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March 20, 2008

Daniel F. Caruso, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: **DOCKET NO. 352** The Connecticut Light and Power Company application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a proposed substation located at 264 Rood Avenue and 25 Shelley Avenue, Windsor, Connecticut

Dear Chairman Caruso:

In connection with Docket No. 352, enclosed please find the original and twenty (20) copies of Proposed Findings of Fact.

Very truly yours,

Marianne B. Dubuque

Marianne Barbino Dubuque

MBD/mkw
Enclosures
cc: Service List

DOCKET NO. 352 – Northeast Utilities Service Company, on behalf of The Connecticut Light and Power Company (CL&P) Application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a proposed substation located at 264 Rood Avenue and 25 Shelley Avenue, Windsor, Connecticut	}	Connecticut
	}	Siting
	}	Council
	}	March 20, 2008

Proposed Findings of Fact

Introduction

1. The Connecticut Light and Power Company (CL&P), in accordance with the 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 (RCSA), applied to the Connecticut Siting Council (Council) on November 7, 2007 for the construction, operation, and maintenance of a new substation to be located on CL&P's property located at 264 Rood Avenue and 25 Shelley Avenue, Windsor, Connecticut. (CL&P 1, Vol. 1, pp. A-1, Q-1)

2. The purpose of the proposed facility is to add capacity and improve reliability of the electric power distribution system in Windsor. (CL&P 1, Vol. 1, p. G-1)

3. Pursuant to CGS § 16-50m, the Council, after giving due notice thereof, held a public hearing on February 21, 2008, beginning at 3:00 p.m. and continuing at 7:04 p.m. The hearing was noticed for Windsor Town Hall, 275 Broad Street, Windsor, Connecticut. (Council's Hearing Notice dated January 22, 2008; Transcript 1 - 3:00 p.m. [Tr. 1], p. 2; Transcript 2 – 7:04 p.m. [Tr. 2], p. 2)

4. The only party in this proceeding is the applicant. (Tr. 1, p. 3)

5. The Council and its staff inspected the proposed substation site on February 21, 2008, beginning at 2:00 p.m. (Council's Hearing Notice dated January 22, 2008)

6. Pursuant to CGS § 16-50*l* (b), public notice of the application was published in the Hartford Courant on November 2, 2007 and November 5, 2007. (CL&P 1, Vol. 1, p. Q-3; CL&P 1, Vol. 2, Exh. 9)

7. CL&P erected two signs, one at the property entrance on Rood Avenue and one at 25 Shelley Road on February 11, 2008. The signs included the applicant's name, the type of facility proposed, the public hearing date and location, the availability of the applicable documents for Docket 352, and contact information for the Council. (Tr. 1, pp. 64-65)

8. Pursuant to CGS § 16-50*l* (b), notice of the application was provided to all abutting property owners by certified mail. (CL&P 1, Vol. 1, p. Q-3; CL&P 1, Vol. 2, Exh. 10; CL&P 2)

9. Representatives from CL&P conducted a door-to-door outreach to all of the abutting properties and also to four homes located across the street on Rood and Matianuck Avenues, with the intention of speaking with the property owners about the proposed substation. Information was left at those homes where the door was not answered. (Tr. 1, p. 60; CL&P 3, Q. 10)

10. Pursuant to CGS § 16-50*l* (b), CL&P provided notice to all federal, state and local officials and agencies listed therein. (CL&P 1, Vol. 1, pp. Q-2 through Q-3; CL&P 1, Vol. 2, Exh. 8)

State Agency Comment

11. Pursuant to CGS § 16-50*l*, on January 22, 2008, the following State agencies were solicited by the Council to submit written comments regarding the proposed facility: Department of Environmental Protection ("DEP"), Department of Public Health ("DPH"), Council on Environmental Quality ("CEQ"), Department of Public Utility Control ("DPUC"), Office of Policy and Management ("OPM"), Department of Economic and Community Development ("DECD"), and the Department of Transportation ("DOT"). (Council's Hearing Notice dated January 22, 2008)

12. The Council received a response from the DPH dated February 8, 2008. The DPH had no comment on the proposal. (DPH Comments dated February 8, 2008)

13. The following agencies did not respond with comment on the application: DEP, CEQ, DPUC, OPM, DECD, and DOT. (Record)

Municipal Consultation

14. CL&P commenced the municipal consultation process on September 5, 2007, by sending a Municipal Consultation Filing ("MCF") to the Town of Windsor Chief Elected Official, Mayor Donald Trinks. Thereafter, Town Manager, Peter P. Souza provided CL&P with a letter of support for the Project dated November 1, 2007. (CL&P 1, Vol. 1, p. O-1; CL&P 1, Vol. 2, Exh. 7)

15. The Windsor Inland Wetlands and Watercourses Commission unanimously granted CL&P location approval for placement of the substation on June 5, 2007. (CL&P 1, Vol. 1, p. O-1)

16. The Windsor Planning and Zoning Commission unanimously approved the location of the proposed substation on June 12, 2007. (CL&P 1, Vol. 1, pp. O-1 through Q-2)

17. The Windsor Economic Development Commission unanimously voted to support the project on July 18, 2007. (CL&P 1, Vol. 1, p. O-2)

18. Emily Moon, Assistant Town Manager, made a limited appearance statement into the record at the February 21, 2008 hearing in favor of the project. Ms. Moon indicated that the Town is supportive of a new substation primarily to enhance its opportunities for economic development efforts. (Tr. 1, pp. 16-17)

19. Eric Barz, Town Planner, made a limited appearance statement into the record at the February 21, 2008 hearing expressing support for the project. (Tr. 2, p. 6)

Need

20. The proposed substation would address the need for additional distribution-system capacity and improved reliability in Windsor by establishing a new bulk power substation in the Town. (CL&P 1, Vol. 1, p. G-1)

21. The Windsor electric load is currently served by four bulk power substations: Bloomfield Substation and North Bloomfield Substation located in Bloomfield, Windsor Locks Substation in Windsor Locks, and Northwest Hartford Substation in Hartford. (CL&P 1, Vol. 1, p. G-1; CL&P 5, p. 10)

22. The Bloomfield Substation was expected to exceed its permissible load rating of 120 MVA in 2007. To alleviate the immediate need, a Forced Load Transfer (FLT) scheme was instituted. The Bloomfield Substation is expected to exceed its permissible load rating of 134 MVA in 2008. (CL&P 1, Vol. 1, p. G-5; CL&P 5, p. 9)

23. The North Bloomfield Substation is expected to exceed its permissible load rating of 79 MVA in 2008. (CL&P 1, Vol. 1, p. G-6)

24. From 1981 to 2005, Windsor's power use grew by more than 53%. (CL&P 1, Vol. 1, p. G-4; as corrected in CL&P 5, p. 9 and hearing testimony of K. Bowes, Tr. 1, p. 10)

25. Customer demand is on the rise in the towns that have substations now serving Windsor and therefore, available capacity at these substations is diminishing quickly. For example, substantial regional projects and new developments in the vicinity of Bradley International Airport and Route 20 and I-91 are placing further stress on the overall system. (CL&P 1, Vol. 1, p. G-4)

26. The proposed substation would provide approximately 56 MVA of substation capacity to the system allowing peak loads to be reduced by 30.8 MVA at Bloomfield Substation. (CL&P 5, p. 10)

27. A substation for the Windsor area has been listed in the Council's Forecast of Loads and Resources since 2005. (CL&P 1, Vol. 1, p. A-4)

28. On September 27, 2007, ISO-New England approved the plan for the implementation of the Windsor substation. (CL&P 1, Vol. 1, p. A-4)

29. CL&P offers an array of traditional energy efficiency or demand side management ("DSM") programs through the Connecticut Energy Efficiency Fund ("CEEF") to residential, commercial and industrial customers. (CL&P 5, p. 13)

30. Since 2005, CL&P estimates that through participation in the CEEF programs, customers in Windsor and the surrounding participating towns have achieved peak-demand savings of approximately 16 MW and will save approximately 1,480,235,609 kWH of energy over the life of the installed measures. (CL&P 5, p. 13)

31. CL&P Residential Energy Efficiency Programs include the Home Energy Solutions, the Weatherization Residential Assistance Partnership Program, the New Construction Program, and the Room Air Conditioner Replacement Program. (CL&P 5, pp. 13-14)

32. CL&P commercial and industrial energy reduction efforts include the Energy Opportunities Program and the Energy Conscious Blueprint Program. (CL&P 5, p. 14)

33. CL&P continues to pursue conservation and load management programs throughout its system and offers programs to customers located in the areas that will be served by the proposed substation. (CL&P 5, p. 15)

34. CL&P has explored other system alternatives such as Distributed Generation and demand response solutions. (CL&P 5, p. 12)

35. None of these options would create a distribution system serving Windsor that is as reliable and flexible as one produced by the proposed project and ultimately, would not eliminate the need for the proposed facility to meet system capacity projections. (CL&P 5, p. 12)

36. CL&P has undertaken efforts at conservation and load management both generally and in the specific areas driving the need for the proposed substation. (CL&P 5, p. 12)

37. In Windsor, eight customer-side distributed resource projects (29MW) have been approved by the Department of Public Utility Control consisting of six Emergency Generation programs (25 MW) and two Distributed Generation programs (3.9 MW). (CL&P 5, p. 16)

38. None of the eight projects in Windsor have been completed and three projects (representing 13 MW) may not be built. (CL&P 5, p. 16)

39. CL&P does not expect a significant level of future Distributed Generation projects in the area. (CL&P 5, p. 16)

40. If all of these customer-side projects planned for Windsor became operational, they would not diminish the pressing need for the proposed substation. (CL&P 5, p. 16)

41. Peak demand is expected to increase due to the significant potential for additional industrial/commercial development, specifically in the Pigeon Hill Road/Day Hill Road area. There are a number of larger projects recently completed, currently planned or in various stages of construction within Windsor that represent a projected load increase of over 41 MW by 2010. (CL&P 1, Vol. 1, p. G-4; CL&P 5, p. 17)

42. Proposed Distributed Generation base load units will only reduce load during peak periods by about 3.9 MW. (CL&P 5, p. 16)

Alternatives

43. CL&P examined the feasibility of expanding the neighboring substations to meet Windsor's growing demand but determined expansion costs and the costs associated with the installation of necessary distribution feeders would well exceed the cost of the proposed substation. Additionally, the expanded system would produce a Windsor distribution system that is not as reliable and flexible as the system that will result from the proposed substation and ultimately, would not eliminate the need for the proposed facility to meet system capacity projections. (CL&P 1, Vol. 1, pp. G-6 through G-10)

44. Expansion of the Windsor Locks Substation is not a viable option due to the relatively long and narrow shape of the Windsor Locks Substation property, poor topography, the need for a 27.6-kV feeder source, the lack of unused feeder get-a-way routes and the proximity to residential neighbors. (CL&P 3, Q. 3)

45. CL&P reviewed and evaluated a total of eight sites concluding that the selected parcel was the most viable option for the new substation. (CL&P 1, Vol. 1, p. I-1)

46. In its site evaluations, CL&P used the following criteria to evaluate a particular location's viability: proximity to distribution load pocket and existing feeders; proximity to existing transmission lines; proximity to neighbors and other surrounding features; natural/cultural resources constraints; zoning and land-use constraints; ease of access; sufficient size and shape; proximity to public water-supply watershed and/or aquifer areas; and earthwork requirements. (CL&P 1, Vol. 1, p. I-1)

47. The eight sites evaluated were: Park Avenue ("Location 1"); Washington Road ("Location 2"); Matianuck Avenue ("Location 3"); north of Rood Avenue at Utility Corridor ("Location 4A"); south of Rood Avenue ("Location 4B"); Windsor Avenue ("Location 5"); Deerfield Road ("Location 6"); and Midian Avenue ("Location 7"). (CL&P 1, Vol. 1, pp. I-2 through I-5)

48. CL&P determined that the proposed site, Location 4A, was ideally located given that: it formerly housed a distribution substation; access currently exists from Rood Avenue; it provides direct connections to an existing 115-kV transmission circuit and to 23-kV distributions feeders; the property and abutting CL&P-owned parcels total 21.03 acres, which provide a 490± foot setback from Rood Avenue; significant existing vegetation can be preserved to provide a substantial buffer to neighboring residences; and the work associated with constructing the proposed substation minimally affects wetlands. (CL&P 1, Vol. 1, p. I-4)

49. CL&P determined that Location 1 was unsuitable because the site would require longer distribution feeders, resulting in increased costs, would require ROW purchases, significant land clearing and installation of new utility structures and interconnecting lines. In addition, residences are located on all four potential sites where the transmission lines cross Park Avenue. (CL&P 1, Vol. 1, p. I-2)

50. CL&P determined that Location 2 was unsuitable because the area around the site is well developed with residences with insufficient buffer. Also, wetland constraints exist in this area. (CL&P 1, Vol. 1, p. I-2)

51. CL&P determined that Location 3 was unsuitable because residences occupy all potential site areas where the transmission lines cross Matianuck Avenue. (CL&P 1, Vol. 1, p. I-2)

52. CL&P determined that Location 4B was unsuitable since the site has significant wetland constraints and does not provide sufficient buffering from neighboring residences. (CL&P 1, Vol. 1, p. I-4)

53. CL&P determined that Location 5 was unsuitable because the area is residentially developed. Although some vacant land is available, the development of a substation would require land acquisition from an active adjacent property owner (church parking lot). Moreover, sites in this area provide insufficient buffer from neighboring residences and most of the adjoining land to the west is also constrained by floodplain and bordering wetlands. (CL&P 1, Vol. 1, pp. I-4 through I-5)

54. CL&P determined that Location 6 was unsuitable since no currently vacant land was identified to support a substation. Moreover, development in this location would require longer distribution feeders, additional ROW purchases, significant land clearing and installation of new utility structures and lines. The area is well developed with residences, with minimal vegetative buffer, and the eastern portion of this area has significant wetland constraints. (CL&P 1, Vol. 1, p. I-5)

55. CL&P determined that Location 7 was unsuitable because this location poses significant challenges for the interconnection of a substation to existing distribution feeders. Development of this location would necessitate longer distribution feeders resulting in additional ROW purchases and extensive tree clearing for the installation of new utility structure lines. Nearby residences are located to the north and lack adequate

distance/vegetation buffer. There is no direct access to the ROW and development would require the construction of a new road. An active rail line extends through the area and development would require installation of an at-grade crossing. (CL&P 1, Vol. 1, p. I-5)

Description of Proposed Project

56. The proposed substation would be located on a parcel encompassing over 20 acres with additional abutting and contiguous CL&P-owned parcels, providing for a total of 21.03 acres of land. This project would include the construction of a new 115-kV to 23-kV electric substation, including the installation of two new terminal structures within the substation compound and two new wood-pole structures outside the substation compound. (CL&P 1, Vol. 1, pp. A-1, F-3 and H-1)

57. The site is currently occupied by a 23-kV distribution switching station (former substation), 115-kV and 345-kV transmission lines, 23-kV distribution lines, and a dirt access drive that extends northward from Rood Avenue to the switching station. (CL&P 1, Vol. 1, p. H-3)

58. The substation would be located in a 220 feet by 137 feet area enclosed by a seven-foot high chain link fence with one additional foot of barbed wire (three strands). CL&P would establish a trap-rock surface within the substation compound. (CL&P 1, Vol. 1, p. F-1)

59. Access to the proposed substation would be from a gravel driveway, which will be established generally along the route of an existing unimproved, dirt access. (CL&P 1, Vol. 1, p. F-1)

60. The proposed substation would be supplied from one of the existing 115-kV-overhead transmission line circuits (1751 line). (CL&P 1, Vol. 1, p. F-1)

61. The property is bounded by twenty-five abutting parcels. The nearest residential structure is located 365 feet north of the proposed substation. (CL&P 1, Vol. 1, p. H-3)

62. The three transformer connecting positions in the proposed substation would each be outfitted with 115-kV disconnect switches, and two will have 115-kV circuit switchers. One disconnect switch and one circuit switcher will be in the supply path to the 60-MVA power transformer, used to step down the voltage from 115-kV to 23-kV. In addition, there would also be a 48-foot by 14-foot by 14-foot high relay and control enclosure, a 27-foot by 14-foot by 14-foot high metal-clad switchgear enclosure and a 24-foot by 14-foot by 14-foot high battery enclosure. (CL&P 1, Vol. 1, pp. F-3 through F-4; CL&P 5, p. 5)

63. The second disconnect switch would provide for a future 60-MVA power transformer, if needed. (CL&P 1, Vol. 1, p. F-3)

64. The third disconnect switch and circuit switcher will be used for a mobile transformer connection, when necessary, to perform maintenance or to replace a failed piece of equipment. The proposed substation would be large enough to accommodate two additional 60-MVA transformers at a later date, if needed. (CL&P 1, Vol. 1, p. F-3)

65. The proposed substation would require the installation of an additional 115-kV circuit breaker at the Manchester Substation and changes to certain protection and control equipment at the North Bloomfield Substation. (CL&P 1, Vol. 1, p. F-4)

66. Development of the proposed substation also requires protective relay system changes within the control enclosures at three other existing bulk substations (Manchester, Northwest Hartford and Bloomfield). (CL&P 1, Vol. 1, p. F-4)

67. The cables for each distribution feeder will exit the proposed substation via underground conduits and be connected to existing overhead distribution lines already on the property. Consistent with the present feeder configuration, two of these initial feeders from the proposed substation will follow the general route of the access drive to Rood Avenue, and one feeder will exit the Property on an existing right-of-way to the north. (CL&P 1, Vol. 1, pp. F-3 through F-4)

68. The #1751 transmission line will be looped beneath the other existing transmission lines into the proposed substation, and a new 115-kV circuit breaker will be installed to separate the existing 1751 transmission line into two circuits (CL&P 1, Vol. 1, p. F-1)

69. The interconnections between the substation and the 115-kV transmission line would be accomplished by installing two new terminal structures within the proposed substation, each of which would also support a line disconnect switch and two new wood-pole structures outside the substation (structures #10142A and #10143A), each consisting of three wood poles. (CL&P 1, Vol. 1, Fig. F-1 and p. F-3)

70. Existing wood-pole structure #10143 would also be relocated about 70 feet to the west. (CL&P 1, Vol. 1, p. F-3)

71. From wood-pole structure #10142A a new section of line conductors would connect to one of the line terminal structures located inside the proposed substation's fenced area. From the relocated wood-pole structure #10143 a new section of line conductors will be connected to the new wood-pole structure #10143A and then to the second line terminal structure located inside the fenced area. Both new line sections will cross under the transmission lines supported by steel-poles. (CL&P 1, Vol. 1, p. F-3)

72. The highest proposed substation structures will be 55 feet. The highest existing transmission structures are approximately 110 feet tall. (Tr. 1, pp. 20 and 27)

73. The nominal service life of the substation equipment is approximately 40 years. (CL&P 1, Vol. 1, p. F-5)

74. The construction phase of the project is expected to take approximately 10 to 12 months. (CL&P 1, Vol. 1, p. L-3)

75. The tentative in-service date is June 2009. (CL&P 1, Vol. 1, p. L-3)

76. The estimated cost for the siting, design, and construction of the proposed substation and supporting infrastructure is $13,800,000. (CL&P 1, Vol. 1, p. F-5)

Environmental Considerations

77. The proposed project would not have any significant, long-term adverse effects on the existing environment and ecology, nor would it affect the scenic historic and recreational values of the vicinity. (CL&P 1, Vol. 1, p. K-1)

78. There are six wetland areas on the property. Development of the substation would result in temporary and permanent impacts to portions of two of these wetlands. (CL&P 1, Vol. 1, p. K-4)

79. The Windsor Inland Wetlands and Watercourses Commission regulates a 150-foot upland review area. Due to the size and extent of the wetlands on the property, only small outlying portions of the property fall outside of the upland review area. (CL&P 1, Vol. 1, pp. K-4 through K-5)

80. The eastern portion of the substation will extend slightly into Wetland 3, resulting in a permanent impact of approximately 490 square feet. (CL&P 3, Q. 4)

81. Historical disturbances to Wetland 3 have diminished its functions and values. (CL&P 1, Vol. 1, p. K-5)

82. Connecting the existing 115-kV 1751 transmission line to the proposed substation would require the installation of three wood poles, each within five-foot diameter cassions and eight associated guy-wire anchors within and adjacent to Wetland 1, resulting in approximately 40 square feet of permanent impacts and 2,228 square feet of temporary impacts. (CL&P 1, Vol. 1, p. K-5)

83. Removal of a wood-pole angle structure from Wetland 1 at the western turn of the 115-kV line would require minimal temporary impacts (290 square feet). (CL&P 1, Vol. 1, p. K-5)

84. Replacement of the angle structure west of Wetland 1 will result in temporary impacts (approximately 1,190 square feet) to cross this wetland via 14-foot wide timber mats to allow for construction access to this location. (CL&P 1, Vol. 1, p. K-5)

85. Work associated with transmission line modifications would result in 40 square feet of permanent wetland impacts and 3,708 square feet of temporary wetland impacts. (CL&P 1, Vol. 1, p. K-5)

86. The relatively small area of permanent impacts resulting from new utility pole work is not expected to adversely impact the principal functions or values of Wetland 1. This wetland area is primarily occupied by disturbed emergent and scrub/shrub habitat and such habitat would be maintained post-construction. (CL&P 1, Vol. 1, pp. K-5 through K-6)

87. The amount of clearing necessary to construct the substation is approximately 50,000 square feet, including approximately 35,000 square feet for the substation footprint and 15,000 square feet for a 20-foot wide construction zone surrounding the footprint. (CL&P 3, Q. 1)

88. One coniferous forest inclusion in the southeast corner of the proposed substation footprint would be affected by construction activities. Approximately 20% of that inclusion would be cleared. (CL&P 3, Q. 5)

89. A portion of the sand dune community will be disturbed. The elevation of the dunes would be reduced to meet the existing road elevation to provide necessary line clearances above ground. (CL&P 3, Q. 7)

90. Approximately 46 trees six inches or greater in diameter will be removed to enable construction of the Substation footprint. (CL&P 6, p. 11)

91. A population of lady slipper was identified on the property. Scientists from CL&P and VHB conducted a careful analysis of site conditions and after obtaining concurrence from the Windsor Environmental Planner & Inland Wetlands Agent, concluded that a suitable habitat is available at the relocation site. CL&P will attempt to relocate the lady slipper. The lady slipper is not a state threatened, endangered or special concern species. (CL&P 3, Q. 6; Tr. 1, pp. 25-26)

92. Upon completion of construction activities, all disturbed/exposed areas would be stabilized and revegetated. These areas would be dressed with topsoil and seeded with a New England conservation/wildlife mix, to establish a cover of native grasses, forbs, wildflowers and legumes that would provide both soil stability and wildlife habitat value. (CL&P 1, Vol. 1, p. L-2)

93. The site would not affect any state or federal endangered, threatened, or special concern species. (CL&P 1, Vol. 1, p. K-7; CL&P 1, Vol. 2, Exh. 4)

94. Based on current CTDEP NDDB review criteria, the substation does not present a potential conflict with a listed species or significant natural community. (CL&P 1, Vol. 1, p. K-7)

95. The closest water supply wells are part of the Windsor Locks Wellfield (a State-designated Preliminary Aquifer Protection Area), located approximately 4.5 miles north of the substation. Based on substation design considerations and the physical distance of the water supply wells to the substation, there would be no adverse environmental effect on the aquifer. (CL&P 1, Vol. 1, p. K-8)

96. The site is not located within a flood hazard area. (CL&P 1, Vol. 1, p. H-12)

97. Any potential release of transformer oil would be contained by a secondary containment, consisting of an underlying and surrounding polyvinyl-lined sump capable of holding 110 percent of the transformer's fluid capacity. (CL&P 1, Vol. 1, p. L-2)

98. Noise levels from substation operations would be below the maximum allowed by state regulations. (CL&P 1, Vol. 1, p. K-10; as corrected in the hearing testimony or K. Bowes Tr. 1, p. 10)

99. The main source of noise in the area of the proposed substation is traffic noise from I-91. (CL&P 1, Vol. 1, p. K-10)

Visibility

100. The siting and design of the proposed substation provides for a sufficient setback from Rood Avenue and neighboring residences and minimizes vegetation loss such that a natural tree and shrub buffer would be retained. (CL&P 1, Vol. 1, p. L-2)

101. Residents along the right-of-way would have a limited view into the proposed substation. (Tr. 1, pp. 26-27)

102. Residences to the north would have limited seasonal views of the proposed substation. (Tr. 1, p. 28)

Magnetic Field Levels

103. There are no state or federal limits for magnetic fields. CL&P incorporated the Council's 2007 Electric and Magnetic Field Best Management Practices into the design of the proposed substation. (CL&P 1, Vol. 1, p. M-13)

104. The Institute of Electrical and Electronic Engineers has issued a guideline limit for long-term public exposure of 9,040 milliGauss (mG). The International Commission on Non-Ionizing Radiation Protection has issued a guideline limit for long-term public exposure of 833 mG. (CL&P 1, Vol. 1, p. M-13)

105. The existing transmission lines and distribution lines on the property produce magnetic fields. (CL&P 1, Vol. 1, p. M-2)

106. The interconnection of the substation would affect current flows on the 115-kV circuits and the 23-kV distribution circuits. To determine how the magnetic field from these lines would be altered by the proposed substation, CL&P performed pre and post-construction magnetic field calculations based on ISO New England's 2014 projected peak-day line currents. (CL&P 1, Vol. 1, p. M-7 through M-8)

107. The highest magnetic field level along the southerly boundary with Rood Avenue, with the proposed substation in service, is projected to be 65 mG directly under the 115-kV circuit. (CL&P 1, Vol. 1, p. M-8)

108. The highest magnetic field level along the westerly boundary with Matianuck Avenue, with the proposed substation in service, will be 41.7 mG. This level is lower than it would be without the proposed project in service. (CL&P 1, Vol. 1, pp. M-8 through M-10)

109. Magnetic field levels drop off rapidly with the distance from the transmission line source, so the magnetic field levels at all points along a property boundary to either side of the transmission and distribution circuits will be much lower than the levels found beneath the circuits. Magnetic field levels would reach background levels approximately 200 feet from the outermost circuit. (CL&P 1, Vol. 1, p. M-10)

110. One residence, 288 Rood Avenue, is sufficiently close to the existing transmission lines that the project-caused change in transmission line currents will cause an increase in MF at the residence. (CL&P 3, Q. 11)

111. CL&P is willing to consider certain mitigation measures in its D&M Plan in order to lessen the increased MF at 288 Rood Avenue. (Tr. 1, pp. 49-50)

112. Measurements of existing magnetic fields were collected by CL&P in June of 2007 along Rood and Matianuck Avenues at the north and south property boundaries. The highest pre-construction measurement of magnetic fields was 44.6 mG. (CL&P 1, Vol. 1, p. M-3; as corrected in CL&P 3, Q. 11 and hearing testimony of K. Bowes, Tr. 1, p. 10)

113. Magnetic fields produced by substation equipment alone, irrespective of the transmission lines, would be less than 1 mG at the property line. (CL&P 1, Vol. 1, p. M-2)

Safety and Reliability

114. Construction of the proposed substation would be performed in full compliance with the standards of the National Electrical Safety Code. (CL&P 1, Vol. 1, p. J-1)

115. In the event of equipment failure, protective relaying equipment would remove the equipment from service, thereby protecting the public and other equipment within the substation. (CL&P 1, Vol. 1, p. J-1)

116. Reliability would be improved by utilizing a loop through design, transformer protection devices and redundant automatic protective relaying equipment. Protective relaying equipment would provide automatic detection of abnormal conditions. When an abnormal condition occurs, a protective trip signal would be sent to the respective circuit breaker(s) to isolate faulted equipment. CL&P plans to install redundant protective relaying schemes with continuous monitoring. (CL&P 1, Vol. 1, p. J-1)

117. The substation would be remotely controlled and monitored by means of a Supervisory Control and Data Acquisition system. (CL&P 1, Vol. 1, p. J-1)

118. Fire/smoke detection would automatically activate an alarm at Connecticut Valley Electric Exchange and the system operators would then take the appropriate action. The control enclosure would be equipped with fire extinguishers. (CL&P 1, Vol. 1, p. J-2)

Figure 1 Site Layout