

An application of The Department of Public Safety, Division of State Police for a Certificate of Environmental Compatibility and Public Need for the construction, operation, and maintenance of telecommunications facilities located in the Towns of North Canaan, Norfolk, Litchfield, and Sharon, Connecticut. : Docket 118
: Connecticut Siting Council
: February 5, 1990

ORIGINAL

FINDINGS of FACT

1. The 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 August 25, 1989, for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of telecommunications towers, associated equipment, and buildings in the Towns of North Canaan, Norfolk, Litchfield, and Sharon, Connecticut, to provide telecommunications service within Litchfield County. (Record)
2. The State Police formally withdrew part of the application pertaining to CTS Site 75-A, Sharon, Connecticut, by a letter dated November 16, 1989. (Record)
3. The application was accompanied by proof of service as required by section 16-50¹ of the CGS. (Record)
4. Affidavit of newspaper notice as required by section 16-50¹ of the CGS was supplied by the applicant. (State Police 3, Q.1)
5. The Council and its staff inspected the proposed sites in the Towns of North Canaan, Norfolk, Litchfield, and Sharon, Connecticut, on October 30, 1989. (Record)
6. Pursuant to section 16-50m of the CGS, the Council, after giving due notice thereof, held a public hearing on this application on October 30, 1989, at 3:45 P.M. and 7:00 P.M. in the Litchfield Middle School Auditorium in Litchfield, Connecticut. (Record)
7. The parties to 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. The Department of Environmental Protection (DEP) filed written comments with the Council pursuant to section 16-50j of the CGS. (Record)
9. The Council of Environmental Quality submitted written comments to the Council pursuant to section 16-50j of the CGS. (Record)

Existing State Police Radio System

10. The State Police currently utilize a communications system originally designed in 1940 to service 290 troopers. The current system's inadequacies include: a) inability to provide statewide coverage, b) co-channel interference, and c) a lack of communications between State police and other state/local agencies during emergencies and disasters. (State Police 1, p.5-2)
11. The current point-to-point communications services are provided by leased telephone landlines. The two-way mobile radio is a low-band VHF, voice only, simplex system. (State Police 1, p.8-2)
12. The existing State police communications system has been used for over 40 years without major modifications. There are no methods of procurement of new equipment or application of new technologies that would update this system to meet present or future demands. (State Police 1, p.8-3)
13. Leased landlines have no advantages of speed or security over average home phone lines and are deficient in many aspects related to public safety. Specific problems with the network include a) lack of capacity for system growth, b) inability to configure the system for tactical and other emergency situations, c) inherent noise levels, d) frequent circuit failures, e) unacceptable delays in restoring full service after circuit failures, and f) the potential for a disastrous outage during periods of inclement weather when communications are crucial for dispensing information and delivery of aid to the citizens of the State. (State Police 1, pp. 5-2, 5-3, and 9-1)
14. Low-band VHF frequencies experience "skip" interference from other systems. Atmospheric conditions cause radio signals to propagate hundreds of miles and can interfere with or block local transmission. (State Police 1, p.9-5)
15. The current radio system has poor or no communication areas and cannot be totally compensated for by propagation or antenna techniques available to low-band VHF. (State Police 1, p.9-5)
16. Features such as voice encryption and mobile data terminals are not available because of equipment and technology limitations imposed by operating on the low-band VHF. The current radio system cannot support the digital data transmission speeds required for either of these uses. (State Police 1, p.9-5)
17. Problems and design faults with the existing two-way radio system include: a) 40 year old design not sized for the traffic demands of an existing 1100 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 subjected to propagation and noise problems, f) areas of poor or no communication ("dead spots"), and g) no voice encryption or mobile data terminals (MDT) are available. (State Police 1, pp.9-3 and 9-4)

18. The State Police investigated and rejected the following five other radio systems for various reasons.
- 1) Copper wire landlines could not support the numbers of channels or transmission speed required with the use of a computer driven operation;
 - 2) Satellite terminals were cost prohibitive in usage charges;
 - 3) Fiber optic installation charges on the number of miles necessary was an unaffordable expense and susceptible to damage and extended outages;
 - 4) Leased fiber optic networks did not offer any cost savings or managerial and budgetary control; and
 - 5) An analog microwave network did not provide higher transmission speed, system expansion, or intelligence networking. (State Police 1, p.11-1 and 11-2; Transcript pp.74-78)

Proposed State Police Radio System

19. The proposed State Police Connecticut Telecommunication System (CTS) would be an 800 MHz trunked two-way radio system, consisting of 49 tower sites of which ten to fifteen sites would have to be acquired for construction, connected by a digital microwave network. The system would provide statewide coverage in about three to five years. (State Police 1, pp.5-3 and 5-4; Transcript p.16)
20. The Connecticut State Police with other public agencies cooperated in designing a plan through both a Tri-State and New England region for application of Federal Communications Commission (FCC) licenses. These plans would qualify those agencies as 800 MHz users. This frequency is capable of supporting the number of units in use, channel loading, and channel traffic requirements that are not available in other bands. (State Police 1, pp. 2-13 and 2-14; Transcript, pp. 16-18)
21. Selection of an 800 MHz trunked radio system was based on the demands and systems available to meet them. Mobile data terminals, voice encryption, support of 2000 units, and the capability of expansion could only be serviced by the latest trunked system employing digital addressing for radio control. The lack of other frequencies to handle the number of channels required opened a portion of the 800 MHz spectrum to public safety. (State Police 1, p.11-3)
22. The proposed CTS would handle large volumes of daily radio traffic as well as large numbers of simultaneous messages generated during emergency situations. The proposed CTS would be designed, developed, and implemented to enhance public safety, would increase levels of security for sworn personnel, and would provide service well into the next century while allowing for technological advancements. (State Police 1, p.10-1)

23. The basic architecture of the CTS network was determined by existing troops, district commands, headquarters, and other fixed locations including hilltop radio base stations. Four new sites would be added to provide line-of-site path for digital microwave and seven new sites would be added to meet propagation coverage requirements of the 800 MHz trunked two-way radio system. (State Police 1, p.12-1)
24. Because dispatch centers are housed at each troop, telecommunications towers must be located at each troop. Remote towers act as interconnection points and help alleviate effects of earth curvature and topographical features. (State Police 1, p.12-1; Transcript, pp.23 & 24)
25. The digital microwave network would provide known radio control, voice and data circuits, higher transmission speed for computer operation, digital intelligence interfacing at remote sites, and a building block expansion capacity. (State Police 1, p.11-2)
26. The design objective of the digital microwave radio network would provide an average path reliability of approximately 99.9 percent or 5.3 minutes of outage per year per path. (State Police 1, pp.12-2 and 12-3)
27. Tower design loadings include all current antennas (point-to-point and two-way radio), future requirements for other State/local agencies, and a hypothetical expansion of three 6-foot diameter dish antennas mounted at the top of the tower. The towers would be designed to withstand a wind loading of 90 mph wind with 1/2 inch of radial ice in accordance with EIA Standard 222-D. (State Police 1, pp.12-1, 12-2, and 13-E-1)
28. Self-supporting lattice towers were selected because of cost, greater structural strength, simpler maintenance, and their capacity for multiple use. (State Police 1, p.12-2; State Police 3, Q.2)
29. Propagation coverage of the trunked 800 MHz two-way radio system would be based on a 95 percent confidence level for a portable radio to ensure coverage in each troop area. (State Police 1, p.12-3)
30. Propagation analysis of 800 MHz coverage is considered a second priority to digital microwave service. Although coverage is deficient in some areas and could be corrected by directional antennas or additional towers, the application addresses a digital microwave radio system large enough to cover the State of Connecticut. (Transcript, pp.80-85)
31. The electromagnetic radio frequency power density at the base of the proposed telecommunications towers, assuming all channels operating simultaneously at maximum allowable power and broadcasting from the lowest set of antennas, would be 3.8122 percent of the safe limit at the Troop "B" site, 2.9196 percent of the safe limit at the Riggs Hill site, and 2.8692 percent of the safe limit at the

- Troop "L" site and would all be well below the American National Standards Institute (ANSI) safe limit standard of 2.92 mW/cm² as adopted by the State of Connecticut under CGS section 22a-162. (State Police 1, p.13-O-1; State Police 7)
32. Each proposed site facility would be supplied emergency power via an engine and electric generator set. Troop "B" and Riggs Hill would each be powered by a 35 KW generator and Litchfield would have a 15 KW generator. These engines would be fueled by propane. (State Police 1, section 14; State Police 3, Q.10)
 33. Propane fuel tanks would be buried at each proposed site facility. Troop "B" and Riggs Hill would each have an approximately 3-foot by 10-foot tank holding 500 gallons of fuel while Litchfield would have an approximate 2 1/2-foot by 8-foot tank holding 250 gallons of fuel. These tanks are sized to provide three days of operation at maximum load. (State Police 1, section 14; State Police 3, Qs.9 and 10)
 34. The Department of Environmental Protection states "there are no known extant populations of federally endangered and threatened species or Connecticut 'species of special concern' occurring at the sites in question." (State Police 1, section M and 14)
 35. On September 1, 1988, the FAA found that the proposed telecommunications towers would not be a hazard to air navigation and obstruction marking or lighting would not be necessary. (State Police 1, section L; State Police 16)
 36. According to the Connecticut Historical Commission, the proposed telecommunications facilities "will have no effect on historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places." (State Police 1, section M and 14)

North Canaan Troop "B" Site

37. A 120-foot self-supporting, lattice tower is proposed to be constructed on the south side of Troop "B" barracks on Route 7 in North Canaan, Connecticut. (State Police 1, p.13-D-1)
38. The existing barracks consists of an approximately 25-foot by 65-foot building with telecommunications antennas mounted on the roof. (State Police 1, section H, Troop B)
39. A proposed 15-foot by 33-foot equipment shelter would be constructed adjacent to the proposed telecommunications tower. The State Police would utilize approximately 289 square feet of the proposed building. One hundred thirty square feet would be available to other users and 76 square feet for storage of an emergency engine and electric generator. (State Police 1, section 14, Troop "B"; State Police 14, Q.34)

40. Antennas on the proposed Troop "B" tower would all belong to the State Police. The antennas would consist of one eight-foot microwave dish antenna mounted at 116 feet, and four two-foot corner reflectors and a seven-foot monopole mounted at the top of the tower. (State Police 6 and 7; Transcript p.39)
41. The fall zone of the proposed tower is within property owned by the State Police. The proposed equipment shelter and existing Troop facilities would be within the fall zone. (State Police 14, Attachment 13)
42. Access to the proposed Troop "B" site would be via an existing driveway from Route 7 leading to a parking area along side the barracks. (State Police 1, section 14, Troop "B")
43. A wetland is located on the west edge of the Troop "B" barracks property. The proposed facility would be located approximately 135 feet from the wetland. No construction activities would occur within 100 feet of the wetland. Water quality on and around the proposed facility would be unchanged as a result of construction and operation of this facility. (State Police 1, section 14, Troop "B")
44. Land use in the general vicinity of the proposed site consists of commercial, industrial, and some residential development along Route 7. There is no zoning classification for the proposed Troop "B" CTS site. (State police 1, p.13-D-1)
45. The latest cost estimate of construction for the proposed Troop "B" site in North Canaan, Connecticut is as follows:
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|--------------------------------------|-----------------|
| 1. Radio Equipment | \$708,600 |
| 2. Tower and Antennas | \$98,900 |
| 3. Power Systems | \$34,900 |
| 4. Site, Road, and Shelter | \$97,400 |
| 5. Miscellaneous (Fees, Dismantling) | <u>\$36,700</u> |
| Total Cost | \$976,500 |
- (State Police 19)

Litchfield Troop "L" Site

46. A 180-foot, self-supporting, lattice tower is proposed to be constructed adjacent to the new Troop "L" barracks on Route 202 in Litchfield, Connecticut. This tower would replace an existing 180-foot guyed monopole at the existing Troop "L" barracks located a short distance north along Rt. 202 from the proposed site. The existing monopole would be removed after completion of the proposed tower. (State Police 1, pp.13-D-5 and 13-G-6)
47. A proposed 15-foot by 25-foot equipment shelter would be constructed adjacent to the proposed tower. The State Police would utilize 147 square feet of space, while 130 square feet would be available to other users. Approximately 98 square feet would remain for storage of the emergency engine and electric generator set. (State Police 1, section H; State Police 14, Q.34)

48. Access to the proposed Litchfield facility would be via an approximately 400-foot driveway from Route 202. (State Police 1, section 14, Litchfield)
49. Antennas on the proposed Troop "L" tower are as follows: Litchfield County Dispatch would have two 12-foot dipole array antennas mounted at approximately 125 feet and 150 feet; Office of Emergency Management would have a six-foot whip mounted at 130 feet, an eleven-foot dipole array mounted at approximately 135 feet, and two 12-foot dipole array antennas mounted at approximately 145 feet and 155 feet; and the State Police would have an eight-foot diameter dish mounted at 177 feet and two seven-foot folded monopoles mounted at the top. (State Police 6 and 7; Transcript pp. 39 and 40)
50. Litchfield County Dispatch (LCD) represents a number of town ambulance services and fire companies. LCD would centralize their dispatching services in the new State Police Troop "L" barracks. Attachment of antennas to the proposed tower would enable LCD to provide a more efficient and secure communications system to its member towns. (State Police 13)
51. State of Connecticut, Office of Emergency Management would move its Area 5 office from Torrington to the new State Police Troop "L" facility to use the proposed tower and improve emergency communications needs to Litchfield and Western Hartford County towns. (State Police 11)
52. The proposed Litchfield CTS tower would be located a minimum of 150 feet east from a wetland. Construction and operation of the proposed facility would not affect the wetland. (State Police 1, section 14, Litchfield)
53. The buildings of the Troop "L" barracks would be the only structures within the fall zone of the proposed tower. (State Police 14, Q,31)
54. On April 19, 1989, the Town of Litchfield Conservation Commission reviewed the proposed Troop "L" telecommunications facility site plans and determined that no regulated Inland Wetland and Watercourse activity is involved. (State Police 1, section M)
55. The zoning for the proposed Troop "L" CTS site is B1/Business. (State Police 1, p.13-D-5)
56. The latest cost estimate of construction for the proposed Troop "L" facility in Litchfield, Connecticut is as follows:

1. Radio Equipment	\$708,600
2. Tower and Antennas	\$120,100
3. Power Systems	\$26,500
4. Site, Road, and Shelter	\$84,300
5. Miscellaneous (Fees, Dismantling)	<u>\$37,400</u>
Total Cost	\$976,900

(State Police 19)

Norfolk Riggs Hill Site

57. A 180-foot, self-supporting, lattice tower is proposed to be constructed on Riggs Hill off Winchester Road in Norfolk, Connecticut. It would replace an existing 180-foot, guyed monopole. (State Police pp.13-D-3 and 13-G-3)
58. A proposed 15-foot by 34-foot equipment shelter would be constructed adjacent to the proposed tower. The State Police would utilize 289 square feet, with 130 square feet available to other users and 76 square feet for storage of an emergency engine and electric generator set. (State Police 1, section 14, Riggs Hill; State Police 14, Q.34)
59. Antennas on the proposed Riggs Hill tower would belong to the State Police except for two 2-foot microwave dishes mounted at approximately 100 feet belonging to the Department of Education. The State Police antennas would consist of two six-foot diameter dishes mounted at 70 feet and 105 feet, a 12-foot dipole array antenna mounted at 168 feet, and a seven-foot monopole and four 13-foot whip antennas mounted at the top. (State Police 6 and 7; Transcript p.39)
60. The Department of Education would implement an Instructional Television Fixed Service through microwave linkage. Educational programming for students and professional development for staff would become available to all state school districts. (State Police 12)
61. The existing access to the Riggs Hill site is via an approximately 325-foot footpath along an existing power line right-of-way which supports the facility. The grade of the ingress/egress is very steep with an approximate slope of 25 to 30 percent. Improvements to the foot path could be made to ease entry/exit to the proposed tower site. (State Police 1, section H, Winchester; Transcript pp.30, 32, 33, and 36)
62. Preventative maintenance visits for a microwave digital system would be approximately once a month and as needed for a two-way radio system with a minimum once per year FCC inspection. In addition, access to the site would be necessary to deliver propane fuel for the emergency generator. (Transcript pp.30 and 32)
63. An approximate 1500-foot accessway is proposed to be constructed at the Riggs Hill site. This proposed accessway would approach the proposed tower site from the north off Winchester Road. (State Police 1, section H; Transcript, pp.88-89)
64. Presently, along the proposed accessway, a ten-foot wide path is clear of trees and sparse with underbrush and deadfall. The area north of the proposed Riggs Hill site is naturally wooded with slopes ranging from approximately one percent at the base of the proposed accessway to approximately 27 percent near the top of the proposed accessway. The proposed accessway would be twelve feet wide and made up of broken stone base with a process aggregate surface. (State Police 3, Q.19)

65. An approximate 500-foot section of the accessway would be cut or filled to achieve an 18 percent slope. Because Connecticut Guidelines for Soil Erosion and Sediment Control require a maximum two to one slope for excavated areas, the width of excavation for this section of the proposed access road would be approximately 55 feet and would require the removal of trees and vegetation. (State Police 1, section 14 Norfolk pp.7 and 8; State Police 14, Drawings 9 and 10; Transcript pp.87-89)
66. The fall zone of the proposed tower at the Riggs Hill site would encroach private property to the south by 135 feet, assuming the radius of the fallen tower is equal to the tower height. No structures except the equipment shelter would be within the fall zone of the proposed Riggs Hill tower. (State Police 14, Q.31 and Drawing #6)
67. The zoning for the proposed Riggs Hill CTS site is rural/residential. (State Police 1, p.13-D-3)
68. The latest cost estimate of construction for the proposed Riggs Hill site in Norfolk, Connecticut is as follows:
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|--------------------------------------|-----------------|
| 1. Radio Equipment | \$422,600 |
| 2. Tower and Antennas | \$105,300 |
| 3. Power Systems | \$34,900 |
| 4. Site, Road, and Shelter | \$242,200 |
| 5. Miscellaneous (Fees, Dismantling) | <u>\$64,000</u> |
| Total Cost | \$869,000 |

(State Police 19)