DOCKET NO. 189 - An application by Lake Road Generating Company L.P. for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a proposed electric generating facility located off of Lake Road in Killingly, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		December 7, 1998

Findings of Fact

Introduction

1. On July 1, 1998, in accordance with Chapter 277A of the Connecticut General Statutes, as amended by Public Act 98-28, Lake Road Generating Company L. P. (Lake Road Generating), an affiliate of U.S. Generating Company, submitted an application to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, operation, and maintenance of a new electric generating facility, nominally rated at 792 megawatts (MW) and fueled by natural gas, to be located off Lake Road in Killingly, Connecticut. (Lake Road Generating Exhibit 1, transmittal letter, and p. A-1)

2. In accordance with General Statutes § 16-50l(e), Lake Road Generating met with the Town of Killingly officials beginning April 1997 through June 1998 to discuss the benefits and technical merits of the proposed facility. (Lake Road Generating Exhibit 2)

3. Pursuant to General Statutes § 16-50l(b), Lake Road Generating published notice of the application in the Norwich Bulletin on June 20, 24, 25, 27, and 30, 1998. (Lake Road Generating Exhibit 1, Certificate of Service)

4. Pursuant to General Statutes § 16-50m, the Council, after giving due notice thereof, held a public hearing on the proposed application on September 3, 1998, beginning at 3:00 p.m., and reconvening at 7:00 p.m., in the Killingly High School Auditorium, 79 Westfield Avenue, Killingly, Connecticut. (Council Hearing Notice dated July 23, 1998; Transcript, September 3, 1998, 3:00 p.m. (Tr. 1) and 7:00 p.m. (Tr. 2))

5. The Council and its staff made a field inspection of the proposed site located approximately 800 feet east of Louisa Viens Drive cul-de-sac and 1,800 feet north of Lake Road, Killingly, Connecticut on September 3, 1998, at 1:30 p.m. (Council Hearing Notice dated July 23, 1998)

6. The applicant and the Town of Killingly are parties to this proceeding. Connecticut Light and Power Company is an intervenor to this proceeding. (Tr. 1)

Public Benefit

7. Pursuant to Public Act 98-28, An Act Concerning Electric Restructuring, generators of electricity may compete with each other for the development of in-state electric generation. (Lake Road Generating Exhibit 1, p. B-11; Public Act 98-28; CL&P 1, Q. 2)

8. Pursuant to the Energy Policy Act of 1992, electric utility companies have been required to open up their transmission facilities for non-discriminatory use by competitive electric generation suppliers. The new independent system operator (ISO New England) has been established to operate the

region's bulk power transmission system reliably and consistently with Federal Energy Regulatory Commission's open access requirements. (Lake Road Generating Exhibit 1, p. B-6)

9. The State of Connecticut has become a significant importer of electric power because of the recent closures of Connecticut Yankee and Millstone 1 nuclear units and outages of Millstone nuclear units 2 and 3. (Lake Road Generating Exhibit 1, pp. B-3 to B-4; CL&P 1, Q.3)

10. By year 2001, New England is projected to need approximately an additional 2,161 MW, assuming an average demand with high supply, including Millstone units 2 and 3 returning to service, to maintain reliability of the regional bulk power system. Under the same assumptions, Connecticut is expected to need approximately an additional 1,389 MW by 2001 to maintain reliability of the state's bulk power system. If Millstone units 1 and 2 were to retire, New England's capacity need would increase by 30 percent to 3,032 MW and Connecticut's need would increase an additional 2,260 MW. (Lake Road Generating Exhibit 1, pp. B-14 to B-16)

11. The proposed facility would pose no financial risk to the consumer. In the event the economic performance of the proposed facility is less than projected, Lake Road Generating would review all aspects of the proposed facility to reduce costs and maintain the economic viability or dismantle and move the facility components to an area that would prove economic. Lake Road Generating would be fully responsible to construct, operate, and decommission the facility. (Lake Road Generating Exhibit 1, pp. B-19 to B-23; Lake Road Generating Exhibit 3, Q.8

12. The proposed facility would reduce dependence on large nuclear generators both in Connecticut and New England, allow for operational flexibility with three units versus one large unit, and reduce certain air emissions compared to certain existing fossil-fueled electric generators. (Lake Road Generating Exhibit 1, pp. B-21 to B-30; Tr. 1, p. 46)

Proposed Project

13. The proposed facility would consist of three single shaft power blocks each with a nominal rating of 264 MW. Each power block consists of a combustion turbine, heat recovery steam generator (HRSG) and associated exhaust stack, steam turbine, air-cooled condenser, and emergency diesel generator. (Lake Road Generating Exhibit 1, pp. A-1 - A-3 and C-1 - C-5; Tr. 1, p. 25)

14. The operation of the three simple cycle combustion turbines without the steam could provide 528 MW within 35 minutes. The reuse of heat and dual pressure steam generates 264 MW of electrical output, increasing electric production efficiency with no additional fuel. The nominal service life of the proposed facility would be 35 years. (Lake Road Generating Exhibit 1, pp. C-5 and C-31)

15. A 165-foot tall stack would be constructed for each of the three generating units. This is the optimum height as determined by air emission modeling. These three stacks could be combined into a single stack containing three individual flues. While the single stack configuration may decrease output and efficiency, this analysis was not quantified. A single stack configuration may also cause a slight increase to air emissions per kilowatt generated, require additional land area to construct the additional ductwork and larger stack, and move the proposed facility closer to adjacent neighbors to the east potentially causing an increase of noise to these neighbors. (Lake Road Generating Exhibit 1, p. C-5; Lake Road Generating Exhibit 3, Q.7; Tr. 1, pp. 45-46; Tr. 2, p. 44)

16. The turbine buildings (measuring 158 feet long by 96 feet wide by 72 feet high) would be located on the northern half of the proposed site. The air-cooled condensers (measuring 182 feet long by 128 feet wide by 110 feet high) would be immediately west of the turbine buildings. The HRSGs, three 165-foot exhaust stacks, and natural gas receiving station and compressor would be east of the turbine buildings. The electrical interconnection to the CL&P transmission line would be north of the turbine buildings. (Lake Road Generating Exhibit 1, p. C-7; Lake Road Generating Exhibit 1, Volume II, Tab 4; Tr. 1, pp. 25 and 26; Tr. 2, pp. 6, and 7).

17. An 840,000 gallon distillate fuel oil tank, a 565,000 gallon raw water storage tank, a 740,000 gallon demineralized water storage tank, a water treatment system, and a chemical storage system would be located south of the turbine buildings. (Lake Road Generating Exhibit 1, p. C-7; Lake Road Generating Exhibit 1, Volume II, Tab 4)

18. A security fence would enclose the proposed plant and switchyard. Access to the site would be monitored. (Lake Road Generating Exhibit 1, p. C-29; Tr. 1, p. 34)

Schedule and Cost

19. Under the current schedule, Lake Road Generating would proceed with construction beginning no later than September 1999 culminating with plant testing and commercial operation by June 2001. (Lake Road Generating Exhibit 1, p. A-3; Lake Road Generating Exhibit 3, Q. 5; Tr. 1, p. 40)

20. Electric Power Research Institute (EPRI) estimates total plant capital costs for a combined cycle gas turbine to be about $600 dollars per kilowatt of capacity or $475,200,000 dollars for a 792 MW facility. (Lake Road Generating Exhibit 1, p. C-34)

Alternate Generation Technologies

21. Lake Road Generating considered alternative technologies such as pulverized and atmospheric fluidized bed coal combustion, simple cycle turbine combustion, solar-photovoltaic, municipal solid waste combustion, biomass/wood combustion, nuclear, and energy storage but these technologies were eliminated because they would not be cost effective or compatible for baseload operation; were too restricted by site limitations; or would be restricted by permitting and construction schedules. (Lake Road Generating Exhibit 1, p. C-48)

22. Lake Road Generating has chosen the gas-fired combined cycle facility as the most efficient generation technology. The proposed facility would use less fuel than existing fossil-fueled facilities per unit of power produced. It would also have lower air emissions than other facilities using fossil fuels. (Lake Road Generating Exhibit 1, pp. C-49-51)

Cooling Technology

23. The proposed facility would be air-cooled using a series of tubes and mechanical fans. Exhaust steam from the steam turbine would circulate through tubes with the fans forcing ambient air over the tubes to condense steam to liquid which returns to the HRSG to continue the steam/water cycle. (Lake Road Generating Exhibit 1, p. C-6)

24. If the proposed facility used wet-cooled condensers, it would require about six million gallons of water per day. (Lake Road Generating Exhibit 1, p. E-75)

25. Air-cooled and wet-cooled technology perform similarly at a temperature of 50 degrees or less. The impact of air-cooling versus wet-cooling would cause a net average annual loss of approximately five MW for the facility with a heat rate diminished by less than one percent. Under a summer operating scenario assuming ambient air temperature of 90 degrees, the net loss in power output associated with air-cooling would be about 33 MW for the facility when compared to wet-cooling without power augmentation. (Tr. 1, pp. 42-44)

Natural Gas Supply

26. The proposed facility would operate primarily on natural gas which would require, on average, 135 million cubic feet (mmcf) or up to a maximum of 147 mmcf of natural gas per day. (Lake Road Generating Exhibit 1, p. C-8; Lake Road Generating Exhibit 4, p. A-15)

27. Two existing Algonquin Gas Transmission high pressure interstate natural gas pipelines (24- and 30-inch diameter) located 1.8 miles north of the proposed site have a daily capacity of 857 mmcf. In addition, it is connected to many other intersecting pipelines, including Iroquois, Tennessee, Texas Eastern, Columbia and Transco. For the last three years approximately 20 percent of gas delivery to the Putnam area was restricted for no more than 25 days. (Lake Road Generating Exhibit 5, Norman Karloff pre-filed testimony; Tr. 1, pp. 62-64)

28. A 16-inch high pressure dedicated service line would be constructed to interconnect with both of the Algonquin Gas Transmission System high pressure interstate natural gas pipelines. This gas interconnection is not included in the proposed application. (Lake Road Generating Exhibit 1, pp. C-32 - C-33; CL&P 1, Q. 1; Tr. 1, pp. 26, 47-50, and 64)

Fuel Oil Supply

29. As an air emissions permit condition, the proposed facility would not operate for more than 720 hours per unit per year on distillate fuel oil. (Lake Road Generating Exhibit 1, pp. C-8, and E-61; Lake Road Generating Exhibit 4)

30. Distillate fuel oil with 0.05 percent sulfur content would be used as an alternate fuel when the natural gas supply is interrupted. Fuel oil would be available from terminals in Hartford and New Haven, Connecticut; Providence, Rhode Island; and Springfield, Massachusetts. (Lake Road Generating Exhibit 1, pp. C-8; Lake Road Generating Exhibit 4; Tr. 1, pp. 55-56)

31. The 840,000 gallon distillate fuel oil storage tank would allow the three turbines to operate for 18 hours at full load. (Lake Road Generating Exhibit 1, p. C-8)

32. Approximately 143 trucks each with a 7,700 gallon capacity would be required each day to maintain a fuel oil supply for continuous operation up to 720 hours per year per combined-cycle unit. Lake Road Generating would need to use five fuel unloading stations at the proposed facility in order to continuously operate three units. Three off-loading stations would allow continuous operation of two units (528 MW). The turbines are capable to switch fuels while operating at 70 percent load.

(Lake Road Generating Exhibit 1, p. C-8 and C-9; Lake Road Generating Late File Exhibit 12; Tr. 1, pp. 25, 52, 53, 59, and 61; Tr. 2, p. 84)

33. Lake Road Generating rejected use of an existing rail line adjacent to the east property boundary of the proposed site to deliver oil because construction of a new rail spur and more substantial unloading and piping station would not be economically justifiable for a maximum of 720 hours of full operation on fuel oil. (Tr. 1, p. 55)

Alternative Sites

34. The applicant developed a set of 12 site screening criteria related to technical development and feasibility, environmental impacts, community acceptance, and capital cost. These criteria include proximity to a natural gas pipeline 20-inches or greater in diameter located on or near the site, proximity to an electric transmission line 115-kV or larger, site size of 20 acres or larger, site zoning designated to allow construction and operation of a generating facility, transportation on or near a state maintained road, water availability of six million gallons per day, level topography with approximately 15 acres of buildable land, no impacts to wetlands and water bodies, low liability associated with site contamination, air emission dispersion, distance to sensitive receptors (i.e., residential neighborhoods, hospitals, schools, and nursing homes), and availability of water disposal. (Lake Road Generating Exhibit 1, pp. D-3-D-11)

35. Lake Road Generating evaluated 10 sites of which five would be considered suitable for the proposed facility. Based on screening criteria, Killingly was chosen as the proposed site. Alternatives in the Towns of Putnam, Milford, Southington, and Sherman were rejected for one or more of the following reasons: the community prohibited development and operation of a power generation facility, need for a local zoning change, numerous single-family residences in close proximity of the site, extensive wetlands on the site, the existing electric transmission system would require modification, and uncertainty of property ownership. (Lake Road Generating Exhibit 1, pp. D-16-D-21; Lake Road Generating Exhibit 3, Q. 13)

36. Lake Road Generating did not find any brownfield sites acceptable for development. (Lake Road Generating Exhibit 3, Q. 12)

Proposed Site

37. The proposed site consists of seven parcels of property totaling approximately 60 acres. Lake Road Generating has options to purchase these parcels which are owned by Edgar and Cindy Audet, Louis and Joanne Beauvais, Raymond and Ruth Laliberte, Elizabeth and Michael Favreau, Shirley Boda, the Estate of Albina Provencal, and the Town of Killingly. The footprint of the proposed facility including the access road and storm drainage basins would use about 30 acres. (Lake Road Generating Exhibit 1, Volume I, pp. D-16-D-21, Volume II Tab 4; Lake Road Generating Exhibit 3, Q.17; Tr. 1, p. 28)

38. The site currently is undeveloped containing a mature forest, primarily oak mixed with white pine and aspen. Three small isolated wetlands and a watercourse exist on the property, but would not be within the footprint of the proposed facility. Soil types in areas of the proposed site are described as gravely, or extremely rocky soils typical of stratified drift. The central portion of the property is relatively flat with moderate slopes along the east and west portions of the property. Elevations

range between 360 feet above mean sea level (AMSL) in the southeast corner of the proposed site to 270 feet AMSL at the western property boundary near the terminus of Louisa Viens Drive. The proposed site footprint would have a final elevation of 316 feet AMSL. (Lake Road Generating Exhibit 1, Volume I, pp. E-27-E-31, Volume II, Tab 4)

Land Use

39. The proposed site lies within a 500 acre industrially-zoned district. Land uses surrounding the proposed site include undeveloped woodland, a CL&P transmission line right-of-way, and the Quinebaug River to the north and west, Interstate 395 on the northeast border of the proposed site, five residences along Old Trolley Road and the Providence & Worcester railroad to the east, residences surrounding Alexander Lake to the south across Lake Road, and the Killingly Industrial Park to the southwest and west of the proposed site. (Lake Road Generating Exhibit 1, pp. E-1 to E-2)

40. The nearest neighbor would be Jeanne and Larry Williams on Old Trolley Road about 200 feet southeast of the proposed site boundary and 950 feet from the nearest turbine exhaust stack. Lake Road Generating has made offers to purchase all residential homes on Old Trolley Road. Anselmo Toni and the Williams are the remaining residential neighbors who do not have an agreement with Lake Road Generating for an option to purchase their property. (Lake Road Generating Exhibit 1, Volume II, Tab 4; Tr. p. 35)

41. The nearest designated public recreation area is Owen Bell Park, owned by the Town of Killingly, located approximately one and one-half mile south southeast of the proposed site. Roads surrounding this park would not be used during construction or operation of the proposed facility. Other recreational areas include the Quinebaug River, 0.4 miles northwest of the proposed facility; the Five Mile River, 0.8 miles southeast of the proposed facility; and Alexander Lake, a privately owned lake located 0.6 miles south of the proposed facility. (Lake Road Generating Exhibit 1, p. E-7; Lake Road Generating Exhibit 3, Q. 19)

Water Use

42. The primary source of water would be provided by the Town of Killingly. Lake Road Generating also has an agreement with Crystal Water Company, as a supplemental water supplier. (Lake Road Generating Exhibit 1, pp. C-10 and C-11)

43. Town of Killingly owns two public wells and a water treatment unit located within Killingly Industrial Park. These water supply wells and treatment unit would serve the Killingly Industrial Park which would include the proposed facility. Water is pumped to a 750,000 gallon, 52-foot high water tank located near the south-central edge of the proposed site. The two wells have an average daily demand of 40,000 gallons and a safe daily yield of 570,000 gallons with 24 hour pumping. (Lake Road Generating Exhibit 1, p. E-80; Lake Road Generating Exhibit 3, Q. 14; Lake Road Generating Exhibit 10)

44. Crystal Water Company's average daily water demand for its system is 900,000 gallons. The safe daily yield is 3.7 million gallons with 24 hour pumping. Crystal Water Company states it has capacity to serve the proposed facility. (Lake Road Generating Exhibit 1, p. E-80; Lake Road Generating Exhibit 3, Q. 14; Lake Road Generating Exhibit 10; Tr. 2, pp. 89 and 90)

45. The total water used on an annual average basis by the proposed facility would be approximately 109,590 gallons per day (gpd) using natural gas and 216,908 gpd using distillate fuel oil. The maximum daily water use would be 1,272,720 gallons using natural gas and 1,482,000 gallons using distillate fuel oil. The increased water consumption during oil combustion is due to water injection to reduce nitrogen oxide emissions. Also, water use would increase when the facility is operating during power augmentation; a process of injecting steam during combustion of natural gas to optimize power output when local ambient temperatures exceed 85 degrees. Lake Road Generating anticipates that this augmentation would be limited to 16 hours over two to three days per year. Water would also be supplied for domestic use and fire protection. (Lake Road Generating Exhibit 1, pp. C-9, C-10 and C-11; Tr. 2, p.40)

Wastewater

46. The Town of Killingly Water Pollution Control Facility has the capacity to accept the facility's discharge of up to 170,000 gallons of wastewater per day. Using natural gas, the facility would discharge an annual average of 49,293 gpd with a maximum daily discharge of 144,000 gallons to the municipal wastewater treatment plant. Using distillate fuel oil, the facility would discharge an annual average of 55,805 gpd with a maximum daily discharge of 168,000 gallons to the municipal wastewater treatment plant. Wastewater would be neutralized prior to discharge to the municipal sewer system. (Lake Road Generating Exhibit 1 Volume I, pp. C-9, C-10 and C-11, Volume II Tab 5).

47. Lake Road Generating would construct a 2,000-foot long sewer line from the site to the Old Trolley Road/Maple Street intersection for connection to an existing 15-inch sewer line. This connection would not require a pump station. (Lake Road Generating Exhibit 1, p. C-11; Lake Road Generating Exhibit 7)

Air Emissions

48. Dry-low nitrogen oxide (NO_x) combustion in conjunction with selective catalytic reduction (SCR) would control NO_x emissions when firing natural gas. Water injection with SCR would control NO_x emissions when firing distillate fuel oil. Emissions of sulfur dioxide (SO_2) and particulate matter (PM) would be controlled through use of natural gas and low sulfur (0.05 percent) fuel oil. Control of volatile organic compounds (VOC) and carbon monoxide (CO) would be achieved through combustion control and a CO catalyst. (Lake Road Generating Exhibit 1, pp. C-18-C-19)

49. The proposed turbines would be subject to the lowest achievable emissions rate (LAER) for NO_x. The remaining criteria pollutants of particular matter 10 microns in size (PM_{10}), SO_2, lead (Pb), CO and VOCs would be subject to the best available control technology (BACT). Lake Road Generating would provide modeling and calculations regarding prevention of significant deterioration of air quality, new source review, acid rain, and hazardous air pollutants for Department of Environmental Protection (DEP) program review. (Lake Road Generating Exhibit 1, pp. E-54-E-60; Lake Road Generating Exhibit 4, pp. A-10-A-14)

50. The following table represents existing, modeled, and total concentrations including National and Connecticut Ambient Air Quality Standards (NAAQS/CAAQS.) for the following pollutants.

Annual Impacts (ug/m^3)

Pollutant Dispersion	SO_2	NO_x	PM_{10}
existing	11.7	43.3	17.3
modeled	2.1	00.9	1.9
total	13.8	44.2	19.2
NAAQS/CAAQS.	80.0	100.0	50.0

(Lake Road Generating Exhibit 1, pp. E-64 - E-65)

51. To comply with the requirements of a non-attainment new source review for NO_x, the proposed project would acquire offsets at a minimum ratio of 1.2 to 1.0. PG&E Energy Trading-Power, L.P., on behalf of Lake Road Generating, has an agreement to obtain NO_x offsets from Anchor Glass, a local source of NO_x emissions. Lake Road Generating would also obtain allowances to offset SO_2 emissions under the federal Acid Rain Program. (Lake Road Generating Exhibit 1, p. E-63; Tr. 1, pp. 37-39; Lake Road Generating Exhibit 4, pp. A-7-A-9)

Traffic

52. Lake Road Generating, in conjunction with the Town of Killingly, proposes to construct a new 2,375-foot road connecting Lake Road to Louisa Viens Drive. A private drive would be constructed off this road to the proposed facility. Lake Road Generating has access rights along Old Trolley Road, a private way, which the applicant would maintain as an emergency access. (Lake Road Generating Exhibit 3, Q. 18; Tr. 1, pp. 29-34 and 77-78; Lake Road Generating Late File Exhibit 12)

53. Existing traffic conditions at the Lake Road/Attawaugen Crossing, Upper Maple Street, and Tracy Road intersection just west of Interstate 395 is at a level of service (LOS) of "B" or better, which represents short delays on minor turning movements. Assuming peak construction activity at peak volume hours, the traffic operating conditions at the Lake Road/Attawaugen Crossing, Upper Maple, and Tracy Road intersection would not degrade the existing LOS of "B" and no improvements are necessary. This traffic analysis includes a new Staples warehouse located north on Tracy Road and plans to construct a Holiday Inn conference center, as approved by the Town of Killingly, at the intersection of Tracy Road and Lake Road with signalization of the Lake Road/Attawaugen Crossing, Upper Maple Street, and Tracy Road intersection. (Lake Road Generating Exhibit 1, pp. E-19 - E-22; Tr. 1, pp. 69-70)

54. During operation, traffic would consist of approximately 35 employees on two 12-hour shifts; however, when the plant is burning continuously on distillate fuel oil, which would not exceed 30 days per year, a maximum of 143 tanker trucks (six trucks per hour) would deliver fuel each day. (Lake Road Generating Exhibit 1 Volume 1, p. E-22; Volume II, Tab 11, p. 10; Tr. 2, p. 84)

Noise

55. Pursuant to Regulations of Connecticut State Agencies Sections 22a-69-1 to 22a-69-7.4, Control of Noise, noise levels are regulated by noise emissions from land use categories and potential receptors.

The proposed site would be a Class C industrial source which cannot exceed 70 decibels (dBA) when measured at another Class C receptor, 66 dBA at a Class B receptor (commercial), and 61 dBA at a Class A receptor (residential) during daytime hours, or 51 dBA at a Class A receptor during nighttime hours (10:00 p.m.-7:00 a.m.). (Lake Road Generating Exhibit 1, p. E-12)

56. Existing background sound levels that are exceeded 90 percent of the time (L_{90}) and equivalent continuous sound level (L_{eq}) in the vicinity of the proposed site are as follows:

Ambient Noise Levels (dBA)

Location	L_{90}		L_{eq}	
	daytime	nighttime	daytime	nighttime
Old Trolley Road	50.0	46.8	55.6	54.0
Pine Hollow Road	45.3	43.6	49.0	47.0
Upper Maple Street	44.6	42.8	50.4	47.9
Tracy Road	53.1	48.5	59.6	53.8

57. The estimated L_{90} and L_{eq} noise levels from the proposed facility with existing ambient noise levels in the vicinity of the proposed site are as follows:

Estimated Noise Levels (dBA)

Location	Cumulative L_{90}		Cumulative L_{eq}	
	daytime	nighttime	daytime	nighttime
Old Trolley Road	53.4	52.2	56.9	55.7
Pine Hollow Road	46.7	45.6	49.7	48.0
Upper Maple Street	46.3	45.1	50.9	48.8
Tracy Road	55.0	52.6	60.1	55.5

Estimated cumulative L_{90} noise levels may exceed State noise regulations to Class A receptors at Tracy Road and Old Trolley Road. (Lake Road Generating Exhibit 1, pp. E-12-E-16)

58. Noise impacts during construction, start-up, and operation would be mitigated by:

- intensive construction and start-up operations restricted to daytime hours (7:00 a.m.-10:00 p.m.);
- acoustic enclosures for the combustion and steam turbines and generator buildings;
- acoustic enclosures for air intake manifolds and exhaust diffusers;
- silencer and filter systems incorporated into the inlet and exhaust sections of the turbines, compressor intake, and the transition ducts between the combustion turbine and heat recovery steam generator;
- exhaust gas silencer for each stack; and
- specially designed fans on the air-cooled condensers and auxiliary equipment cooling systems.

(Lake Road Generating Exhibit 1, pp. C-20 and C-21)

59. The need for blasting during construction has not been determined. (Tr. 1, p. 70)

Environmental

60. A phase one cultural resource survey was conducted between June 28, and July 10, 1998, by TRC Garrow Associates, Inc., concluding no further cultural resource investigation of the proposed project area is recommended. This survey was reviewed by the Connecticut Historical Commission who determined that there would be "no effect" on the state's historic, architectural, and archaeological resources. (Lake Road Generating Exhibit 1, p. E-22; Lake Road Generating Exhibit 3, Q. 16; Lake Road Generating Exhibit 8)

61. Approximately 12.5 acres of oak woodland upland habitat would remain undisturbed. An additional 14.5 acres of oak woodland would be temporarily disturbed during construction, but would be allowed to revegetate after facility construction. A total of 153 trees with 18 inch diameter measured at breast height were identified on the proposed site. Approximately 60 of these trees would be cleared to construct the proposed facility. (Lake Road Generating Exhibit 1, p. E-36; Lake Road Generating Exhibit 2, informational submittal to the Town of Killingly Planning and Zoning Commission)

62. No Federal or State Endangered, Threatened, or Special Concern Species were identified during site visits in the summer and fall of 1997 and spring of 1998, nor has the Department of Environmental Protection identified any records of such species in the proposed project area. (Lake Road Generating Exhibit 1, p. E-31 and E-51)

63. Three small wetlands sized 0.08, 0.04, and 0.06 acres located near the west northwest area of the proposed site are classified as palustrine forested wetland. A 0.26 acre intermittent watercourse is located in the center of the proposed site and is wet varying by season. While the drainage areas of these wetlands and watercourse would be altered, retention basins would be constructed to control runoff and recharge groundwater. The design of this system is still under development with the Town of Killingly. Lake Road Generating would maintain a 25-foot construction buffer around the wetlands and watercourse. The Town of Killingly Inland Wetlands and Watercourses Commission issued a permit for the proposed facility without restrictions for a 200-foot buffer between disturbed and regulated areas, as specified by local regulations. (Lake Road Generating Exhibit 1 Volume I, pp. E-39-E-48, Volume II Tabs 4 and 16; Lake Road Generating Exhibit 3, Qs. 20, 23 and 24; Town of Killingly Exhibits 1, 4 and 5)

64. The proposed facility site is not within the 100- or 500-year flood plains of the Quinebaug River. (Lake Road Generating Exhibit 1, p. E-71)

65. The proposed site is within both primary and secondary recharge areas of an Aquifer Protection Zone. Ground water in the area of the proposed site has a DEP classification of GA; a designation that the groundwater is within an area of existing private water supply wells or an area with a potential to provide water to public or private water supply wells. GA water is suitable for drinking without treatment and baseflow for hydraulically-connected surface water bodies. (Lake Road Generating Exhibit 1, pp. E-81 and E-83)

66. Prior to construction, erosion and sedimentation controls would be placed around the perimeter of areas to be disturbed by construction, soil stock piles, and the inland wetlands and watercourse. Dust

would be managed by wetting dry areas or regrading and seeding affected areas. (Lake Road Generating Exhibit 1, pp. E-47 - E-49; Lake Road Generating Exhibit 3, Q. 22; Tr. 1, p. 73)

Visibility

67. The 165-foot exhaust stacks would be seen from Lake Road and Louisa Viens Drive in the area of the Killingly Industrial Park, Tracy Road located east of Interstate 395, from sections of Interstate 395 between Exists 93 and 95, south shore of Alexander Lake, and from local roads where terrain or vegetation do not obscure the view of the proposed facility's stacks. The existing mature vegetation and topography of the site area would provide a visual buffer of the proposed facility's buildings. (Lake Road Generating Exhibit 1, pp. E-9-E-11)

68. A plume of water vapor may exit the exhaust stacks for up to 700 hours annually while operating on natural gas. This plume would usually be visible during colder months to a height of 25 meters above the stacks and 50 meters downwind. A plume of water vapor may exit the exhaust stacks for up to 92 hours annually while operating on distillate fuel oil. This plume would usually be visible during colder months to a height of 300 meters above the stacks and 500 meters downwind. (Lake Road Generating Exhibit 1, p. E-68)

69. The proposed exhaust stacks would not be required to be lighted pursuant to Federal Aviation Administration criteria. Lighting at the proposed facility would be designed in consultation with the Town of Killingly to minimize off-site impacts. (Tr. 2, p. 76)

Stormwater, Spill, and Waste Management

70. General stormwater discharge permits for both construction and industrial activities would be obtained from the DEP. The design for a stormwater management system and a Stormwater Pollution Prevention Plan are still under development with the Town of Killingly. (Lake Road Generating Exhibit 1, pp. C-12 - C-14, E-75 - E-76; Town of Killingly Exhibits 4, 5, 6 and 7; Tr. 1, p. 72)

71. The facility and ancillary equipment would be designed to contain fuel oils, lubricants, and chemicals (aqueous ammonia, caustic soda, sulfuric acid) with the following measures:

    - secondary containment area capable of holding 110 percent of liquid capacity;
    - impermeable barriers;
    - a tank and piping leak detection monitoring system;
    - corrosion protection for all piping and tanks;
    - spill containment and overfill protection for oil and chemical unloading;
    - training and written operating procedures for staff; and
    - routine inspections.

    Lake Road Generating would develop a Spill Prevention Control and Countermeasure Plan consistent with federal and State requirements. Lake Road Generating personnel would be trained in chemical handling and emergency response. (Lake Road Generating Exhibit 1, pp. C-12 through C-15, C-29, and E-76)

72. The proposed facility would be designed with manual override to safely and systematically shutdown in an abnormal situation. Contingency plans and procedures for emergency response would be

designed with the Town of Killingly in conjunction with State and local regulations. (Lake Road Generating Exhibit 1, pp. C-13 and C-22)

73. Electric transformers would be filled with mineral oil surrounded by a containment area capable of capturing 100 percent of the largest transformer contents with sufficient capacity for a one hour deluge of fire water. Stormwater in the containment area would pass through an oil/water separator prior to runoff. (Lake Road Generating Exhibit 1, p. C-15; Lake Road Generating Exhibit 3, Q. 9)

74. Solid waste and debris that cannot be recycled, reused, or salvaged would be removed by licensed contractors and disposed at either local or regional approved facilities. (Lake Road Generating Exhibit 1, p. C-16)

Electric Interconnection

75. The proposed facility would produce electric current flow to be transmitted on CL&P's existing 345 kilovolt (kV) transmission line circuit no. 347. Under certain conditions this current is expected to flow west along circuit no. 347 replacing imported energy flowing east from Rhode Island. (Lake Road Generating Exhibit 6, pp. 4-7)

76. Summer and winter line ratings for circuit no. 347 in Connecticut (Northeast Utilities) and Rhode Island (Eastern Utilities Association) during normal, long term emergency (LTE), short term emergency (STE), and drastic action limit (DAL) conditions are as follows:

Summer Rating

	Northeast Utilities		Eastern Utilities Association	
operating condition	amperes	megavolt amperes	amperes	megavolt amperes
Normal	2400	1434	**2100**	**1255**
LTE	2760	1649	**2420**	**1446**
STE	3000	1793	**2915**	**1742**
DAL	4000	2390	na	na

Winter Rating

	Northeast Utilities		Eastern Utilities Association	
operating condition	amperes	megavolt amperes	amperes	megavolt amperes
Normal	2680	1601	**2260**	**1350**
LTE	2940	1757	**2600**	**1554**
STE	**3000**	**1793**	3335	1993
DAL	4000	2390	na	na

ISO New England would operate the transmission line with the ratings shown in bold.

ISO New England's electric transmission impact study would determine if any transmission line upgrades would be required with the addition of the proposed facility's load. (CL&P Late File 2; Tr. 2, p. 78)

77. The proposed facility would interconnect with the existing Card Street-Sherman Road 345-kV electric transmission line located approximately 500 feet north of the site boundary. The detailed design of the interconnection would be based upon a regional electric transmission impact study which has yet to be completed. This electric utility interconnection is not included in the proposed

application. (Lake Road Generating Exhibit 1, pp. C-32-C-33; CL&P 1, Q. 1; Tr. pp. 26, 47-50, and 64)

Electric and Magnetic Fields

78. The calculated electric field would remain at 4.2-kV per meter along circuit no. 347 and would not change with load from the proposed facility. (Lake Road Generating Exhibit 6, pp. 4-7; Tr. 1, pp. 23 and 73-74)

79. The magnetic field of circuit no. 347 is expected to change from an existing centerline midspan measurement of 138 milliguass (mG) to a calculated maximum exposure of 390 mG assuming the proposed facility at full load. The existing magnetic field at the edge of the right-of-way, 60 feet south of circuit no. 347, is 46 mG and is expected to change to a maximum exposure of 141 mG. The nearest receptor along circuit no. 347 is a home located 156 feet from the transmission line with an existing magnetic field measurement of 8 mG expected to increase to 22 mG. (Lake Road Generating Exhibit 6, pp. 4-7; Tr. 1, pp. 23 and 73-74)

80. Calculations for electric and magnetic fields were based on voltage, current flow, conductor height assuming exposure perpendicular to the transmission line at the point of lowest conductor sag, currents on phase, horizontal conductors, and flat terrain. (Lake Road Generating Exhibit 6, pp. 4-7; Tr. 1, pp. 23)

Telecommunications

81. The applicant would consider proposals to use the exhaust stacks for telecommunications purposes providing it is technically, legally, environmentally and economically feasible, and whenever such sharing meets public safety concerns. (Tr. 1, pp. 78-79)

Municipal Approvals

82. The Town of Killingly supports the proposed project with conditions that address site access; emergency response; truck traffic; review of construction by the municipality; stormwater retention/recharge; landscaping; forest management; fuel storage; utility interconnections; spill management; wastewater discharge; community relations; chemical, oil and container storage; final engineering; transfer of certificate; noise measurements and mitigation; construction fencing; erosion/sedimentation controls; construction monitoring; stockpiled and excavated material; continuous operation on fuel oil; and that the Town have an opportunity to review and comment on site plans. (Lake Road Generating Late File Exhibit 12; Transcript 1, p.82)