DOCKET NO. 83 - An application of the Connecticut Light and Power Company for a Certificate of Environmental Compatibility and Public Need for a 115-kV underground transmission line to interconnect the AES Thames Cogeneration Project to the Montville Substation in Montville, Connecticut.	:	Connecticut Siting Council
	:	January 12, 1988

FINDINGS OF FACT

1. Northeast Utilities (NU), acting on behalf of the Connecticut Light and Power Company (CL&P) in accordance with the provisions of Sections 16-50g to 16-50z of the Connecticut General Statutes (CGS), applied to the Connecticut Siting Council (Council) on August 31, 1987, for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction of a 115kV underground transmission line to interconnect the Applied Energy Services (AES) Thames Cogeneration Project to the Montville Substation in Montville, Connecticut. (Record)
2. The fee as prescribed by Section 16-50v-1 of the Regulations of State Agencies (RSA) accompanied the application. (Record)
3. The application and notice thereof were served in accordance with CGS Section 16-501(b) of Chapter 277a. (Record; CL&P-1; CL&P-2, Part H, pp. 2-4)
4. Legal notice of the application was published in the Norwich Bulletin and The Day on September 18, 1987, in accordance with CGS Section 16-501(b). (Record)
5. The Council and its staff made an inspection of the proposed underground transmission line route on November 9, 1987. (Record)

6. Pursuant to Section 16-50m of the CGS, the Council, after giving due notice thereof, held a public hearing on this application in the Montville Senior Citizens Center, Uncasville, Connecticut, beginning at 6:30 p.m. on November 9, 1987. (Record)

7. The parties in the proceeding are the applicant and those persons and organizations whose names are listed in the Decision and Order which accompanies these findings. (Record)

8. On October 20, 1986, The Council approved an application of Applied Energy Services, Inc.,(AES) for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a 180-MW cogeneration plant in Montville, Connecticut. (Docket 61 Record; CL&P-2, pp. A-1, B-1)

9. The proposed 115kV underground line is necessary to interconnect the AES Thames Cogeneration Project facility with CL&P's substation at the Montville Power Plant. (CL&P-2, pp. A-1, A-2, ES-1)

10. The AES project is currently under construction and is expected to commence operations by November 1989. Testing of the line would occur in September 1988. The total cable installation would be completed by October 1988, and is expected to supply construction and auxiliary power to the cogeneration plant. (CL&P-2, pp. ES-1, ES-4, A-1, Exhibit G-1)

11. If the proposed interconnection is completed, the AES facility would be able to sell 180 MW of electricity to CL&P. (CL&P-2, pp. ES-1, A-1)

12. The proposed interconnection would contribute to the general goal of furthering Connecticut's energy policy of conserving and diversifying fuel use and reducing the consumption of foreign oil. (Docket 61 Record)

13. The proposed transmission line was identified in the "Northeast Utilities System 1987 Forecast of Loads and Resources for 1987-1996." (Record)

14. The proposed line is located in the Town of Montville, New London County, Connecticut. It would lie between the proposed AES Cogeneration Plant and CL&P's Montville Substation. The line parallels the Thames River and a Central Vermont Railway track. It would lie approximately eight miles upstream (north) from the mouth of the Thames River, on the west bank of the river. (CL&P-2, p. C-1)

15. CL&P consulted with Stone Container Corporation (SCC), the owner of the AES Thames Cogeneration Plant site, for choosing the route of the line through SCC property. The right-of-way (ROW) selected through the SCC property has been reserved by SCC for utility purposes. (CL&P-5, Q-13)

16. The route of the proposed line would proceed underground from the AES Cogeneration Plant terminal structure, southerly under an access road parallel to the Thames River. It would cross Dock Road; turn westward parallel

to and south of Dock Road; pass under a Central Vermont Railroad crossing; proceed through a ROW on private property and along Dock Road to an intersection with CL&P's existing overhead transmission line corridor. It would turn southerly and travel in the existing CL&P corridor to the Montville Substation. (CL&P-2, pp. ES-2, D-2, Exhibit A-2, Exhibit D-1; Tr., p. 18)

17. The ROW for the underground route would require the acquisition of four ROW parcels totaling 1.3 acres. (CL&P-2, p. D-2)

18. The Central Vermont Railway has agreed to allow the proposed line to pass under a railroad crossing on Dock Road, as long as engineering requirements are met. (CL&P-5, Q-13)

19. The property owners of a parcel of land through which a portion of the proposed line would pass, granted CL&P permission to take soil borings from this area. No written agreement for a ROW through this property has been reached. (CL&P-5, Q-13, Q-24; Tr., p. 33)

20. The only overhead portions of the line would be located at the overhead to underground transition points at the AES Thames Cogeneration Plant and the Montville Substation terminals. (CL&P-2, p. ES-3)

21. The applicant investigated two overhead alternative routes for the line. One alternative line would pass over several structures at the SCC facility, cross Dock Road,

and extend along the Central Vermont Railway ROW in the vicinity of private properties. This line would be visible from nearby residences. The second alternative line would pass along the SCC's property adjacent to the Thames River, cross Dock Road, pass over the Wronowski Boat Yard to intersect with the railroad ROW and continue in the same manner as the first alternative. (CL&P-2, p. D-1; Tr., p. 19)

22. The minimum ROW width needed for construction of an overhead 115kV transmission line would be 80 feet. The ROW of the railroad is approximately 35 feet wide. Potential problems with ROW acquisitions was a principal reason the overhead route options were rejected. (CL&P-2, pp. D-1, D-2; CL&P-5, Q-7)

23. The proposed underground route has an advantage of minimal private ROW acquisition. The underground route would require a 40-foot wide ROW where no public ROW or present CL&P ROW exists. When compared to overhead routes, the underground route would present the least environmental impacts. (CL&P-2, pp. D-1, D-2; Tr., p. 19)

24. The proposed underground single circuit 115kV line would be approximately 4,000 feet in length. A high-pressure, oil-filled (HPOF) pipe-type electric cable system would be installed in a trench, dug approximately five feet deep and averaging two to three feet wide at the bottom. The circuit would consist of three 2.84-inch, single conductor

cables located inside an 8 5/8-inch diameter steel pipe. The cables would be insulated by oil-impregnated paper. The insulating oil in the pipe would be pressurized at 200 pounds per square inch (psi) and maintained by oil pumping equipment installed at the Montville Substation. After welding the pipe joints, the pipe would be protectively coated and tested for leaks; the trench would be filled with soil. (CL&P-2, pp. A-2, ES-1, ES-2, Exhibit A-3; CL&P-3, Q-4; Tr., pp. 18-19)

25. The selection of the conductor size was matched to the generating capacity of the plant. Design, construction limitations, and economic factors helped determine which cable system would be used. A conductor smaller in diameter than the proposed conductor would be insufficient to take the load from the AES Thames Generating Plant. (Tr., pp. 29-30)

26. The HPOF cable was chosen because of its ruggedness and proven reliability. CL&P has used such 115kV cable since 1960. (CL&P-2, p. ES-2)

27. The reliability factor for three types of underground cable systems suitable for this project is greater than 99.5%. Overhead cables would be less reliable than underground lines due to greater exposure to outages; however, an overhead line would take less repair time than an underground line. Bending the cable at the point where it leaves the SCC's access road and crosses Dock Road

would not affect the cable's reliability. (CL&P-5, Q-8; Tr., pp. 29-30)

28. CL&P's experience with HPOF cable in the transmission system indicates that the potential for rupture of the pipe and subsequent loss of insulating oil would be minimal and unlikely. Such cable systems are widely used throughout the Unites States and the world, due to their durability and reliability. (CL&P-2, pp. E-2, ES-3; Tr., p. 37)

29. CL&P has one low-pressure oil-filled (LPOF) line in service in its system. In service since 1981, this line has experienced two incidents resulting in interruption in service,each time for one day. (CL&P-5, Q-9)

30. A LPOF cable was rejected for the project because of cost, need to open the entire trench length at one time, and the need to locate an oil reservoir tank and pressurizing nitrogen cylinders at or near the highest point of the line. The highest point of the proposed line would be somewhere between the terminals. (CL&P-5, Q-9)

31. Any abnormality in the proposed cable system, such as an oil leak, would be sensed by a loss-of-pressure and loss-of-fluid detection system in the pumping plant controls. The protection devices would de-energize the cable, reduce oil pressure, and shut down the oil supply system. This would mitigate the amount of any oil leaked from a damaged area

into the surrounding environment. (CL&P-2, pp. E-2, ES-3; CL&P-5, Q-12; Tr., pp. 37-38)

32. The amount of oil lost in the event of a line rupture and leak would depend on the size of the hole and the time required to detect the breach of pipeline integrity. The proposed line would contain approximately 7,300 gallons of oil. Each pothead would contain about eight gallons. The pumping plant and oil storage tanks would contain approximately 2,000 gallons. (CL&P-5, Q-10, Q-11)

33. Any oil-soaked soil resulting from a cable leak would be disposed of in compliance with federal and state regulations at an approved disposal site. (CL&P-5, Q-12)

34. The oil used in the cable system is biodegradable and contains no polychlorinated biphenyls (PCB's). (Tr., p. 39)

35. The detailed construction flow plan would be developed by a construction subcontractor. Construction would commence in April 1988 and would proceed by stages. Total construction, allowing for bad weather and unexpected factors, would take approximately 24 weeks. (CL&P-2, p. E-1; Tr., p. 27)

36. The estimated times required to complete sections of the route are as follows: Montville Substation to Dock Road, 10-15 days; Dock Road to the railroad crossing, 10-12 days; railroad crossing to AES Thames terminal, 10-15 days. (CL&P-3, Q-16)

37. During the preparation of construction plans, utilities with known installations in the area would be contacted. An overground field survey would locate utilities which have surface features. During construction, the installation contractor would perform excavations around the utility services carefully to avoid damage. The "Call Before You Dig" program would be notified as work progresses and all requirements met along the entire route. After the surface material is excavated by a backhoe, hand excavation would pinpoint any locations of utility services. Where necessary, all excavation around these services would be done by hand. (CL&P-3, Q-19)

38. The status of a proposed natural gas pipeline project that would pass across private property, through which a section of the proposed electric cable would pass, is uncertain. This project is unlikely to be built. (CL&P-5, Q-24; Tr., p. 31)

39. Construction would be scheduled to minimize disruption of traffic. Daylight hours and weekend construction on the Dock Road segment would shorten the period of disruption to permit passage of traffic during non-construction times. Excavated material would be removed from this portion of the line and metal plates placed over the open trench at the end of each workday, thereby permitting the passage of traffic during non-construction times, excavated material would be removed from this portion of the line and metal plates placed over the open trnech at the end of each workday. Where appropriate, caution signs would be used. (CL&P-3, Q-3)

40. The applicant does not anticipate blasting would be required for construction of any portion of the proposed line. (Tr., pp. 32-33)

41. One 24-30 hour overnight procedure would be required during the cable splicing activity at an intermediate manhole. Except for this activity and construction on a narrow 300-foot long segment of Dock Road, no other overtime or weekend construction of the trench is planned. (CL&P-5, Q-18)

42. A truck with air-conditioning equipment would be parked over the manhole to provide a properly air-conditioned environment during the splicing. (CL&P-5, Q-18)

43. The cable would pass under the railroad after a pit is dug on both sides of the tracks. A machine would force the pipe under the railroad from one pit through to the other pit. The pits would then be filled with dirt. This construction would not affect the operations of the railroad. (Tr., pp. 34-35)

44. An intermediate manhole would be installed on Dock Road near the juncture of CL&P's existing ROW corridor. This is required for pulling the cable through the pipe conduit. The manhole would be precast and measure approximately 18 feet long by eight feet wide by nine feet deep. Construction for the installation of the intermediate manhole would take about five working days. (CL&P-3, Q-16; Tr., pp. 39-40)

45. Cable installation would include setting up and taking down the cable pulling equipment, pulling the cable, setting up and taking down the cable splicing equipment, splicing the cable, and connecting the cable at each terminal. This would take approximately 27 working days. (CL&P-3, Q-23)

46. Approximately 100 to 200 feet of trench can be excavated in a normal workday. (CL&P-3, Q-17)

47. Lightning arrestors would be installed at each terminal to protect the cable system and other equipment from lightning-induced voltages. (CL&P-2, p. F-1)

48. Dock Road ends at a public boat launching dock. Traffic along the road is generated by the residents of Dock Road; public accessing the boat launch dock; and employees, contractors, and deliveries for the SCC paper mill, the Wronowski ferry boat dock, and the AES Thames Cogeneration Plant. (CL&P-3, Q-5)

49. A control-of-traffic plan for Dock Road was developed between the applicant and the Town of Montville Resident State Trooper. Traffic control would be required for all construction activities on Dock Road. Access plans for fire fighting and other emergency equipment would be developed prior to construction. (CL&P-3, Q-21)

50. Traffic control along Dock Road would be provided by Montville police officers. Barricades would be used at excavations along the wider portions of Dock Road during non-working hours. (CL&P-3, Q-21)

51. Construction on Dock Road would affect public use of the road and the public boat launching docks at the end of the road. (CL&P-2, p. ES-3)

52. Most of Dock Road is approximately 30 feet in width, which would allow one lane of the road to be open to traffic during construction. One narrow section west of the railroad crossing is about 18 feet wide for approximately 300 feet. This section is bounded by stone walls retaining earth. This section would be closed during construction, but would not affect residents' access to their homes. It would affect access to the SCC's paper mill, the public boat launching dock, the ferry boat dock, and the construction office trailers on the AES Thames plant site. (CL&P-3, Q-3, Q-5, Q-21)

53. Construction along the narrow section of Dock Road would be scheduled to minimize impacts to traffic by using maximum daylight hours and weekends. The road would be reopened for emergency access and after hours by covering open trenches. Options to quickly reopen the road have been discussed with safety officials. (CL&P-3, Q-2)

54. Building occupants adjacent to the route would receive notification prior to construction, particularly where excavation of sidewalks or streets would affect access to a driveway. Any special needs of ingress and egress would be accomodated. Trenches would be backfilled or covered with steel plates after working hours. (CL&P-3, Q-20)

55. A total but short-term blockage of the boat launching dock may occur when the trenching exits the SCC property and passes to the south side of Dock Road, west of the dock. (CL&P-2, p. E-1)

56. During construction of the proposed line, SCC employee parking would be relocated to other areas owned by the company. Traffic of paper shipments would require detailed coordination, which could involve staged construction, weekend construction, adjusted shipping schedules, and the covering of excavated areas. This plan would be developed jointly by the participants in the proposed project. (CL&P-4, Q-22)

57. AES Thames expects to discuss with the owner of the ferry boat dock property plans to access that property during construction in that area. Construction time for this section of the trench could take from one to three days. (Tr., pp. 43-44, 46-47)

58. Construction off Dock Road would not affect traffic on Dock Road or any other road. (CL&P-3, Q-21)

59. The greatest environmental impacts would occur during construction. Potential impacts may include some soil erosion from stockpiled soils and sediment-laden runoff during heavy rainfall. Following construction, affected areas would be restored to their original condition. After construction, the operational underground system would have minimal impact on the environment. (CL&P-2, p. E-1)

60. Erosion and sedimentation controls could be needed during the two to three week excavation period and would depend on proximity to water bodies, weather conditions, soil susceptibility to erosion, and ground slope along the construction route. Wherever necessary, control measures would minimize such impacts. (CL&P-2, p. ES-3; CL&P-3, Q-1)

61. After the installation of the cable and restoration of the construction area, there would be no visual evidence of the line except at the above-ground terminals at each end of the transmission line corridor. No adverse visual impacts would result from the operation of the underground line. (CL&P-2, p. E-2)

62. The proposed project would have no effect on groundwater in the area. A portion of the trench along the river would be below groundwater level. A sheet pile and/or temporary dewatering would be used in this area to keep the trench dry during construction. After the trench is filled, the surface would be restored as construction proceeds. (CL&P-3, Q-4)

63. The route of the proposed underground line would not pass through any mapped wetlands. (Tr., pp. 48-49; AES Thames-2)

64. The applicant would take measures necessary to minimize the affects of construction, particularly dust emissions, on nearby residences. (Tr., p. 36)

65. The Connecticut Historical Commission reviewed the proposed project and determined that a high probability exists for the presence of archaeological sites in the area. The Commission recommended that a professional survey be undertaken to locate and identify archaeological resources in the project area. ((CL&P-2, Exhibit H-4)

66. An archaeological reconnaissance survey would be conducted by a professional archaeological survey company. If any archaeological resources were discovered, the applicant would discontinue operations in the area and notify the State Historic Preservation Officer (SHPO). Preservation measures would be developed through consultation with the SHPO. (CL&P-3, Q-15)

67. The vicinity of the proposed project is used for industrial, commercial, and residential purposes. No developed public recreational areas are located within the ROW of the proposed transmission line. (CL&P-2, p. C-2)

68. The Department of Environmental Protection (DEP) found that no state land or resource of historic or conservation significance was located in or in proximity to the suggested transmission line corridor. (CL&P-2, Exhibit H-1, H-2 Data Base Species)

69. The DEP determined that there are no extant or historic records of federally endangered or threatened species or Connecticut "Species of Special Concern" at the proposed project site. Due to this investigation and the

previously disturbed nature of the land along the route, the applicant did not conduct an environmental survey. (CL&P-3, Q-14)

70. The DEP concurs with the choice of the underground route for the construction of the line. (Record)

71. The applicant would submit complete plans to and apply for a construction permit from the Town of Montville's Director of Public Works prior to excavation. (CL&P-3, Q-6)

72. Officials representing the Town of Montville testified in favor of the proposed project. (Tr., pp. 20-23)

73. The proposed cogeneration plant project was approved by the Connecticut Department of Public Utility Control (DPUC) on June 17, 1986 (Docket No. 86-02-12). (CL&P-2, pp. A-1. B-1)

74. CL&P expects to submit an application to the DPUC for approval of the line during the early part of 1988. (Tr., p. 43)

75. AES Thames, Inc., will finance the project, and CL&P will construct, maintain, and own the transmission line. (CL&P-2, p. ES-1)

76. The estimated cost of the proposed underground transmission line is $1,400,000. As a result of the Tax Reform Act of 1986 and a decision of the Connecticut DPUC, an additional 35% ($490,000) would be added to the above figure for taxes associated with customer contributions in

aid of construction. The estimated total cost would be approximately $1,890,000. (CL&P-2, p. A-3)

77. The cost of underground electric cables suitable for this project, for materials only, are as follows:
high pressure oil filled - $770,000/mile;
low pressure oil filled - $780,000/mile; and
extruded electric - $1,060,000/mile.
Installed overhead cables would cost $1,300,000/mile.
(CL&P-5, Q-8)

78. The installed costs per mile for three types of underground cable are as follows:
High Pressure Oil Filled $1,500,000/mile*;
Low Pressure Oil Filled . . . . . 1,500,000/mile; and
Solid Dielectric . . . . . 2,100,000/mile.
*Requires a pump plant for $140,000 (installed).
(CL&P-6)