric and Magnetic Field Best Management Practices, February 11, 1993.

6. Connecticut Siting Council Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Facilities in Connecticut, May 4, 2006 (Draft).

7. CL&P 2006 Forecast of Loads and Resources for 2006-2015, March 1, 2006.

8. UI 2006 Forecast of Loads and Resources for 2006-2015, March 15, 2006.

9. Connecticut General Statutes Section 16-243 and Sections 16-11-137, and 139 of the Regulations of Connecticut State Agencies (and by reference, the National Electrical Safety Code ANSI C2, 2002 Edition).

10. ISO-NE, Blackout 2003: Performance of the New England and Maritimes Power Systems During the August 2003 Blackout, February, 2004.

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

12. Connecticut Department of Public Utility Control, Docket No. 03-11-01, DPUC Review of CL&P and UI Conservation and Load Management Plan for the Year 2004, February 4, 2004.

13. Connecticut Department of Public Utility Control, Docket 02-14-12, DPUC Investigation into Possible Shortages of Electricity in Southwest Connecticut During Summer Periods of Peak Demand.

14. Connecticut Department of Public Utility Control, decision dated August 8, 2001, Docket No. 00-09-04, Joint Application of The Connecticut Light and Power Company and Western Massachusetts Electric Company for the Sale of Land – City of Stamford.

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

16. Energy Efficiency: Investing in Connecticut's Future, Report of the Energy Conservation Management Board, Year 2003 Programs and Operations, January 21, 2004.

17. Institute for Sustainable Energy, An Assessment and Report of Distributed Generation Opportunities in Southwest Connecticut, January 10, 2003, prepared by Xenergy.

18. Working Group on SWCT, Comprehensive Assessment and Report, Part I, January 2, 2003, prepared pursuant to Public Act No. 02-05 and Executive Order No. 26.

19. NEPOOL Planning Procedure No. 4.

XVI. PRE-APPLICATION PROCESS (CONN. GEN. STAT. SECTION 16-50L(E))

UI met with Trumbull representatives prior to the distribution of the municipal consultation filing. On December 1, 2005, the municipal consultation filing was delivered to the Chief Elected Official in Trumbull thereby initiating the formal municipal consultation process. See Appendix G. Also, on December 22, 2005 and December 28, 2005 the municipal consultation filing was delivered to the Chief Elected Officials in the Town of Stratford and the City of Bridgeport.[10] See Appendix G. A list of the Company's meetings held prior to the submission of the Application to the Siting Council is set forth in Exhibit I.

[10] The City of Bridgeport and the Town of Stratford are within 2,500 of the proposed location of the substation and therefore pursuant to Conn. Gen. Stat. 16-50*l*(e) the municipalities received a copy of the municipal consultation filing.

XVII. APPLICATION FILING FEE (RCSA SECTION 16-50V-1A)

The filing fee for this application is determined by the Council's filing fee schedule and the estimated construction cost for the substation as set forth in Section VI. A check for the Council's application fee in the amount of $17,300 payable to the Treasurer, State of Connecticut accompanies this Application.

Pursuant to Conn. Gen. Stat. §16-50*l*(a)(1), the Company also encloses a separate check in the amount of $25,000 payable to the Council for the Municipal Participation Fee.

XVIII. OTHER RELEVANT INFORMATION

As required by Conn. Gen. Stat. §16-50*l* (e), the Company filed the same information submitted to the municipalities in December 2005 with the Connecticut Energy Advisory Board ("CEAB") on December 1, 2005, the same day the material was provided to Trumbull. Such information was filed in accordance with instructions received from CEAB representatives.

In addition, at the request of CEAB, on January 26, 2006, UI representatives met with LaCapra Associates, the CEAB's consultant, to discuss the need for the substation and to answer questions.

XIX. GOVERNMENT APPROVALS

In addition to the Certificate from the Council, the proposed substation may require various permits, approvals, and reviews from other agencies. Additionally, UI will notify certain agencies about the substation although no permit or approval is required from the agency. Please refer to Exhibit E, Section 6, for a summary of the possible permits, approvals and reviews for the proposed substation.

ATTACHMENT A

GENERAL CLOSSARY OF TERMS

GENERAL GLOSSARY OF TERMS

115-kV: 115 kilovolts or 115,000 volts.

AC (alternating current): An electric current which reverses its direction of flow periodically. (In the United States this occurs 60 times a second-60 cycles or 60 Hertz.) This is the type of current supplied to homes and business.

Bus: A conductor capable of carrying large amounts of current in a substation.

CTDEP: Connecticut Department of Environmental Protection.

Circuit: A system of conductors (three conductors or three bundles of conductors) through which an electrical current is intended to flow and which may be supported above ground by transmission structures or placed underground.

Circuit Breaker: A switching device that automatically disconnects power to the circuit in the event of a fault condition. Located in substations. Performs the same function as a circuit breaker in a home.

CL&P: The Connecticut Light & Power Company.

Conn. Gen. Stat.: Connecticut General Statutes.

CSC: Connecticut Siting Council; the Council.

dBA: Decibel, on the A-weighted scale.

DC (direct current): Electricity that flows continuously in one direction. A battery produces DC power.

Demand: The total amount of electricity required at any given time by an electric supplier's customers.

Distribution: Line, system. The facilities that transport electrical energy from the transmission system to the customer.

D&M Plan: Development & Management Plan.

DPUC: (Connecticut) Department of Public Utility Control.

Duct: Pipe or tubular runway for underground power cables (see also Conduit).

Duct Bank: A group of ducts or conduit usually encased in concrete in a trench.

Electric Field: Result of voltages applied to electrical conductors and equipment.

EMF: Electric and magnetic fields.

Fault: A failure or interruption in an electrical circuit (short circuit).

G: Gauss; 1G = 1000 mG (milligauss); the unit of measure for magnetic fields.

GIS: Gas insulated substation using sulfur hexafluoride gas (SF6) as the insulating medium.

H-frame: A wood or steel structure constructed of two upright poles with a horizontal cross-arm and bracings.

ISO: Independent System Operator.

Jumper Conductor: A piece of wire that is used to connect a piece of equipment and solid bus. Used so there is no connection between the equipment and the bus, eliminating the possibility of transmitting mechanical vibrations and preventing possible vibratory induced damage.

kV: Kilovolt, equals 1,000 volts.

Lines: A series of overhead transmission structures which support one or more circuits; or in the case of underground construction, a single electric circuit.

Load: Amount of power delivered as required at any point or points in the system. Load is created by the power demands of customers' equipment (residential, commercial and industrial).

Magnetic Field: Produced by the flow of electric current; strength measured as magnetic flux density in units called gauss (G) or milligauss (mG) – 1/1,000 Gauss.

mG: Milligauss (see Magnetic Field) – 1/1,000 Gauss

MVA (Megavolt Ampere): Measure of electrical capacity equal to the product of the voltage times the current. Electrical equipment capacities are sometimes stated in the MVA.

MW (Megawatt): Megawatt equals 1 million watts, measure of the work electricity can do.

NEPOOL: New England Power Pool.

Paper Street: Also known as Foster Avenue. Owned by the Town of Trumbull.

Right of way: ROW; corridor.

SCADA: System Control and Data Acquisition system – A system installed at the substation which allows control and monitoring from a remote location.

SF_6: Sulfur hexafluoride, an insulating gas used in GIS substations and circuit breakers.

Statutory Facilities: Environmental, ecological, scenic, historic, recreational or other resources identified by the Connecticut Siting Council in its Electric Substation Facility Application Guidelines, Section VII, Items H and K (CGS Section 16-50/(a)(1)).

Substation: A fenced-in yard containing switches, transformers, line terminal structures, and other equipment enclosures and structures. Adjustments of voltage, monitoring of circuit and other service functions take place in this installation.

Switchgear: General term covering electrical switching and interrupting devices. Device used to close or open, or both, one or more electric circuits. Also called “circuit breaker”.

Transformer: A device used to transform voltage levels to facilitate the efficient transfer of power from the generating plant to the customer. A step-up transformer increases the voltage while a step-down transformer decreases it.

Transmission Line: Any line operating at 69,000 or more volts.

V/m: Volts per meter; kilovolt per meter; 1,000 V/m=1-kVm.

Voltage: A measure of the push or force which transmits electricity.

Watercourse: Rivers, streams, brooks, waterways, lakes ponds, marshes, swamps, bogs, and all bodies of water, natural or artificial, public or private.

Wetland: Land, including submerged land, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial or flood plain by the U.S. Department of Agriculture, Natural Resources Conservation Service. Connecticut jurisdictional wetlands are based solely on soil type; federal jurisdictional wetlands are classified based on a combination of soil type, wetland plants, and hydrologic regime.

ATTACHMENT B

CROSS-REFERENCE BETWEEN COUNCIL'S APPLICATION GUIDE AND UI'S APPLICATION

CROSS-REFERENCE BETWEEN COUNCIL'S APPLICATION GUIDE AND UI'S APPLICATION	
Council's Guide	**UI's Application**
I. Pre-Application Process (General Statutes § 16-50l(e)) Municipal Consultations	Volume 1, Sections XVI and XVIII; Volume 2, Exhibits G and I.
II. Application to Municipal Agencies (General Statutes § 16-50x(d))	Volume 2, Exhibit H.1.
III. Quantity, Form, and Filing Requirements (Regs. Conn. State Agencies § 16-50j-12)	Volumes 1 and 2.
IV. Application Filing Fees (Regs. Conn. State Agencies § 16-50v-la)	Volume 1, Section XVII.
V. Proof of Service (General Statutes § 16-501(b))	Volume 1, Section XV; Volume 2, Exhibit H.
VI. Public Notice (General Statute § 16-50l(b))	Volume 1, Section XV; Volume 2, Exhibit H.
VII. Notice to Abutting Landowners (General Statutes § 16-50l(b))	Volume 1, Section XV; Volume 2, Exhibit H.
VIII. Contents of Application (General Statutes § 16-50l(a)(1))	
A. A brief description and the location of the proposed facility, including an artist's rendering and/or narrative describing its appearance.	Volume 1, Section I, Executive Summary.
B. A statement of the purpose for which the application is being made.	Volume 1, Section II.
C. A statement describing the statutory authority for such application.	Volume 1, Section III.
D. The exact legal name of each person seeking the authorization or relief and the address or principal place of business of each such person.	Volume 1, Section IV.
E. The name, title, address, and telephone number of the attorney or other person to whom correspondence or communications in regard to the application are to be addressed.	Volume 1, Section V.
F. A description of the proposed facility including: (1) Itemized estimated costs; (2) Comparative costs of alternatives considered; (3) Facility service life; (4) Bus and specifications; (5) Overhead take-off design, appearance, and heights; (6) Length of interconnections to transmission and distribution; (7) Initial and design voltages and	Volume 1, Section VI ; Volume 1, Exhibit C.

capacities; (8) Rights-of-way and accessway acquisition; (9) Transmission connections and distribution feeders; and (10) Service area	
G. A statement and full explanation of why the proposed facility is needed and how the facility would conform to a long-range plan for the expansion of the electric power grid serving the state and interconnected utility systems that would serve the public need for adequate, reliable, and economic service, including: (1) A description and documentation of the existing system and its limitations; (2) Justification for the proposed in-service date; (3) The estimated length of time and existing system is judged to be adequate with and without the proposed facility; (4) Identification of system alternatives with the advantages and disadvantages of each; and (5) If applicable, identification of the facility in the forecast of loads and resources pursuant to General Statutes § 16-50r	Volume 1, Section VII; Volume 1, Exhibit C.
H. A proposed site map at a scale no smaller than one inch = 40 feet and aerial photos of suitable scale showing the site, access, and abutting properties including proximity of the following: 1. Settled areas; 2. Schools and daycare centers; 3. Hospitals 4. Group homes; 5. Forests and parks; 6. Recreational areas; 7. Seismic areas; 8. Scenic areas; 9. Historic areas; 10. Areas of geologic or archaeological interest; 11. Areas regulated under the inland Wetlands and Watercourses Act; 12. Areas regulated under the Tidal Wetlands Act and Coastal Zone Management Act; 13. Public water supplies; 14. Hunting or wildlife management areas; and 15. Existing transmission lines within one mile of the site.	Volume 1, Section IX; Volume 1, Exhibit B, Figure 4-1; Volume 2, Exhibits K and L.
I. A justification for selection of the proposed site including a comparison with alternative sites which are environmentally, technically, and economically practicable. Include enough information for a complete comparison between the proposed site and any alternative site contemplated.	Volume 1, Section VIII; Volume 2, Exhibit D.
J. Safety and reliability information, including: (1) Provisions for emergency operations	Volume 1, Sections XI and XII.

and shutdowns; and (2) Fire suppression technology	
K. A description of the effect that the proposed facility would have on the environment, ecology, and scenic, historic, and recreational values, including effects on: (1) Public health and safety; (2) Local, state, and federal land use plans; (3) Existing and future development; (4) Roads; (5) Wetlands; (6) Wildlife and vegetation, including rare and endangered species, and species of special concern, with documentation by the Department of Environmental Protection Natural Diversity Data Base; (7) Water supply areas; (8) Archaeological and historic resources, with documentation by the State Historic Preservation Officer; and (9) Other environmental concerns identified by the applicant, the Council, or any public agency	Volume 1, Section X; Volume 1, Exhibit B; Volume 2, Exhibit E.
L. A statement explaining mitigation measures for the proposed facility including: (1) Construction techniques designed specifically to minimize adverse effects on natural areas and sensitive areas; (2) Special routing or design features made specifically to avoid or minimize adverse effects on natural areas and sensitive areas; (3) Establishment of vegetation proposed near residential, recreational, and scenic areas; and (4) Methods for preservation of vegetation for wildlife habitat and screening	Volume 1, Section XI.
M. Justification that the location of the proposed facility would not pose an undue safety or health hazard to persons or property at the site of the proposed facility including:	Volume 1, Section XII; Volume 2, Exhibit F.
1. Measurements of existing electric and magnetic fields (EMF) at site boundaries, and at boundaries of adjacent schools, daycare facilities, playgrounds, and hospitals, with extrapolated calculations of exposure levels during normal and peak normal line loading;	
2. Calculations of expected EMF levels at the above-listed locations that would occur during normal and peak normal operation of the facility; and	
3. A statement describing consistency with the Council's "Best Management Practices for Electric and Magnetic Fields," as amended.	

N. A schedule of the proposed program for right-of-way or property acquisition, construction, rehabilitation, testing, and operation.	Volume 1, Section XIII.
O. Identification of each federal, state, regional, district, and municipal agency from which approvals have been obtained or will be sought, copies of approvals received, and a schedule for obtaining approvals not yet received.	Volume 1, Section XIX.
P. Bulk filing of municipal zoning, planning, planning and zoning, conservation, and inland wetland regulations and by-laws.	Volume 1, Section XIV.
Q. Such information any department or agency of the state exercising environmental controls may, by regulation, require.	Volumes 1 and 2.
R. Such information the applicant may consider relevant.	Volume 1, Section XVIII.