DOCKET NO. 32

AN APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE GOODWIN AND COLEBROOK HYDROELECTRIC POWER PROJECT OF THE METROPOLITAN DISTRICT	:	CONNECTICUT SITING COUNCIL June 20, 1983

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

1. The Metropolitan District (MD) in accordance with provisions of sections 16-50k and 16-501 of the General Statutes of Connecticut, revised to 1982, as amended, applied to the Connecticut Siting Council on March 31, 1983, for a Certificate of Environmental Compatibility and Public Need for the Goodwin and Colebrook Hydroelectric Power Projects. (MD 1)
2. The fee prescribed in section 16-50v-1(b) of the Regulations of Connecticut State Agencies accompanied the application. (Record)
3. The application was accompanied by proof of service as required by section 16-501(b) of the General Statutes. (MD 1, part D)
4. Affidavits of newspaper notice as required by Statute and section 16-501-1 of the Regulations were also filed with the application. (MD 1, part D)
5. Pursuant to section 16-50m of the General Statutes, the Connecticut, Siting Council, after giving due notice thereof, held a public hearing at the Colebrook Town Hall, Route 183, Colebrook, Connecticut on May 18, 1983, at 7:00 P.M. for the convenience of the public. (Record, Tr. pp. 1-2)
6. 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)

7. The Office of Policy and Management/Energy Division, the Department of Economic Development, and the Department of Environmental Protection (DEP) filed written comments with the Council pursuant to section 16-50j(g) of the General Statutes of the State of Connecticut. (Record)
8. On May 18, 1983, members of the Council made an inspection of the facility. (Record)
9. The Metropolitan District, a municipal corporation created by the General Assembly to provide water and sewer services to Connecticut municipalities, proposes to construct hydroelectric power stations at the existing Goodwin and Colebrook dams in Hartland and Colebrook. (Tr. p.19)
10. In 1979, the State legislature authorized the Metropolitan District to develop, construct, and operate hydroelectric generating facilities. (Tr. p.19)
11. The Colebrook dam is located in the Town of Colebrook, Connecticut. It is 1300 feet long, 223 feet high, and 30 feet wide. (MD 2, Att. 6-20, pp.1-2)
12. The Colebrook dam is owned and operated by the U. S. Army Corps of Engineers and was completed in 1968. (MD 2, Att. 7-21, p. 15)
13. The Colebrook Reservoir has a storage capacity of 32 billion gallons and a surface area of 1185 acres when full. (MD 2, Att. 6-20, p.1)
14. The Colebrook Reservoir is operated for flood control, water supply for downstream fisheries, and riparian users. (MD 1, Sec. c6a, p.5)

15. There would be no structural changes to the Colebrook facilities other than the construction of a powerhouse at the southern base of Colebrook dam, the modification of outlet works for hydropower generation, and the building of an access road to the powerhouse. (MD 2, Env. Rep., p. 10)

16. There would be no change in the Colebrook reservoir's storage elevations, and essentially no change in present operating procedures. (MD 2, Env. Rep., p. 10)

17. New trash racks would be installed in the existing stop-gate guide slots in the gate passages at the upper end of the Colebrook dam intake structure. Each intake structure would be fitted with a movable 4' x 12' steel trash rack having vertical bars with a maximum 3" spacing. (MD 2, Att. 6-20, p. 19)

18. The underwater trash racks would prevent debris from entering the turbines to be installed for electrical generation, which are very sensitive, and would protect fish from the turbines to some extent. (Tr. pp. 29-30)

19. The existing trashbar (racks) is inadequate to protect the proposed turbine. (MD 1, Sec. c6a, p. 19)

20. The crest gates contemplated earlier for the Colebrook proposal were eliminated by social and environmental concerns rather than economic reasons. (Tr. pp. 85-66)

21. The existing 10' diameter outlet conduit in the Colebrook dam would be fitted with a steel lining. (Tr. p. 22)

22. During work on the Colebrook outlet conduit, the Metropolitan District would have to draw the Goodwin Reservoir down. During the Goodwin Reservoir draw-down, the Metropolitan District would go

into an operation of filling and emptying that impoundment in order to maintain the necessary flows below the Goodwin dam. (Tr. p. 38)

23. As soon as possible, a gate would be placed at the end of the Colebrook conduit, thus allowing the water to refill up to the level of the gate. The Colebrook conduit could then be blocked off, the water pumped out of it, and the water in the Goodwin Impoundment allowed to go down to maintain discharge requirements while work in the Colebrook conduit continues. (Tr. p. 38)

24. The Colebrook powerhouse station would be located adjacent to the downstream toe of the Colebrook dam, within the pool of the Goodwin Reservoir. (MD 2, Att. 6-20, p. 23)

25. The Colebrook powerhouse would be a tower 70' - 80' high, with a base 75' below the overflow line of Goodwin Reservoir, so that when the Goodwin Reservoir is full, the powerhouse would be 10-15'above the waterline. (MD 1, p. A2; Tr. p. 26, 35)

26. The Colebrook powerhouse would be embedded in rock at the outlet of the 10' conduit from the dam's intake tower. (Tr. p. 26)

27. The Colebrook powerhouse would take roughly 15 months to construct. (Tr. p. 34)

28. The Colebrook powerhouse would contain a single turbine-generator unit of 2500 kW capacity. The turbine-generator unit would operate at flows of 150 to 500 cubic feet per second (cfs). The turbine is a single 1500 mm vertical full Kaplan unit. (MD 1, Sec. C-6c, p. 24; MD 2, Att. 6-20, Exhibit A, p. 11; Tr. p. 22)

29. Electricity produced by the Colebrook generator would be transmitted at 4160 volts via a new underground duct line to a new

step-up transformer located along the access road below the Colebrook dam. (MD 2, Att. 6-20, p. 16)

30. Existing utility pole lines would be upgraded by using larger cable or additional insulation to convey the power generated to Northeast Utilities' Robertsville substation. No new power line poles will be needed. (Tr. pp. 26, 30)

31. The access road leading to the Colebrook powerhouse would serve first as access for construction and later for operations and maintenance work. (MD 1, Sec. c-6a, p. 26)

32. The Colebrook access road would lead downhill in a double half-bend in order to maintain the uniform grade of 12%. The access road, 20' in width, would use existing bank-run gravel. (MD 1, Sec. C-6a, p. 26)

33. The Goodwin Dam is located in the Town of Hartland, Connecticut; it is owned and operated by MD, and it was completed in 1960 for future water supply purposes. It is 820 feet long, 125 feet high, and has a 900 foot long concrete spillway crest. (MD 2, Att. 6-20, App. A, p. 1)

34. Goodwin Reservoir has a storage capacity of 2.8 billion gallons. (MD 1, App. A-1)

35. At some future time, MD expects to partially utilize the Goodwin Reservoir to supplement the municipal water supply demands of its licensed service area. (MD 1, Goodwin Env. Rep., p. 3)

36. The Goodwin Dam and appurtenant structures are all in excellent condition and are maintained on a regular basis by the District. (MD 1, Goodwin Env. Rep., Ex. 1, p. 13)

37. The West Branch of the Farmington River is impounded by the Goodwin Dam and has a yearly flow of 60 billion gallons of water. (MD 1, App. 1, p. 1)

38. The West Branch of the Farmington River is used for water supply, fishing, boating, waste assimilation, agriculture, wildlife preservation, hunting, tubing, logging, camping, hydroelectric generation, salmon restoration, trout hatching, and swimming. (MD 2, Att. 7-21, p. 13)

39. Work at the Goodwin Dam site would include construction of a powerhouse station below the dam, a seven foot diameter penstock inside an existing 35 foot diameter outlet conduit, modifications to the existing gatehouse, a trashrack, and power lines on the existing pole lines. (Tr. p. 22)

40. A new trashrack at the upstream entrance structure with medium bar spacing would be necessary to protect the turbines from harmful debris. (MD 1, p. A-2)

41. Modifications to the existing gatehouse include the removal of three small gates and a concrete wall and the installation of a new transition section enclosed in concrete. (MD 1, p. A-1)

42. The penstock would be connected to the existing west sluice gate chamber in the gatehouse after the gatehouse has been modified and would serve the powerhouse via the existing 35' diameter outlet works of the gatehouse along the southwest side of the outlet conduit and the outlet channel, a distance of 431 feet. (MD 1, p. A-1)

43. The Goodwin powerhouse would be made of gray brick and would be 20 to 25 feet above ground. It would be located on the west side of

the existing outlet channel about 160 feet from the end of the outlet conduit. (MD 1, p. A-1, A-2; Tr. p. 39)

44. During the construction of the Goodwin powerhouse, the Colebrook Lake water level would be maintained so that water could come into the Goodwin Reservoir via the Colebrook dam spillway. (Tr. p. 33)

45. There would be provisions for a temporary bypass of the Goodwin gatehouse past the powerhouse construction site. (Tr. p. 34)

46. The Goodwin powerhouse would contain two fifteen hundred kilowatt generating units which would operate with flows ranging from eighty to four hundred forty cubic feet per second. (Tr. p. 21)

47. Power generated at the Goodwin Dam would be transmitted by new underground cables under the new service yard at the foot of the dam and along the improved access road to an enclosed transformer across from the existing parking lot on the west abutment of the dam. The power then would be transmitted over an existing pole line on District property to Route 8, where Northeast Utilities has a pole line. (MD 1, p. A-2)

48. An existing road 14 feet wide with a 12% slope would be used for access near the top of the Goodwin dam, and a new road would be constructed along the toe of the dam. (MD 1, Civil Design Anal., p. C-1; MD 5, pp. C1, C2)

49. The Goodwin transformer would be placed back into the woods at the west end of the dam. (Tr. p. 32)

50. Equipment needed for work at both sites includes a 30 ton overhead crane, a 5 ton gantry hoist, and bulldozers. (MD 2, Att. 6-20, p. 15; Tr. p. 34)

51. The MD expects the bidding and awarding of all contracts to be completed by April, 1984. (MD 2, Att. 7-21, p. 10)

52. Actual construction would be planned to start in August, 1983, with the installation of the penstock at Goodwin Dam. (Tr. p. 22)

53. Construction of both powerhouses would be expected to begin simultaneously in August 1984 and be complete by December 1, 1985, with generation commencing in January, 1986. (Tr. p. 22)

54. Construction of the powerhouses would be devised in such a manner as to have limited effect on downstream flow commitments. (MD 2, Att. 6-20, App. A, p. 11)

55. In order to begin design and development to meet Federal Energy Regulatory Commission (FERC) requirements, the MD began surveying the Goodwin site, cleared some trees, and did some grading work. (Tr. pp. 28-29)

56. The project would be intended to ensure the fully compatible use of water for public water supply, river flow management, and hydroelectric power by keeping control of the water under the cooperating agencies involved: the Army Corps of Engineers, the Connecticut Department of Environmental Protection, and the Metropolitan District. (Tr. p. 25)

57. The Metropolitan District is required by law or agreements to discharge through or over the Goodwin dam a minimum flow of 50 cfs at all times, all natural flows up to 150 cfs, all releases by the DEP from fishery pools, riparian releases as ordered by downstream riparian owners, all releases from Otis Reservoir, and flood water discharges by the Corps of Engineers. (MD 2, Att. 7-21, p. 2; Tr. p. 27)

58. Riparian commitments might not be met at all times during construction, but this could be mitigated by monetary compensation or the rescheduling of releases by agreement. (MD 2, Att. 6-20, Env. Rep., p. 10)

59. The only period when anticipated flows downstream might be less than normal is from November 1, 1984, to February 24, 1985. During that time a minimum continous flow of 50 cfs would still be maintained. (MD 1, Sec. c-6a, p. 27)

60. The Department of Environmental Protection requested that the Council condition its certificate with a specific requirement of water release from the Goodwin Dam: 50 cfs at all times and pass through of run-of-river flows when incoming recharge is between 50 and 150 cfs. The MD has indicated to the DEP it could provide such levels. (DEP comments, June 6, 1983)

61. There have been periods during the summer when natural flows coming into the Goodwin impoundment are as low as 7 cfs. The Metropolitan District would continue to release a minimum of 50 cfs, but will be taking stored water from the impoundments to do so. (Tr. p. 77)

62. At the Goodwin Dam, the Metropolitan District proposes to discharge an annual average flow of 245 CFS through the penstock. (MD 2, Att. 6-20, Exhibit E, App. A, p. 12)

63. Records indicate that discharges over the Goodwin dam spillway occurred 140 days in 1981 and 149 days in 1982. (MD, LF 2)

64. After the project becomes operational, the scheduling and amount of water released into the West Branch Farmington River would remain as at present. (Tr. p. 26)

65. During periods of excess water, such water would be released over the Goodwin Spillway, or through the three remaining service gates on the east side of the gate house into the conduit. There is no advantage to discharging through the three service gates as opposed to discharging over the Goodwin Spillway. (Tr. p. 77)

66. It is MD policy to maintain the Goodwin impoundment at 641 feet elevation, because it is easier for the District to ask the Corps of Engineers to release specific amounts of water from Colebrook and let it go over the Goodwin Spillway than it is for the District to regulate the outflows. (Tr. p. 78)

67. Daily pool level fluctuations from hydropower operation would generally not exceed 1 foot at Colebrook and 1 to 2 feet at Goodwin. (MD 2, Att. 6-20, Env. Rep., p. 10)

68. As part of the DEP Water Diversion Permit, monitoring of temperature and dissolved oxygen is subject to the approval of DEP and would have to be in place prior to construction. Additionally, following commencement of operation, the District would have to maintain flow records on a daily basis and modify the diversion as necessary to eliminate unforseen adverse water quality situations stemming from the diversionary operations. (Tr. p. 84)

69. From the Massachusetts-Connecticut state line to the Goodwin Dam, the waters of the West Branch of the Farmington River and its tributaries are rated Class AA (existing or proposed drinking water supply) by DEP. (MD 2, Att. 6-20, p. 2)

70. The District would follow the requirements of the United States Fish and Wildlife Service as far as possible, with regard to water

discharge temperatures. (Tr. p. 65)

71. When the Goodwin Hydroelectric facility is in operation, it is expected that dissolved oxygen levels just below the dam would be lower than the dissolved oxygen levels in flows presently discharged over the spillway. The dissolved oxygen level, if not at DEP's 5 mg/liter standard immediately below the dam, should increase to this level within a very short distance down stream by natural aeration. (MD 2, Att. 6-20, Env. Rep., p. 13)

72. The only expected changes from existing water quality conditions would be a minor short term turbidity increase during construction and possibly a slight increase in near-shore turbidity in Colebrook Lake caused by daily pool fluctuation. Turbidity concentrations should revert back to normal levels as the bank stabilizes after a few years of operation. (MD 2, Att. 6-20, Att. B, p. 14; Env. Rep., p. 12)

73. MD decided not to propose adding physical aeration systems to the normal plant operation until monitoring determines whether sufficient natural aeration occurs to bring dissolved oxygen levels up to the 5 mg/liter standard. (MD 1, Sec. G6C, p. 3)

74. The District, with consultants would study design options, including upward directional baffling of the Colebrook discharge into the Goodwin Lake. (Tr. p. 75)

75. MD would study the possibility of placing boulders for deflection of water discharged out of the Goodwin Lake. (Tr. p. 73)

76. Controlled blasting would be required for the Goodwin and Colebrook powerhouses. (Tr. p. 33; Tr. p. 38)

77. Truck traffic at the project sites would be scheduled only during

week days. (Tr. pp. 58-59)

78. Fish found in the two impoundments include brown, brook, and rainbow trout, yellow perch, largemouth bass, chain pickerel, sunfish, brown bullhead, rockbass, smelt, and shiners. (MD 1, Goodwin Env. Rep., p. 2)

79. No anadromous fish are found in the vicinity of the project site, nor are there plans to introduce any in the near future. (MD 1, Goodwin Env. Rep., p. 5)

80. Approximately 5500 rainbow, brown, and brook trout are stocked annually by the DEP in Colebrook Lake; the State of Massachusetts stocks another 8,000-10,000. No fish are stocked in Goodwin Lake. (MD 2, Att. 6-20, Env. Rep., p. 6)

81. The District is working with the DEP to ensure that trout would not be affected by project construction. (Tr. p. 27)

82. The Massachusetts Division of Fisheries and Wildlife states the operation of the project would have no adverse effect on the fisheries resources of the Colebrook Reservoir. (MD 2, Att. 6-20, letter of 1/6/83)

83. To ensure protection of the fisheries resource, a water monitoring program in cooperation with the DEP would be run continuously before, during, and after construction. (Tr. p. 43)

84. It is believed that water level fluctuations in Colebrook Lake prevent any substantial fish reproduction. (Tr. p. 57)

85. No fish ladders are planned for the project sites by DEP, and the project would have no effect on existing or planned fish ladders downstream. (Tr. pp. 119-120)

86. The turbines might kill 30% of the stocked trout. (MD 2, Att. 6-20, p. 40)

87. The most satisfactory way to mitigate turbine-induced fish mortality would be for MD to stock 30% (4650) more fish, as proposed. (MD 2, Att. 6-20, Env. Rep., p. 14)

88. The Colebrook Lake is open to recreation on a limited basis; fishing is the only water-based recreation permitted. Hunting and hiking are permitted on surrounding federal lands. (MD 2, Att. 6-20, p. 4)

89. The boat launching site at Colebrook Lake would not be affected by this project. (Tr. p. 54)

90. The Goodwin impoundment has no designated boat launching site or public access for recreation. (MD 2, Att. 6-20, Env. Rep., p. 6)

91. No impacts by this project would be expected on the recreational use of the land and water resources of the area. (MD 1, Env. Rep. p. 6)

92. No federally-listed threatened or endangered species are known to occur in the project area. (MD 1, Env. Rep., p. 7; MD 2, Env. Rep., p. 6)

93. Because the project area could be utilized by bald eagles in the future, the District would cooperate with the Connecticut Audubon Society and any other interested parties to provide protection and controlled observation. (MD 2, Att. 6-20, Env. Rep. p. 15)

94. The project site involves no Critical Habitats and does not impinge on any eligible sites which may be included in the National Register of Historic Places. (MD 1, Env. Rep., p. 7)

95. In the opinion of the State Historic Preservation Officer, the proposed facilities would have no effect on this state's cultural heritage. (MD 2, Att. 6-20, letter of 1/6/83)

96. The construction of the two powerhouses would not disturb any significant geological formations in the dam site area. (MD 1, Env. Rep., App. A)

97. No significant noise is expected from the site, although a very low hum may be perceived when it becomes operational. (Tr. p. 41)

98. The design of the project is intended to minimize any change in the appearance and operation of the Goodwin and Colebrook Dams. (Tr. p. 25)

99. The West Branch of the Farmington River is included in a Nationwide Rivers Inventory as a potential National Wild and Scenic River. (MD 2, Att. 6-20, Env. Rep., p. 16)

100. A study conducted by the National Park Service, together with the Department of Environmental Protection, the Farmington River Watershed Association, and the Metropolitan District, will propose the West Branch of the Farmington River as a National Wild and Scenic River. (Tr. p. 106)

101. Following FERC approvals, the Goodwin/Colebrook project was reviewed by the state Department of Environmental Protection, and a public hearing was held pursuant to PA 82-402, the Water Diversion Policy Act. No parties opposed the proposal before the DEP, and the DEP issued the first Water Diversion Permit to the MD for the Goodwin/Colebrook hydroelectric project on October 26, 1982. (Tr. p. 21)

102. MD expects to sell approximately 19 million kWh annually to the Connecticut Light and Power Company, under the provisions of Connecticut PA 82-164, An Act Concerning the Purchase of Power Produced by Cogeneration or Renewable Technology. (Tr. pp. 22,23)

103. By MD estimates the capacity factor for the combined facilities would be 39%. (Tr. p. 81)

104. Connecticut state energy policy in 16a-35k of the General Statutes promotes renewable resources to the maximum practicable extent for future generations. (Tr. p. 23; MD 1, p. A-4)

105. The Goodwin/Colebrook project is needed because the state needs environmentally safe and economically efficient renewable energy resources. (Tr. p. 22)

106. This proposal is consistent with national policy encouraging the development of renewable energy resources. (Tr. p. 23; MD 1, p. A-1)

107. In rendering its decision, FERC ruled that of the proposals made, the Metropolitan District's proposals were "better adapted to promote a comprehensive development of the region's water resources." (Tr. p. 20; MD 2, Att. 7-21)

108. Operation of the two dam sites would have to be coordinated in order to obtain the maximum generating potential out of the complex. (Tr. p. 80)

109. If the MD operated Goodwin and another party operated Colebrook, the resulting lack of coordination could result in less total power generated. (Tr. p. 80)

110. Hydro-generation is not planned as the lead use of the impoundments. (Tr. p.81)

111. The filings by the MD for licenses for Goodwin and Colebrook were in response to filings by other interested developers. The MD's policy is that these sites must be protected for public water supply, environmental interests, recreation, and to fulfill riparian obligations to others. (Tr. p. 82)

112. The MD foresaw the possibility of another developer legally requiring the release of MD water to generate electricity as a serious risk to its water rights. (Tr. p. 83)

113. The Department of Public Utility Control has consistently endorsed hydroelectric development where it is compatible with environmental concerns and where it is economic. (DPUC Decision, Docket 820701, p. 81, administratively noticed)

114. The MD filed for a preliminary permit for the Colebrook site on March 6, 1981, and was granted a permit by FERC on April 2, 1982. (MD 2, Att. 7-21, p. 11; Tr. p. 20)

115. The MD filed for an exemption from licensing for the Goodwin site from FERC on May 5, 1981, and was granted the exemption on September 30, 1981. (MD 2, Att. 6-20, p. 11)

116. A study by the National Park Service, together with the Department of Environmental Protection, the Farmington River Watershed Association, and MD, encouraged hydroelectric development on the Farmington River. (Tr. p. 106)

117. On November 2, 1982, the voters of the District's towns authorized a $12 million dollar bond issue to finance the Goodwin/Colebrook project. (Tr. p. 21)

118. MD would finance the project by issuing general obligation bonds, as required by charter limitations. (Tr. p. 93)

119. The bond market now shows a borrowing rate of 8.4%. The MD computed its project borrowing costs at 9%. (Tr. p. 91)

120. The municipalities that are members of the MD would be financially supporting the project for the first 10 years; then payback to these towns would be expected. (Tr. p. 31)

121. MD's bond rating has been AA for five years. (Tr. p. 93)

122. If the average 19,000,000 kWh/year generation expected by the MD were not realized, the costs of the lost generation would have to be borne by the member towns through taxes in accordance with the obligations of the District to cover the costs of the general obligation bond. (Tr. p. 98)

123. The total cost of the project over the 20 year life of the 12 million dollar bond issue for construction costs, exclusive of revenues generated by power sales, is estimated at $29.1 million. (MD Exh. 2, p. A24; LF 2)

124. The principal cost of the bond issue would be $12.0 million over the 20 year life of the issue, payable at $600,000 per year. (MD LF 2)

125. Interest payments on the bond issue would be expected to total $12.4 million by year 2008. (MD LF 2)

126. Operations and maintenance expenses, escalating at 6% annually, would be expected to total approximately $4.7 million for the first 20 years of operation. (MD LF 2)

127. Based on MD assumptions, the economic break-even point would be approximately 13.7 years. (Tr. p. 31)

128. The member towns will pay a total of $864,000 from years five through nine, at which time revenue from sales exceeds total expenses. (Tr. p. 31; MD LF 1)

129. The estimated net return to the towns through the end of the 20th year totals $5,392,360. (MD LF 3)

130. MD characterized the forecasted production of 19,000,000 kWh/year as a low estimate and testified that actual generation could be double that figure in a year with good water flow. (Tr. pp. 98-99)

131. Recent meetings between the DPUC and small power producers, including the MD, have not yet produced an agreement on a rate structure. (Tr. p. 107)

132. The MD estimates that, at an annual generating rate of 20,000,000 kWh, 40,000 barrels of oil would be saved. (Tr. p. 108)

133. There is no formal signed agreement with Northeast Utilities for the purchase of the electricity generated at the two dam sites. (MD 2, Q. 32)

134. The $400,000 expended to date on the project has been paid for by a temporary borrowing from revenues of water sales. (Tr. p. 112)

135. Alternate sources of loans or grants from government agencies were sought by the MD; none were found. (Tr. p. 114)

136. The MD is also investigating the possibility of hydroelectric generation at several other sites including Nepaug Reservoir, Barkhamstead Reservoir, Collinsville Upper and Lower Dams, and Tariffville Gorge. (Tr. pp. 115-116)

137. After 50 years the cost per kilowatt hour is expected to increase due to an increase in operations and maintenance costs which were computed at an annual average of 6 percent. (Tr. p. 89)

138. Revenue from power sales were calculated at an average annual increase of 3 percent, which is a conservative estimate. (Tr. pp. 89-90)

139. The MD estimates the average cost of generating electricity over 52 years would be 5.79¢ per kWh. This figure was derived assuming an operations and maintenance annual cost inflation at 6%, annual revenue increases of 3%, and average annual generation of 19,000,000 kWh. (Tr. pp. 89-93; MD 2, Ans. 25)

140. Based on MD assumptions the annualized price of electricity produced by the project for a 20 year, 30 year, and 40 year expected life would be 6.88¢/kWh, 5.51¢/kWh, and 5.27¢/kWh respectively. (MD 2, Q. 25)

141. Any future diversion tunnel development would have no impact upon the generation from the Goodwin/Colebrook facilities. (Tr. p. 104)

142. The U.S. Corps of Engineers has expressed no financial interest in the development of the Colebrook facility and is being compensated for its services. (Tr. p. 100)

143. No energy credits could be applied by the MD for renewable resource generation since it is not a taxpaying agency. (Tr. p. 100)

144. Electricity sales revenue above project expenses would be used to offset the costs of district operations, which are assessable against member towns and do not include costs reflected in water rates. (MD 2, Q. 31; Tr. pp. 106-107)

145. The estimated cost of constructing the Goodwin facility is $4.4 million. Other estimated costs include financial fees $300,000; legal fees, $22,500; and contingencies, $365,000. The estimated total cost of developing the Goodwin site is $5,687,510. (MD Exhibit 2, Q. 24)

146. The estimated cost of constructing the Colebrook facility is $5.0 million. Other estimated costs include financing, $300,000; legal fees, $22,500; and contingencies, $365,000. Estimated total cost of developing the Colebrook site is $6,312,500. (MD 2, Q. 24)

147. A modification to the water intake system at the Goodwin dam to allow for the mixing of water from the 600 foot level with water from the 540 foot level would cost $250,000. (MD 2, Q. 6)

148. The addition of a new multi-level water intake tower at Colebrook dam would be expected to cost between five and ten million dollars, which the MD considers prohibitively expensive. (Tr. p. 87; MD 2, Q. 13; MD 2, Att 6-20)

149. Based upon conclusions and recommendations reached by the MD's consultants (Anderson and Nichols and the U.S. Army Corps of Engineers), three megawatts of generation at each site is the optimum for this project. (Tr. pp. 87-88)

150. The cost of installating the power lines from the dams' generators to the Northeast Utility Substation would be borne solely by MD. The MD would also incur the cost of the proper switch gear and equipment for the tie-in in addition to the improvement of the NU lines. (Tr. pp. 88-89)