ORIGINAL

DOCKET NO. 150 - An application of the State of Connecticut, Department of Public Safety, Division of State Police for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of a telecommunications facility located on Butternut Hollow Road, in the Town of Greenwich, Connecticut.

Connecticut

Siting

Council

August 4, 1992

FINDINGS OF FACT

Introduction

1. The Connecticut Department of Public Safety, Division of State Police (State Police), in accordance with provisions of sections 16-50g to 16-50z of the Connecticut General Statutes (CGS), applied to the Connecticut Siting Council (Council) on February 20, 1992, for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a telecommunications tower, associated equipment, and building in the Town of Greenwich, Connecticut, to provide telecommunications service within Fairfield County, Connecticut. (State Police 1, Sections 1 and 3)

2. Public notice of the application, as required by CGS section 16-50l(b), was published in the Greenwich Time on February 18 and 19, 1992; and in the Greenwich News on February 6 and 13, 1992. (State Police 3, Q. 1B, Attachment B)

3. The Council and its staff inspected the proposed site in the Town of Greenwich, Connecticut, on May 13, 1992. (Council Hearing Notice)

4. During the Council's field inspection of the proposed site, a balloon was flown to approximate the height of the proposed 180-foot tower and attachments. (Transcript May 13, 1992, Afternoon (Tr. 1), pp. 32, 33)

5. Pursuant to section 16-50m of the CGS, after giving notice thereof, the Council held a public hearing for this application on May 13, 1992, beginning at 3:00 P.M. and reconvening at 7:00 P.M., in the Town Hall Meeting Room, Greenwich Town Hall, 101 Field Point Road, Greenwich, Connecticut. (Council Hearing Notice; Tr. 1 and Transcript May 13, 1992, Evening (Tr. 2))

## Existing State Police Radio System

6. The State Police currently utilizes a two-way, low-band communications system originally designed in 1940 to service 290 troopers that has not materially changed since it was installed. This system consists of 11 hilltop base stations, one for each troop. Four frequencies are shared by the 11 troops and their district headquarters. Currently over 1,000 sworn personnel continue to use this same system. (State Police 1, pp. 2-8, 8-2, and 9-4)

7. Point-to-point communication services to integrate communication services across the State are presently provided by leased telephone landlines, except for three district headquarters which use analog microwave systems for their two-way mobile radio system. (State Police 1, pp. 8-1 and 8-2)

8. Leased point-to-point landlines are deficient in many aspects related to public safety. Specific problems with the existing network includes: a) lack of capacity for system growth, b) inability to configure the system for tactical responses and other emergencies, c) limits to data transmission speed, d) inherent noise levels, e) frequent and unacceptable delays of circuit failures, and f) outages when communications are crucial for dispensing information and delivery of aid to the citizens of the State. (State Police 1, pp. 5-2 and 9-1)

9. The State Police investigated and rejected the following five point-to-point systems because: a) copper wire landlines could not support the number of channels or transmission speed required with the use of computer driven operation, b) satellite terminals were cost prohibitive in usage charges, c) fiber optic installation charges on the number of miles necessary was an unaffordable expense and susceptible to damage and extended outages, d) leased fiber optic networks did not offer any cost savings or managerial and budgetary control, and e) an analog microwave network did not provide higher transmission speed, system expansion, or intelligence networking. (State Police 1, pp. 11-1 and 11-2)

10. Existing wireline circuits are mostly strung above ground from pole to pole. These lines are subject to damage created by storms and humans. The use of fiber optic cables for new wireline circuits would be subject to the same type damages and would also present security problems. (State Police 1, p. 9-2; Tr. 1, pp. 48, 49)

11. Problems and design faults with the existing two-way radio system, which is a low-band VHF, voice only, simplex system, include: a) 50 year old design not sized for the traffic demands of an existing 1,000 plus trooper police force, b) physical structures are old and in need of replacement, c) sites are not fenced or alarmed, d) channel capacity varies from radio to radio and the frequency band in use is not being further developed, e) frequencies are subject to propagation and noise problems, f) areas of poor or no communication ("dead spots"), and g) voice encryption and mobile data terminals (MDT) are not available. (State Police 1, pp. 2-2, 8-2, 9-3, and 9-4)

12. Low-band VHF frequencies experience atmospheric interference caused by other radio signals propagating hundreds of miles which can interfere with or block local transmission. (State Police 1, p. 9-4)

13. The existing State Police communications system has been operating for over 50 years without major modification. This system has some poor or no communication areas, has difficulty offering service to portable hand-held radios, and cannot be totally compensated for by propagation or antenna techniques available to low-band VHF. In addition, there are no methods for procurement of new equipment or applications of new technologies that would update the current system to meet present or future demands. (State Police 1, pp. 2-2, 8-2, 8-3, and 9-5)

14. Voice encryption and MDTs are not available on low-band VHF channels because of equipment and technology limitations. The current radio system cannot support the digital data transmission speeds required for either of these uses. (State Police 1, p. 9-5)

15. State Police calls for service in Greenwich are currently handled by Troop G in Westport, Connecticut, which serves the southwestern area of the State. In 1991, Troop G received 20,025 calls for assistance in this area. (State Police 3, Q. 3)

Proposed State Police Radio System

16. The proposed Connecticut Telecommunications System (CTS) would be a digital microwave network for point-to-point communication supporting an 800 MHz trunked two-way mobile radio system. The 41 site network would be owned, operated, and maintained by the Connecticut Department of Public Safety, Division of State Police. An additional eight unidentified sites may be added to the system to fill in coverage-deficient areas. (State Police 1, pp. 2-8 to 2-10, 5-3, and 5-4; Tr. 1, pp. 22-24)

17. The Connecticut State Police in conjunction with other public safety groups belonging to the Tri-State and New England committees for spectrum utilization cooperated in developing plans for licenses from the Federal Communications Commission (FCC). These groups were established under a FCC mandate to allocate 800 MHz two-way radio frequencies on an equal basis among all eligible licensees in the public safety community. (State Police 1, pp. 2-11 and 2-12)

18. The CTS would serve two functions: 1) to provide statewide radio coverage to troopers in vehicles and carrying portable radios and 2) to ensure all fixed State Police operation centers and affiliated agencies have access to a communication system should the public telephone system fail. (State Police 1, p. 12-1)

19. The proposed CTS would handle large volumes of daily radio traffic as well as large numbers of simultaneous messages generated during emergency situations. The system would be designed, developed, and implemented to enhance public safety, increase levels of security for sworn personnel, and provide service well into the next century while allowing for technological advancements. (State Police 1, p. 10-1)

20. The design objective for system outages due to propagation failure would not exceed one hour per year. The average reliability for each microwave path would be ten times more stringent (99.999%) with outages not exceeding five and one-half minutes per year. This criterion forms the basis of the CTS design and determines the combined tower heights and dish antenna sizes. (State Police 1, p. 12-9)

21. The digital microwave network would connect all State Police operation centers and would provide radio controlled voice and data circuits (including voice encryption and MDT); higher transmission speed for computer operations; intelligent digital interface permitting system reconfiguration at remote sites; a building block expansion capacity; computer connection; and emergency telephone circuits in the event the telephone landline network becomes overloaded or inoperative. (State Police 1, pp. 2-10, 2-11, and 11-2)

22. The CTS is designed to use digital electronics and redundant processors, and to provide uninterrupted operation, additional channel capacity, and communication between local, state, and federal agencies. (State Police 1, pp. 2-10 and 2-11)

23. In the CTS, self-supporting lattice towers are selected over guyed and monopole towers because a self-supporting tower is less expensive, less vulnerable to storm damage, and offers expansion capacity. (State Police 1, pp. 12-2, 12-5, and 12-6)

24. Completion and on-line operation of a statewide CTS point-to-point microwave system is anticipated by the end of 1994. (Council Administrative Notice No. 9, Docket No. 128, Findings of Fact No. 25)

Proposed Tower Site

25. A 180-foot, self-supporting, lattice tower is proposed to be constructed within approximately 0.78 acres of land owned by the State of Connecticut, Department of Transportation (DOT), bordered on the north by the Merritt Parkway (Route 15) and on the south by Butternut Hollow Road, Greenwich. (State Police 1, Section 2, p. 2-7, Sections 13B, 13D, 13H, and Section 14, p. 1; State Police 4, Q. 32 A.2, Attachment A)

26. On April 19, 1991, the DOT transferred to the State Police, control over the parcel of land containing the proposed site until such time as the DOT requests return of control for this land. (State Police 11)

27. The proposed structure would have a base width of approximately 27.5 feet tapering to approximately 8.5 feet at the top. The tower would be three legged, constructed of galvinized steel, and grounded against lightning strikes. The minimum life expectancy of the tower would be 25 years. (State Police 1, p. 12-3, and Section 13E-1; State Police 3, Q. 36)

28. The proposed self-supporting tower would be designed with CTS specifications to support one, six-foot microwave radome operated by the Greenwich Police Department; a three-foot and a four-foot whip antenna operated by the Greenwich Police Department; four, thirteen-foot whip antennas operated by the State Police; an 18-foot whip antenna operated by the DOT; a nine-foot whip antenna operated by the Fairfield County Chiefs of Police Association (FCCPA); and six, four-foot cellular telephone panel antennas, and two, 13-foot whip omnidirectional antennas operated by Metro Mobile CTS of Fairfield County, Inc. (Metro Mobile). The total height of the tower structure including all appurtenances would be 200 feet above ground level. (State Police 1, Sections 13E-1, 13F, 13J, 13L, and Section 14, Exhibit B, and Exhibit D)

29. The tower design could hypothetically support three additional six-foot dish antennas at the top of the tower, allowing for future expansion capability. The tower design would be in accordance with Electronic Industries Association Standard 222-D to withstand a wind loading of 90 miles per hour (mph) with one-half inch of radial ice. (State Police 1, Section 12, pp. 2, 4, 7, and Section 13E-1; State Police 3, Q. 18)

30. The proposed tower would be interconnected to the CTS by a microwave signal to an existing Town of Greenwich facility located on the roof of Greenwich Hospital approximately 4.4 miles to the south. The radio signals would be relayed to State Police Troop G in Westport, Connecticut, using existing microwave links established by Metro Mobile in Stamford and South Norwalk. (State Police 1, Section 13A and 13C; State Police 3, Q. 5, Q. 10; Tr. 1, p. 48)

31. The 180-foot height of the proposed tower would provide 95 percent portable radio coverage within Greenwich without interference in the 821 MHz frequency range, and a clear microwave pathway to the existing Greenwich Hospital radio base station operated by the Town of Greenwich on the roof. (State Police 3, Q. 13)

32. The minimum ground clearance for the proposed microwave beam would be 100 feet at the highest points along the pathway, requiring an antenna centerline at the 177-foot level on the proposed tower and a 15-to 20-foot structure on the hospital roof. (State Police 1, Section 13C; State Police 3, Q. 5, Q. 11; Tr. 1, pp. 47, 48)

33. The proposed tower facility would be constructed within an approximately 0.19 acre parcel (120 feet by 70 feet) within the State property. The elevation of the site is 360 feet above mean sea level. The surrounding area is zoned RA-2 residential. (State Police 1, Section 1, and Sections 13B, 13D, 13H, and 13L; State Police 3, Q. 1 Attachment A; State Police 4, Q. 32 A2 Attachment A)

34. The proposed tower site is a gently rolling wooded parcel with the proposed tower and equipment building situated on top of a knoll. The site contains saplings and approximately 50 trees ranging in size from six to 36 inches in diameter. All vegetation within a security enclosure would be cleared. (State Police 1, Section 14, pp. 1, 6; State Police 3, Q. 1C Attachment A)

35. Access to the proposed site would be off Butternut Hollow Road via a 12-foot wide by 135-foot long driveway. The surface would be crushed rock on geotextile fabric. The route would be selected to minimize road length and effects on the environment. (State Police 1, pp. 12-3, 12-4, and Section 13D, p. 1; State Police 3, Q. 1C)

36. A 16-foot by 60-foot precast concrete equipment shelter is proposed to be placed adjacent to the tower for the storage of electronic equipment of the State Police and other users sharing the tower, and an emergency generator. (State Police 1, Section 14, p. 2)

37. Electricity and telephone utilities would serve the property to provide power for the radio equipment, heat, and air conditioning. An overhead, or optional underground, 0.3 mile long service line would be constructed along Butternut Hollow Road from the nearest existing utility pole to the site. The connecting utilities would be installed underground along the accessway from Butternut Hollow Road to the equipment building. No sewer, water, or gas lines would be installed. (State Police 1, Section 12, p. 12-3, Section 13G, p. 1, and Section 14, p. 8; Tr. 1, pp. 26-28; Tr. 2, pp. 8, 20)

38. A 65 kw, propane-fueled, emergency generator would be installed in the equipment shelter to provide power during unforeseen outages. A 1000-gallon propane tank, 3.5 feet in diameter by 16 feet long, would be placed underground adjacent to the equipment shelter. The propane tank would be designed in accordance with National Fire Protection Association (NFPA) 58 "Standard for the Storage and Handling of Liquified Petroleum Gases.", dated 1979. (State Police 1, Section 14; State Police 3, Q. 24)

39. The emergency generator would automatically operate 15 to 30 minutes per week for maintenance purposes. The expected noise during emergency generation at the furthest point along the property line would be 74.8 dbA. The position of the generator in the concrete equipment shelter, ambient traffic noise, and natural buffering by surrounding vegetation would reduce the effects of the noise levels on the environment. Noise created by or related to the emergency generator is exempt from State Noise Regulations. (State Police 1, Section 14, pp. 2, 4, 8; State Police 3, Q. 25; State Police 4, Q. 37)

40. An eight-foot high, chain-link security fence, topped with three stands of barbed wire, would surround the proposed facility. Remote alarms to guard against tampering, high temperature, smoke, and propane leaks would be installed. (State Police 1, Section 12, pp. 12-3, 12-5, and 12-6)

41. The nearest residence is located approximately 850 feet west of the proposed tower site. The nearest residence on Butternut Hollow Road is approximately 1/4 mile south of the site. There are about 22 residences within a 1000-foot radius of the proposed tower base. The Merritt Parkway intersects this circle to the north of the proposed tower. (State Police 1, Exhibit 15; State Police 3, Q. 1D; State Police 4, Q. 32 A.3)

42. The fall zone of the proposed tower and attached antennas would encompass land owned by the State and the Connecticut American (Greenwich) Water Company. The nearest paved edge of the Merritt Parkway would be 210 feet from the proposed tower base. The only structure that would be in the fall zone is the proposed equipment shelter of the State Police. (State Police 1, Sections 13B, 13H, and 13I; State Police 3, Q. 1C; State Police 4, Q. 32 A.2 and A.3)

43. The calculated electromagnetic radio frequency power density at the base of the proposed telecommunications tower base, assuming all channels are operating simultaneously at maximum allowable power, would be 2.5747 percent of the American National Standards Institute safe limit standard, as adopted by the State of Connecticut under CGS section 22a-162. (State Police 1, Sections 13N and 13O)

44. The Federal Aviation Administration has determined that the proposed 180-foot high tower would not be a hazard to air navigation and obstruction marking or lighting would not be necessary. (State Police 1, Section 5, p. 5-3, and Section 13L)

45. There are no known extant populations of federally endangered and threatened species or Connecticut "species of special concern" occurring at the site. (State Police 1, Section 14, p. 11 and Exhibit E)

46. The proposed tower would have no impact to historic, architectural, or archaeological resources listed on or eligible for the National or State Register of Historic places. (State Police 1, Section 14, Exhibit E)

47. Due to the wooded nature of the proposed site and the adjacent Greenwich Water Company property, with mature forest cover having a canopy height of approximately 75 feet, the lower portion of the tower would be screened and blocked from view from nearby homes. However, due to the height of the tower, upper parts of the tower would be visible from some roads and homes in the area. (Department of Environmental Protection Letter, dated March 31, 1992, received April 1, 1992)

48. Areas disturbed by construction activities would be covered by gravel, loamed, or revegetated as needed. (State Police 1, Section 14, pp. 17, 18)

49. During construction of the proposed facility, potential adverse environmental effects created by surface water runoff, erosion, and sedimentation would be mitigated by the use of erosion and sedimentation barriers, fugitive dust controls, and traffic controls. (State Police 1, Section 14; State Police 2, Section 3; Tr. 1, p. 32)

50. A small brook and wetland area about 300 feet west of the proposed site, and Putnam Lake about 350 feet east of the proposed site would not be affected by the construction and operation of the proposed facility. (State Police 1, Section 14, p. 17; State Police 2, Section 3; Council Administrative Notice No. 10)

51. The proposed facility would be visited by personnel two to four times per month for routine maintenance and equipment checks. (State Police 1, Section 14, p. 9)

52. The proposed facility would be developed at the present time by a combined effort of the proposed tower sharers to prevent the construction of several telecommunications towers in the Greenwich area. Without the participation of the current proposed tower sharers, the State Police would not develop the proposed site at this time, but at some later date because the site would provide needed 800 MHz coverage. (State Police 3, Q. 15)

53. The State Police currently does not use any transmitting radio facility in the Town of Greenwich. (State Police 3, Q. 9)

54. Construction of the proposed tower site would start in the third quarter of 1992 and would take approximately two months to finish. Antennas for Metro Mobile and the Town of Greenwich would be installed during the tower construction. State Police two-way radio antennas would be installed in mid-to-late 1994 when the 800 MHz system is implemented. Antennas for the DOT and FCCPA would be installed at some undetermined time following tower construction. (Siting Council Administrative Notice No. 9, Finding of Fact No. 28; State Police 1, Section 13Q; State Police 3, Q. 14; Tr. 1, pp. 34, 35)

Alternative Sites

55. Seventeen sites were considered for construction of a telecommunications facility in Greenwich. Sixteen sites were rejected for some of the following reasons: too difficult to develop for engineering reasons; too costly; property owner would not sell or lease property; location was too far west or north for adequate radio coverage for the Town of Greenwich; parcel area inadequate in size; a site would require a tower higher than 200 feet; property was part of a nature preserve; public opposition to a site; a site would be too inaccessible; and a previously considered closed school was reopened. (State Police 1, Section 15; Tr. 1, p. 69)

56. No alternative site was selected for construction of the proposed facility. (State Police 1, Section 15)

57. The Parkway School property on Lower Cross Road was evaluated as a potential facility site when the school was closed prior to 1990. A fire at another school in 1990 caused the Parkway School to be reopened. The Greenwich Board of Education intends to retain the property as an active school and opposes the use of the Parkway School property for a telecommunications facility. (State Police 1, Section 15, p. 15-3; State Police 3, Q. 8; Tr. 1, pp. 8, 9, 13, 14; Tr. 2, pp. 10, 11, 13)

58. Town of Greenwich officials support the construction of the proposed mutually shared communications facility on Butternut Hollow Road and not the Parkway School property. (Tr. 1, pp. 8, 9, 11; Tr. 2, pp. 9-17)

Metro Mobile

59. Metro Mobile CTS of Fairfield County, Inc. is a Connecticut corporation licensed by the Federal Communications Commission (FCC) to construct and operate a cellular system in the Bridgeport New England County Metropolitan Area (NECMA) which includes the Town of Greenwich. On April 23, 1992, Metro Mobile petitioned the Council for party status in this proceeding. On May 5, 1992, the Council granted party status to Metro Mobile. (Metro Mobile Letter requesting party status, dated April 23, 1992; Council Letter notifying Metro Mobile of party status approval, dated May 5, 1992)

60. On December 31, 1991, Metro Mobile entered into a license agreement with the State of Connecticut, Department of Public Safety, Division of State Police, to share space on the proposed tower for a minimum of 25 years. Metro Mobile would pay the State Police a sum of $100 annually over the term of the license for use of the proposed tower and building. (State Police 4, Q. 36, Attachment F)

61. Metro Mobile would be responsible for the design, purchase costs, construction, and maintenance of the 180-foot tower, equipment building, access road, security fence, emergency generator, and associated electrical equipment. Following construction, ownership of the proposed facility would be transferred to the Department of Public Safety. (State Police 4, Q. 36, Attachment F)

62. The installation of cellular equipment at the proposed site would establish a cell site for Metro Mobile which would improve call handling capacity in the Greenwich area, and provide for the off-loading (transferring) of calls from Metro Mobile's existing Greenwich, Banksville, and Riverside cell sites, which began exceeding call handling capabilities during 1991. (State Police 1, Exhibit 15; Metro Mobile 2, Q. 30)

63. Metro Mobile determined cellular coverage was inadequate in some Greenwich areas, particularly along a one and one-half mile section of the Merritt Parkway. Metro Mobile analyzed probable coverages from several sites along the Merritt Parkway and concluded the proposed site would be necessary to eliminate cellular coverage holes along the Merritt Parkway and off-loading problems from existing Greenwich facilities. (State Police 1, Section 15; Metro Mobile 2, Q. 28, Q. 31; Tr. 1, pp. 40-42, 49-54)

64. The proposed facility would not eliminate the need for Metro Mobile's existing Banksville, Riverside, or Greenwich facilities. No one site in Greenwich could replace the Banksville site and the proposed Butternut Hollow Road site. (Metro Mobile 2, Q. 29; Tr. 2, p. 25)

Town of Greenwich

65. The Town of Greenwich is developing its own public safety communications system. The proposed tower site was determined to be adequate to resolve the Town's communication problems after a search for a tower site was conducted by a Town appointed tower site search committee. (State Police 3, Q. 13, Q. 15; Tr. 1, pp. 36, 69, 70; Tr. 2, pp. 9)

66. The Town of Greenwich received authorization from the Federal Communications Commission on April 4, 1992 to operate a trunked radio system. An application for construction of the proposed microwave system is pending. (State Police 3, Q. 20)

67. On January 16, 1992, the Town of Greenwich entered into an agreement with the State of Connecticut, Department of Public Safety, Division of State Police to share the proposed tower facility. The Town of Greenwich would operate the proposed microwave radio system and pathway from the proposed tower to the Greenwich Hospital roof top installation. The State Police and Metro Mobile would share the microwave pathway. No additional cost for sharing the microwave system would be incurred by the State Police. (State Police 1, Section 13C; State Police 3, Q. 5, Q. 11; State Police 6; Tr. 1, pp. 47, 48)

68. The proposed facility would not eliminate any existing towers in Greenwich because the Town of Greenwich operates no other tower sites for its radio communication system. (State Police 3, Q. 3, Q. 9; Tr. 1, pp. 70, 71)

Costs

69. The State of Connecticut would incur no cost for construction and maintenance of the proposed facility for 25 years. (State Police 1, Sections 13D, p. 2, and 13P; State Police 3, Q. 15; State Police 4, Q. 36, Attachment F; Tr. 1, p. 28)

70. Estimated costs for proposed tower sharers are itemized as follows:

Connecticut State Police

| | |
|---|---|
| Radio equipment | $276,500 |
| Tower and antennas | 33,000 |
| Power systems | 0 |
| Site, road, shelter | 0 |
| Miscellaneous | 22,900 |
| Total | $332,400 |

Metro Mobile

| | |
|---|---|
| Radio equipment | $347,400 |
| Tower and antennas | 51,000 |
| Power systems | 34,500 |
| Site, road, shelter | 125,000 |
| Miscellaneous (including site design, preparation construction, installation)* | 182,800 |
| Total | $740,700 |

Town of Greenwich

| | |
|---|---|
| Radio equipment, antennas, associated equipment, installation | $379,977 |

Department of Transportation and Fairfield County Chiefs of Police Association — No Expense

*Includes construction of the overhead utility line.

(State Police 1, Section 13P; State Police 3, Q. 16; Tr. 1, p. 28; Tr. 2, p. 20)

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