DOCKET NO. 143 - An application from the Electric Division of the Wallingford Department of Public Utilities for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of a 115-kV substation and its connection to an existing transmission line in the Town of Wallingford, Connecticut.

Connecticut

Siting

Council

July 31, 1991

FINDINGS OF FACT

1. In accordance with provisions of section 16-50g to 16-50z of the Connecticut General Statutes (CGS), the Town of Wallingford, Department of Public Utilities Electric Division (WED), applied to the Connecticut Siting Council (Council) on February 15, 1991, for a Certificate of Environmental Compatibility and Public Need (Certificate) to construct, operate, and maintain a new 115-kV substation and its connection to an existing Connecticut Light and Power Company (CL&P) transmission line in the Town of Wallingford, Connecticut. (Record).

2. Public Notice of the application, as required by CGS section 16-50l(b), was published in the New Haven Register on February 11, and 15, 1991; and in the Record Journal, and the Hartford Courant on February 8, and 15, 1991. (WED I, Exhibit 6-2)

3. Pursuant to CGS section 16-50m, the Council, after giving due notice thereof, held a public hearing on this application on May 15, 1991, beginning at 2:30 p.m. and reconvening at 7:00 p.m., in the Town Council Chambers at the Town of Wallingford Municipal Building, 45 South Main Street, Wallingford, Connecticut. (Record)

4. The Council and its staff made a field inspection of the proposed site in Wallingford, Connecticut, on May 15, 1991. (Record)

5. The only party to the proceeding is the applicant. (Record)

6. Pursuant to CGS 16-50l(e), the applicant provided a technical report to and consulted with the public officials of the Town of Wallingford, Connecticut. (WED I, Exhibit 7-1; WED III)

7. The Connecticut Department of Environmental Protection (DEP) filed written comments with the Council pursuant to CGS Section 16-50j. (Record)

8. The need for the proposed substation was first identified in the WED "Review of the Connecticut Electric Utilities' 1989 Ten-Year Forecasts of Loads and Resources" and since then in subsequent forecasts. (WED I, p.7; Administrative Notice, Item #2)

9. Two existing 115-kV to 13.8-kV bulk supply substations serve the Town of Wallingford. The East Street substation serves approximately 80 percent of the Town of Wallingford's load via fifteen feeders and the North Wallingford substation serves the remaining load via six feeders. (WED I, p.3)

10. A summary of the loads and capabilities for the two existing substations are as follows:

Substation	Historic Summer Peak Load (MVA)*	Firm Capability (MVA)
East Street	85	89
North Wallingford	20	22

*MVA - Mega volt ampere
(WED I, p.4)

11. The existing East Street and North Wallingford substations are approaching load levels that exceed their firm transformation capability. Additional transformation capacity is needed during peak load periods so that a single transformer failure could occur and service would still be maintained. (WED I, p.4)

12. Three options were evaluated in response to growing load:
 1. Develop a new substation;
 2. Expand existing substations; or
 3. Do nothing; which is not an acceptable solution.
(WED I, p.20 and 24)

13. The existing East Street and North Wallingford substations were not candidates for expansion because: existing loads are heavy and nearing transformation capability; increased load losses and voltage drops would occur with longer distribution feeders; the East Street substation layout, yard space, and future on-site generation leaves little room for expansion; the North Wallingford substation has no available duct banks for feeder expansion; and expansion of existing substations would be limited by distribution feeder routes. (WED I, pp. 21-23)

14. Seven sites were evaluated and six sites were rejected for one or more of the following reasons: residential and airport approach areas; watershed, well fields, and wetland areas; load proximity; and limited options for distribution circuit routing. (WED I, pp.20-21)

15. The need for and benefits of the proposed substation in northwest Wallingford are summarized as follows:
    1. Provide firm bulk capacity closer to load and reduce loading at the existing East Street and North Wallingford substations;
    2. Reserve load growth capability at the existing North Wallingford substation;
    3. Improve customer service reliability and voltage conditions; and
    4. Improve distribution feeder routing as well as reduce energy and demand loses. (WED I, p.2)

16. Customer reliability would be improved through shorter and less heavily loaded distribution feeders. Shorter feeders with less load per feeder results in reduced energy losses as well as improving voltage regulation. Also, faults could be located more quickly and affect fewer customers. (WED IV, Q.1, Q.3)

17. The proposed substation would reduce feeder and substation load on the existing distribution system. However, existing feeders would continue to serve some load and have reserve capacity to backup the proposed substation feeders. (WED IV, Q.7; Transcript pp.23 and 24)

18. The proposed substation would be owned and operated by WED and connected to an adjacent existing 115-kV transmission line owned and operated by CL&P. (WED I, p.1)

19. WED would purchase approximately 3 acres from CL&P for the proposed substation site. CL&P would retain the transmission right-of-way (ROW) easement for the property. (WED IV, Q.11 and 12,)

20. The proposed substation would be located off Old North Colony Road between State Routes 150 and 5 on property to be acquired from CL&P adjacent and extending onto a CL&P transmission line ROW designated as circuit 1355. (WED I, p.7)

21. The proposed site lies south of New Colony Avenue, Route 71, on a sandy knoll. The northern part of the site is level and wooded with a variety of trees and shrubs. A south facing slope of the site becomes more open with grass and extends east along the CL&P ROW. (DEP letter dated April 10, 1991)

22. The proposed site location was restricted by two major criteria:
    1. A 100-foot, local setback from the center line of Route 71 forms an arc along the north border of the proposed site.
    2. CL&P has stated that no substation structures except a fence can be placed within the CL&P ROW which bounds the southern border of the proposed site.

    The result is a compressed, elliptical shaped site approximately 100 feet by 250 feet. (WED I, Exhibit 2-2; Transcript Afternoon, pp. 33-35 and Evening, pp. 10 and 11)

23. Development of the proposed substation site would encompass approximately 1.8 acres on a three acre parcel. The minimum lot size considered in the site selection process was one acre. (WED IV, Q.12)

24. The proposed site is commercially zoned (CB-40) and within an aquifer protection district. Adjacent land uses include a car dealership south of the proposed site, auto salvage yard to the south and west of the proposed site, and commercial and retail businesses to the west, north, and east of the proposed site Immediately south of the site is a CL&P transmission line support structure. (WED I, Exhibit 3-2, Exhibit 4-1; WED IV, Q.17)

25. The elevation of the proposed substation yard would be approximately 93 feet above mean sea level (AMSL). Existing elevations of the proposed site range from 88 to 98 feet AMSL. (WED I, Exhibit 3-2)

26. A 200-foot access road would be constructed off Old North Colony Road approximately 130 feet south of Route 71. The access road would have a four-foot cut through a 16-foot earth berm and slope upward and easterly to the proposed substation site. (WED I, Exhibit 3-2)

27. Clearing and rough grading would extend 30 feet beyond the substation's perimeter. The surrounding area would be approximately 10 feet lower than the proposed substation yard. (WED I, pp.7, 9, and 17, Exhibit 3-2)

28. Approximately a dozen trees or more ranging from 10 to 16 inches in diameter and 30 to 50 feet in height would be removed along the north portion of the proposed site. In addition, "danger" trees, outside the perimeter of the proposed site, which could fall on substation equipment, would be removed. (WED VIII, Transcript Evening, pp. 11-13)

29. Trees along a slope facing north to Route 71 would remain and partially shield the proposed substation. The substation would be visible from the south and east because of the open space under the transmission line ROW. (WED I, pp. 16 and 17, WED III)

30. The proposed substation would consist of two, 20 MVA power transformers, one 115-kV circuit breaker, a control house complete with relays, controls and metalclad switchgear with six, 13.8-kV feeder positions complete with tie breaker. (WED I, p.7)

31. A 30-foot by 50-foot control house would be constructed on the north side of the proposed site, which would shelter relay and control switch boards, a substation battery/charger, 15-kV metalclad switch gear, and a Supervisory Control and Data Aquisition (SCADA) system. (WED I, p.8)

32. The two power transformers would be three phase (12/16/20 MVA) with a total firm transformation capability of 22 MVA, and would step down 115-kV voltage to 13.8-kV voltage. These would be located south and to either side of the control house within the perimeter of the substation fence. (WED I, p.7 and Exhibit 3-2)

33. Each power transformer would contain approximately 4,000 gallons of oil. A recessed, concrete, impounding basin would surround each transformer designed to retain the total volume of oil from each transformer, rainfall from a 100-year storm occurrence, plus a 10 per cent contingency. (WED IV, Q.15 and Transcript Afternoon, pp. 25 and 51)

34. The oil used in the power transformer would have a PCB concentration lower than 2 ppm which the Environmental Protection Agency designates as a non-PCB and is not regulated as a hazardous substance. (WED I, p.18)

35. Small oil spills would be detected by utility maintenance personnel during weekly visits. Larger spills would activate an alarm device alerting utility personnel via a 24 hour SCADA system. (WED I, p.18; Transcript Afternoon, p.26)

36. The impounding basins would be inspected once a month. If any contaminant is discovered within the accumulated storm water, the total volume of the basin would be pumped and trucked off-site to an appropriate treatment facility. Non-contaminated storm water would be pumped onto the site for ground drainage. (WED IV, Q.15; Transcript Afternoon, pp. 28-30)

37. The Town of Wallingford - Water Division has approved the oil spill prevention system, consisting of a no direct drainage basin surrounding the transformers. All local requirements of the Aquifer Protection District regulations have been met. (WED VII)

38. The proposed control house and 115-kV bus structure would be 25 feet in height except for the two, 115-kV termination structures, which would have a 41-foot height plus an additional nine feet for overhead ground wires. (WED I, p.8, Exhibit 2-2)

39. Five distribution feeders would exit north from the proposed substation in underground ducts to Rt. 71 and run east and west to pole locations on the distribution system. (WED IV, Q.2, Transcript p.24)

40. The proposed substation would have telephone communications and water utilities. Water would be used for irrigation of landscaping and upkeep of substation. No sewer lines are planned. (Transcript Afternoon, pp.24 and 55)

41. The proposed site has no wetlands or watercourses and is not within a 100-year flood hazard zone. However, the proposed site is within an Aquifer Protection District. (WED I, p.15)

42. The transformers and circuit breakers would be equipment that would emit noise. The A-weighted sound pressure levels predicted at nearby receptor locations in a commercial Class B Noise Zone range from 31 dBA to 38 dBA. A level of 26 dBA is predicted at the nearest residential Class A Noise Zone. (WED I, p.16; WED IV, Q.13)

43. The proposed substation is categorized as a Class C land use. Noise standards for an industrial Class C emitter to a commercial Class B noise zone is 66 dBA, and 61 dBA for day and 51 dBA for night to a residential Class A noise zone. (Regulations of State Agencies section 22a-69-2.5 and section 22a-69-3.5)

44. Construction would be limited to weekdays during daylight hours, except for transformer filling, testing, commissioning, and any construction scheduling requirements per the New England Power Pool. (WED I, Exhibit 3-1)

45. No known historic architectural or archeological resources that are listed or determined eligible for listing on the National Register of Historic Places would be affected. (WED I, p.8; WED IV, Q.19)

46. There are no known Federally Endangered and Threatened Species or Connecticut "species of special concern" on the property of the proposed substation. (WED I, p.18; WED IV, Q.19)

47. The nearest residence is approximately 400 feet southwest of the proposed substation site boundary. The residence is on property used as a truck wrecking/repair facility. (WED V, Q.22)

48. The proposed substation would not cause any television and/or radio interference. (WED I, p.17)

49. A seven-foot, chain link fence would encompass the 100-foot by 250-foot proposed substation yard. The proposed control house would include cement barriers that would be an integral portion of the fence line. A two-leaf, 20-foot gate and three-foot access gate would be placed along the western border of the site. (WED I, Exhibit 2-2)

50. Stone topping would be used to control fugitive dust and mud tracking onto public roads during construction. (WED I, p. 10, Exhibit 3-1)

51. Areas disturbed by construction would be loamed and seeded. WED has planned for additional planting, especially along the north perimeter wall, building, and fence. A final layer of trap rock would be placed within the fenced area of the substation. Areas 20 feet outside the fenced perimeter would be maintained as grass for security reasons. (WED I, pp. 10, 11, and 17; WED IV, Q.14; Transcript Afternoon, p. 69 and Evening, p.14)

52. The start-up of construction would approximately be September 1991, and completed by December 1992. (WED IV, Q.10, Transcript p.47)

53. The estimated cost of construction for the proposed substation in 1991 dollars is $2,880,000 plus $300,000 for the CL&P interconnection. (WED I, p.11 and Exhibit 3-4)

54. Electrical and magnetic field values, measured in kilovolt per meter (kV/m) and milliGauss (mG) respectively, were calculated at three locations of the proposed substation as follows:

	Magnetic	Electrical
Transmission Line ROW (southeast)	15 mG	.2 kV/m
Middle Fence (north)	14 mG	.2 kV/m
Corner Fence (northeast)	18 mG	.3 kV/m

These values were computer generated based on 658 amperes for the 115-kV circuit and heavy load levels for the 13.8-kV underground feeders. The magnetic and electrical field values predicted for the proposed substation are lower than those limits set by the following states.

Montana	1 kV/m at edge of ROW
New York	1.6 kV/m at edge of ROW
New Jersey	3 kV/m at edge of ROW
Minnesota	8 kV/m at edge of ROW
Florida	2 kV/m and 150 mG at edge of ROW for 230 kV and smaller lines.

The State of Connecticut has not established standards for electrical or magnetic fields.

(WED V, Q.21; Transcript Afternoon, p.57 and 58; Council Administrative Notice Item #7)

55. Electric field levels would be very low and effectively unchanged because of its location on an existing 115-kV right-of-way. The predicted magnetic field values from the 115-kV circuitry at the edge of the fence are similar to the existing magnetic field values at the edge of the ROW. The predicted magnetic field values significantly drop with distance. (WED I, p.17; WED V, Q.21)

56. The proposed substation would interconnect with and take delivery from CL&P's circuit No. 1355, a 115 kV transmission line. The substation would comply with all CL&P interconnection requirements and would have no adverse impact on the transmission system. (WED I, p.8)

57. Design and installation of the proposed substation would be in full accordance with the standards of the National Electrical Safety Code, and all applicable American National Standards Institute, Institute of Electrical and Electronics Engineers, and National Electrical Manufacturers Association standards. (WED I, p.8)

58. CL&P has provided comments and recommendations which assisted WED in designing the proposed substation layout. CL&P would continue to provide engineering services for the proposed substation design, construction, and interconnection. (WED IV, Q.16; Transcript Afternoon, p.60)

59. The Town of Wallingford's Planning and Zoning Commission (PZC) granted approval of the proposed substation site plan. In addition, the PZC has issued an Aquifer Protection District Permit for development of the proposed site. (WED V, Q.25)

60. The Town of Wallingford concurs with the need, site selection process, and mitigation measures of land use in constructing and operating the proposed substation. (WED I, Exhibit 7-1)