ORIGINAL

DOCKET NO. 111 - An application of Waste Management of Connecticut, Inc., and Bio-Energy Partners for a Certificate of Environmental Compatibility and Public Need for the construction of a 3.33 MW electric generating landfill gas management facility in New Milford, Connecticut.	:	Connecticut Siting Council November 22, 1989

FINDINGS OF FACT

Introduction

1. Waste Management of Connecticut, Inc., (WMCT) and Bio-Energy Partners (BEP) 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 March 31, 1989, for a Certificate of Environmental Compatibility and Public Need for the construction and operation of a landfill gas management facility (LGMF) in New Milford, Connecticut, which would generate electricity through the combustion of landfill gas (LFG) derived from present and future municipal solid waste buried in the New Milford Landfill. (Record)
2. The application was accompanied by proof of service as required by section 16-50l of the CGS. (Record)
3. The fee as prescibed by section 16-50v of the Regulations of State Agencies accompanied the application. (Record)
4. Affidavit of newspaper notice as required by section 16-50l of the CGS was supplied by the applicant. Newspaper notice of this application was published twice by the applicant in the Danbury News Times. (WMCT 6)
5. The Council and its staff inspected the proposed site in the Town of New Milford, on August 21, 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 August 21, 1989, at 2:30 p.m. and 7:00 p.m. in the New Milford Town Hall in New Milford, Connecticut. (Record)
7. Parties to the preceeding are the applicant and those persons and organizations whose names are listed in the Decision and Order which accompany 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. WMCT's property consists of 159 acres of which 90 acres is a permitted landfill area. The proposed project would be built on approximately two acres. The remainder of the property is composed of roads, maintenance and administrative buildings, and buffer zones. (WMCT 1, p.G-1)

10. The landfill operation was started in the early 1960's, and WMCT became owner/operator of the landfill in 1984. (WMCT 3, Q.42)
11. The organic portion of municipal solid waste, consisting largely of used paper products and yard clean-up, is slowly digested by naturally occurring micro-organisms which produce a by-product of methane, commonly known as natural gas. (WMCT 1, p.A-1)
12. LFG contains approximately 55 percent methane, over 40 percent carbon dioxide, plus other gases including water vapor and small amounts of volatile organic compounds. (WMCT 1, p.A-1)
13. LFG has a heating value of approximately 500 BTU per cubic foot. (WMCT 1, p.A-1)
14. LFG naturally enters the atmosphere carrying malodorous compounds. Also, LFG migrates horizontally creating a potential of explosion in on-site buildings. Presently, a collection system and flare station minimize the odor dissipating from the landfill and possibilities of explosion. (WMCT 1, p.A-2)
15. The present rate of gas generation was computed to be between one million to two million cubic feet per day. The quantity is expected to increase and peak at about two and one half million cubic feet per day around 1996, then decline at about three per cent per year. (WMCT 2, Q.1)
16. LFG would be collected through a pipeline header connected to a series of wells buried in the refuse. A slight negative pressure would draw the gas to a flare, compression, and filter station. Once the gas was cleaned, it would be injected into the turbine for combustion which would turn a generator, to produce electricity, and finally the exhaust would be cooled and released by fan-forced ambient air. (WMCT 2, Q.27)
17. The combustion of the LFG would occur in a Centaur 4500 gas turbine engine which would be directly coupled to a 3.33 MW electric generator and automatically controlled to deliver constant voltage and phase control. In addition, a stand-by gas flare would be utilized if the turbine/generator were shut down for any length of time. (WMCT 1, p.A-4, p.I-1 and I-3)
18. Operation of the proposed turbine/generator, with LFG as fuel, would generate power in much the same way piped natural gas is burned in similar turbines. (WMCT 1, p.I-1)
19. The EPA recognizes turbines as the technology of choice to recover energy by driving electric generators fueled with LFG. (WMCT 1, p.J-10)
20. The LFG mixture of methane, carbon dioxide, and other volatile coumpounds cannot be compressed into a liquified form. There is no practical or economic means to store LFG. (WMCT 2, Q.26)

21. Consideration was given to installing a pipeline to deliver gas to steam boilers at an industrial operation north of the landfill, but this was determined infeasible due to distance and cost to connect. (WMCT 2, Q.26)
22. Initially, four, 800 KW, reciprocating engines were considered for the proposed LGMF. Plans were changed to install three 950 KW turbines because they would provide better reliability and less maintenance than the reciprocating engines. Also, turbines generate less nitrogen oxide (NO_x) emissions than internal combustion engines, but at a small loss of efficiency. WMCT selected the proposed 3.33 MW turbine when they were informed that the 950 KW turbines would no longer be manufactured. (WMCT 2, Q.10)
23. The net effect of municipal solid waste recycling would not be expected to affect the composition of waste already in place at the landfill and would be unlikely to reduce the production of methane. (WMCT 2, Q.2)
24. The LGMF would not be affected by the future construction of a Housatonic regional resource recovery facility. At this time no regional resource recovery facility site has been selected and no permits have been sought. (WMCT 2, Q.2)
25. The New Milford landfill is expected to be used over the next few years to meet the State's solid waste disposal needs. (WMCT 2, Q.2)
26. The capping of the landfill with a heavy duty polyethelene sheet, covered with top soil, would substantially improve the recovery of methane generated. This would also avoid the drawing of air into the landfill through the top, thus recovering close to 100 per cent of the naturally-occurring LFG. (WMCT 2, Q.3 and 5)
27. The DEP's Solid Waste Management Unit granted WMCT a Permit To Construct and a Permit to Operate a LGMF on the landfill with the estimated LFG rates based on the final grading in that permit. (WMCT 2, Q.39; Exhibit 3, Q.2)
28. The applicant expects a closure, capping, and stabilization of the New Milford landfill during the operating life of the proposed facility. However, the actual date would be determined by the rate at which material was received and its effective packing into volumetric space available. (WMCT 2, Q.3; Transcript p.66)

Need

29. In accordance with Connecticut General Statutes 16a-35k, the proposed LGMF would be utilizing a renewable resource and reducing the dependence on oil in an effort to diversify the State's energy supply mix. (WMCT 1, p.B-1 and B-2)

30. The proposed LGMF would serve the public need in four ways:
    1. It would generate useful electric power from a fuel that is presently available on site and wasted.
    2. It would offset the need to import and purchase approximately 50,000 barrels of oil per year.
    3. Generating electricity with LFG instead of sulphur-containing oil or coal would reduce sulphur dioxide (SO_2) emissions.
    4. An efficient system to collect and utilize LFG would improve operations at the New Milford Landfill. (WMCT 1, p.B-1)
31. In order to replace the electricity that would be produced by the LGMF, CL&P or some other electric generator would have to burn a corresponding amount of fuel and release of CO_2 in addition to that which would be naturally released from the Landfill. (WMCT 11)

Construction

32. The proposed LGMF would be located on previously disturbed, barren soil just east of the landfill proper, approximately 4500 feet west of the Housatonic River, on the western side of Route 7, 1.5 miles south of the Route 67/7 intersection. (WMCT 1, p.G-1, p.J-1)
33. The foundation and building would be built outside the area of landfilling operations. No LFG would be generated around or beneath the footprint of the building. (WMCT 2, Q.24 and 25)
34. The height of the proposed building would be 25 feet, and the exhaust stack would extend 12 feet above the roof for a total height of approximately 37 feet. (WMCT 1, p.J-2)
35. All aspects of construction would take place within site boundaries and would be buffered by the landfill and dense vegetation to the south and east. (WMCT 1, p.J-2)
36. The operational testing and start-up would expected to be complete early in 1991. (WMCT 2, Q.21)

Traffic

37. The proposed site access would be to Routes 7/202 through an easement behind a shopping center or by way of an undeveloped accessway south of the proposed access. (WMCT 1, p.G-13; Transcript p.62)
38. Traffic volume to the proposed LGMF would consist of construction vehicles and would not raise the existing level of service during the construction phase. Two employees, occasional visitors, and a weekly pick-up of condensate would make up the traffic flow during operations. (WMCT 1, pp.G-13, J-2, and J-9; WMCT 2, Q.23)

Safety

39. The site manager would have responsibility for administering a comprehensive safety program based on compliance with applicable recognized safety standards and Occupational Health and Safety Administration regulations. (WMCT 1, p.D-1)
40. There would be no significant danger of fire or explosion. The proposed project would comply with all local and State codes including that of the National Fire Prevention Association. (WMCT 3, Q. 6 and 10)
41. An automatic fire suppression system would be installed in the building. A combined halon and water spray system would be engineered for response through ionization and heat detectors. An automatic gas-line shut-off would be activated if a leakage of methane gas or low-gas concentration were detected. (WMCT 1, D-2)
42. The engine and generator would operate continously with fail-safe shut-down controls. A day-shift operator would ensure that unsafe situations were avoided. (WMCT 1, p.D-3 and D-4)
43. Other Waste Management of North America facilities with similar turbines have operated without incidents requiring response of local emergency or WMNA personnel to prevent an emergency situation. (Transcript, p.38)
44. The proposed facility would qualify as a highly protected risk according to Factory Mutual and Protection Mutual Insurance Companies. (Transcript, p.39)
45. Alarm systems within the proposed LGMF would be connected into an auto-dial telephone system. Company personnel and/or Town emergency services would be contacted to respond to the appropriate calls. (WMCT 1, p.D-3)
46. WMCT would consult with the Town in preparing an emergency response plan. (WMCT 7, p.12; Transcript pp.42-45)

Land Use and Zoning

47. The applicant justifies the proposed location for the following reasons:
    1. A fuel source would be located immediately adjacent to the proposed project.
    2. The facility would be easily interconnected to the local electric grid.
    3. The facility would be sufficiently removed from the waste disposal operations so as not to interfere with that activity.
    4. The facility would be adequately buffered from abutting residential areas and adjacent land uses.
    (WMCT 1, p.H-1)

48. The proposed site is zoned industrial. Residential and industrial zones abut the property to the north and there are residential zones to the west, south, and east. A large shopping complex and a small parcel zoned commercially abut the eastern portion of the proposed site. (WMCT 1, pp. G-1 and G-2)
49. The nearest residential property is over 600 feet from the the proposed LGMF. (WMCT 1, p.J-2)
50. On June 13, 1989, the Town of New Milford Inland Wetland Commission authorized construction activity for the LGMF. (WMCT 2, Q.52 attachment)

Electric

51. Connecticut Light and Power (CL&P), a subsidiary of Northeast Utilities (NU), would purchase and integrate the power into the electric grid. Although the proposed project could not adapt to the utility's changing system demand, it could yield power to the NU/CL&P grid on a predictable schedule. (WMCT 1, p.C-2)
52. On August 1, 1989, the Department of Public Utility Control approved an electric purchase agreement between WMCT and NU/CL&P for a ten year term. (WMCT 7, p.2; Transcript pp. 70-71)
53. The design capacity of the proposed electrical interconnection is 4.2 MVA maximum, at 13,800 volts. The planned route from the facility would be via aerial lines along the proposed access road to Route 7 where there is an existing CL&P line. This proposed line would be designed, constructed, and maintained in accordance with CL&P criteria. (WMCT p.A-4; WMCT 2, Q.20)
54. The proposed LGMF would rely on NU/CL&P for power for start-up and when the turbine/generator was shut down. (WMCT 1, p.C-2)
55. The proposed LGMF would supply NU/CL&P with approximately 16 million KWh per year. (WMCT 2, Q.16)

Noise

56. Noise levels at the WMCT property lines closest to any residences have a projected range from 42 to 45 decibels (dBA) which would be substantially less than typical traffic noise along Rt. 7. (WMCT 1, p.J-5)
57. Construction of the masonry block building would not be expected to generate unusual loud noises. There would be no blasting or pile driving and no other noisy construction operations are anticipated. Truck traffic would be expected to be the principal noise generator during construction. (WMCT 2, Q.33)
58. The proposed LGMF would be constructed for safety and best practical noise control. It would also be oriented thirty degrees south of east, to direct noise generally towards the landfill. (WMCT 1, p.I-2; Transcript p.62; and DEP comments dated 15 Aug 1989)

Air Quality

59. Combustion of the methane and volatile organics in the LFG is considered to be the best available control technology to improve air quality. (WMCT 2, Q.13)
60. The proposed LGMF would improve air quality surrounding the landfill by reducing the natural emissions of LFG and destroying organic, odor-bearing compounds which occur in LFG. (WMCT 1, p.J-9; Exhbit 2, Q.1)
61. Nonstop operation of the proposed turbine (8,760 hr/yr) would emit approximately 25 tons of NO_x per year, 22 tons of carbon monoxide (CO) per year, and one ton of SO_2 per year. The remaining exhaust gases would essentially be free of measurable particulates. (WMCT 2, Q.12 and 13)
62. The combustion of approximately two million cubic feet of LFG per day would discharge approximately 108 tons of carbon dioxide (CO_2) per day. Approximately 58 percent of this would be from combustion of the methane, and 42 percent would be from the CO_2 already present in the LFG before combustion. (WMCT 11)
63. The design features of the turbine would be in compliance with all applicable State and federal emissions standards and technology requirements. (WMCT 1, p.J-1)
64. The DEP Air Compliance Unit has issued a Permit to Construct the proposed LGMF. (WMCT 1, Exhibit K-1)

Water

65. Water provided by the New Milford Water Company would be used for two purposes, sanitary and fire suppression. Less than 100 gallons per day would be needed for potable and sanitary use. A maximum rate of approximately 1,100 gallons per minute could be supplied through a 12-inch main line for fire suppression. (WMCT 1, p.J-6)
66. Wastewater would be disposed of in a conventional septic system or stored and trucked to an approved treatment plant. (WMCT 2, Q.28)
67. The water table at the proposed site ranges between seven and nine feet below the surface. No discharges to the groundwater would be anticipated during construction or operational activities. (WMCT 1, Exh.I-2, p.J-6; WMCT 3, Q.11)
68. A 14-acre wetland area is 65 feet east of the proposed LGMF. The wetland contains three types of habitats: wooded swamp, shrub swamp, and open water marsh. (WMCT 1, p.G-10)

Condensate

69. Water vapor would be collected from LFG through the compression and collection process. An expected daily average would be 600 gallons but could range as high as 2,400 gallons depending on ambient temperatures. The condensate would not be ignitable or otherwise hazardous. (WMCT 1, pp.J-6 and 7; WMCT 2, Q.28; Transcript pp.65 and 79)
70. The LFG condensate would be stored in a 15,000 gallon, coated and cathodically protected, double-wall tank measuring 8 1/2 feet in diameter by 40 feet long. Five feet of the tank would be placed below grade on a concrete pad with the remainder of the tank covered with sand to prevent freezing of the condensate. Automatic and manual leak-monitoring devices would detect any liquid in the sealed interstitial space of the tank. (WMCT 2, Q.30; WMCT 10; and Transcript pp.80-82)
71. An elevated aboveground tank installation would cost $18,000 more than the proposed earth covered installation. For an equal degree of security, an aboveground tank would require a secondary containment area, a roof to prevent rainfall accumulation, and a heating system to prevent freezing. (WMCT 10)
72. The Solid Waste Management Unit of the DEP has approved the installation, operation, and maintenance of the condensate storage tank. (WMCT 10, Supplement)
73. The LFG condensate would be transferred by a transport tanker to an approved treatment plant in New Jersey owned by Waste Management of North America. If this site-specific condensate were determined to be non-hazardous, it would be transferred to a local wastewater treatment plant. (WMCT 1, p.J-7; WMCT 2, Q.30)
74. The DEP Solid Waste Management permit would require the applicant to analyze the condensate and groundwater and submit a report on a quarterly basis. (Transcript p.54)

Vegetation and Wildlife

75. WMCT conducted a survey of flora and fauna on May 27, 1989. The investigation revealed no rare or endangered species and no unusual or sensitive habitats on the proposed site. (WMCT 1, p.G-12)

Archaeology

76. According to the State Historic Preservation Office, the proposed project would have no effect on historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places. (WMCT 1, p.G-5 Attachment)

Cost

77. The proposed LGMF would cost approximately $1 million, exclusive of the leased equipment planned for the generation of electricity, land which would be already owned, and the capital which is required to collect gas in accordance with environmental control plans. (WMCT 1, p.E-1; WMCT 2, Q.19)
78. WMCT currently employs 50 people at the Hauling and Landfill Divisions in New Milford. The proposed LGMF plans to hire two employees that would operate the gas wells and oversee the facility that would generate power, excluding maintenance and office support. (WMCT 2, Q.17)
79. The LGMF's generating cost per KWh would range from 2.74 cents per KWh to over five cents per KWh. (WMCT 2, Q.18)
80. The price paid by CL&P under the electricity purchase agreement would equal the avoided cost over the ten-year contract period. (WMCT 2, Q.18)
81. WMCT would own and operate the gas collection system while BEP would lease approximately two acres and own and operate the proposed facility. (WMCT 7, p.3)