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 a telecommunications tower and associated equipment in the Town of Westport, Connecticut.	:	Docket 123 Connecticut Siting Council March 29, 1990

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 September 28, 1989, for a Certificate of Environmental Compatability and Public Need (Certificate) for the construction, maintenance, and operation of a telecommunications tower, associated equipment, and a building in the Town of Westport, Connecticut, to provide telecommunications services within Fairfield County. (Record)
2. The application was accompanied by proof of service as required by section 16-50l of the CGS. (Record)
3. Affidavit of newspaper notice as required by section 16-50l of the CGS was supplied by the applicant. (Record)
4. On November 2, 1989, a publicly noticed pre-hearing conference was held at the Council's office in New Britain, Connecticut, and attended by parties and by Katherine Barnard, Planning and Zoning Director, Town of Westport, Connecticut. (Record)
5. The Council and its staff inspected the proposed site in the Town of Westport, Connecticut, on December 14, 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 December 14, 1989, at 3:30 P.M. and 7:00 P.M. in the Westport Town Hall Auditorium in Westport, 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)

Existing State Police Radio System

9. 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, pp.5-2 and 9-3)

10. The current point-to-point communication services are provided by leased telephone landlines. The two-way mobile radio is a low-band VHF, voice only, simplex system. (State Police 1, pp.8-1 and 8-2)
11. The existing State police communication 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)
12. Leased landlines have no advantages of speed or security over average home phone lines and are deficient in many aspects for purposes of public safety. Specific problems with the existing network include: a) lack of capacity for system growth, b) inability to configure 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 region-wide 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)
13. Low-band VHF frequencies experience "skip" interference from other telecommunications systems. In addition, atmospheric conditions cause the existing low-band radio signals to propagate hundreds of miles and can interfere or block local transmission. (State Police 1, p.9-5)
14. 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)
15. Features such as voice encryption and mobile data terminals are not available because of equipment and technology limitations imposed by 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)
16. Problems and design faults with the existing two-way radio system include: a) the 40 year old design is not sized for the traffic demands of an existing 1100 trooper force, b) the physical structures are old and in need of replacement, c) the 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) some areas have poor or no communications ("dead spots"), and g) no voice encryption or mobile data terminals (MDT) are available. (State Police 1, pp.9-3 and 9-4)

17. The State Police investigated and rejected five other communications systems for the following 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 were 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 intelligent networking. (State Police 1, p.11-1 and 11-2)

Proposed State Police Radio System

18. The proposed State Police Connecticut Telecommunication System (CTS) would be a digital microwave network for point-to-point communication and an 800 MHz trunked two-way radio system consisting of 49 tower sites throughout the State of Connecticut. (State Police 1, pp.5-3 and 5-4)
19. The Connecticut State Police with other public agencies cooperated in designing plans 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. 2-12 and 2-13)
20. 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 for public safety purposes. (State Police 1, p.11-3)
21. 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, 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)

22. The basic architecture that links the CTS network together would be radio microwaves between 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 paths for digital microwaves 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)
23. Because dispatch centers are housed at each troop, telecommunications towers must be located at each troop. Remote towers act as interconnection points to help alleviate effects of earth curvature and topographical features. (State Police 1, p.12-1; State Police 2, Q.14)
24. The digital microwave network would provide known radio control, voice and data circuits, higher transmission speed for computer operation, intelligent digital interface permitting system reconfiguration at remote sites, and a building block expansion capacity. (State Police 1, p.11-2)
25. The design objective of the digital microwave radio network would be for an average path reliability of approximately 99.9 percent or 5.3 minutes of outage per year per path. (State Police 1, p.12-3)
26. Tower design loadings include all current antennas (point-to-point and two-way radio), future requirements of other State/local agencies, a hypothetical expansion of three 6-foot diameter microwave dish antennas mounted at the top of the tower, and other private entities that the State Police would allow to share the tower. The tower would be designed to withstand a wind loading of 90 mph wind with 1/2 inch of radial ice and in accordance with EIA Standard 222-D. (State Police 1, pp.12-1, 12-2, and 13-E-1; State Police Late File Exhibit 6, no. 6)
27. Self-supporting lattice towers were selected because of greater structural strength, simpler maintenance, and their capacity for multiple use. (State Police 1, p.12-2)
28. The proposed site would not broadcast an 800 MHz two-way radio signal. The proposed Westport Troop "G" site would transmit a microwave signal to an existing Wilton site which would broadcast the 800 MHz two-way radio signal to cover the Westport area. (State Police 1, pp.2-8 and 12-3; State Police 2, Q.11)
29. The digital microwave network would connect all State Police facilities and would provide radio control, computer connection, and emergency telephone circuits in the event the telephone landline network becomes overloaded or inoperative. (State Police 1, p.2-11)

Proposed State Police Telecommunications Tower

30. A 180-foot self-supporting, lattice tower is proposed to be constructed, on an existing paved area, on the southeast corner of the State Police Troop "G" barracks on U.S. Route 1, Boston Post Road East in Westport, Connecticut. (State Police 1, p.13-D-1; State Police 2, Drawing no. T129-18)

31. An existing 80-foot, guyed tower is located on top of the 20-foot high, Troop "G" building and would be removed once the proposed tower is operational. (State Police 1, p.13-G-1; Transcript, p.65)
32. The State Police considered and rejected three sites in the Westport area. One site on State land was rejected because the area was undesirable to develop in terms of unstable soils, difficult access, increased costs, and being more visible than the proposed tower. The other two sites on Town of Westport land would require construction and operation of additional towers which would not alleviate the need of a telecommunications tower at the State Police, Troop "G" barracks in Westport. (State Police 1, section 15; State Police 2, Q.27; Transcript, pp.29-34 and 94)
33. The proposed tower would support operations of the State Police, Fairfield County Chief of Police Association, and Metro Mobile CTS of Fairfield County Inc., (Metro Mobile). (State Police 1, pp.5-1, 15-2, and 15-3)
34. The State Police antennas would consist of an 8-foot microwave dish antenna mounted at 176 feet, a 6-foot microwave dish antenna mounted at 170 feet, two 12-foot whip antennas mounted at 165 feet, a 5-foot whip antenna mounted at 130 feet and two 14-foot whip antennas with one mounted at 125-feet and the other at 110-feet. (State Police 1, section 13-5; State Police 4)
35. The proposed facility is part of a State Police plan to upgrade its communication equipment to enhance public safety, to share tower space with other users, and to avoid the construction of additional towers within the State. (State Police 1, pp.3-1, 3-2, 5-3, and 10-1)
36. The Troop "G" barracks is the dispatch center for Fairfield County and it must be interconnected to the CTS by a microwave radio link which includes a telecommunications tower. (State Police 2, Q.14)
37. The existing 960 MHz radio link from Troop "G" to Wilton requires a tower height of 180 feet to correct an existing path clearance problem. This existing system would be used for approximately one and a half years until replaced by the proposed CTS microwave point-to-point system. The design objective of the CTS is to establish and maintain clear microwave paths. To establish a clear microwave point-to-point link to a 180-foot Wilton tower, a 180-foot tower is necessary to clear intersecting topography and vegetation. (State Police 2, Qs.14, 19, 20, and 26; State Police 3, Qs.37 and 40; Transcript, pp.29 and 39)
38. A proposed 20-foot by 40-foot equipment shelter would be constructed adjacent to the proposed telecommunications tower. Approximately 50 percent of the proposed equipment shelter would be used by the State Police with approximately one quarter of the State Police space reserved for future use. The remaining space would be used by Metro Mobile. (State Police 2, Drawing no. T129-18; State Police 3, Q.41)

39. The proposed facility is located within a general business zone. (State Police 1, p.13-D-1 and section 14, p.11; State Police 2, Q.25, Attachment 10)
40. There are approximately 52 residences within a 1,000-foot radius of the proposed telecommunications tower. The nearest residence is approximately 400 feet from the proposed tower. (State Police 1, section 15, p.15-6; State Police 2, Q.28)
41. Access to the proposed site would be via an existing driveway, along the east side of the Troop "G" barracks, from Boston Post Road East. (State Police 2, Drawing no. T129-18)
42. An inland wetland is approximately 100 feet west of the proposed tower. No construction activities would occur within 100 feet of the inland wetland and provisions to control erosion and sedimentation would be implemented during construction. (State Police 1, section 14, p.5)
43. The fall zone of the proposed tower would encompass property owned by the State of Connecticut's Department of Public Safety and Department of Transportation. The Troop "G" facility would be the only building within the fall zone. (State Police 2, Q.28, Attachment 11)
44. The electromagnetic radio frequency power density at the base of the proposed telecommunications tower, assuming all channels operating simultaneously at maximum allowable power and broadcasting from all antennas, would be 9.7378 percent (2.9605 percent from State Police antennas and 6.7773 percent from Metro Mobile antennas) of the American National Standards Institute (ANSI) safe limit standard, as adopted by the State of Connecticut under CGS section 22a-162. (State Police 4)
45. The proposed site facility would be supplied emergency power by a propane fueled engine and 45KW generator which would be tested once a week for approximately 15 minutes and might operate several times per year for two or three hours. (State Police Late File 5; Transcript pp. 61 and 62)
46. The emergency engine/generator would have noise levels ranging from 68 to 90 decibels at approximately 40 feet from the nearest property line. By-products of combustion emitted from the engine would be low. Filters could be used to reduce both noise and exhaust emissions. (State Police 2, Drawing T129-18; State Police Late File 5)
47. Heating and air conditioning within the equipment building would be powered by electricity. (State Police 1, section 14, p.6)
48. 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 M, DEP letter dated May 9, 1989, and section 14, pp. 9 and 10)
49. On August 10, 1989, the FAA found that the proposed telecommunications tower 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)

50. The proposed telecommunications facility would have no effect on historic, architectural, or archaeological resources. (State Police 1, section M and section 14, p.11; Connecticut Historical Commission letter dated August 7, 1989)
51. The cost estimate for construction to be incurred by the Division of State Police is as follows:

1. Radio equipment	$708,600
2. Antennas	$15,600
3. Power systems	$26,500
4. Tower and shelter	$0
5. Miscellaneous	$27,200
Total cost	$777,900.

(State Police 2, Q.3, Attachment 3)
52. State Police would own the proposed tower, equipment building, and fence upon completion of construction and would permit Metro Mobile to use the new facility pursuant to a 25 year license. (State Police Late File 6, no. 4 and no. 14)

Proposed Metro Mobile Cellular Site

53. Metro Mobile would be responsible for cost, design, construction, and maintenance of the proposed tower, equipment building (including heat and air conditioning), and fence. (State Police 2, Q.4; State Police Late File 6, no. 1 and no. 11)
54. Metro Mobile would occupy space on the proposed State Police Troop "G" tower. On the proposed tower two 13-foot whip-type transmit antennas would be mounted at the 140-foot level, six 12-foot whip-type transmit/receive antennas with deflectors would be mounted at the 155-foot level, and a 6-foot microwave dish antenna would be mounted at approximately 177 feet. (State Police 1, section 13-J and section 15, Metro Mobile)
55. Metro Mobile would provide additional cellular service along routes I-95, U.S. 1, and the Merritt Parkway in the Westport and Fairfield areas and cover areas that currently do not receive adequate coverage from existing cellular sites. (State Police 1, section 15, Metro Mobile)
56. The proposed Westport cellular site would be a six sector site with each sector having a maximum of 12-15 channels with the ability to handle approximately 600 calls per peak hour. (State Police 2, Q.32; State Police 3, Q.42)
57. Metro Mobile's proposed Westport site would off-load existing cellular traffic from sites in Fairfield, South Norwalk, and Wilton, Connecticut, which would increase frequency reuse allowing for an increased level of service to customers. (State Police 2, Q.30; State Police 3, Q.44)
58. Cellular sites in South Norwalk and Fairfield would be converted to sectorized sites in 1990. The Wilton site would remain omnidirectional. (State Police 2, Q.32)

59. Metro Mobile would connect the proposed Westport cellular site with their South Norwalk mobile telephone switching office (MTSO) site via a microwave link. This would avoid added cost and use of leased landlines. Also, the State Police, in agreement with Metro Mobile, would use this microwave link through South Norwalk to a proposed facility in Greenwich for future 800 MHz radio transmission. (Transcript pp.126-128)

60. Metro Mobile would abandon the proposed tower if they were unable to correct any interference with the State Police telecommunications system. (State Police Late File 6, no. 10)

61. The construction cost estimate to be incurred by Metro Mobile is as follows:

1. Cellular Radio equipment	$437,400
2. Tower and Antennas	$51,200
3. Power systems	$27,000
4. Equipment shelter	$80,000
5. Miscellaneous	$132,800
Total cost	$728,400.

(State Police 1, section 15, Metro Mobile)