DOCKET NO. 63

AN APPLICATION OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION OF MICROWAVE TELECOMMUNICATION TOWERS IN THE TOWNS OF GLASTONBURY AND MONTVILLE, CONNECTICUT.	:	CONNECTICUT SITING COUNCIL
	:	August 4, 1986

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

1. The Department of Environmental Protection (DEP), 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 April 24, 1986, for a certificate of environmental compatibility and public need (certificate) for the construction, maintenance, and operation of telecommunication towers and associated equipment in the Towns of Glastonbury and Montville, Connecticut. (Record)
2. The fee as prescribed by section 16-50v-1 of the Regulations of State Agencies (RSA) accompanied the application. (Record)
3. The application was accompanied by proof of service as required by section 16-501 of the CGS. (Record)
4. Affidavits of newspaper notice as required by statute and section 16-501-1 of the RSA were also filed with the application. (Record)
5. The Council and its staff made an inspection of the proposed Montville site on June 9, 1986 and has inspected John Tom Hill several times in previous dockets. (Record)
6. Pursuant to section 16-50m of the CGS, the Council, after giving due notice thereof, held public hearings on this application in the gymnasium of the Uncasville Elementary School in Uncasville, Connecticut, on June 9, 1986. (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 of Fact. (Record)

8. The Council took administrative notice of its record in Docket 22. (Record)

9. Exhibits in this application are as follows:

   Department of Environmental Protection:

   1. Application of April 24, 1986;
   2. Responses to pre-hearing questions;
   3. Operation and Maintenance costs of new system;
   4. Estimated cost of microwave radio system;
   5. Testimony of Gordon Shand;
   6. Estimate of ambient radiofrequency levels.

   Connecticut State Police (CSP):

   1. Map of CSP coverage;
   2. Beseck Mountain to John Tom Hill beam path.

   (Record)

10. The towers proposed in this application are part of an emergency telecommunications network designed to carry the radio signals of the CSP, Department of Health Services (DHS), Office of Civil Preparedness (OCP), Capitol Region Chiefs of Police Association (CRCOPA), the Connecticut Army Reserve National Guard (CTARNG), and the DEP from Hartford to all regions of the state. (DEP 1, Glastonbury, p. 1)

11. The proposed Glastonbury tower would establish a two hop microwave path between Talcott Mountain in Avon and the proposed Glastonbury site on John Tom Hill via the State Office Building in Hartford to

serve the interests of the state agencies named above. (DEP 1, Glastonbury, p. 5)

12. The proposed communications system establishes microwave paths between the proposed Glastonbury tower site and existing sites on the State Office Building roof in Hartford, on Windham Avenue in Colchester, on Ekonk Hill in Sterling, and a future site on Beseck Mountain in Middlefield. (DEP 1, Glastonbury, p. 3)

13. The CSP would use the proposed system for troop-to-troop communications statewide and for dispatching during disasters. The DEP would use the system to link a statewide communications system with its office in the State Office Building in Hartford. The proposed Glastonbury site would allow the DEP communications system to link with the statewide system for dispatching personnel. The Emergency Operations Center (EOC) at the State Armory in Hartford would use the system in the same manner as the DEP, but additional links would establish radio communications between the EOC and the state's nuclear power plants, without dependence on public telephone lines, as required by the Federal Emergency Management Agency (FEMA) and the Nuclear Regulatory Commission (NRC). (DEP 1, Glastonbury, p. 6, p. 13)

14. The DHS would use the proposed system for Emergency Medical Services communication and to transmit radiological data. The OCP would use the system to coordinate local officials during disasters. In addition, the proposed Glastonbury tower would improve the quality of the Regional Access Frequency System (RAFS), a law enforcement radio system used by 30 police departments in the Capitol region. (DEP 1, Glastonbury, pp. 5-7, pp. 12-13)

15. DEP is proposing a 120' free standing telecommunications tower for a site .4 miles north of the intersection of Birch Mountain Road and Hebron Avenue on John Tom Hill in Glastonbury. (DEP 1, Glastonbury, p. 2)

16. The proposed Glastonbury tower would be of Rohn Manufacturing design or equivalent. The legs of this tower would form an equivalent triangle of 19' per side at the base and would be anchored in concrete piers. The tower would be gray in color. (DEP 1, Glastonbury, p. 2; DEP 1, Glastonbury, Attachment A; DEP 2, Q. 17)

17. The proposed Glastonbury tower would not be obstruction-marked or lighted under Federal Aviation Administration (FAA) regulations. The tower would be designed for Zone B wind loading with ½" radial ice under Electrical Industry Association (EIA) standard RS-222. (DEP 1, Glastonbury, Exhibit A; DEP 2, Q. 2)

18. The proposed Glastonbury tower would support four microwave dishes and four whip antennas. A 4' dish at the 117' level of the proposed tower would face northwest to the State Office Building in Hartford. Two 6' dishes at the 108' level of the tower would face southeast to a site on Windham Avenue in Colchester. One 8' dish at the 116' level of the tower would face east to a site on Ekonk Hill in Sterling. The tower would also support two UHF whip antennas and two 15'-18' low band FM whip antennas. (DEP 1, Glastonbury, p. 3; DEP 2, Q. 24)

19. The proposed Glastonbury site is a triangular state-owned parcel measuring 316'x406'x287' in an area zoned rural residential. The proposed site is level and clear, and therefore no substantial filling, grading, or tree removal would be required. A 125' gravel access road would be constructed. (DEP 1, Glastonbury, p. 2, p. 11)

20. The proposed Glastonbury site would provide the needed line of site to facilities in Hartford, Middlefield, Colchester, and Sterling. (DEP 1, Glastonbury, p. 13)

21. An existing cement block radio equipment building stands on the proposed Glastonbury site. This building would house both UHF and microwave antennas and receivers, as well as a 5 kV emergency back-up generator. (DEP 1, Glastonbury, p. 3)

22. The properties adjacent to the proposed Glastonbury site contain 12 existing towers ranging in height from 100' to 250'. These towers include a 145' ATT Long Lines tower, a 210' Southern New England Telephone tower, a 120' Department of Transportation tower, two General Communications towers of 210' and 100', Huntress Electronics towers of 180' (two), 200' and 140', a 250' ZIP call tower, and a 95' DEP tower. (DEP 1, Glastonbury Attachment B)

23. DEP would dismantle its existing fire tower at the proposed Glastonbury site after the proposed tower becomes operational. (DEP 2, Q. 14)

24. Utilities would be brought into the proposed Glastonbury site a distance of 125' using conduit pipe at or near ground level. (DEP 1, Glastonbury, p. 2)

25. The only alternative to the construction of the proposed Glastonbury tower would be for the state agencies to rely on telephone lines. Telephone lines are unacceptable due to high costs and vulnerability to accidents, weather, and security breaches. In addition, FEMA will not permit DEP to use telephone lines in dispatching emergency radiological monitoring personnel. (DEP 1, Glastonbury, pp. 7-8)

26. Radio frequency electromagnetic power densities from the proposed Glastonbury tower would be 0.01239 microwatts per square centimeter (uW/cm^2) at the tower base and 0.006713 uW/cm^2 at the nearest residence. The total ambient power densities would be 0.129685 uW/cm^2 at the tower base, and 0.125214 uW/cm^2 at the nearest residence. (DEP 2, Q. 24)

27. The DEP would be willing to conduct a microwave electromagentic radiation study of the John Tom Hill area subsequent to the installation and operation of the proposed Glastonbury facility, to evaluate cumulative radiation levels. (Tr. p. 33)

28. The Department of Environmental Protection, the Department of Health Services, and the Office of Civil Preparedness have not been provided funds for equipment to measure ambient radio frequency electromagnetic radiation power density levels and therefore cannot provide tests for this purpose without resorting to a personal services contract with an outside consulting firm. (DEP 2, Q. 23; Tr. 6/9/86, pp. 37-38)

29. The costs to contract for ambient radio frequency electromagnetic radiation power density level testings at the John Tom Hill proposed site and nearby selected areas, are estimated to range from $1,500 to $2,000. Additional rental, travel, and per diem costs could add $1,036 to the above charges. (DEP 3, Glastonbury, Q. 6)

30. The proposed Glastonbury tower would be visible from the intersection of Bailey Street and Route 94 and from the intersection of Birch Mountain Road and Route 94. It would not be visible from the intersection of Rockwell Street and Route 94. DEP would locate its microwave dishes as low to the tree line as possible. DEP would

also cluster the dishes to minimize their visibility. (DEP 1, Glastonbury, p. 11; DEP 2, Q. 7)

31. At the present time, there is no reliable two way radio system allowing communication directly between the EOC in the State Armory Building in Hartford and either the Connecticut Yankee or Millstone nuclear power plants, as required by the NRC. A point-to-point microwave system would allow direct non-telephone communications between the EOC and the state's nuclear power plants. (Tr. pp. 18-19)

32. In the past year there were estimated about 12 outages of the current state emergency system. FEMA has cited DEP for three years for using telephone lines to dispatch radiological personnel in emergency situations. (Tr. pp. 27-29)

33. The state's Nuclear Disaster Plan has been tested in drill situations, but the state's performance was rated fair to poor due to poor communications. (DEP 2, Q. 11)

34. A telecommunications tower proposed for Montville would be used to coordinate the activities of those state agencies required to respond to an emergency at a nuclear power plant. Voice and data communications between State Police Troop E barracks in Montville and Troop K barracks in Colchester would be facilitated by such a tower without dependence on telephone lines in an emergency. Such a system would also provide good communications for routine State Police operations. (DEP 1, Montville, p. 3, p. 10; Tr. p. 13)

35. The proposed Montville tower would be a 260' self-supporting steel tower, of Rohn Manufacturing SSV design or equivalent, located 7.5' from the north wall of the State Police Troop E barracks in

Montville adjacent to Route I-395. (DEP 1, Montville, p. 1, p. 4, p. 14; DEP 2, Q. 4)

36. The legs of the proposed Montville tower would form an equilateral triangle measuring 25' a side at the tower base. The legs would be mounted on concrete pillars. (DEP 1, Montville p. 15; DEP 2, Q. 17)

37. The proposed Montville tower would be designed for Zone B wind loading with ½" radial ice, under EIA standard RS-222. An ice shield canopy and cable support facility would be built between the proposed tower and police barracks for protection. (DEP 1, Montville Exhibit B, p. 20; DEP 1, Montville, pp. 21-22)

38. The proposed Montville tower site is 115' above mean sea level in a 50'x40' state-owned grassy area. The proposed site is classified as a highway right-of-way. The proposed site is level and clear, and no grading, filling, or tree removal would be required. No new access road would be required. (DEP 1, Montville pp. 14-15; DEP 1, Montville, Exhibit E, p. 12)

39. The proposed Montville site is within an area classified by the DEP Water Resources Unit as Ud, a wetlands soil which has been disturbed by filling. (DEP 2, Q. 9)

40. The proposed Montville tower would support one 4' diameter solid parabolic dish facing to the southeast at the 258' level of the tower. Four VHF and UHF antennas would be mounted at the 260', 230', and 210' levels of the tower. UHF and VHF transmitters and receivers would be located within the Troop E barracks. (DEP 1, Montville p. 5)

41. The microwave dish located at the 258' level of the proposed Montville tower would provide an unobstructed path to a future microwave dish to be located at the 90' level of an existing tower on Vinegar Hill in Ledyard. (DEP 1, Montville pp. 5-6)

42. The proposed Montville tower would be obstruction marked and lighted with high intensity white obstruction lights on a 24-hour-a-day basis to conform with FAA regulations. The lighting system would conform with all applicable provisions of the National Electrical Code. (DEP 1, Montville p. 24; DEP 2, Q. 2)

43. Electricity for the lighting system of the proposed Montville tower would be brought in underground. (DEP 2, Q. 2)

44. The State Police investigated the use of existing towers on nearby Mohegan Hill. None of these towers would be capable of supporting the proposed equipment. If a site at Mohegan Hill were used, an additional tower would still be necessary at the Troop E barracks to comply with FEMA regulations. (DEP 2, Q. 8)

45. The only alternative to tower construction would be the use of telephone lines. The State Police do not consider this as an acceptable alternative due to the lower reliability of telephone lines and the lack of security. (DEP 1, Montville p. 11)

46. The power density on the roof of the Troop E barracks would be 0.000412 uW/cm^2. The power density at the nearest residence, 1500' away, would be 0.0000463 uW/cm^2. (DEP 2, Q. 18, Q. 24; DEP 1, Montville p. 8)

47. The proposed Montville tower would be visible from the intersection of Raymond Hill Road and Route I-395, from Fort Hill, and from the Gallivan Lane overpass on Route I-395. The proposed tower would

not be visible from residences in the area due to the topography of the area and to the height of trees in the surrounding tree line. (DEP 2, Q. 7; Tr. p. 25)

48. Requests for tower sharing by other agencies or entities would be weighed with regards to tower loading, space, frequency compatibility, and purpose. Non-state agencies would not have access to the emergency system. However, they might be allowed to share microwave paths similar to those used by CRCOPA. (DEP 2, Q. 3, Q. 12)

49. There are no known populations of federal endangered or threatened species or state-listed species of special concern at either of the proposed sites. (DEP 2, Q. 5)

50. The State Historic Preservation Officer has determined that the proposed projects would have no effect on historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places. (DEP 1, Glastonbury, Attachment E; DEP 2, Q. 10)

51. The total cost for the proposed NECS system is approximately $900,000, including estimates of future services, and costs of services and equipment previously incurred. (DEP 3, Q. 4)

52. The proposed Glastonbury facility's estimated cost to construct and equip the facility is $70,000. Annual O&M costs are estimated at ten percent of initial construction costs or $7,000. (DEP 3, Glastonbury, Q. 3)

53. The costs to construct the proposed Glastonbury facility excluding electronic equipment, include the following:

Tower and installation,	$25,000;
Building construction (including labor),	$10,000;
Utilities,	$ 3,500;
Total	$38,500.

(DEP 1, Glastonbury, p. 9)

54. The DEP, CRCOPA, DHS, OCP, and DPS have sufficient funds to cover the costs of all the components of this application. (DEP 1, Glastonbury, p. 9)

55. To date, funding from the State Legislature for the total costs of the entire emergency system has not been completed. The Connecticut State Police propose to submit a request to the Legislature's coming session for this purpose. (Tr. 6/9/86, p. 16)

56. The estimated annual cost for operating a telephone connection from the State Office Building to the Glastonbury facility would be $49,000 based on the leasing of lines for 49 channels at an estimated fee of $1,000 per channel. (DEP 3, Glastonbury, Q. 3)

57. The costs to construct the proposed Montville facility are estimated as follows:

Steel tower,	$ 34,000;
Tower foundation and installation,	$ 34,000;
Lighting,	$ 12,000;
Microwave equipment and installation,	$ 25,000;
Total	$105,000.

(DEP 1, Montville, p. 12)

58. The difference between the telephone line annual O&M costs of $49,000 and the microwave system annual O&M costs of $7,000 would save the Connecticut taxpayers $42,000 per year. (DEP 3, Glastonbury, Q. 3)

59. The cost of maintaining a telephone line connection between facilities is expensive and is expected to increase. This is particularly relevant when a number of discrete lines are necessary. (DEP 1, Glastonbury, pp. 7-8)

60. The monthly rate for a telephone alternative connection from the Hartford Police Department to both John Tom Hill and Talcott Mt. for two RAFS/UHF channels exceeds $9,000/year, or an estimated ¼ of the cost of the microwave system exclusive of tower costs. (DEP 1, Glastonbury, p. 8)

61. The electric utility companies would contribute greater than fifty percent of the costs of the Nuclear Emergency Communications System that extends between Hartford, Montville, and Ledyard. (Tr. 6/9/86, pp. 21-22)

62. The Nuclear Safety Fund is contributing to the cost of the system even though it will be used on a day-to-day basis by the State Police and other public safety agencies. (Tr. 6/9/86, p. 22)