

<p><b>DOCKET NO. 433</b> – The United Illuminating Company application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a 115/13.8 kilovolt substation located at 14 Old Stratford Road, Shelton, Connecticut.</p>	<p>} } } }</p>	<p>Connecticut</p> <p>Siting</p> <p>Council</p> <p>February 15, 2013</p>
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**DRAFT Findings of Fact**

**Introduction**

1. The United Illuminating Company (UI), in accordance with provisions of Connecticut General Statutes (CGS) Sections 16-50g et seq., and Section 16-50j-1 et seq. of the Regulations of Connecticut State Agencies, applied to the Connecticut Siting Council (Council) on October 3, 2012 for the construction, maintenance, and operation of a bulk power substation at 14 Old Stratford Road, Shelton, Connecticut (refer to Figure 1). (UI 1, p. 1)
  
3. The purpose of the proposed facility is to improve reliability and add capacity to the electric power distribution system in UI’s Greater Shelton Service Area (GSA) and to eliminate voltage risk collapse and potential rolling blackouts during contingency conditions at UI’s Indian Well Substation. (UI 1, p. 11)
  
4. Pursuant to CGS § 16-50m, the Council, after giving due notice thereof, held a public hearing on January 17, 2013, beginning at 3:00 p.m. and continuing at 7:00 p.m. at the Shelton City Hall, 154 Hill Street, Shelton, Connecticut. (Transcript 1 – January 17, 2013 at 3:00 p.m. [Tr. 1], p. 3; Transcript 2 – January 17, 2013, at 7:00 p.m. [Tr. 2], p. 3)
  
5. The Applicant and The Connecticut Light and Power Company (CL&P) are parties to the proceeding. (Record)
  
6. The Council and its staff made an inspection of the proposed site on January 17, 2013, beginning at 2:00 p.m. (Council’s Hearing Notice dated December 14, 2012)
  
7. Pursuant to CGS § 16-50l(b), public notice of the filing of the application to the Council was published in the Connecticut Post on September 21 and September 23, 2012. (UI 1, p. 7)
  
8. On January 2, 2013, UI erected a four-foot by six-foot sign near the corner of Old Stratford Road and Pootatuck Place describing the proposed project. The sign included the Applicant’s name, type of facility proposed, the date and location of the Council’s public hearing, and contact information for the Applicant and the Council. (UI 6)
  
9. Pursuant to CGS § 16-50l (b), notice of the application was sent to all abutting property owners by certified mail. (UI 1, pp. 8-9)
  
10. Pursuant to CGS § 16-50l(b), UI provided notice to all federal, state and local officials and agencies listed therein. (UI 1, pp. 3-5)

11. UI provided a copy of the application to the Connecticut Energy Advisory Board (CEAB). Pursuant to CGS § 16-50(a)(2), the project is exempt from the CEAB mandatory request for proposal process. No comment from the CEAB was received. (UI 1, p. 77; Record)

#### **State Agency Comment**

12. Pursuant to CGS § 16-50j(h), on December 14, 2012, the following State agencies were solicited by the Council to submit written comments regarding the proposed facility: Department of Agriculture, Department of Energy & Environmental Protection (DEEP), Department of Public Health, Council on Environmental Quality, Public Utilities Regulatory Authority, Office of Policy and Management, Department of Economic and Community Development, the Department of Transportation (DOT), and the Department of Emergency Services and Public Protection. (Record)
13. The Council received written comment from the DOT regarding permitting requirements if the project affects Bridgeport Avenue. The project, as proposed, would not affect Bridgeport Avenue. (UI 1, App. A, DR-3; Record)
14. No other State agencies commented on the proposal. (Record)

#### **Municipal Consultation**

15. UI began discussing the proposed project with the City of Shelton officials in December of 2011. (UI 2)
16. In July of 2012, UI submitted a technical report to the City of Shelton (City) and to the Town of Stratford as one of the alternatives examined was within 2,500 feet of Stratford. After submitting the technical report, UI met with the Mayor of Stratford to discuss the project. (UI 1, p. 76)
17. UI held a publically noticed information session on August 1, 2012 in Shelton. Eleven non-project people attended including five members of the Shelton Planning and Zoning Commission. (UI 2)
18. On October 12, 2012, the Shelton Conservation Commission submitted written comment to the Council requesting establishment of a buffer along the Far Mill River, adjacent to the site. (Record)
19. On January 10, 2013, the Shelton Planning and Zoning Commission submitted written correspondence to the Council requesting consideration of access to the Far Mill River and establishment of a vegetative buffer along the Route 8 south exit ramp to prevent direct views of the substation from the ramp area, considered by the City as a gateway to Shelton. (Record)
20. On January 17, 2013, John Anglace, Jr., President of the Shelton Board of Alderman submitted written comment to the Council generally in support of the project. Mr. Anglace further requested consideration of site aesthetics and requested comment on any subsequent site plans prior to site construction. (Record)

#### **Project Need**

21. UI's GSA includes the municipalities of Shelton, Trumbull, Ansonia, Derby and portions of Stamford, and Orange. (UI 1, p. 11)

22. UI provides service to the GSA from four substations, known as the Trap Falls, Indian Well, Ansonia, and Trumbull substations. The four substations have the capability to supply 250 megavolt-amperes (MVA) to the GSA. (UI 1, pp. 11, 14)
23. UI initially conducted a needs study in May 2008 which indicates 60 MVA of load growth within the GSA by 2013, mostly from the potential for three new large customers in the area. These new customers did not materialize due to the subsequent economic downturn. Actual load growth during this period was 8 MVA. (UI 1, pp. 11-12; Tr. 2, p. 16)
24. UI's most recent study for the period of 2012 – 2021 indicated a load growth of 37 MVA by 2021, reaching a total load of 247 MVA by 2021. This new load growth consists of 13 MVA from specific new loads and 24 MVA of general load growth at the four substations serving the GSA. (UI 1, pp. 13-14)
25. UI is forecasting a capacity need in the GSA by the 2015 summer peak when UI expects area load to reach 93 percent of available substation capacity. (UI 1, pp. 13-15)
26. The substation would be located in the area of the GSA that is expected to receive the most load growth. (UI 1, p. 15)
27. To meet demand in the short-term, UI would transfer distribution load among the four substations, using all available substation capacity to the extent possible. UI expects load transfer solutions to be exhausted by 2015. (UI 1, p. 13)
28. In addition to load-growth studies, UI examined the voltage stability rating of its existing substations under 95 percent load conditions and determined a voltage collapse could occur at the Indian Well Substation. UI thus downgraded the rating at the Indian Well Substation by 25.5 MVA, reducing capacity to the GSA. (UI 1, pp. 11-13; Tr. 1, pp. 79-81)
29. The projected peak demand at the Indian Well Substation would be 122 percent of its firm rating. (UI 1, App. H, p. 1-3)
30. UI has implemented short-term procedures to reduce the possibility of voltage collapse at the Indian Well Substation and would initiate load shedding and/or rolling blackouts, if necessary, to protect the substation. (UI 1, p. 13)
31. A new substation servicing the Shelton area was projected in the Council's Forecast of Loads and Resources since 2007. (2007 Forecast of Electric Loads and Resources)

#### **Site Alternatives**

32. Expansion of the Indian Well and Trap Falls substations would not be possible due to physical site constraints. (UI 1, App. G, p. 10)
33. Replacing transformers at the Indian Well and Trap Falls substation would provide capacity relief in the short term (increase of 10-20 MVA per substation), but such replacement would require an extensive redesign of the substations, causing a contingency concern as an existing transformer would be out of service for four months. Additionally future space for a mobile transformer would be eliminated. (UI 1, App. G, p. 10)

34. UI examined the installation of a third transformer at either the Trap Falls or Trumbull substations but rejected this possibility due to extensive site work that would be required to install a new transformer and underground distribution feeders at each site. (UI 1, App. G, pp. 12-13)
35. UI examined and rejected the installation of a single 40 MVA transformer along the existing 115-kV transmission line between the Trap Falls and Derby Junction substations. This option does not allow for a backup transformer to serve load in the event of an outage. (UI 1, App. G, p. 10)
36. The estimated load growth within the GSA cannot be accommodated or delayed by energy efficiency or conservation and load management programs. These programs reduce load by approximately 1 MVA per year. (UI 1, p. 16)
37. Distributed generation cannot meet future load growth estimates as these projects are typically few in number and a backup power supply must be available in the event these units are not operable. (UI 1, pp. 16-17)
38. UI conducted a search for properties in the area that could accommodate a new substation. A new substation site would require approximately two acres and would need to be adjacent to the existing transmission system in the load growth area. (UI 1, App. H, pp. 2-1- 2-2)
39. After examining 36 potential locations, UI selected the proposed site for a new substation. One other candidate was feasible, a raw land site adjacent to the Trap Falls Substation, but that site would only accommodate two transformers and not allow for future expansion or potential transmission line upgrades. The site would also require significant blasting and grading in a residential area. Additionally, a water main would have to be relocated to accommodate distribution feeders. (UI 1, App. H, pp. ES-1, 2-2, 4-7, 4-8; UI 2, R. 1, R. 3)

#### **Site Location**

40. The proposed site is located on a six-acre, industrial-zoned parcel that was purchased by UI in 2009. (UI 1, pp. 18, 71)
41. The parcel is bound by the Route 8 south exit ramp to the east, Old Stratford Road to the south, Pootatuck Place to the west and the Far Mill River to the north (refer to Figure 2). (UI 1, p. 18)
42. Developed commercial properties are located west of the site including a hotel and gas station. A City sewage pumping station is located north of the parcel, across the Far Mill River. (UI 1, p. 50; UI 7)
43. The nearest residence is located approximately 470 feet north of the substation at 26 Beard Sawmill Road. (UI 1, p. 43)
44. A CL&P easement with four overhead 115-kV transmission lines extends across the western portion of the parcel. (UI 1, p. 18)
45. The parcel is generally level with an elevation of approximately 100-110 feet above mean sea level (amsl). (UI 1, p. 32)
46. The parcel was previously occupied by the Lord Corporation and contained several industrial buildings for the manufacture of rubber products. The buildings were demolished in the late 1990's and underground tanks and contaminated soil were removed. (UI 1, p. 19)

47. Presently, the site contains a perimeter chain-link fence, several asphalt areas, scrubland and open areas, and a small building in the northeast corner of the property used for ongoing underground site remediation activities. Nine groundwater remediation wells are also on the property. (UI 1, pp. 19-20)

### **Proposed Substation Description**

48. The proposed substation site would be located in the central portion of the parcel, occupying approximately two acres. The substation is generally rectangular in shape, measuring 367 feet by 247 feet at its longest dimensions. (UI 1, p. 19)
49. The substation would have a trap rock surface and would be enclosed by an eight-foot high chain link fence with one foot of barbed wire. (UI 1, p. 19)
50. Access to the substation would be from an existing driveway extending east from Pootatuck Place. The driveway would be upgraded to a 20-foot wide travel surface. (UI 1, p. 19)
51. Substation equipment would include two 50 MVA 115/13.8-kV transformers, a 115-kV circuit breaker and associated buswork, six 115-kV disconnect switches, two metal switchgear enclosures, each 44 feet long, 14.5 feet wide, and 14 feet high, and a metal control house measuring 66 feet long, 28 feet wide, and 14 feet tall. (UI 1, p. 21)
52. The substation would be designed to accommodate a third transformer to meet future demand. (Tr. 1, pp. 48-49)
53. Four new monopoles would be installed to connect CL&P's #1560 115-kV transmission circuit to the substation. Two new line terminal structures, approximately 65 feet in height would be installed within the substation. Two additional monopoles with heights of 70 feet and 95 feet would be installed in CL&P's right-of-way. (UI 7, sheet 001)
54. UI would transfer ownership of the two monopoles within the transmission line right-of-way to CL&P upon completion of the project. (Tr. 1, p. 85)
55. Two underground distribution feeders would exit the substation; one heading west towards Bridgeport Avenue and the other heading east towards Armstrong Road. (Tr. 1, pp. 59-60)
56. The construction phase of the project is expected to take approximately 12-18 months, with a tentative in-service date of December 2014. (UI 1, p. 73)
57. Construction would generally occur from 7:00 a.m. to 5:00 p.m. Monday through Friday, except for work that needs to be scheduled at off-peak electrical demand hours such as installation of terminal structures and interconnections. (UI 1, p. 27)
58. The substation equipment is designed for a service life of 40 years. (UI 1, p. 22)
59. The estimated cost for the project, including land acquisition, materials and equipment, design, engineering and construction is \$38.2 million. (UI 1, p. 73)

### **Environmental Considerations**

60. A groundwater plume with chlorinated solvents exists on the eastern portion of the parcel. A groundwater remediation system using a groundwater injection well system has been established in accordance with DEEP permits and is maintained by ARCADIS, a consultant for the Lord Corporation. (UI 1, pp. 19-20; UI 7, p. 6; Tr. 1, p. 39)
61. ARCADIS personnel would be able to access the remediation building and remediation wells without having to enter the substation. UI would retain a portion of the existing fence on the east, west and north sides of the parcel to control access to the remediation facilities. A gate and new fencing off Pootatuck Place would be installed for vehicle access. (UI 7, sheet 001; Tr. 1, pp. 16-17)
62. Site remediation is about 90-95 percent complete. (Tr. 1, pp. 48-49)
63. UI's proposed substation would require the removal and/or relocation of several of the on-site remediation wells. UI is working with ARCADIS to determine new remediation well placements to ensure compliance with previous DEEP remediation permits. (UI 7, p. 6)
64. UI's construction activities would have no impact on groundwater remediation efforts. (UI 7, p. 6)
65. UI would monitor excavated soil and groundwater during construction for contaminants and dispose of any contaminated materials in accordance with applicable regulations. (UI 1, p. 7)
66. The soils at the proposed site have been altered by previous industrial use and consist of manmade fill and disturbed areas. (UI 1, p. 32)
67. A small wetland (0.17 acre) is located within the substation footprint. It was formed after previous site grading activities left a depression on top of buried asphalt. No amphibians were identified using this area. (UI 1, pp. 32-37)
68. UI consulted with the US Army Corps of Engineers who determined that the filling of the wetland would require a US Army Corps permit. (UI 1, pp. 34-35)
69. As part of the US Army Corps permit requirement, UI would set aside 0.9 acres of the property along the Far Mill River as a conservation area accessible to the public. A small parking area would be constructed and a section of old chain link fence removed to allow access. Ownership of the parcel and responsibility for the parking area maintenance is still being discussed with the City of Shelton. (UI 7; Tr. 1, 15-18, 83-84)
70. Vegetation at the site is mostly in a shrubby state, featuring opportunistic species such as Autumn Olive. A corridor of mature trees exists along the Far Mill River. (UI 1, p. 36).
71. There are no known state or federal endangered, or threatened, or species of special concern in the project area. (UI 1, p. 37, App. B)
72. The northeast portion of the proposed substation is located within the FEMA designated 100-year flood zone (115 feet amsl) and most of the remaining substation area would be within the FEMA designated 500-year flood zone (116 feet amsl). The substation would not be located within the Far Mill River floodway, an area with flood currents that could carry flood related debris. (UI 7, Sheet 001; Tr. 1, pp. 22-23, 26-27)

73. UI would remove approximately one foot of organic soil and underlying asphalt, and old drainage features within the substation footprint. Approximately 15,000 cubic yards of fill would be imported to the site to raise the substation grade to an average trap rock surface of 113.75 feet amsl. (UI 1, p. 26; Tr. 1, pp. 21, 56, 87-88)
74. Although the finish grade of the substation would be within the 100-year and 500-year flood lines, UI would design and install equipment so that critical components are located one foot above the FEMA 500 year flood line. (UI 7, Sheet 001; Tr. 1, pp. 26-27, 66, 84, 91-92)
75. Construction of the site would not impact floodplain storage capacity on the parcel. (UI 1, p. 26; Tr. 1, pp. 66-67)
76. Stormwater would be controlled through the installation of five catch basins that would discharge into an infiltration basin located at the south end of the property, between the substation footprint and Old Stratford Road. The infiltration basin would have a soil surface with established grasses. (UI 1, p. 26; Tr. 1, pp. 19-20)
77. Water within the infiltration basin would naturally percolate into the underlying soil. The infiltration basin would be designed to discharge excess water into a drainage swale to the east that leads to Black Brook. (UI 1, p. 26; Tr. 1, pp. 66-69)
78. The site is not within any historic district and would have no impact on archeological or historic resources. (UI 1, p. 41)
79. The transformers contain a mineral oil that serves as an insulator. The transformers feature a secondary containment system designed to hold 110 percent of the transformer oil capacity. Oil would collect in sumps and would be blocked from draining through the use of a bead containment system. (UI 1, p. 29; Tr. 1, pp. 50-51)
80. Noise levels from normal substation operations would not exceed regulatory criteria at the nearest receptors. (UI 1, App. D, p. ES-1)

### Visibility

81. Year-round views of the substation yard would be possible within the immediate area of the parcel and generally out to a distance of 500 feet south and west of the site. This area would include portions of Beard Sawmill Road and Old Stratford Road, and commercially developed areas along Pootatuck Place. Additionally, the substation would be visible year-round from a creamery on Beard Sawmill Road, approximately 600 feet northeast of the site (refer to Figures 3A and 3B). (UI 1, App. E; Tr. 1, pp. 32-34)
82. Portions of the substation would be visible from two residences on Beard Sawmill Road, north of the site, during leaf-off conditions. (Tr. 1, pp. 34-35)
83. Year-round views of the new monopoles associated with the substation would be visible year-round from the CL&P right-of-way out to a distance of 1,000 feet, similar to the existing transmission structures. (UI 1, App. I)

84. UI would remove all vegetation up to the property line along the south and southeast side of the parcel to accommodate the substation and associated infiltration basin. A strip of trees would remain along the Route 8 south exit ramp and along Old Stratford Road west of the ramp. (UI 1, App. I; Tr. 1, p. 20)
85. No vegetative screening would exist along Pootatuck Place or Old Stratford Road at the intersection of Pootatuck Place. Line of sight visibility may preclude any potential plantings in this area. (UI 1, App. I; Tr. 1, pp. 73-74)
86. UI would examine the possibility of removing the southeast corner of the substation to facilitate landscape plantings that would improve aesthetics from the Route 8 south exit ramp and Old Stratford Road. (Tr. 1, pp. 63-64)
87. Relocation of the infiltration basin to the east side of the parcel to improve site aesthetics would not be possible due to the presence of the existing groundwater remediation system. (Tr. 1, pp. 57-59)
88. UI would consult with the City of Shelton to finalize a landscape plan for the substation. (Tr. 2, p. 15)
89. The substation would have lighting installed on two 50-foot masts. Shielded lights would be used to confine lighting to the substation area and not outward to abutting properties. (Tr. 1, pp. 34-36)

#### **Magnetic Field Levels**

90. Existing magnetic field (MF) sources in the project area are the existing 115-kV transmission lines and adjacent distribution lines. Several field measurements were taken and the highest MF levels recorded in the area of the transmission and distribution lines ranged from 10 to 27 milliGauss (mG). MF modeling indicates similar MF levels would occur around the transmission and distribution lines upon completion of construction. (UI 1, p. 57)
91. Once the new substation is constructed, MF levels at the perimeter fence under peak load conditions would range from 13.9 to 44.7 mG. The MF levels would attenuate to 0.5 mG to 18.7 mG 50 feet from the substation perimeter. (UI 1, p. 58)
92. International health and safety agencies, including the World Health Organization, the International Agency for Research on Cancer (IARC), and the International Commission on Non-Ionizing Radiation Protection (ICNIRP), have studied the scientific evidence regarding possible health effects from MF produced by non-ionizing, low-frequency 60-Hertz alternating currents in transmission lines. Two of these agencies attempted to advise on quantitative guidelines for mG limits protective of health, but were able to do so only by extrapolation from research not directly related to health: by this method, the maximum exposure advised by the International Committee on Electromagnetic Safety (part of IARC) is 9,040 mG, and the maximum exposure advised by the ICNIRP is 2,000 mG. Otherwise, no quantitative exposure standards based on demonstrated health effects have been set world-wide for 60-Hertz MF, nor are there any health related state or federal standards in the U.S. The existing and calculated MF levels for this project are well below these recommended exposure levels. (UI 1, pp. 59-62)
93. The calculated MF levels for the proposed substation would be well below recommended exposure standards for the general public. (UI 1, p. 62)
94. The proposed substation would not increase MF levels at the nearest residence. (UI 1, p. 62)



95. Although substations are not the subject of the Council's *EMF Best Management Practices for the Construction of Electric Transmission Lines in Connecticut*, UI applied certain design elements that comport with the Council's document as follows;
- a) the project would comply with the National; Electric Safety Code;
  - b) the site does not abut any residential areas, private or public schools, licensed child day care facilities, licensed youth camps or public playgrounds;
  - c) the substation is located adjacent to an existing 115-kV transmission line, thus the interconnection is very short and within a restricted area; and
  - d) the substation is occupies two acres of a six acre property creating a buffer area;
- (UI 1, p. 61; App. A, DR-6)

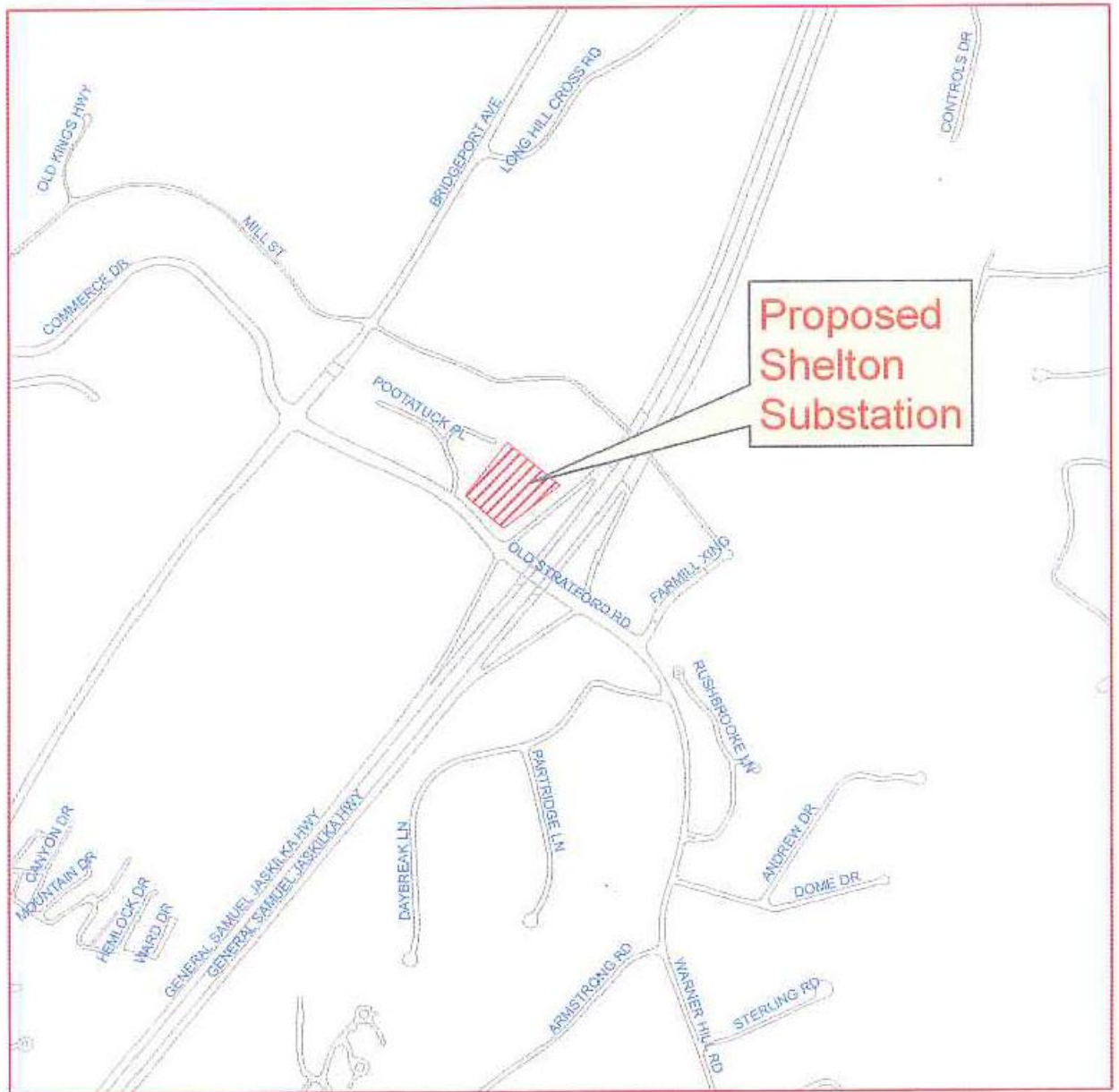


Figure 1: Site location at 14 Old Stratford Road, Shelton. (UI 1, App. A)





Figure 3A: Photostimulation of substation from Well's Hollow Creamery, Beard Sawmill Road. (UI 7)



Figure 3 B: Photostimulation of substation from Old Stratford Road, west of Route 8 south exit ramp. (UI 7)