DOCKET NO. 69

AN APPLICATION OF METRO MOBILE CTS OF HARTFORD, INC., FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF FACILITIES TO PROVIDE CELLULAR SERVICE IN THE TOWNS OF KILLINGWORTH, MIDDLETOWN, AND OLD SAYBROOK, CONNECTICUT.	:	CONNECTICUT SITING COUNCIL
	:	February 18, 1987

F I N D I N G S O F F A C T

1. Metro Mobile CTS of Hartford, Inc. (Metro Mobile), 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 18, 1986, for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of telecommunications towers and associated equipment buildings in the towns of Killingworth, Middletown, and Old Saybrook to provide domestic public cellular radio telecommunications service (cellular service) in the Hartford New England County Metropolitan Area (Hartford NECMA). (Record)
2. The fees as prescribed by section 16-50v-1 of the Regulations of State Agencies (RSA) accompanied the application. (Record)
3. The Council and its staff made an inspection of the proposed Killingworth, Middletown, and Old Saybrook sites on November 3, 1986. (Record)
4. Pursuant to section 16-50m of the CGS, the Council, after giving due notice thereof, held public hearings on this application in the Haddam-Killingworth Regional High School in Ponset, beginning at 7:00 P.M. on November 3, 1986; in the Old Saybrook Town Hall in Old Saybrook, beginning at 10:00 A.M. on November 18, 1986; in the Municipal Building in Middletown beginning at 10:45 A.M. on

December 9, 1986; and in the Municipal Building in Middletown beginning at 11:00 A.M. on December 18, 1986. (Record)

5. 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)

6. The following state agency filed written comments with the Council pursuant to section 16-50j of the CGS: the Department of Environmental Protection (DEP). (Record)

7. The Council took administrative notice of its record in dockets 40, 51, 56, and 58. (Tr. 11/3/86, p. 18)

8. Cellular service consists of small overlapping broadcast regions, two to ten miles in diameter, known as cells. Each cell is served by a transmitter limited by the Federal Communications Commission (FCC) to no more than 100 watts effective radiated power per channel. Each cell has a central switching point containing electronic apparatus uniting the cells into a system. Mobile units are limited by the FCC to a maximum of seven watts of transmitted power. (Docket 58, Finding 13)

9. For the purposes of cellular service construction permit applications, the FCC has defined a NECMA consisting of Hartford, Tolland, and Middlesex Counties. (Docket 58, Finding 14)

10. The FCC requires that a licensee serve at least 75 percent of its licensed service area within three years of obtaining an operating license or risk losing the license. (Docket 58, Finding 15)

11. Cellular service is an improved mobile telephone service. To date, the Department of Public Utility Control (DPUC) has regulated mobile telephone service. Eventually, cellular service could replace the existing simplex mobile service. The FCC has classified cellular service as a form of basic local exchange service, which also would be subject to DPUC regulation. (Docket 58, Finding 16)

12. The FCC has determined that a national public need exists to improve the present mobile telephone service, due to the current system's limited capacity, long waiting lists nationally, and poor quality service, which have created congested channels and long waiting times. (Docket 58, Finding 17)

13. The FCC has established the technical standards for cellular service to ensure the efficient use of the allotted frequency spectrum and to ensure nationwide compatibility. (Docket 58, Finding 18)

14. The FCC has pre-empted the state's regulation of cellular service in three major areas: technical standards, market structure, and state certification prior to federal application for a construction permit. (Docket 58, Finding 19)

15. Applicants for FCC cellular system authorizations are not required to demonstrate a public need for cellular service, because the FCC has exercised its primary jurisdiction to determine that there is a need for cellular service generally and to encourage the development of cellular service nationwide. (Docket 58, Finding 20)

16. The FCC has acknowledged state jurisdiction with respect to charges, classifications, practices, services, facilities, and regulation of service by licensed carriers. (Docket 58, Finding 21)

17. According to FCC rules, there must be two licenses awarded in each NECMA to provide competition. One is awarded to a wireline company, the other to a non-wireline company. (Docket 58, Finding 22)

18. The FCC defines a "reliable service contour" as an area having a signal quality greater than or equal to 39 dBu. The FCC requires 75 percent coverage of the cellular geographic service area. (Docket 58, Finding 23)

19. Cell-splitting accommodates the future growth of demand for cellular mobile service. Adding a cell between existing cells increases the number of calls which can be handled in an area. Cell-splitting adds cell sites containing lower power antennas, converts omnidirectional antennas to directional antennas, or both. (Docket 58, Finding 24)

20. New cells achieved by cell-splitting may require additional towers and/or associated equipment. (Docket 58, Finding 25)

21. An omnidirectional antenna radiates in 360 degrees, but may be blocked by part of the tower itself, an effect called shadowing. Terrain and buildings can also cause shadowing. (Docket 58, Finding 26)

22. Shadowing in urban areas can be reduced by overlapping coverage from two cell sites. Such overlapping fills in holes from shadowing and increases the possible number of simultaneous conversations. (Docket 58, Finding 27)

23. The potential for intermodulation interference and shadowing may be significant when antennas broadcasting independent radio signals are located on the same tower. (Docket 58, Finding 28)

24. The FCC has authorized Metro Mobile to construct a cellular system to serve the Hartford NECMA. (Metro Mobile 1, p. 9)

25. To begin its search for potential cellular tower sites, Metro Mobile developed a hexagonal grid for the area to be served, with the center of each hexagon representing the centroid of a theoretical primary cell site search area. For uneven terrain, secondary cell sites were considered. (Metro Mobile 1, p. 26)

26. Primary cell site search areas have a radius of 1.2 miles from the centroid. Secondary search areas have a 0.6 mile radius. (Metro Mobile 1, p. 27)

27. Metro Mobile based site selections on the location of existing towers; elevation; impacts on residential, historic, scenic, or environmentally sensitive areas; possible interference from airports, transmission lines, or broadcast facilities; ease of access; utility service; and computer modeling of coverage. (Metro Mobile 1, pp. 26-28)

28. With the addition of the three sites proposed in this application, Metro Mobile would achieve coverage of 76 percent of the Hartford NECMA. Metro Mobile's present coverage of the Hartford NECMA is 63 percent. (Metro Mobile 1, p. 21)

29. Each of the three proposed sites initially would be equipped with eight channels. The proposed system is designed to facilitate the use of portable units. (Metro Mobile 2, Q. 22; Tr., 11/3/86, p. 78)

30. Each proposed tower site would contain a telecommunications tower and associated equipment building. The proposed Killingworth and Middletown sites would each contain a Rohn SSV heavy series, self-supporting lattice tower. The towers are 22 feet at the base on

each side, triangular in shape, and taper to a width of four and one-half feet at the top. (Metro Mobile 1, p. 12; Tr., 11/18/86)

31. Each lattice tower would support two 11-foot, whip-type antennas with two-foot mountings on three-foot sidearms at the top of the structure, thus adding a total of 13 feet to the height of the towers. Three dual, eight-foot reflectorized antennas with two-foot mountings on six-foot sidearms would be located ten feet below the top of the tower. (Metro Mobile 1, p. 13)

32. The proposed Old Saybrook site would contain a 160-foot Valmont radio mast monopole. This monopole would be 25 to 28 inches in diameter at the base, tapering to about five inches in diameter at the top. Two triangular antenna support platforms would be mounted on the proposed monopole, one at the 147-foot level, and one at the 160-foot level. The platforms would be triangular in shape, 10 feet wide on a side, and four to six inches thick. Two whip transmit antennas, each two inches in diameter, would add 13 feet above the top of the upper platform. Six receive antennas, each nine feet in length, would be mounted below the lower platform. (Metro Mobile 1, p. 12; Metro Mobile 1, Exhibit G, p. 6; Tr., 11/18/86, p. 154, p. 158, p. 167)

33. All of the towers proposed in this application would be designed for Zone A windloading with one-half inch radial icing under Electronic Industries Association standard RS-222-C. All of the State of Connecticut is within Zone A. (Metro Mobile 1, p. 13)

34. The proposed towers are not identified as obstructions under Federal Aviation Administration (FAA) regulations, and therefore

obstruction marking or lighting would not be necessary. (Metro Mobile Late File 7)

35. The surface of each of the proposed towers would be of weathering galvanized steel. (Metro Mobile 1, p. 12)

36. A single-story electronics equipment building would be constructed near the base of each of the proposed towers. These buildings, constructed of concrete or fiberglass, would house receiving, transmitting, switching, processing, and monitoring equipment, as well as a standy-by power source. The buildings would be approximately ten feet in height and contain approximately 350 square feet. (Metro Mobile 1, p. 13)

37. The proposed equipment buildings would be unmanned. Typical tower site buildings would be accessed by a 12-foot wide crushed stone driveway, and would be surrounded by an eight-foot chain link fence with a twelve-inch security wire at the top. (Metro Mobile 1, p. 14)

38. To avoid interference with the existing Southern New England Telephone Company (SNET) system, as required by the FCC, cellular frequency coordination would be achieved with correct frequency selection, antenna placement, shielding, and filtering. (Docket 58, Finding 49)

39. For the proposed frequency range of 870-890 Mhz, the allowable human exposure over a 0.1 hour period is a power density of 2.9 mW/cm^2, according to the American National Standards Institue (ANSI) Standard. The electromagnetic radio frequency power densities at all proposed sites would be several orders of magnitude below these standards. The standards are intended to eliminate

adverse effects on the human body. (Metro Mobile 1, Exhibit N; Docket 58, Finding 52; Docket 58, Pre-Hearing Question 42)

40. The proposed Killingworth site is a 100-foot by 100-foot, leased parcel of land owned by James H. and Pauline Lally of Clinton, Connecticut. The proposed site is located behind the Atlantic Carting Company, 300 feet south of Route 80, and 700 feet west of the Deep River town line. (Metro Mobile 1, Exhibit 2, p. 3)

41. The Lally property is located within two zones. It is within an industrial zone to a depth of 300 feet from Route 80, with the remainder residential. Most of the proposed site is in the residential zone. The Lally property is bordered by rural residential zones on three of its four sides. The proposed tower would not meet Town of Killingworth zoning code set back requirements or height restrictions applicable to the industrial zone. The owner of the proposed site would be willing to allow Metro Mobile to relocate its proposed site to a location within the industrial zone. (Tr., 12/9/86, pp. 194-198; Tr., 11/3/86, p. 96)

42. The proposed Killingworth lattice tower would be 160 feet in height, resulting in a 173-foot structure when the 13 foot antennas are included. A 15.5-foot by 21-foot equipment building would be located at the base of this tower. (Metro Mobile 1, Exhibit 2, pp. 15-17, p. 21)

43. The proposed Killingworth tower would provide coverage along portions of Routes I-95, 1, 9, 79, 80, 81, 145, 148, 153, and 154. Additionally, this site would cover the gap along Route 9 between the Haddam site approved by the Council in Docket 58 and the proposed Old Saybrook site. (Metro Mobile 1, p. 11; Tr., 11/3/86, p. 81)

44. The Killingworth Conservation Commission voted unanimously to oppose the proposed Killingworth tower, citing its visibility from many areas of that town. (Town of Killingworth letter of December 10, 1986)

45. The proposed Killingworth site is 410 feet above mean sea level (AMSL). The proposed tower would have some visibility from points along Tower Hill Road, and limited visibility from Spruce Ledge Road and from Kelseytown Road. (Metro Mobile 1, Exhibit 2, p. 15; Tr., 11/18/86, p. 223)

46. The proposed Killingworth site has 35 residences within a 2,000-foot radius and is 700 feet west of the nearest boundary of the Cockaponset State Forest. One owner of a residence within 2,000 feet opposed the proposed site. (Metro Mobile 1, Exhibit 2, p. 5; Metro Mobile 2, Q. 7; Tr., 11/3/86, p. 115)

47. Based on conservative assumptions, the power density level for the proposed Killingworth site would be 0.0043921 mW/cm^2 at the base of the proposed tower. (Metro Mobile 1, Exhibit N)

48. Towers presently located within Killingworth include a 100-foot state police tower on Chestnut Hill Road, a 100-foot Provincial Gas tower on Route 80, a 300-foot AT&T tower on Little City Road, a 371-foot Storer Cable tower on Route 81, and 80-foot and 150-foot towers at the Killingworth Fire Department on Route 81. (Killingworth Late File 2)

49. Metro Mobile considered and rejected several alternative sites in Killingworth. The Storer Cable tower was considered, but rejected due to poor coverage along Route I-95 and little or no coverage along Route 9. The Connecticut Water Company property around the

Kelseytown Reservoir in Clinton was investigated, but was rejected due to low elevations. Connecticut Water Company property around the Killingworth Reservoir was considered, but rejected due to insufficient elevation and the necessity of considerable leveling and tree removal in the construction of an access road. (Metro Mobile 1, Exhibit 2, p. 26)

50. The proposed Middletown site is a leased, 70-foot by 70-foot parcel of land 750 feet south of Brooks Road on property owned by Edward Hill, Jr. It is zoned R-4, and is on land used for agriculture. (Metro Mobile 1, Exhibit 1, pp. 3-4, Metro Mobile 1, Q. 15)

51. The proposed Middletown lattice tower would be 180 feet in height, with a total structure height of 193 feet, including antennas. A 15.5-foot by 21-foot equipment building would be constructed at the base of this tower. (Metro Mobile 1, Exhibit 1, p. 15, p. 21)

52. The access road into the proposed Middletown site would cross a designated inland wetlands area. The owner of the site is unwilling to relocate the access road to avoid the wetlands area. Metro Mobile's access road plan is expected to comply with all Town of Middletown wetlands restrictions and guidelines. (Metro Mobile Late File 8, Late File 10; Metro Mobile 2, Q. 2; Tr., 11/18/86, pp. 209-210)

53. The proposed Middletown tower would provide coverage along sections of Routes 9, 9A, 16, 17, 66, 81, 151, 155, and 196. This site would interface with the approved Haddam site to the south and the approved Portland site to the north. (Metro Mobile 1, pp. 10-11; Metro Mobile Late File 8)

54. The proposed Middletown site is 540 feet AMSL. The proposed tower would have little or no visibility from Brooks Road or from Bear Hill Road. A stand of trees restricts the visibility from Brooks Road. (Tr., 11/18/86, p. 215; Metro Mobile Late File 18)

55. On December 4, 1986, Metro Mobile revised its proposed Middletown site location by moving it 150 feet westward of its originally proposed location. A residence owned by Frank Rak of Bear Hill Road is located approximately 2,000 feet from this proposed site, as revised. There would be an unobstructed view of the upper 50 feet of this tower from the Rak residence. (Metro Mobile Late File 19; Tr., 11/18/86, p. 310; Tr., 12/18/86, p. 55; Rak Exhibit 1)

56. Nineteen residences are located within a 2,000 foot radius of the proposed Middletown site, as revised, and the site is 1,050 feet southeast of the nearest boundary of the Cockaponset State Forest. None of the 19 owners objected to the proposed tower. (Metro Mobile 1, Exhibit 1, p. 5; Metro Mobile 2, Q. 1; Record)

57. Based on conservative assumptions, the power density level for the proposed Middletown site would be 0.0034664 mW/cm^2 at the base of the proposed tower. (Metro Mobile, Exhibit N)

58. Metro Mobile considered and rejected two other potential tower sites in the Middletown area. A business-zoned area located between Route 9 and Saybrook Road was rejected due to low elevation which would necessitate a higher tower with a high degree of visibility to the surrounding developed area. (Metro Mobile 1, Exhibit 1, p. 30)

59. An industrial-zoned property located west of Bear Hill owned by William Guatieri was also considered. The owner insisted that access to this site must cross adjacent public and private lands,

rather than his own property, which would necessitate an access road of 3,500 to 4,000 feet in length. Negotiations on access rights with adjacent property owners may take nine months to one year to finalize. The irregular nature of the terrain surrounding this site makes access difficult. Extensive removal of trees and filling and grading would be required to develop an access road from Brooks Road. Development costs of this access road are estimated at $180,000. This cost does not reflect the cost of obtaining the necessary easements to develop the roadway. Operating and maintenance costs would be approximately $5,000 to $6,000 per year. Although the coverage from this site would have been adequate, the access problem led Metro Mobile to reject this site. (Metro Mobile 1, Exhibit 1, p. 30; Metro Mobile 2, Q. 4; Tr., 12/18/86, p. 32; Metro Mobile Late File 24; Metro Mobile Late File 28)

60. The proposed Old Saybrook site is a leased, 75-foot by 50-foot parcel of land owned by Sorenson and Sorenson Associates and located 450 feet east of the Middlesex Turnpike. (Metro Mobile 1, Exhibit 3, p. 3)

61. The proposed Old Saybrook site is zoned AA-1, which permits single family dwellings on one-acre lots. The proposed tower would not meet applicable Old Saybrook zoning regulations requiring a minimum setback for structures over 35 feet in height. A water tank 75 feet in height and 50 feet in diameter is located 100 feet east of the proposed site. The trees surrounding the proposed site are 60 to 80 feet in height. (Metro Mobile 1, Exhibit 3, p. 3; Metro Mobile 2, Q. 10; Tr., 11/3/86, p. 26; Tr., 11/18/86, p. 273, p. 281; Tr., 12/9/87, p. 90)

62. The proposed Old Saybrook tower is a 160-foot monopole, with a total structure height of 173 feet, including antennas. A 15.5-foot by 21-foot equipment building would be constructed at the base of this tower. Access to this proposed site would be via an existing paved easement road. (Metro Mobile 1, Exhibit 3, p. 3, p. 15, p. 21)

63. The proposed Old Saybrook tower would provide coverage on Routes 1, I-95, 9, 9A, 51, 82, 145, 153, 154, 156, and the marine market in Long Island Sound. If a 140-foot tower were used, Metro Mobile would lose one mile of coverage along Route I-95, one mile along Route 145, two miles along Route 156, one mile along Route 9A, and one mile along Route 1. Moving the proposed site to the west would cause a loss of coverage along the valley in which Route 9 is located. (Metro Mobile 1, p. 11; p. 16; Metro Mobile Late File 11; Tr., 11/3/86, p. 60, p. 67)

64. The proposed Old Saybrook tower would provide some coverage overlap into the New London NECMA to the east across the Connecticut River. Metro Mobile is not authorized to market service in the New London NECMA. (Tr., 11/18/86, pp. 175-177)

65. The proposed Old Saybrook site is 140 feet AMSL. The proposed tower would not be visible from Route 154. The proposed tower would be visible from boats travelling the nearest portion of the Connecticut River, 1.7 miles away. Regarding other locations on the Connecticut River, the proposed tower would not be visible from Joshua Rock, a distance of 4.6 miles, from Lord Cove, 2.6 miles distant, or from Goose Island, 2.5 miles distant. It would be

barely visible fron Calves Island, 2.4 miles away, and would be barely visible from the Old Ferry Tavern site, a distance of 1.85 miles across the Connecticut River. (Metro Mobile Late File 13; Metro Mobile Late File 14; Tr., 11/18/86, p. 173, p. 213, p. 251, p. 257, p. 265)

66. The Connecticut River Gateway Commission opposes the construction of the proposed Old Saybrook tower because of its visibility in the area. The Town of Old Saybrook also opposed the proposed tower. The proposed Old Saybrook site is approximately 3/4-mile outside of the Connecticut River Gateway Commission Conservation Zone. State parks located within the Connecticut River Gateway Commission conservation zone include Gillette Castle in East Haddam and Selden Neck in Lyme. A new State park has been recently established in Old Lyme, on the eastern bank of the Connecticut River, at the Old Ferry Tavern site. In its comments, the DEP raised no objections to the proposed Old Saybrook site. (Connecticut River Gateway Commission letter, 10/30/86; Tr., 11/18/86, p. 244, p. 262; Connecticut River Gateway Commission Exhibit 4; DEP letter of 10/28/86; Record)

67. An applicant for a subdivision has a preliminary plan for approximately 30 homes for the property surrounding the proposed Old Saybrook tower site. (Tr., 11/18/86, p. 213; Tr., 12/9/86, p. 45, p. 89)

68. The existing Old Saybrook SNET cellular tower is 0.85 miles west of the proposed Metro Mobile Old Saybrook site. The nearest home to the proposed Old Saybrook site home is 600 feet northwest of the proposed site. None of the owners of the 45 residences with a 2000-foot radius of the proposed site opposed the proposed tower. (Metro Mobile 2, Q. 9, Q. 10; Record)

69. Towers presently located within Old Saybrook include a 75-foot tower owned by the Connecticut Water Company off of Middlesex Turnpike, a 150-foot SNET cellular tower off of Ingham Hill Road, two 199-foot WLIS AM radio towers west of Route 9, a 180-foot WLIS tower off of Springbrook Road, and a 100-foot AMTRAK tower southeast of Route 154. (Old Saybrook Late File 4)

70. Metro Mobile considered and rejected several potential tower sites in the Old Saybrook area. An industrial-zoned property south of Route I-95 and west of Route 154 was rejected due to low elevation. The Connecticut Water Company property on Obed Heights, which abuts the proposed site, was rejected due to the lack of space for a tower and an equipment building. Property owned by the Connecticut Water Company on Stumpet Hill in Essex was rejected due to high population density and proximity of residents in the area. Property near the WLIS radio towers near Route 9 was rejected due to the incompatibility of cellular radio systems with AM radio broadcast towers. Property along Route 9 approximately eight miles south of the intersection of Route 9 and Plains Road in Essex was rejected due to a residential development planned for the property. A parcel of land on the north side of Viney Hill in Essex was rejected due to the excessive cost of access road construction and the substantial environmental impact which would result. A potential site in Westbrook on Chittenden Hill Road was rejected due to the significant amount of tree clearing which would have been required. (Metro Mobile 1, Exhibit 3, p. 30; Tr., 11/18/86, p. 142)

71. Metro Mobile did not communicate with SNET regarding the sharing of SNET's existing Old Saybrook tower. Metro Mobile's antennas would have to be placed at the 130-foot level of this tower. It is Metro Mobile's understanding that it is SNET's position that two competing carriers cannot share an antenna structure under FCC rules. At the Council's request, Metro Mobile contacted the FCC for a clarification of this matter. Metro Mobile has not received a clarification from the FCC as of February 18, 1987. The potential for intermodulation interference and shadowing may be significant when antennas broadcasting independent radio signals are located on the same tower. Additionally, Metro Mobile determined that the existing SNET Old Saybrook tower site would not be the best location from which to provide coverage to Route 9. Use of this tower by Metro Mobile may require the construction of another tower on Route 9. Metro Mobile 1, Exhibit 3, p. 30; Tr., 11/18/86, pp. 183-184; p. 189; Metro Mobile Late File 15; Docket 58, Finding 28)

72. The proposed Killingworth facility construction, equipment, and improvement costs are estimated as follows:

Radio equipment,	$174,938;
Tower and antenna,	78,600;
Standby power,	6,800;
Equipment building,	75,000;
Miscellaneous,	67,050;
Total	$402,388.

(Metro Mobile Late File 17; Metro Mobile 1, Exhibit 2, p. 18; Metro Mobile 2, Q. 20)

73. The proposed Middletown facility construction, equipment, and improvement costs are estimated as follows:

Radio equipment,	$174,938;
Tower and antenna,	85,200;
Standby power,	6,800;
Equipment building,	75,000;
Miscellaneous,	67,050;
Total	$408,988.

(Metro Mobile 1, Exhibit 1, p. 18; Metro Mobile 2, Q. 19; Metro Mobile Late File 17)

74. The proposed Old Saybrook facility construction, equipment, and improvement costs are estimated as follows:

Radio equipment,	$174,938;
Tower and antenna,	88,200;
Standby power,	6,800;
Equipment building,	75,000;
Miscellaneous,	62,050;
Total	$406,988.

(Metro Mobile 1, Exhibit 3, p. 18)

75. The State Historic Preservation Officer has determined that the proposed Killingworth, Middletown, and Old Saybrook tower sites would have no effect on the state's historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places. (Metro Mobile 1, Exhibit L, p. 1)

76. There are no known existing or historic records of species classified by the U.S. Government as federally endangered or threatened, or of species classified by the State of Connecticut as being of special concern, occurring at any of the proposed sites. (Metro Mobile 1, Exhibit K, p. 1)

77. None of the proposed sites would have a significant adverse impact on DEP State Forest properties. (DEP letter of 10/28/86)