ORIGINAL

Docket No. 163 - An application of the Department of Transportation for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Connecticut Transit administration/ maintenance property, 470 James Street, New Haven, Connecticut.	:	Connecticut
	:	Siting
	:	Council
	:	December 5, 1994

FINDINGS OF FACT

Introduction

1. On April 20, 1994, the Connecticut Department of Transportation, Bureau of Public Transportation (DOT), pursuant to Connecticut General Statutes (CGS) sections 16-50g to 16-50z, applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, operation, and maintenance of a 140-foot telecommunications tower and associated equipment in the City of New Haven, Connecticut. (DOT 1, p. 1)

2. The proposed site is located at the existing Connecticut Transit (CT) administrative/ maintenance facility at 470 James Street, New Haven, Connecticut. The proposed tower would be located on a 30-foot above-grade roof of a proposed new extension to be constructed adjacent to an existing 30-foot high CT maintenance building. (DOT 1, pp. 1, 5, 13, 20, 21, 24, 25, 58, and 59)

3. The proposed tower would provide backup communications to the New Haven area for the DOT vehicles and establish a microwave link to a West Rock Ridge telecommunications facility for primary communications to the New Haven area. From West Rock Ridge, signals could be transferred to other DOT facilities within the State via a microwave network. (DOT 1, pp. 11, 15-18, 58, 70, 71, 73; DOT 3, Q-4; Tr. 1, pp. 34-35)

4. Pursuant to CGS section 16-50m, the Council, after giving due notice thereof, held a public hearing for the proposed facility on June 20, 1994, commencing at 3:00 p.m., and continued at 7:00 p.m., in the Public Hearing Room, New Haven Hall of Records, 200 Orange Street, New Haven, Connecticut. (Council Hearing Notice 1; Transcript 1 (Tr.))

5. The Council and its staff conducted a public inspection of the proposed site on June 20, 1994, at 2:00 p.m., prior to the hearing. (Council Hearing Notice 1)

6. On October 4, 1994, the Council reopened the hearing for the purpose of receiving additional evidence and testimony on the design, height, construction, and operation of the proposed tower. (Council Hearing Notice 2; Tr. 3)

7. The DOT has discussed the proposed project with City of New Haven officials, who were concerned with certain traffic control matters and sidewalk reconstruction which would be addressed during construction activities. (DOT 2; Tr. 1, pp. 68, 69)

Existing DOT Telecommunications System

8. A two-way radio communication system is necessary for the general operation of the bus transportation system within the New Haven area to provide safe and dependable transportation to the public. (DOT 1, p. 11)

9. The DOT currently uses a low-band, voice only, two-way analog radio system to provide voice and emergency communications between the CT facility and its fleet of buses, maintenance vehicles, and supervisory personnel in the Greater New Haven bus service area. (DOT 1, pp. 5, 8)

10. The DOT uses an existing State-owned Connecticut State Police (CSP) tower on West Rock Ridge in New Haven for the existing primary radio system and transceiving antennas. In the event of a failure of the primary system, the backup system, located at the CT building, provides radio coverage within a reduced area. The interconnection between the two facilities is via radio links. (DOT 1, pp. 11, 16, 17; DOT 3, Q-4; DOT 4, pp. 2,3; DOT 5, Late File Exhibit 1)

11. The existing CT facility provides emergency bus communications to the Norwich and New London areas via telephone landlines to an existing DOT radio base station located on Vinegar Hill in Ledyard. (DOT 1, pp. 16, 17; DOT 3, Q-4; Tr. 1, pp. 33-35, 38-41)

12. The existing CT tower consists of a 60-foot, guyed, lattice, roof-mounted tower supporting three whip antennas, located on the northern end of the CT building, for secondary and backup radio communications. (DOT 1, pp. 5, 11-13, 28)

13. The existing 60-foot roof-mounted tower would not provide sufficient height for a microwave link to the West Rock Ridge facility because an intervening object would cause interference with the microwave signal. In addition, the existing mast is deteriorating and obsolete. (DOT 1, pp. 11, 15, 17, 18; DOT 5, Late File Exhibit 1)

14. The existing radio system has experienced increasing signal interference from external sources, particularly from shared frequencies, adjacent frequencies, and misadjusted frequencies. (DOT 1, p. 17; DOT 3, Q-4; Tr. 1, 32-35)

Proposed DOT Telecommunications System

15. The proposed microwave system would be digitized with 24 to 48 additional channels. This system would provide more reliable and interference-free radio communications by alleviating signal interference from external sources. The proposed enhanced two-way radio communications with all bus, maintenance, and supervisory vehicles in the New Haven area would eventually be interconnected via a microwave link from the West Rock Ridge facility to the DOT and CSP communication facilities located in Colchester, Ledyard, and Norwich. The proposed communication system would provide improved communications and emergency service in the New London area for emergency evacuation activities including

accidents associated with any of the 11 nuclear reactors in the Greater New London area. (DOT 1, pp. 11- 17; DOT 3, Q-4, Q-6; Tr. 1, pp. 30-35, 64, 65)

16. Based on a 1984 study, the minimum tower height needed for an unobstructed microwave pathway would be 136 feet plus 19 additional feet for corrected elevation and equipment additions, yielding a tower height of 155 feet above ground level (AGL) with an antenna mounting height on the West Rock Ridge tower at 100 feet AGL. To accommodate this height for a clear microwave pathway to West Rock Ridge, a 140-foot tower, built with standard 20-foot sections, would be needed on top of the 30-foot high CT building. The proposed tower would extend to 170 feet AGL. (DOT 5, Late File Exhibit 1; Tr. 1, pp. 11, 12)

17. Based on the 1984 study, a 1991 study identified an 80-foot building, located approximately one mile from the CT building, that could present a microwave pathway obstacle. To accommodate clearance of this building, Fresnel zone clearance, curvature of the earth, signal realignment adjustment clearance, antenna mounting bracket installations, and adjustments for previous site elevation measurement errors, a minimum antenna mounting height totaling 146 feet AGL would be required for a clear microwave pathway to West Rock Ridge. With use of standard 20-foot tower sections on the 30-foot roof, a roof mounted tower of 125 feet would be required. (DOT 3, Q-5; DOT 5, Late File Exhibit 1; DOT Exhibit 9, Q-3)

18. On September 14, 1994, the DOT performed a field survey of the proposed microwave path between the James Street facility and the West Rock Ridge facility. Potential obstructions in an area 500 feet to either side of the proposed path were identified and measured for height. (DOT 7, DOT 8)

19. The September 14, 1994, pathway profile analysis indicates an antenna minimum centerline at 158 feet AGL would be required at the DOT building to obtain an unobstructed microwave path to the West Rock Ridge facility. Any antenna placed lower than 158 feet AGL on the rooftop tower would place the microwave signal's Fresnel zone onto the Yale Divinity School building's roof. (DOT 7; DOT 8; DOT 9, Q-2; Tr. 3, pp. 19-21, 26, 27, 29)

20. The DOT proposed to use a 140-foot tower calculated from the 1984 and 1994 surveys as a conservative estimate to achieve a clear pathway to West Rock Ridge. The DOT would have a final microwave signal path analysis performed before commencing construction to verify a clear pathway from the proposed tower. The DOT would not preclude the construction of a smaller tower if the preconstruction survey indicates a shorter tower height would suffice for the proposed project. (DOT 5, Late File Exhibit 1, pp. 3, 4; Tr. 1, pp. 47-50)

21. The existing tower on West Rock Ridge would be replaced by a new tower, equal in height, prior to the construction of the proposed project. The DOT determined the proposed

microwave antenna on the new West Rock Ridge tower would be mounted at the 100-foot AGL level. The total height of the West Rock Ridge tower is 120 feet AGL. (DOT 3, Q-5; DOT 5, Late File Exhibit 1, p. 6, Reference 2, Reference 6; Tr. 1, pp. 42, 43; Tr. 3, p. 15)

22. In addition to providing a clear microwave path to the West Rock Ridge facility, a 140-foot roof-mounted tower would provide better backup radio coverage from the CT building location than the existing 60-foot roof-mounted tower or the 125-foot roof-mounted tower calculated from the 1991 study. (DOT 1, pp. 11, 14, 15; DOT 5, Late File Exhibit 1)

23. A 130-foot, roof-mounted tower at 160 feet AGL could be used by the DOT for the proposed project but would not allow space for shared uses. (Tr. 3, pp. 24, 25)

Alternatives

24. The DOT did not investigate alternative locations off the CT building property for a new tower because of additional capital and operating costs, site rental costs, expenses to relocate existing communications equipment to a new location, the need to lease land lines to a remote location, and a reduction in system reliability. (DOT 1, pp. 12, 18, 19, 34; DOT 3, Q-6, Q-18)

25. A free-standing ground-level tower constructed on the CT property at a distance greater than 200 to 300 feet from the electronic equipment would degrade the radio signal, and interference would be created. In addition, limited available outdoor space due to the renovation of the CT building site would preclude the construction of a free-standing tower on the DOT property. (DOT 3, Q-2, Q-7; Tr. pp. 12-16, 18-21, 66, 67)

26. The use of a State-owned or leased fiber optic cable link to West Rock Ridge would not be practical for the following reasons: tower capital costs would remain the same and a fiber optic cable link would increase cost due to installation charges, new required interface connection equipment, and the continuance of annual leasing costs. In addition, a fiber optic link would be restricted to CT use only. (DOT 3, Q-6, Q-18)

Proposed Site

27. The CT building is located on a State-owned parcel in an urban area zoned as IL (Light Industry), bordered on the west and north at a distance of approximately 200 feet by Interstate 91 (I-91), on the north and east by James Street, on the west by the Mill River, on the south by Humphrey Street, and on the east and south by an AMTRAK railroad right-of-way. (DOT 1, pp. 20, 21, 24, 26, 31, 58; DOT 3, Q-1, Q-2, Q-3, and Q-21)

28. The DOT determined the suitability for improving the CT building site for reasons including the industrial nature of the area, present use of the site, availability and acreage, proximity to the New Haven Central Business District, access to existing roads, and industrial zoning. (DOT 1, p. 27)

Proposed Facility

29. The proposed tower project would be constructed in conjunction with the renovation of the CT building. No clearing or construction of new access would be needed. The proposed tower would be positioned on a new 20-foot by 40-foot by 30-foot high extension of the north end of the CT building. The radio and dispatching equipment would be relocated to this new building extension. The facility would be the location of the main radio base station dispatch operations and backup radio transmitting and receiving systems with a microwave link to the West Rock Ridge facility for the transmission and reception of radio signals. (DOT 1, pp. 11, 14, 28; DOT 3, Q-2; DEP Letter, received May 31, 1994)

30. The proposed tower would be a 140-foot, self-supporting, three-legged, reinforced heavy duty, lattice, galvanized steel Rohn tower, measuring approximately 15 feet wide at the base and tapering to approximately five feet wide at the top. The tower would be painted forest green. (DOT 1, pp. 13, 22, 23, 55, 56, 58, 61; DOT 3, Q-9; Tr. 1, pp. 36, 37, 57, 67-72)

31. The proposed tower would be bolted to the reinforced concrete slabs of the roof which would be tied into the frame system of the new building, therefore, the tower load would be transferred to the pile foundations. (DOT 1, p. 15; DOT 6, DOT 12; Tr. 1, pp. 22, 27-30)

32. A four-foot diameter microwave dish antenna would be mounted on the proposed tower at 168 feet AGL. Three 15-foot whip-type dipole antennas would be mounted at 150 feet AGL, 130 feet AGL, and 110 feet AGL. (DOT 1, pp. 13, 25; DOT 3, Q-15)

33. The transceivers would transmit low power radio waves at approximately 60 watts effective radiated power (ERP) in the 450 to 470 megahertz frequency band and at 1355 watts ERP in the 18 gigahertz band for the microwave transmission. (DOT 1, pp. 12, 13, 67; DOT 3, Q-15; Tr. 1, pp. 58, 59)

34. The proposed tower would be constructed in accordance with the Electronics Industries Association, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, EIA-222-E and would be designed to maintain its integrity with a wind load of 90 miles per hour with one-half inch of radial ice. This design would allow for a tower loading of two microwave dishes and five whip-type antennas, to accommodate the load of additional antennas if needed in the future. (DOT 3, Q-9; DOT 9, Q-4, Q-5; Tr. 1, pp. 27-30)

35. The DOT did not plan to mount additional antennas on the proposed tower in the future. (Tr. 1, 24-26, 29)

36. The DOT is willing to share the tower with other entities. No governmental agencies or commercial businesses had contacted the DOT to discuss tower sharing. (DOT 1, p. 34; DOT 3, Q-8; Tr. 1, pp. 29, 30; Tr. 3, p. 24)

37. The tower's fall zone would include a part of the CT building and a part of an I-91 off-ramp, but not James Street. A free-standing tower constructed adjacent to the proposed new extension of the existing building would involve a larger area of the I-91 exit ramp placed within the tower's fall zone. (DOT 3, Q-2; Tr. 1, pp. 18, 19)

38. During electric power interruptions, electricity would be supplied by an on-site, diesel-fueled, AC emergency generator rated at 550 kilowatts, supplying 480 volts at 60 Hz. Diesel fuel for the generator would be contained in an underground, 1,000 gallon storage tank. (DOT 1, p. 14; DOT 3, Q-2, Q-16; Tr. 1, pp. 69, 70)

39. The proposed tower's design and method of construction would be certified by a Professional Engineer prior to commencement of construction. (Tr. 1, p. 23)

40. The proposed project would be constructed in the fall of 1995 and would become operational by the spring of 1996. The existing 60-foot tower would be dismantled, removed, and scrapped once the new tower and system became operational. (DOT 1, pp. 28, 72)

41. During renovation of the CT building, all existing two-way radio operations would need to remain in operation. The proposed radio improvements would be completed at the time the renovated CT building became fully operational. (DOT 1, p. 14)

Environmental Factors

42. As measured at the base of the tower, the total maximum radio-frequency power density level for the proposed CT facility would be 0.304984 percent of the maximum exposure limit as established by the American National Standards Institute (ANSI) C95.1-1991 revision of the ANSI 1982 guidelines for maximum exposure in an uncontrolled environment as adopted by the State of Connecticut as the State standard for non-ionizing radiation. (DOT 3, Q-15; Tr. 1, p. 57)

43. The existing CT building is surrounded by paved parking areas and driveways, and has no scenic, historic, natural, or recreational values. The proposed facility would have no impact on wetlands, watercourses, recreational properties, or coastal resources. (DOT 1, p. 27; DEP Letter, received May 31, 1994)

44. The Federal Aviation Administration had determined that the proposed 140-foot above roof level tower at 185 feet AMSL would not be an obstruction, would not be a hazard to navigation, and obstruction marking and lighting would not be necessary. The nearest airport was Tweed-New Haven located 2.12 miles southeast of the proposed tower's position. The DOT does not plan to place lights on the tower. (DOT 1, pp. 22, 23, 61; DOT 9, Q-8; Tr. 1, pp. 36, 37, 57, 70-72)

45. The DOT plans to submit notification to the Federal Communications Commission to obtain a permit to operate the proposed microwave system. (Tr. 1, p. 62)

46. The DOT consulted with the Department of Environmental Protection (DEP) regarding the development of the proposed building project and applied to the DEP for a Structures and Dredging Permit, a Vehicle Service Discharge Permit, a Vehicle Wash Discharge Permit, a Stormwater Discharge Registration, and a Stationary Source Air Permit. (DOT 3, Q-11, Q-13, Q-14; Tr. 1, p. 61)

47. The DOT's Environmental Planning Division reviewed the proposed project for compliance with the Connecticut Environmental Policy Act (CEPA) and the National Environmental Policy Act (NEPA). Because the proposed project involved renovation and improvement of an existing facility and no change in use, no further environmental analysis is required under the CEPA. The Federal Transit Administration classified the project as a Categorical Exclusion and additional environmental documentation is not required under the NEPA. (DOT 1, pp. 27, 60; DOT 3, Q-12 Attachment; DOT 4; Tr. 1, pp. 59-62)

48. The CT building lies within a Coastal Zone at 15 feet AMSL. A Coastal Area Management Consistency statement was prepared and submitted to the DEP for construction associated with the building renovation project. (DOT 3, Q-2, Q-11; Tr. 1, pp. 60-62)

49. The nearest residences would be located approximately 500 feet southeast of the proposed site. Sections of the tower structure would be visible from buildings located within 1,000 feet of the site to the east, southeast, southwest, west, northwest, and from I-91. Views of the proposed tower from these neighborhoods would be partially screened by intervening buildings, the AMTRAK railroad right-of-way, a United Illuminating transmission line, the CT building, and the I-91 embankment. The DEP concluded the proposed tower would not have a significant impact on the visual character of the neighborhood. (DOT 1, pp. 20, 30; DOT 3, Q-1, New Haven Zoning Maps, Q-3; DEP Letter, received May 31, 1994)

Costs

50. Estimated costs for the proposed tower, antenna, cables, and electronic equipment were as follows:

Tower and supports	$ 75,000
Antenna and Cables	23,000
Electronic Equipment	88,000
Total	**$186,000**

Eighty to ninety percent of the capital expenditures for the proposed communications project would be reimbursed by federal funding. (DOT 3, Q-17, Q-18; Tr. 1, pp. 35, 36)