STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

April 19, 2011

TO: Parties and Intervenors

FROM: Linda Roberts, Executive Director

RE: **PETITION NO. 980** - BNE Energy, Inc. petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of a 3.2 MW Wind Renewable Generating facility located at 178 New Haven Road, Prospect, Connecticut.

As stated at the hearing in New Britain on March 31, 2011, after the Council issues its draft findings of fact, parties and intervenors may identify errors or inconsistencies between the Council's draft findings of fact and the record; however, no new information, evidence, argument, or reply briefs will be considered by the Council.

Parties and Intervenors may file written comments with the Connecticut Siting Council on the Draft Findings of Fact issued on this docket by April 28, 2011.

LR/CMW/RDM/laf

Enclosure

PETITION NO. 980 - BNE Energy, Inc. petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of a 3.2 MW Wind Renewable Generating facility located at 178 New Haven Road, Prospect, Connecticut.	}	Connecticut Siting Council

April 14, 2011

DRAFT FINDINGS OF FACT

Introduction

1. On November 17, 2010, BNE Energy Inc. (BNE), pursuant to Connecticut General Statutes (CGS) §16-50k and §§16-50j-38 to 16-50j-40 of the Regulations of Connecticut State Agencies, submitted a petition to the Connecticut Siting Council (Council) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation (Petition) of a 3.2 megawatt (MW) Wind Renewable Generating facility in Prospect, Connecticut. The proposed project is referred to as "Wind Prospect." (BNE 1, Vol. 1, p. 1)

2. Pursuant to CGS §16-50k(a), the project is eligible to be approved by a declaratory ruling since it is a grid-side distributed resources facility under 65 MW that is in compliance with air and water quality standards of the Connecticut Department of Environmental Protection (DEP). (BNE 1, Vol. 1, p. 1)

3. Pursuant to CGS § 16a-35k, Connecticut state energy policy includes the goal to "develop and utilize renewable energy resources, such as solar and wind energy, to the maximum extent possible." (BNE 1, Vol. 1, p. 1)

4. BNE is a West Hartford based company, founded in 2006 for the purpose of constructing and operating commercial wind generation projects in Connecticut and elsewhere. (BNE 1, Vol. 1, p. 2)

5. The State of Connecticut has implemented renewable portfolio standards (RPS) that required 14 percent of electric generation within the state be produced by renewable resources by 2010. By 2020, RPS requirements increase to 27 percent, 20 percent of which must be from Class I renewable energy sources, which includes wind. (BNE 1, Vol. 1, p. 3)

6. The parties in this proceeding are the Petitioner (BNE), the Town of Prospect, Save Prospect Corp. (SPC), FairwindCT, Inc., John and Cheryl Lamontagne, Thomas and Eileen Satkunas, and the Connecticut Water Company (CWC). Intervenors to the proceeding include Eric Bibler and The Connecticut Light and Power Company (CL&P). SPC, FairwindCT, Inc. and Eric Bibler were grouped for the purpose of these proceedings. CWC withdrew its party status on March 30, 2011. (Transcript 1, 02/23/11, 6:40 p.m. [Tr. 1], p. 7; Transcript 2, 02/24/11, 2:35 p.m. [Tr. 2], pp. 4-5, 10; record)

7. On November 17, 2010, BNE provided notice of the filing to all adjacent landowners via certified mail, return receipt requested. BNE received return receipts for all abutting property owners except for one, which is U.S. Cap, Inc. BNE sent a second notice to this property owner via regular mail. (BNE 1, Vol. 1, Tab D; BNE 2, R. 12)

8. Pursuant to § 16-50j-21 and 16-50j-40 of the Regulations of Connecticut State Agencies, the Council, after giving due notice thereof, held a public hearing on February 23, 2011 beginning at 6:30 p.m. and on February 24, 2011, beginning at 3:00 p.m. and continuing at 6:30 p.m. at the Long River Middle School Gymnasium, 38 Columbia Avenue, Prospect, Connecticut. (Tr. 1, p. 3; Tr. 2, p. 3; Tr. 3, p. 3)

9. Public hearings were continued on March 3, March 15 and March 31, 2011 at the office of the Connecticut Siting Council, 10 Franklin Square, New Britain, Connecticut. (Transcript 4, March 3, 2011, 11:11 a.m. [Tr. 4], p. 3; Transcript 5, March 15, 2011, 12:10 p.m. [Tr. 5], p. 3; Transcript 6, March 31, 2011, 11:20 a.m. [Tr. 6], p. 3)

10. The Council and its staff inspected the proposed site and surrounding area on February 23, 2011. (record)

11. BNE published notice of the petition filing in the Republican American on October 31, 2010. (BNE 1, Vol. 1, p. 32, Tab D)

12. The Council published a legal notice announcing the date, time and place for this hearing in the Waterbury Republican-American on January 26, 2011 and in the Citizen's News on January 28, 2011. (record)

13. BNE installed a sign at the edge of the host property that presented information regarding the petition and the Council hearing. (record)

14. BNE expects the proposed project to be completed and ready for commercial operation in late 2011. (BNE 1, Vol. 1, p. 30)

State Agency Comment

15. Pursuant to CGS § 16-50j (h), on January 21, 2011, and April 1, 2011, the following state agencies were solicited by the Council to submit written comments regarding the proposed facility: DEP, Department of Public Health (DPH), Council on Environmental Quality (CEQ), Department of Public Utility Control (DPUC), Office of Policy and Management (OPM), Department of Economic and Community Development (DECD), Department of Agriculture (DOAg) and the Department of Transportation (DOT). (Record)

16. The DPH Drinking Water Section provided comments on January 5, 2011. The DPH comments noted that the proposed project is located within the public water supply watershed of Long Hill Reservoir, which is an active source of drinking water for the Connecticut Water Company Naugatuck Central System. The proposed project would also be within 45 feet of a wetlands tributary leading to that water supply. DPH recommended the following.
    a. Erosion and sediment controls should be used and maintained as necessary.
    b. A responsible party should be named for maintenance, inspection, repair, replacement and incorporation of new controls.
    c. Machinery should be serviced outside of the watershed.
    d. Vehicles and machinery should be refueled on an impervious pad with secondary fuel containment controls.
    e. A fuel remediation kit should be kept on-site.

f. The Connecticut Water Company should be notified prior to commencement of the proposed project construction.
g. The Connecticut Water Company should be granted permission to periodically inspect the project to ensure that drinking water is not being affected.

(DPH comments dated January 5, 2011)

17. On January 20, 2011, DOT submitted comments regarding a concern that access to the proposed project would require an encroachment permit if it were to extend from Route 69. (DOT comments dated January 20, 2011)

18. On March 14, 2011, DEP submitted comments regarding the proposed project, which are referred to in various portions of the Environmental section of these findings. (DEP comments dated March 14, 2011)

19. The following agencies did not respond with written correspondence: CEQ, DPUC, OPM, DOAg and the DECD. (record)

Municipal Consultation

20. On October 1, 2008, BNE received local approval from the Prospect Planning and Zoning Commission for the installation of a meteorological (Met) tower to be located on the property. (BNE 1, Vol. 1, p. 5; Tr. 5, p. 30)

21. On October 1, 2010, BNE submitted an informational filing for the proposed project with the Town of Prospect. (BNE 1, Vol. 1, p. 5)

22. On October 18, 2010, at the request of the Mayor of Prospect, BNE conducted a public informational meeting for the residents of Prospect. (BNE 1, Vol. 1, p. 5)

23. The concerns of Town of Prospect Planning and Zoning Commission about the proposed project are primarily the noise and ice throw from the proposed turbines and the project's impact on residential real estate values. (Tr. 5, p. 26)

24. The Town of Prospect Inland Wetland Commission is concerned about the project's potential impact on an existing underground plume of industrial contamination from an adjacent property; the potential impact of the proposed project on the wetlands that exist on the property; the Inland Wetland Commission have asked for permission to enter the property at reasonable times to inspect the proposed project as it goes forward; and have requested a list of contacts from BNE that would be available to call in the event of an emergency. (Tr. 5, pp. 27-28)

Other Permits

25. BNE would file with DEP for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities. (BNE 1, Vol. 1, p. 30)

26. On November 4, 2009, the Federal Aviation Administration (FAA) issued a determination that the proposed turbines do not exceed obstruction standards and would not be a hazard to air navigation; however, the structures must be marked and/or lighted in accordance with FAA regulations. (BNE 1, Vol. 1, p. 31)

27. BNE would install flashing red lights on the nacelle of the turbines, which would be lit at night, and paint the tower white, which would eliminate the requirement of lighting the structures during the day. The proposed red flashing lights would light approximately 20 to 30 times per minute. BNE would also notify the FAA within five days after the installation of the blades on the proposed turbine. (BNE 1, Vol. 1, p. 31-32; Tr. 6, pp. 217-218)

Proposed Site

28. The proposed site is located on a 67.5-acre parcel at 178 New Haven Road in Prospect. The host property boundary would be located approximately 1,760 feet north of the Prospect/Bethany town line and approximately 430 feet east of the New Naugatuck Reservoir (refer to Figure 1). (BNE 1, Vol. 1, pp. 4, 7)

29. The host parcel is currently undeveloped with the exception of a 160-foot telecommunications tower owned by SBA located on the southeast corner of the parcel. BNE notified the owner of the existing telecommunications tower of the proposed project. (BNE 1, Vol. 1, p. 7, Vol. 3, Tab J; BNE 2, R. 19)

30. Surrounding land uses include commercial and residential development. (BNE 1, Vol. 1, p. 7)

31. The host property is zoned residential (RA-1), which requires 1 acre to develop a single-family residence. (BNE 1, Vol. 1, p. 17)

32. Abutting parcels are zoned Residential one-acre lots, Residential two-acre lots, and Industrial. (Town of Prospect Zoning Map, June 2009, Tr. 2, pp. 38-40)

33. CWC owns the adjacent property to the west, which is used for the New Naugatuck Reservoir. Most of the CWC property is Class I watershed land with portions of it designated Class II watershed land. (BNE 1, Vol. 1, p. 19)

34. There are 52 residences within 2,000 feet of the proposed turbine locations. (BNE 2, R. 22)

35. The distance of the proposed turbines to nearby properties is shown in the following table.

	Northern Turbine	Southern Turbine
Distance to nearest property line	360 feet	150 feet
Distance to nearest residential property line	716 feet	885 feet
Distance to nearest residential building	823 feet	930 feet
Distance to Route 69	1,020 feet	1,080 feet

(BNE 1, Vol. 2, Tab F; BNE 6, R. 13; BNE 9h)

36. Access to the proposed site would extend from Kluge Road. A portion of the access road currently exists and would be upgraded then a new access road would be constructed to the turbine locations. (BNE 1, Vol. 1, p. 8)

37. Construction of the proposed project may require some improvements to Kluge Road. BNE would assess the condition of Kluge Road and determine if it is capable of withstanding the weight of the equipment that would travel the road to the host property. (Tr. 4, p. 86; Tr. 6, p. 173)

38. Off-site grading would be required between the end of the pavement on Kluge Road and the host property boundary. (BNE 8, R. 82)

Project Description

39. BNE proposes to install two General Electric (GE) 1.6 MW wind turbines and associated equipment; an ancillary building for storage, office space and an educational area; an access road; and an electrical interconnection at the proposed site (refer to Figure 2). (BNE 1, Vol. 1, p. 7)

40. The hub or tower of each proposed turbine is approximately 328 feet (100 meters) tall. The nacelle is at the top of the hub and contains the operation equipment. The proposed rotor blades are 132 feet each with a diameter of 270 feet (82.5 meters) for the three-blade configuration. BNE is requesting approval for 164-foot (50 meter) rotor blades with a 328-foot (100 meter) diameter for this petition. The total maximum height of the tower and rotor blades would be 492 feet (150 meters). (BNE 1, Vol. 1, pp. 7-8; BNE 6, R. 11)

41. The proposed ancillary building would include restroom facilities and use an on-site well to meet sanitary and drinking needs. An on-site septic system would be required to dispose of wastewater. (BNE 1, Vol. 1, pp. 8-9)

42. Independent pitch motors are used for each blade to provide adjustment of the blade pitch angle during operation. (BNE 1, Vol. 1, p. 10)

43. BNE investigated the use of a 262.5-foot (80 meter) hub height tower rather than a 328-foot (100 meter) hub height; however, due to the ground elevation in the area of the proposed turbines, the wind turbulence intensity would be higher causing more stress on the bottom of the blades versus the top of the blades. (Tr. 4, pp. 88-89)

44. The turbine foundations are proposed to be octagonal, approximately 48 feet in diameter, and about four feet deep made of reinforced concrete. (Tr. 4, p. 114)

45. The power generated from the proposed wind turbines would be sold at wholesale to the grid. (Tr. 6, pp. 214-215)

46. BNE would agree to post a construction bond with the Council, if ordered. (Tr. 6, p. 62)

47. BNE would agree to reimburse any reasonable expenses incurred by the Town of Prospect to hire experts to verify the proposed project would be built in accordance with final design plans. (Tr. 6, p. 62)

48. The useful lifespan of the proposed turbines is approximately 20 to 30 years. At the end of that period, the equipment would be reviewed and a determination would be made to decommission or change out existing equipment. BNE would be willing to file a plan for decommissioning of the turbines during the Development and Management (D&M) Plan phase of the proposed project, if required by the Council. (BNE 1, Vol. 1, p. 9; Tr. 6, pp. 62-63)

49. BNE would be willing to file a certificate of liability insurance for the proposed turbines, with the town on an annual basis. (Tr. 6, p. 66)

Northern Turbine Relocation

50. BNE would be willing to relocate the northern turbine approximately 160 feet south-southwest of its original location. This relocation would increase the distance of the turbine to the nearest residence. (BNE 18b, R. 12)

51. The proposed relocation would also require the relocation of the laydown areas, crane pad, turnarounds and the position and slope of the access road (refer to Figure 3). (BNE 18b, R. 12)

52. The ground elevation at the relocated northern turbine would be 640 feet above mean sea level. (BNE 18b, Tab 1)

Facility Operation

53. BNE worked with GE to find the proper location and product for the proposed wind turbines on the Prospect property. GE performed a Mechanical Loads Assessment taking into account wind shear, air density and turbulence intensity. Turbulence intensity at the location of the proposed turbines were found to be too high for the 270-foot (82.5 meter) rotor diameter turbine with a 262-foot (80 meter) hub height. The proposed 270-foot (82.5 meter) turbine with a 328-foot (100 meter) hub height was selected to reduce the turbulence intensity and loading on the turbine when in operation. (BNE 2, R. 1)

54. The proposed 328-foot (100 meter) hub height would result in a higher energy output and capacity factor compared to the 262-foot (80 meter) hub height. (BNE 2, R. 1)

55. The cut-in wind speed for the 270-foot (82.5 meter) rotor diameter turbine is 7.8 mph (3.5 m/s). (BNE 2, R. 7)

56. Based on measured wind data, the turbines are expected to spin approximately 7,787 hours over a one-year period, or 88.9 percent of the time. (BNE 2, R. 7)

57. Based on measured wind data at the site, the proposed turbines are expected to run at full capacity for approximately 7.5 percent of the time during the year. (BNE 2, R. 8)

58. If the proposed wind turbines were placed too close together, there would be a potential of wind coming through one turbine and causing turbulence on the second turbine. The turbine would be affected by turbulence would be damaged over time and/or would produce less electricity. (Tr. 6, p. 242)

Electrical Interconnection

59. BNE proposes to install an electrical collector yard on the property. Electrical equipment would include a 600-amp, 15-kV class circuit breaker or recloser with a multifunctional relay. (BNE 1, Vol. 1, p. 8)

60. BNE would make the electrical interconnection with CL&P's 13.8-kV distribution system at Kluge Road. (BNE 1, Vol. 1, p. 9)

61. The electrical interconnection of the wind turbines would be subject to an agreement with CL&P to provide power on to the electrical distribution system. (Tr. 6, pp. 215-216)

Reliability

62. The proposed project would generate approximately 8,410 megawatt-hours (MWh) of Class I renewable energy annually. (BNE 1, Vol. 1, p. 11)

63. The proposed wind turbines are designed to have an availability of approximately 98 percent. The capacity factor of the proposed project is expected to be approximately 30 percent. (BNE 1, Vol. 1, p. 12)

64. The remaining two percent of time that the turbines may be unavailable is typically due to routine maintenance or needed repairs. (Tr. 4, p. 83)

65. Maintenance is generally scheduled every six months and requires turbines to be shut down for approximately one and a half days. Maintenance includes tightening of bolts, changing filters, and topping off lubricants in the nacelle. (Tr. 4, pp. 83-84)

66. The proposed turbines could operate in a maximum extreme gust for a three-second period of approximately 125 miles per hour (mph) and for ten minutes at approximately 89.5 mph, in accordance with International Electrotechnical Commission standards. (BNE 1, Vol. 1, p. 13)

Capacity

67. BNE began searching in Prospect for a site because of Prospect's ground elevation and potential for wind resources. The search was focused on available property with enough acreage to accommodate several turbines, with the ability to interconnect with the electric grid, and with a low residential density in the surrounding area. (BNE 1, Vol. 1, p. 13; BNE 2, R. 5)

68. BNE obtained an option to purchase the property of the proposed site. (BNE 1, Vol. 1, p. 13)

69. BNE installed a Met tower on the property on November 3, 2008 to begin collecting wind data. The Met tower measured wind conditions at 131.2 feet (40 meters), 164 feet (50 meters) and 197 feet (60 meters) on the tower. (BNE 1, Vol. 1, p. 13; BNE 2, R. 3)

70. Data from the Met tower was collected for 14.7 months, from November 4, 2008 to January 24, 2010. (BNE 4, R. 33)

71. The nighttime (6:00 p.m. to 6:00 a.m.) and daytime (6:00 a.m. to 6:00 p.m.) average wind speeds for each month are shown in the table below.

Month	Nighttime Average at 100 m	Daytime Average at 100 m
January	7.07 m/s (15.8 mph)	7.01 m/s (15.7 mph)
February	8.40 m/s (18.8 mph)	8.32 m/s (18.6 mph)
March	7.49 m/s (16.8 mph)	6.83 m/s (15.3 mph)
April	7.24 m/s (16.2 mph)	7.51 m/s (16.8 mph)
May	6.52 m/s (14.6 mph)	6.09 m/s (13.6 mph)
June	5.60 m/s (12.5 mph)	5.07 m/s (11.3 mph)
July	5.99 m/s (13.4 mph)	5.40 m/s (12.1 mph)
August	6.20 m/s (13.9 mph)	5.06 m/s (11.3 mph)
September	6.86 m/s (15.3 mph)	6.07 m/s (13.6 mph)
October	7.37 m/s (16.5 mph)	6.96 m/s (15.6 mph)
November	7.27 m/s (16.3 mph)	7.14 m/s (16 mph)
December	8.29 m/s (18.5 mph)	8.33 m/s (18.6 mph)

(BNE 4, R. 33)

Public Health and Safety

Operational Safety

72. The proposed turbines can be controlled from an interface within the nacelle, from a control box at the bottom of the tower, or remotely using a Supervisory Control and Data Acquisition System with local lockout capacity. (BNE 1, Vol. 1, p. 10)

73. Emergency stop buttons would be located within the tower base and within the nacelle to stop the turbine in the event of an emergency. (BNE 1, Vol. 1, p. 10)

74. The proposed turbines would have automatic fire extinguishers and fire alarms and additional, hand held fire extinguishers. (BNE 6, R. 45)

Noise

75. The DEP developed noise control regulations to establish community noise exposure criteria. (Council Administrative Notice Item 42)

76. The regulations establish three types of land classifications based on the actual use of the parcel. The three categories are Class A, generally residential; Class B, generally commercial; and Class C, generally industrial. (Council Administrative Notice Item 42)

77. The site is developed with a telecommunications tower, a Class C Land use category. The construction of electric generating wind turbines would also render the property a Class C land use. (Council Administrative Notice Item 42; BNE 1, Vol. 2, Tab F; BNE 14, R. 39)

78. The DEP noise criteria from a Zone C emitter to a Zone A use is 61 dBA during the daytime (7:00 a.m. to 10:00 p.m.) and 51 dBA during the nighttime (10:00 p.m. to 7:00 a.m.). (Council Administrative Notice Item 42)

79. Noise modeling indicates the noise levels from the turbine hub locations would be 45 to 46 dBA at the nearest residences (Zone A use) during the daytime and nighttime, at a wind speed of 20.1 miles per hour. The projected noise from the turbine complies with DEP criteria. (Council Administrative Notice Item 42; BNE 1, Vol. 3, Tab M)

80. The alternate location of the northern turbine is slightly farther from the nearest receptor thereby having a slightly beneficial effect on noise levels. (Tr. 6, p. 141)

81. BNE would be willing to conduct a two-year post-construction noise study focusing on noise levels at the property boundary near the adjacent residences. (BNE 24)

82. Operation of the site would not generate low frequency noise that is subject to regulation since the turbine would not produce individual octave bands that are higher than other octave bands. (Tr. 6, pp. 228-230)

83. Walls, vegetation or other short barriers would not be effective in reducing sound levels at nearby receptors. (Tr. 6, pp. 150-151, 233-234)

Ice Throw

84. Ice can form under appropriate weather conditions that typically include temperatures in the range of 28° F to 36° F, and a relative humidity greater than 97 percent. Glaze ice is of most concern with wind turbines and can be formed through accumulations of freezing rain or drizzle. (BNE 14, R. 44; Tr. 2, pp. 65-66)

85. Ice could collect on the rotating and non-rotating portions of the turbine although ice formation on operating blades is more likely under appropriate weather conditions. Ice fragments can be thrown from the blade of an operating turbine or fall off a stationary turbine. (BNE 9h)

86. Ice throw and ice fall determinations were based on climate data obtained from on-site measurements from one winter season. Based on the collected climate data, the estimated amount of icing at the site is 192 hours per season. The risk level associated with the ice throw analysis is dependent on the amount of icing assumed for the site. An increase in the hours of icing would increase the risk of ice being thrown. (BNE 9h; BNE 14, R. 49; Tr. 2, p. 67; Tr. 4, pp. 207-208)

87. Ice can accumulate on stationary turbines and can fall off during melting conditions. The worst-case ice drop distance, assuming a 1.1-pound ice fragment, is approximately 226 feet from the base of the turbine. The typical drop range (90 percent of occurrences) of 1.1 pound and 2.2 pound ice fragments from a 328-foot rotor diameter is 131 feet from the base of the turbine. (BNE 9h)

88. The typical range (90 percent of occurrences) of a 1.1-pound ice fragment being thrown from a turbine with a 328-foot rotor diameter is 0 to 475 feet. Land-owners/properties within the typical range of the turbines include the site property, CWC and 15 Kluge Road. (BNE 1 Vol. 1, Tab D, Tab F; BNE 9h; BNE 14, R. 43)

89. The exceptional range (10 percent of occurrences) of a 1.1-pound ice fragment being thrown from a turbine with a 328-foot rotor diameter is 476 to 820 feet. Land-owners/properties within the exceptional range of the turbines are the same as above. (BNE 1 Vol. 1, Tab D, Tab F; BNE 9h; BNE 14, R. 43)

90. The typical range (90 percent of occurrences) for a 2.2-pound ice fragment being thrown from a turbine with a 328-foot rotor diameter is 0 to 508 feet. Land-owners/properties within the typical range of the turbines includes the site property, Naugatuck Water Company, 15 Kluge Road, 18 Kluge Road (CL&P), 214 New Haven Road (U.S. Cap Inc.), 200 New Haven Road (Demagistris), 190 New Haven Road, (Visockis), and 184 New Haven Road (McCormack). (BNE 1 Vol. 1, Tab D, Tab F; BNE 9h; BNE 14, R. 43)

91. The exceptional range (10% of occurrences) of a 2.2-pound ice fragment being thrown from a turbine with a 328-foot rotor diameter is 509 feet to 902 feet. Land-owners/properties within the exceptional range of the turbines include those listed above and 12 Kluge Road, 210 New Haven Road (Brunetti), and 220 New Haven Road. (BNE 1 Vol. 1, Tab D, Tab F; BNE 2a; BNE 9h; BNE 14, R. 43)

92. The closest residence to the turbines, 200 New Haven Road (Demagistris), is approximately 823 feet east of the northern turbine, within the 2.2-pound ice fragment exceptional range (328-foot rotor diameter). The probability of a 2.2-pound ice fragment striking a 10.7 square foot section of the residence is once in every 8,391 years, assuming ice mitigation methods are not employed. (BNE 9h; BNE 14, R. 41)

93. A residence at 190 New Haven Road (Visockis) is approximately 885 feet east of the northern turbine. The probability of a 2.2-pound ice fragment striking a 10.7 square foot section of the residence is greater than once in 10,000 years, assuming ice mitigation methods are not employed. (BNE 9h; BNE 14, R. 41)

94. If a 270-foot (82.5 meter) rotor diameter was used at the site, the probability of a 2.2-pound ice fragment striking a 10.7 square foot section of the closest residence (823 feet east of northern turbine) is once in every 82,639 years, assuming ice mitigation methods are not employed. The probability of a 2.2-pound ice fragment being thrown beyond 837 feet is nil. (BNE 14, R. 41)

95. GE has developed recommended setback distances related to ice throws. The southern turbine with a 270-foot rotor diameter would meet GE's recommended setback. The northern turbine with a 270-foot rotor slightly exceeds GE's recommended setback. BNE would be willing to shift the location of the northern turbine approximately 160 feet to the southwest. At this alternate location, the northern turbine would meet GE's recommended setback. The alternate location would increase the setback from the nearest residential dwelling from approximately 823 feet to 920 feet. (BNE 9h; BNE 14, R. 46; Tr. 6, pp. 40, 260-261)

96. Remote and internal monitoring of the turbines can detect icing events, or other problems, through changes in turbine electrical output when compared to wind speed. Ice formation can affect the aerodynamics of the turbine with accumulating ice slowing the blades down. Sensors would detect lower power outputs when compared to wind speed and would cause the turbine to automatically shut down. The shut down would protect the turbine from mechanical damage as well as act as a safety measure during icing events. (BNE 14, R. 47; Tr. 2, pp. 78-79)

97. Internal monitoring can also detect icing events through an increase in rotor vibration caused by blade ice formation, leading to a shut down of the turbine. (BNE 2, R. 9; BNE 14, R. 47)

98. The turbine would be monitored continuously by GE during operation. During known or predicted icing events, BNE would dispatch personnel to the site to monitor the turbines for icing. (BNE 2, R. 9; BNE 14, R. 47; Tr. 2, pp. 74-75)

99. Once shut down, BNE would have personnel on-site to assess ice accumulation and operating conditions. (BNE 14, R. 47)

100. Restarting and operation of a turbine with ice on the blades is the most dangerous scenario for ice throws. To prevent ice throws upon re-start, BNE would have on-site personnel inspect and ensure ice has melted and fallen from the blades prior to re-start. (BNE 14, R. 47, R. 48; Tr. 2, pp. 69-71, 73; Tr. 6, pp. 267-268)

101. During severe icing events, BNE would curtail or completely shut down the turbines prior to the icing event to prevent ice throws. The turbines could be manually positioned away from favorable ice-forming wind conditions during turbine operation to reduce the amount of icing on the blades during the ice event. (BNE 14, R. 47)

102. GE offers an optional Winter Ice Operation mode that would allow the turbine to spin at slower speeds during icing events to keep the turbines operational and thus produce electricity. BNE is studying whether local weather conditions would warrant inclusion of this option. The mode can be added on after construction is completed. (BNE 2 R. 9; Tr. 2, pp. 86-89)

Shadow Flicker

103. Shadow flicker is the alternating changes in light intensity in a shadow cast upon an area. The change in light intensity is caused by the sun casting a shadow of each of the rotating blades over an area. (BNE 2 a)

104. Shadow flicker can be cast through an unobstructed window of a home under certain circumstances where the room would experience repetitive changes in brightness. Shadow flicker can also occur outside where the alternating shadows would appear on the ground. (BNE 2a)

105. The frequency of shadow flicker is determined by rotor blade speed and the number of blades on the rotor. The frequency is measured in Hertz (Hz), with 1 Hz being equivalent to one flicker per second. (BNE 2a)

106. The proposed turbines, with 270-foot rotor diameter, would rotate at a speed of 9.75 to 16.18 revolutions per minute which corresponds to 29.2 to 48.5 shadows per minute or 0.49 to 0.81 Hz. (BNE 2a; Tr. 6, p. 268)

107. The Epilepsy Foundation determined that flicker frequencies above 3 Hz could be a concern to individuals that are afflicted with photosensitive epilepsy. Shadow flicker from the turbines would be below this recommend level. (BNE 2a; SPC Administrative Notice Item 1)

108. There are no Federal or State of Connecticut standards for shadow flicker. Some communities in various parts of the county have adopted standards that range from 10 hours per year to 30 hours per year at an occupied structure. (BEN 2a; SPC Administrative Notice Items 3, 5, 6)

109. A German court case ruled that the actual exposure level of 30 hours per year of shadow flicker was acceptable at a neighboring property. (BNE 2a)

110. A probable case shadow flicker model was generated which accounts for vegetation and weather conditions not favorable for generating shadows such as lack of sun or absence of wind. Additionally, the probable case model was operated in a conservative "greenhouse mode" which accounts for line of sight shadows affecting a residential dwelling from all sides of the dwelling. This mode is conservative in that the windows of many houses do not face the sun directly during all shadow flicker occurrences. Additionally, varying widths of the blade were not factored into the model. Shadow flicker is more pronounced when the shadow is cast from closer to the hub than from the blade tips. (BNE 2a; BNE 18c; Tr. 2, 90-93; Tr. 4, pp. 141-147; Tr. 6, pp. 118-120)

111. It is possible that shadow flicker could occur in areas considered obscured by vegetation when leaves are off the trees, especially when shadows are cast through the thin tops of the tree canopy. (Tr. 4, pp. 156-158)

112. The probable case model is a predictive tool and cannot precisely determine the effects of shadow flicker. (Tr. 4, pp. 166- 167)

113. The probable case model was limited to a distance of 6,560 feet from the turbines. After this distance, shadow flicker would be negligible. (BNE 2a)

114. The probable case model, when applied to the original proposed locations using a 270-foot rotor diameter, indicates shadow flicker would occur generally east of the site, usually two hours before sunset during specific calendar dates. Shadow flicker would occur to a limited area west of the site for up to two hours after sunrise. (BNE 2a; BNE 5; Tr. 2, pp. 94-95; Tr. 4, pp. 168-189)

115. The probable case model indicates 74 residential dwellings would experience some shadow flicker ranging from three to 31 minutes per day during certain times of the year. Two residential dwellings would experience 32 to 34 hours of shadow flicker per year. Twelve residential dwellings would experience between 10 and 23 hours of shadow flicker per year (refer to figure 4). (BNE 5)

116. The probable case model also indicates approximately five off-site properties would experience over 40 hours of exterior shadow flicker per year and an additional six properties would experience 30 to 40 hours per year of exterior shadow flicker (not including the New Naugatuck Reservoir). (BNE 5; Tr. 6, pp. 268-270)

117. If the probable case model were applied to the site with the alternative northern turbine location, and using a rotor diameter of 270 feet, 77 residential dwellings would experience some shadow flicker ranging from two to 26 minutes per day during certain times of the year. Seventeen residential dwellings would experience 10 to 25 hours of shadow flicker per year. No residential dwelling would experience over 30 hours per year. Six off-site properties would experience over 30 hours of exterior shadow flicker per year (not including the New Naugatuck Reservoir) (refer to Figure 5). (BNE 18c; Tr. 6, pp. 111-112)

118. If the probable case model were applied to the site with the alternative northern turbine location, and using a 328-foot rotor diameter, 93 residential dwellings would experience shadow flicker ranging from two to 31 minutes per day during certain times of the year. Three residential dwellings would experience 32 to 33 hours of shadow flicker per year. Twenty-one residential dwellings would experience between 10 to 29 hours of shadow flicker per year. Twelve off-site properties would experience over 30 hours of exterior shadow flicker per year (not including the New Naugatuck Reservoir). (BNE 18c; Tr. 6, pp. 111-112)

119. Shadow flicker can be mitigated by eliminating shadows cast upon the receptor through the installation of window blinds or the strategic planting of landscaping on the receptor property. Turbines could also be shut down when shadow flicker is most prevalent. (Tr. 2, pp. 96-99; Tr. 4, pp 169-170; Tr. 6, pp. 124-125)

Environmental Impacts

Air and Water Quality Standards

120. The proposed project would comply with DEP air quality standards. The project would produce no air emissions during operation. (BNE 14, R. 36)

121. Water quality standards have been developed by the DEP to protect surface and groundwater resources in Connecticut. (Council Administrative Notice 40)

122. Surface water quality can be affected by construction and development activities through direct discharge or through run-off. (Council Administrative Notice 40)

123. The project would have no direct discharge into surface waters. Indirect discharges from the site would occur through run-off and stormwater discharge. Surface water quality would be maintained through the proper implementation of erosion and sedimentation controls both during construction and after construction. (BNE 14, R. 36)

124. Stormwater generated at the site would be controlled in accordance with the *2004 Connecticut Stormwater Quality Manual* and the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control.* BNE would design the project to conform to these guidelines. The submitted site plans relied on preliminary survey work that does not contain certain topographical features. If the project were approved, BNE would complete all survey work and develop site plans consistent with the aforementioned manual/guidelines. (BNE 14, R. 36; Tr. 6 pp. 156-157, 162-163)

125. Some of the preliminary construction erosion and sedimentation control features include the use of silt fencing, drainage swales, sediment traps, check dams, pipe slope drains, runoff diversions, temporary seeding, and erosion control blankets. (BNE 22, Attachment 3, pp. 3.1-3.3)

126. Some of the post-construction erosion and sedimentation control features include riprap-lined swales, check dams, level spreaders, catch basins, and two bio-retention ponds. (BNE 22, Attachment 1)

127. Culverts would be installed beneath the access road to allow runoff to travel from one side to the other. The culverts would be at least two to three feet beneath the roadbed. (Tr. 6, pp. 171, 172)

128. In accordance with the 2004 Connecticut Stormwater Quality Manual, post-construction peak stormwater run-off levels would not exceed pre-construction levels. (BNE 22, R. 27, Tr. 6, pp. 162-163)

129. Once completed, temporarily disturbed areas would be re-vegetated with a variety of native vegetation. The re-vegetated areas would not be treated with fertilizers or pesticides to prevent phosphorus and nitrogen laden run-off into surface waters. (BNE 14, R. 36)

130. A construction Spill Prevention Plan would be implemented to respond to any accidental spills of hazardous, toxic or petroleum substances that could affect surface water or ground water resources during construction events. In the event a spill occurs, BNE would notify the DEP and the Connecticut Water Company. (BNE 6, R. 19; BNE 14, R. 36, Attachment 2, p. 5-1)

131. BNE is willing to notify CWC at least 72 hours in advance of any maintenance activity that would involve draining, transfer, or addition of lubricating, hydraulic or other oil or having a volume of greater than five gallons; to allow CWC access to monitor all maintenance activities; to require on-site emergency spill control equipment during maintenance activities; and to immediately notify CWC and DEP in the event of a spill. (BNE 15, R. 6)

132. Groundwater in the site area is designated as GAAs, ground water that is a tributary to a public water supply reservoir. (Council Administrative Notice 40)

133. A former manufacturing facility abuts the site to the east at 214 New Haven Road, known as the U.S. Cap and Jacket (USCJ) property. The southern turbine is approximately 900 feet west of the USCJ property. (BNE 18c, R. 2; BNE 1, Vol. 2, Tab F)

134. The USCJ property is located on the east side of a geologic drumlin formation. The proposed turbines are located on the west side of the drumlin. A high point of the drumlin, the field area of the BNE site property, is located between the USCJ and the turbines, thereby creating a hydraulic surface and groundwater water divide. Surface and groundwater would migrate to the northeast. ((DEP comments of March 14, 2011; BNE 18c, R. 2, R. 3; BNE 21, R. 5; BNE 22, Attachment 1, map C-200; Tr. 4, pp. 105, 108, 124-125)

135. Remedial actions were performed at the USCJ in the 1990's and involved the removal or underground and aboveground tanks, an oil water separator, and contaminated soil. Residual soil contamination remains at the USCJ site. (BNE 18c; SPC 4i; Tr. 5, pp. 139-140)

136. A remediation report prepared by Tetra Tech NUS in 2003 recommended additional soil and groundwater testing at the USCJ site to characterize the extent of contamination. The report also recommends the testing of groundwater wells within a half-mile radius of the USCJ property. No additional testing was conducted. (BNE 18c, R. 2; SPC 4i; Tr. 4, pp. 121-124; Tr. 6, pp. 284-285)

137. A groundwater plume containing industrial substances, notably perchloroethylene (PCE) and trichloroethylene (TCE), has been identified migrating off the USCJ property in a northeasterly direction, away from the turbine sites. (DEP comments of March 14, 2011; BNE 18c, R. 2, R. 3; BNE 21, R. 5; Tr. 5, pp. 34-35, 133)

138. Groundwater testing was conducted primarily in the shallow aquifer at the USCJ site although two bedrock wells were also sampled. The bedrock wells, up to 300 feet deep, were found to be contaminated and were closed. Additionally, contaminants were identified in two residential drinking water wells, one at 1 George Street, east of the USCJ property, and the other at 213 New Haven Road, north of the USCJ property. (DEP comments of March 14, 2011; BNE 21, R. 5; Tr. 4. pp. 104-107)

139. Surficial groundwater flows from the USCJ would likely be away from the turbine sites. Bedrock groundwater flow is erratic and could travel along bedrock fracture lines. (DEP comments of March 14, 2011; Tr. 4, 110-111, 124)

140. Blasting could create fractures in bedrock, redirecting groundwater flow. (DEP comments of March 14, 2011; Tr. 4, pp. 108-111, 123-124)

141. BNE does not anticipate blasting of bedrock at the site. The layer of till over the bedrock at the site is estimated to be 15 to 60 feet deep. Excavation for the turbine foundation would be to an approximate depth of ten feet. (BNE 18c, R. 3; BNE 21; Tr. 4 pp. 108-114)

142. There is no existing well on the BNE site property. (Tr. 4, p. 122)

143. A groundwater well would be installed to service a bathroom within the maintenance/storage building. The restroom would discharge to an on-site septic system. BNE would need to obtain Town approval of the well and septic system. (BNE 14, R. 36, R. 37)

144. The well for the maintenance/storage building would be installed into the bedrock. The draw area of the well could extend up to 500 feet. It would not draw from the USCJ property. (BNE 18c, R. 3; BNE 21, R. 5; Tr. 4, pp. 123-124, 126-127)

145. A drainage ditch on the USCJ property along Route 69 leads to an intermittent watercourse that drains along Route 69. This watercourse eventually traverses the northern portion of the BNE site, crosses onto CWC property and empties into the New Naugatuck Reservoir. (BNE 1, Tab F, Tab I; Tr. 5, pp. 141-142, 166-168)

146. The 2003 remediation report recommended the removal of the drainage system components at the USCJ site to eliminate a preferential pathway for the horizontal migration of contaminated groundwater and its subsequent discharge into surface waters. There is no information regarding groundwater discharge into the drainage ditch. It is unlikely that surface water in the drainage ditch is contaminated. (BNE 21, R. 5; SPC 4i; Tr. 5, pp. 141-142, 166-168)

147. Installation of the turbine foundations would have no effect on overall groundwater flows at the site. (Tr. 5, pp. 192-193)

Wildlife

148. The BNE site property is generally located on the west side of a forested hill and includes the following habitat types: second growth hardwood forest, forested wetlands and hillside seeps, and a nine-acre hilltop meadow (refer to Figure 6). (BNE 1, Tab I, p. 2)

149. The site does not have high wildlife value due to the absence of a diversity of nut and seed bearing vegetation in the forest and the abundance of Japanese barberry in the forest understory. Japanese barberry is an invasive species offering minimal food supply to native fauna. (BNE 1, Tab I, p. 15)

150. Construction of the project would cause relocation of some wildlife to adjacent areas and cause some mortality of slower moving species. Once construction is completed, some species sensitive to disturbance would return and some would occupy re-vegetated areas. Generally, long-term impacts to wildlife would be minimal. (BNE 1, Tab I, pp. 15-16)

Amphibians and Reptiles

151. The site lacks water features that would attract many amphibian species. Common species that may occur at the site include American toad, redback salamander, wood frog, and spring peeper. (BNE 1, Tab I, pp. 10-11, BNE 1, Tab M, p. 11)

152. Reptile species could include common snakes and the eastern box turtle, a state species of special concern. Although box turtles were not identified on site, and the site's ground elevation is not within the box turtles' favored habitat range, BNE would undertake protection measures to prevent impacts to this species, including work area isolation, contractor education and reporting to the DEP. (BNE 1, Tab I, pp. 10-12; BNE 24)

Mammals

153. Mammal species most likely to be found at the site include white-tailed deer, red fox, raccoon, opossum, skunk, woodchuck, coyote, rabbits, various rodents, mink, fisher, and bats. (BNE 1, Tab I, pp. 8-10, 13-14; BNE 9h)

154. A bat survey performed from June 25 to November 1, 2010 identified six species of bats utilizing the site. Three of these species, the eastern red bat, hoary bat, and silver-haired bat, are listed as state species of special concern. Although not recorded, the northern long eared bat may occur at the site as it favors interior forest areas. (BNE 9e, pp. 16, 20)

155. Tree dwelling bats would be attracted to the forest and forested wetland areas of the site. This type of habitat is common to the region. Tree roosting bats in this area are solitary and do not aggregate in large numbers; however, the presence of forested wetlands and forest edge habitat on the site, and the proximity of the New Naugatuck Reservoir to the site, are all favorable in supporting bat populations. (DEP comments of March 14, 2011; BNE 9e, p. 18; SPC 5d; R. 66, R. 67)

156. Most bat activity recorded at the site was in the meadow area, most likely because it offers more food for a majority of the identified bat species when compared to the forested areas. (BNE 9e, pp. 18-19)

157. Most recorded bat fatalities at wind turbine sites are of migratory tree roosting species generally during post breeding and migratory periods. The most affected species (75% of reported fatalities) are the eastern red, hoary, and silver-haired bats. (BNE 9e, p. 21; Tr. 6, pp. 201-202)

158. The expected mortality of bats at the site are expected to be low to moderate but may be higher, especially for the hoary bat, due to possible undercounting attributed to limitations in the bat detection/identifications methods of the study. Most bat fatalities would occur in August and September, usually during low wind speed nights. (DEP comments of March 14, 2011; BNE 9e; SPC 5d, R. 61, R. 64; Tr. 6, pp. 202, 206)

159. The DEP recommends a post-construction bat monitoring study of at least two-years in duration to monitor bat mortality at the site. If a post-construction bat study is not performed, DEP requests access to the property for research purposes. (DEP Comments of March 14, 2011)

160. BNE would be willing to perform additional bat monitoring for the period of May to November 2011 and would conduct a two-year post-construction bat monitoring study. (BNE 24)

Birds

161. The site is utilized by various birds as nesting and foraging habitat. Forty-three bird species were identified on-site during a limited study in summer of 2010, all of which were regionally common species such as the eastern towhee and the American robin. The study occurred on three separate days in early summer. Mature vegetation obscured the positive identification of 58 bird sightings. (DEP comments of March 14, 2011; BNE 1, Tab M, pp. 6-12; BNE 8, R. 56; SPC 5a, R. 49, R. 50. R. 56, R. 57)

162. The study did not include the spring or fall migratory period for songbirds, raptors or waterfowl. Studies have demonstrated that turbine fatalities of migrating raptors and waterfowl are not significant. Songbirds, most of which migrate at night, account for the majority of bird mortality at wind turbines. (BNE 1, Tab M; BNE 8, R. 53; SPC 5a, R. 54)

163. BNE is performing a migratory bird study from March to April 2011 to address concerns regarding the initial study that did not include migratory periods. Data from this study would be submitted to the DEP upon completion. (BNE 24)

164. No state listed or federal listed species of concern were identified at the site during the survey. Several birds identified on-site are species of regional conservation concern including the chestnut-sided warbler, chimney swift, and eastern towhee. (DEP comments of March 14, 2011; BNE 1, Tab M, pp. 12-13; BNE 8, R. 59)

165. The most utilized area on the property for birds was the open meadow area and the forest edge. Grasslands and early successional habitat are considered high value habitats by the DEP and are management priorities in Connecticut and the northeast. (DEP comments of March 14, 2011; BNE 1, Tab M, pp. 12-13)

166. Development of the site can affect birds through the loss of habitat or behavioral avoidance. Some grassland species of birds are could avoid the meadow area on the property due to construction activities, turbine noise and/or maintenance activities. Birds that rely on forest interior areas could be affected from forest clearing to develop the road and turbine locations. (BNE 1, Tab M, p. 12; SPC 5a, p. 10)

167. Some studies have documented that some species of birds would avoid a turbine up to a distance of approximately 1,300 feet. Other studies have demonstrated that some species of birds are only temporarily displaced or do not significantly change their behavior once a turbine is in place. (BNE 1, Tab M, p. 12)

168. Bird strikes at turbines can occur for both resident and migrating species. Studies have demonstrated bird fatalities at a single turbine could occur at a rate of approximately 2.3 per birds per year. Studies have indicated that two thirds of these fatalities are from migrating birds. (BNE 1, Tab M, p. 12)

169. The project would not have a significant negative impact on birds of regional conservation concern. (DEP comments of March 14, 2011)

Visibility

170. Each turbine tower would extend to a height of 328 feet above ground level to the turbine hub. Assuming a 328-foot rotor, the 164-foot blades would extend to a blade tip height of 492 feet above ground level. (BNE 1, pp. 7-8; BNE 22, Attachment 1, Sheet C 101)

171. The base of the turbine tower would be between 13.5 to 14.5 feet wide. (BNE 14 R. 62)

172. The proposed 328-foot hubs with 164-foot blades would be visible above the trees from approximately 347 acres within a five-mile radius of each turbine (refer to Figure 7). (BNE 1, Tab J; BNE 9b)

173. Within one-mile of the site, approximately 158 residential properties would have views of at least some portion of the 164-foot blades above the trees. Of these residences, approximately 50 would have views above the trees of at least the hub (height of 328 feet), including the apex of the 164-foot blades (refer to Figures 8 & 9). (BNE 1, Tab J; BNE 9b)

174. The turbines would most likely have the greatest visual impact on the following properties: 187, 198, 210, 213, and 220 New Haven Road; 13, 15, and 17 Lee Road; and 2, 4, 6, and 8 George Street. BNE would be willing to reimburse reasonable costs of vegetative screening installed by the owners of these properties. (DEP comments of March 14, 2011; BNE 2a; BNE 24)

175. Of these residences, the most affected are 187 New Haven Road, 213 New Haven Road and 2 George Street, all of which would have unrestricted views of one or both turbines. (DEP comments of March 14, 2011)

176. BNE would be willing to install evergreen plantings and/or shrubs along the east property line at the abutting residential properties where there is no existing vegetative buffer. (DEP comments of March 14, 2011; BNE 24)

177. The 328-foot hubs would be visible through vegetation during leaf-off conditions from approximately 1,164-acres within a five-mile radius of the site. Most of this seasonal visibility (84 percent) would occur within a one-mile radius of the site, primarily within residential areas east of the site. (BNE 9b)

178. Approximately 248 residential properties would have seasonal views of the 328-foot hubs within one-mile of the site. (BNE 1, Vol. 3, Tab J)

179. Seasonal visibility of the blades would vary, depending on if the blades were moving and the amount of existing vegetation in the view area. The blades would more likely be obscured by the thicker mass of the lower portions of trees rather than the top portions of the trees. Visibility of the blades was not included in the 1,164-acre seasonal visibility estimate. (Tr. 4, pp. 14-17)

180. The projected visibility of the turbines from residences within one-mile of the site is as follows:

Street	Distance to Turbine (mi.)	#of properties with year-round views of hubs and blades	# of properties with year-round views of blades	# of properties with seasonal views
Amber Ct.	0.63	-	-	12
Barbara Ave.	0.75	6	3	8
Candee Rd.	0.50			12
Canfield Ct.	0.55	-	-	3
Coachlight Cir.	0.74	2	11	6
Cobblestone Ct	0.91	-	-	4
Cook Rd.	0.51	-	-	37
Deerfield Dr	0.74	-	3	23
Elaine Ct	0.60	1	1	11
Englewood Ave.	0.89	1	3	-
George St.	0.76	4	-	-
Fieldstone Dr.	0.22	-	-	3
Hemlock Rd.	0.51	4	4	7
Horizon View	0.98	-	-	2
Howard Ave.	0.84	1	3	3
Lee Rd.	0.32	10	4	6
Meadow Ln.	0.47	-	4	11
Putting Green Ln.	0.87	-	-	1
Radio Tower Rd	0.30	5	-	2
Robinmark Rd.	0.64	2	-	12
Route 69	0.20	5	8	8
Roy Mountain Rd.	0.85	-	-	7
Sill Ave.	0.79	-	-	7
Skyline Dr.	0.87	1	-	15
Stephen Ct.	0.61	-	1	6
Valley Ln.	0.69	5	6	-
Woodcrest Dr.	0.37	3	7	42

(BNE 1, Vol. 3, Tab J; BNE 2, R. 18; BNE 9b, R. 5)

181. A red flashing beacon would be installed on the top of each turbine hub in accordance with FAA criteria. The flashing light, 20 to 30 flashes per minute, would be visible at night from locations with a direct line of sight. (Tr. 4, pp. 20-23; Tr. 6, p. 218)

182. Several blue-blazed hiking trails maintained by the Connecticut Forest and Parks Association occur within five-miles of the site, notably the Naugatuck Trail to the west along a prominent ridgeline in Naugatuck and Bethany, and the Quinnipiac Trail along a ridgeline east of the site. A majority of both turbines would be visible from the Beacon Cap overlook on the Naugatuck Trail, approximately 1.8 miles southwest of the site (refer to Figure 10). The turbines would also be visible from the Mount Sanford overlook on the Quinnipiac Trail, approximately 1.3 miles southeast of the site. (Council Administrative Notice Item 34, p. 229; BNE 1, Vol. 3, Tab J; BNE 18c, R. 7; Tr. 4, pp. 23-33)

183. There are no state designated scenic roads within five miles of the site. (Council Administrative Notice Item 35; BNE 1, Vol. 3, Tab J)

184. The turbine hubs and the apex of the blades would be visible from a portion of the Prospect Green Historic District, approximately 1.5 miles north of the site. The district consists of a 130-acre area containing eight buildings along Center Street. (Council Administrative Notice 28; BNE 14, R. 52)

185. The project would have no effect on historical or cultural resources. (BNE 9b, R. 10)

Site Disturbance

Clearing

186. Construction of the proposed project would disturb approximately 8.4-acres, including the clearing of approximately 5 acres of woodland. Approximately 0.6-acres of disturbance would occur within 100 feet of the wetland areas. (BNE 1, Vol. 2, Tab F)

187. Disturbed areas would include the proposed turbines, a blade assembly and laydown area, a temporary stockpile area, a crane assembly area, a tower section laydown area, and a crane pad. (BNE 1, Vol. 2, Tab F)

188. The original site plan specified a 35-foot wide construction access road. A 50-foot wide cleared area would be required to accommodate the access road and associated drainage features. Once the turbines are constructed, the access road would be re-constructed to a width of 20 feet. (BNE 1, Vol. 2, Tab F; Tr. 4, pp. 87-88)

189. The total cut required to construct the proposed project is approximately 37,996 cubic yards and total fill would be approximately 9,098 cubic yards. There would be an excess of approximately 15,000 cubic yards of cut material. (BNE 8, R. 78, R. 79)

190. Development of the proposed site would require approximately 270 cubic yards of rip-rap and 1,470 cubic yards of process gravel. (BNE 8, R. 80)

191. BNE reviewed the use of 1:1 slopes versus 2:1 slopes and eliminated all 1:1 slopes from the project. BNE would use 2:1 slopes for the areas around the southern turbine and a 1.5:1 slope would be used around the northern turbine. All 1.5:1 slopes would be stabilized with geotextile fabric and rip-rap in accordance with the *2002 Connecticut Erosion and Sedimentation Control Guidelines*. (BNE 18b, R. 12)

192. The proposed temporary access road would result in approximately 1.74 acres of graveled surface. (Tr. 4, p. 115)

193. The March 28, 2011 site plan revision included reducing the construction access road from a width of 35 feet to 20 feet and designing the road to stay near existing grades, thus reducing the amount of cut and fill, clearing, and earthwork. (BNE 22; Tr. 6, pp. 185-187)

194. Approximately 5.74 acres of vegetation would have to be cleared for the proposed project if the northern turbine relocation were approved. The total area to be disturbed would be approximately 9.79 acres and the area within 100 feet of wetlands would be approximately 1.1 acres. (BNE 18b, Tab 1)

195. Development of the project with the alternative northern turbine location, and a using 20-foot wide construction access road, would disturb approximately 8.8-acres, including the clearing of 4.4-acres of woodland. Approximately 0.43-acres of disturbance would occur within 100 feet of wetland areas. (BNE 22, Attachment 1; BNE 25)

196. After construction, approximately 7.7-acres of the disturbed areas would be restored by recontouring the areas using soil from the stockpiles and planting a native herbaceous seed mixture to create meadow areas. (BNE 9f, R. 6, BNE 25)

197. Following construction, the 1.5:1 slopes around the northern turbine would be converted to 2:1 slopes or flatter. (BNE 18b, R. 12)

198. Approximately 1.1-acres of the site would consist of permanent developed areas, including the access road, parking areas, turbines, storage building, and crane pads. BNE would not restrict future use of the parcel for some other purpose. The site would not be able to accommodate another wind turbine due to wind turbulence effects that could damage a turbine or cause it to produce less electricity. (BNE 25; Tr. 6, pp. 223-226, 241-242)

199. Off-site grading would be required between the end of the pavement on Kluge Road and the host property boundary. (BNE 8, R. 82)

Wetlands

200. Four separate wetland areas were identified on the site (refer to Figure 6). All four are similar in their soil, hydrology, and vegetative characteristics. All four are forested wetlands that, contain hillside seepage areas where seasonal high groundwater supports wetland vegetation. Intermittent watercourses are within most of the wetland areas. (BNE 1, Vol. III, Tab I; BNE 9c, R. 4)

201. The southernmost wetland is identified as Wetland 1. This wetland is the most productive than the other on-site wetlands. (BNE 1, Vol. II, Tab F.

202. All of the wetlands drain in a westerly direction towards the New Naugatuck Reservoir. (BNE 9c, R. 4)

203. No vernal pools were identified on the site property. (BNE 9c, R. 5)

204. Development of the original turbine configuration or the alternative configuration would have no direct impact on wetlands. (BNE 22)

205. The nearest wetland to the southern turbine development area, (turbine and associated blade laydown area) is Wetland 1, approximately 120 feet to the west. The northern turbine development area is three feet east of Wetland 3. (BNE 1, Vol. II, Tab F)

206. BNE consulted with the CWC regarding the site development plans to further protect the on-site wetlands from potential impacts from erosion and sedimentation. The plans were revised several times to address concerns, most of which regarded the protection of Wetland 3. (BNE 9c; BNE 15, R. 1, R. 2; Tr. 6, pp. 140-141, 154-155, 158-161)

207. The northern turbine relocation site plan revision of March 28, 2011 re-oriented the clearing and blade laydown areas to the east of the turbine, creating a 35-foot buffer between the construction areas. (BNE 1, Vol. II, Tab F; BNE 9c, R. 7; BNE 22, Attachment 1)

208. Other protections for Wetland 3 include the use of a wildlife/conservation seed mix on disturbed soils, and the use of erosion control blankets on exposed areas. (BNE 9c)

209. BNE would retain a third-party inspector to conduct inspections of the established soil and erosion control measures. BNE would also allow CWC representatives to visit the site to inspect soil and erosion control measures. (BNE 14, R. 36; BNE 15, R. 5)

210. The Town requests access to the site during construction to inspect soil and sedimentation controls. (Tr. 5, pp. 28-39)

211. The CWC commented on the March 28, 2011 site plan, stating that the preliminary plan would adequately protect the on-site wetlands but requested additional items to be incorporated into the final design of the site. BNE would agree to address these items in the final design. (BNE 7, R. 7; BNE 22; BNE 26; Tr. 6, pp 162-164, 180, 185, 278)

212. In order to provide additional protections to the on-site wetlands, BNE would be willing to establish a conservation easement to a distance of 50 feet from the delineated edge of the two northernmost wetlands (Wetlands 2 and 4) and the southernmost wetland (Wetland 1). BNE would also be willing to establish an easement around Wetland 3 to a distance sufficient for BNE to perform necessary construction, operations and maintenance of the northern turbine. (BNE 26; Tr. 6, pp. 223-226)

213. The preliminary site plans would need additional geotechnical and topographical information to complete. The final design would be consistent with the 2002 Guidelines for Soil and Sediment Control. (Tr. 6, pp. 159-163; 185-186)

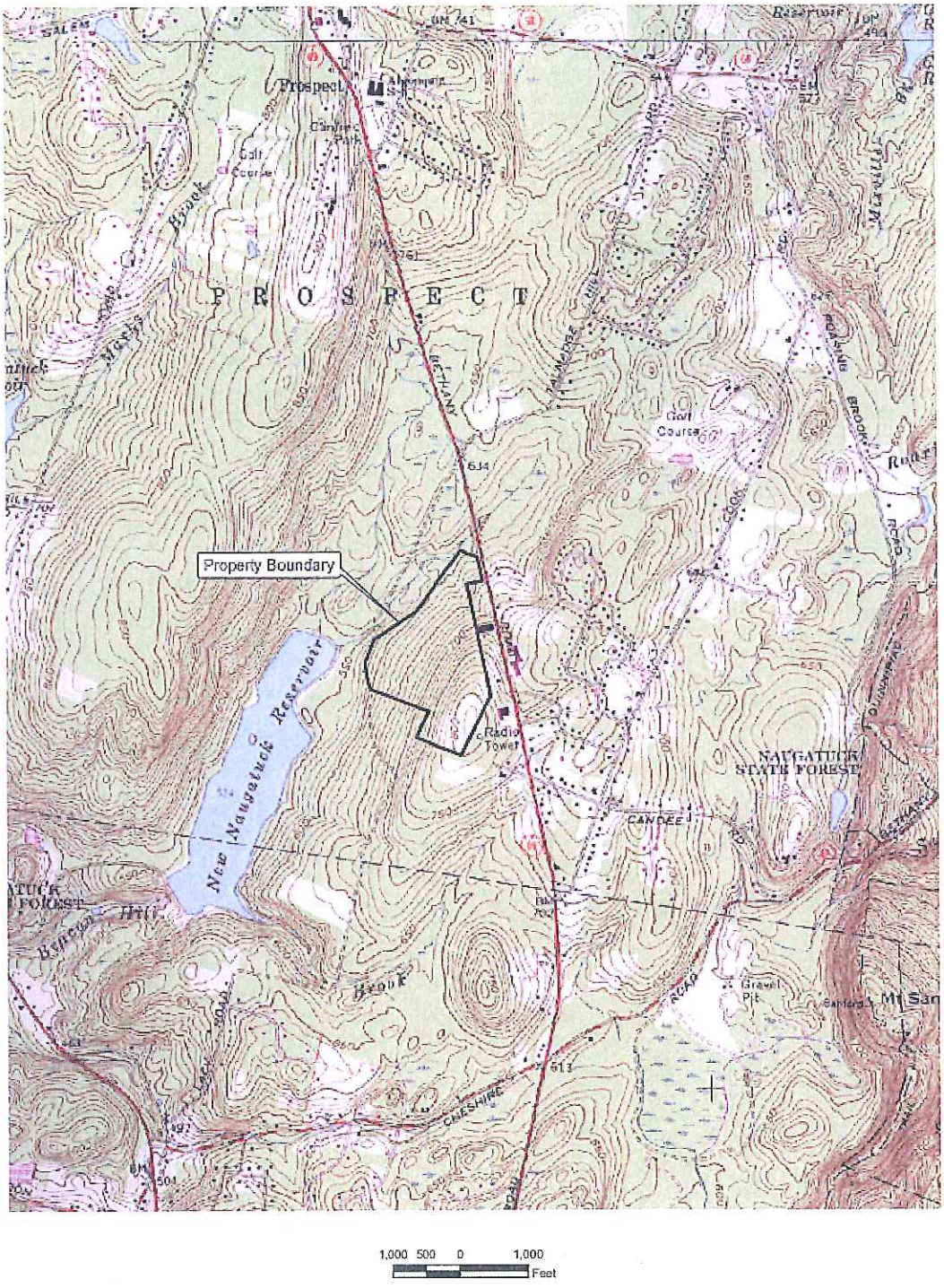


Figure 1: Site Location at 178 New Haven Road, Prospect, CT. (BNE 1, Vol. 3, Tab I)

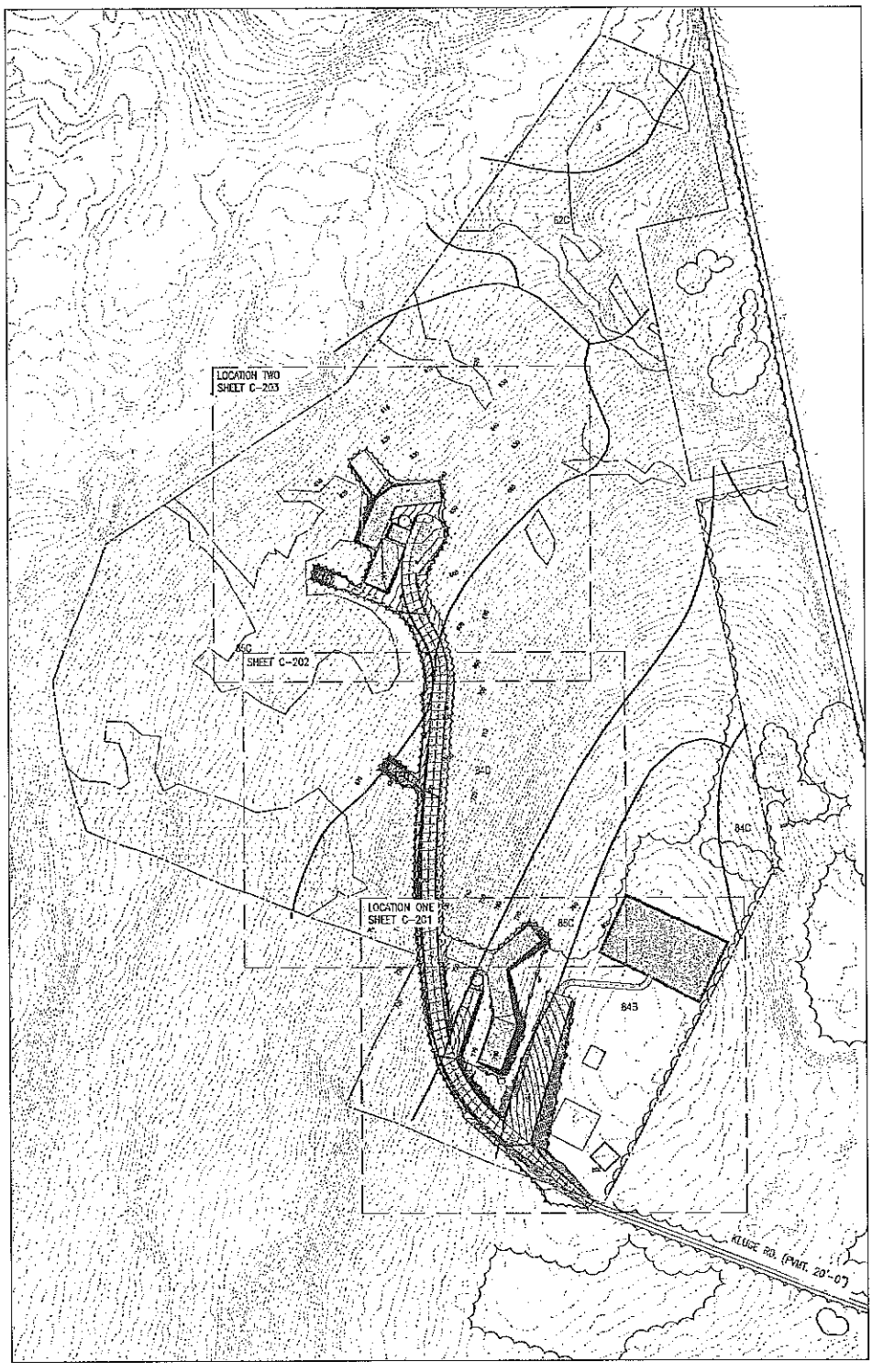


Figure 2: Original Site Plan – showing turbine locations, blade laydown areas and clearing limits. (BNE 1, Vol. 2, Tab F)

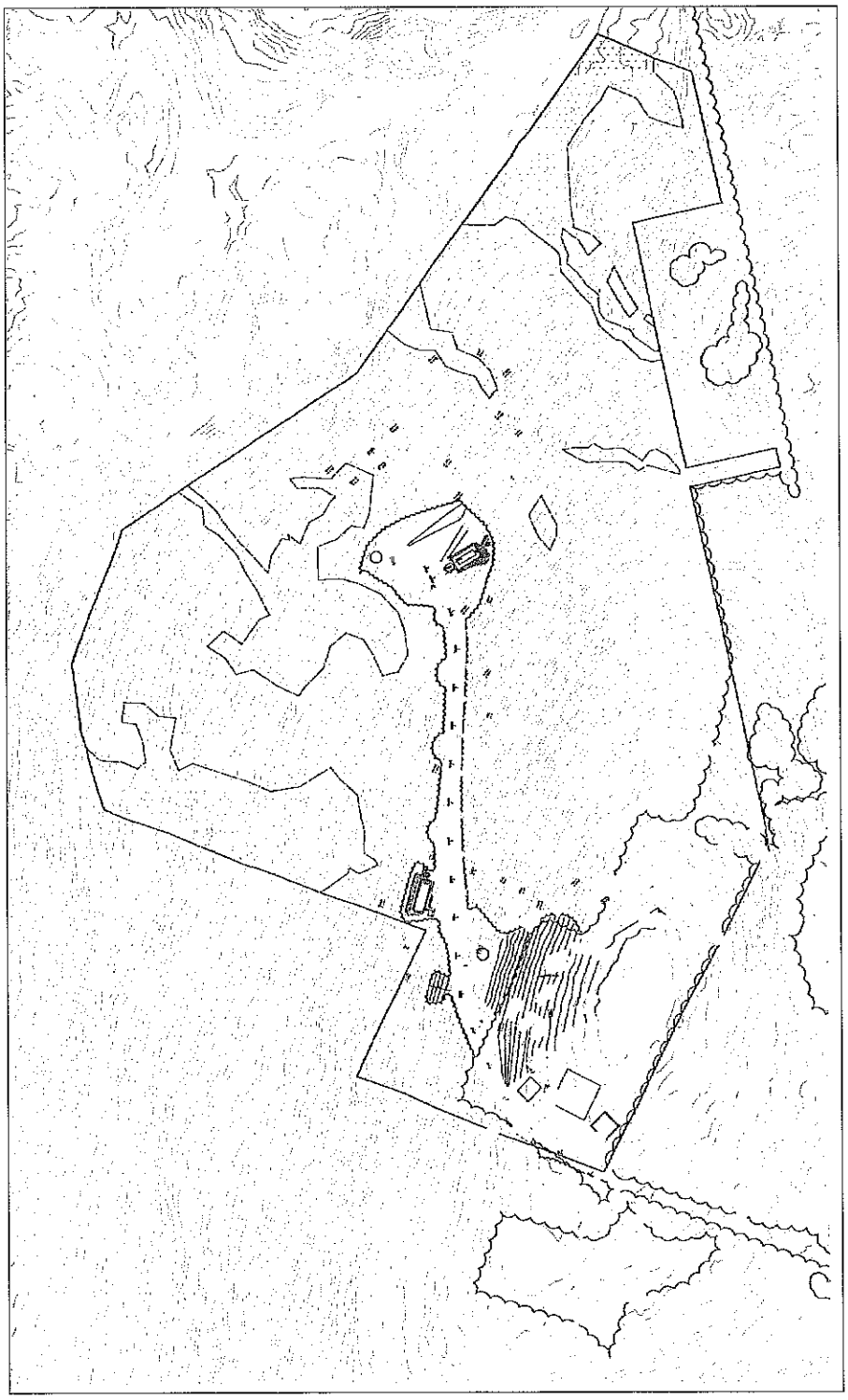


Figure 3: Alternate Site Plan of March 28, 2011- revised location of northern turbine. (BNE 22, Attachment 1)

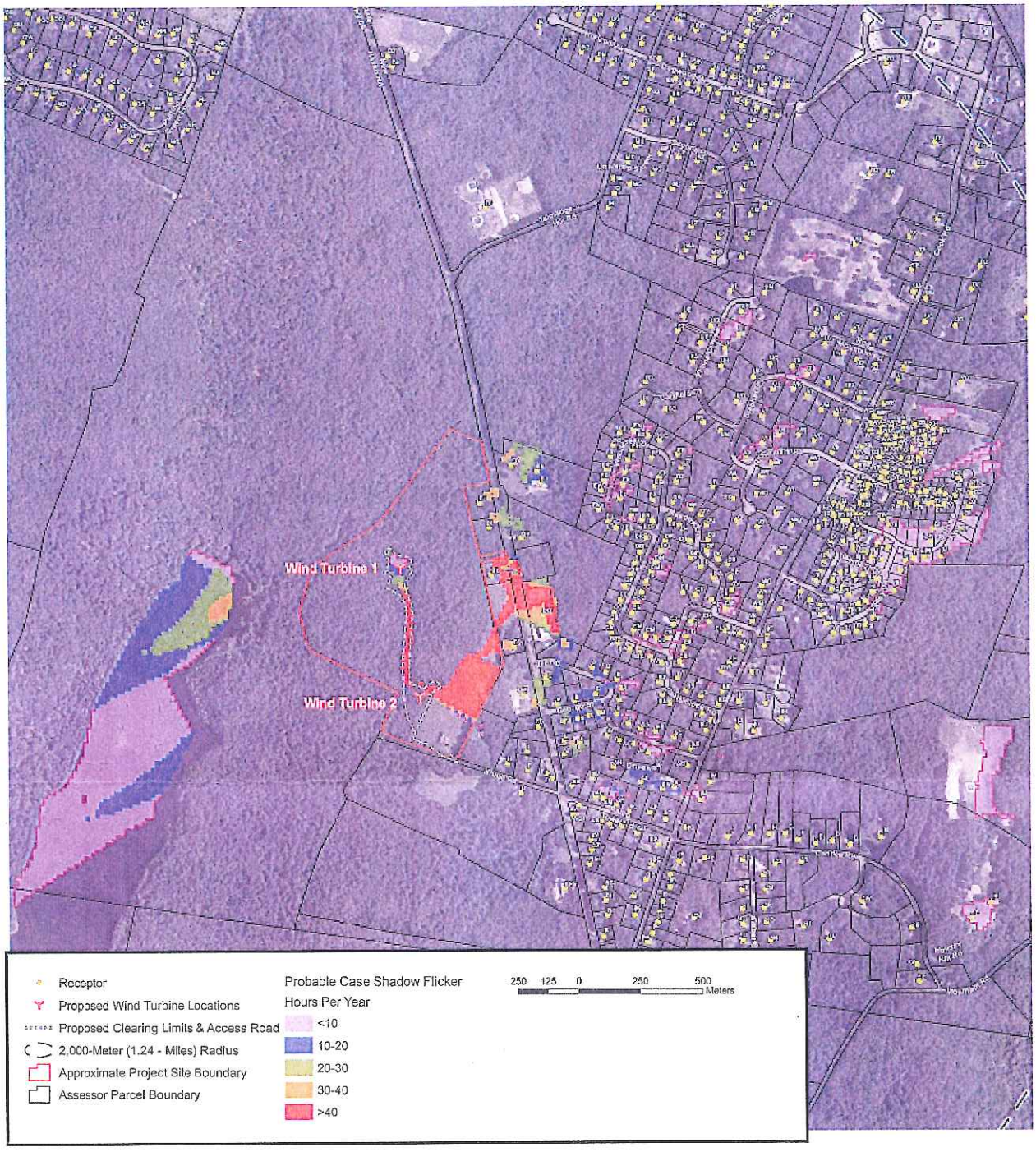


Figure 4: Shadow Flicker Probable Case Model using turbines in original locations with 82.5-meter rotor diameter - showing exterior shadow flicker. Please note, not all areas with <10 hours are shown. (BNE 2a)

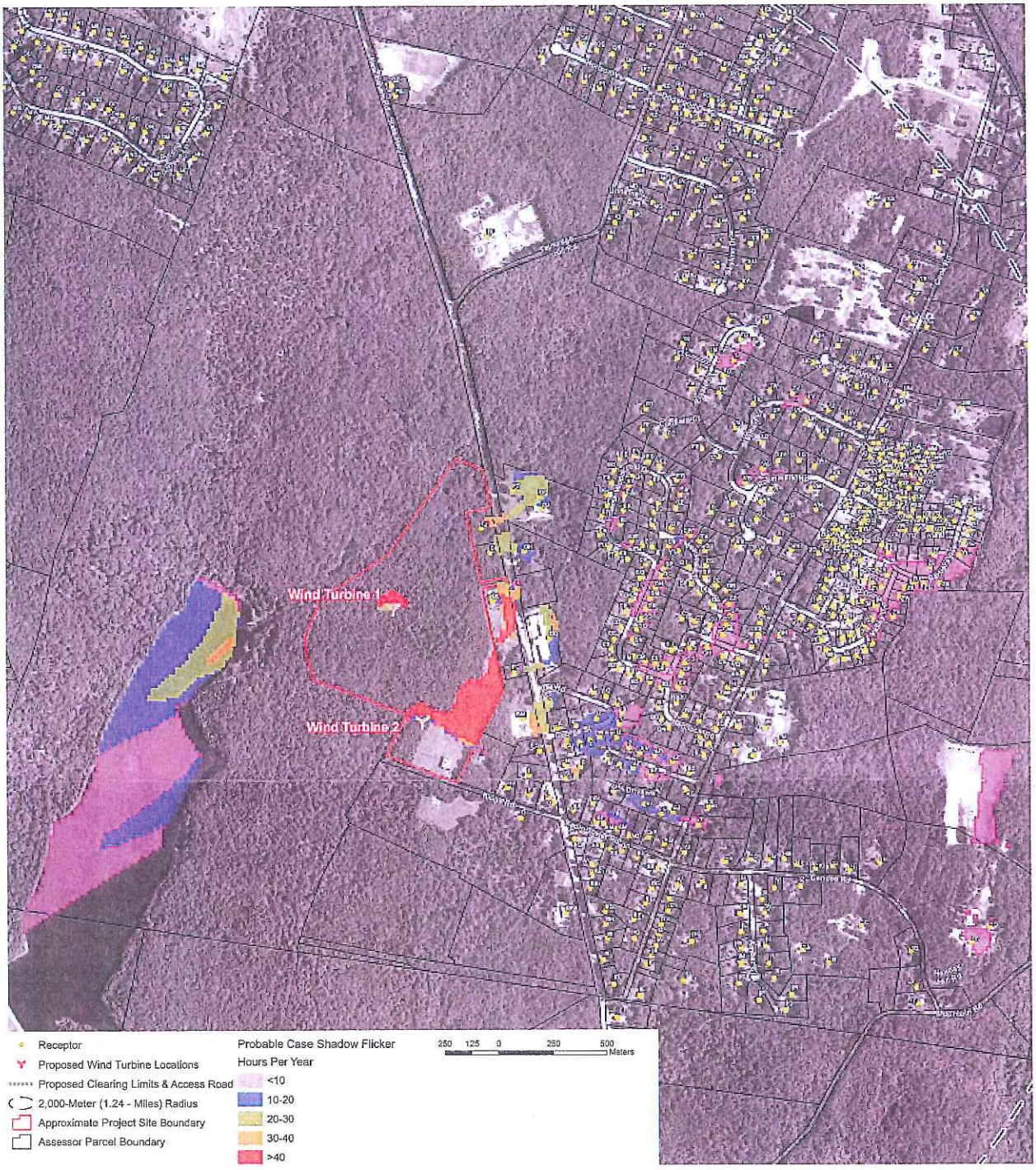


Figure 5: Shadow Flicker Probable Case Model using alternative northern turbine location with 82.5-meter rotor diameter - showing exterior shadow flicker. Please note, not all areas with <10 hours are shown. (BNE 18c)

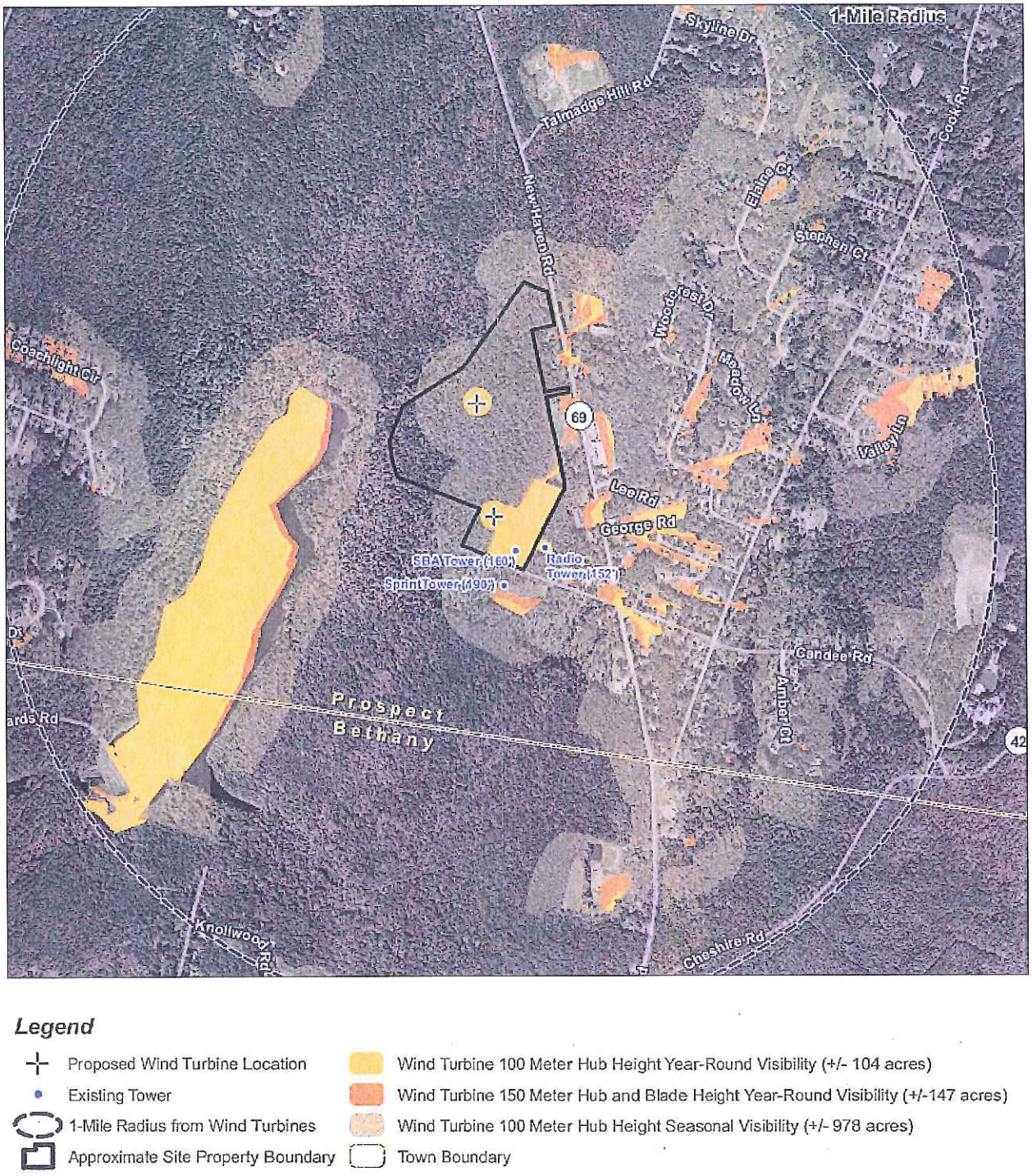
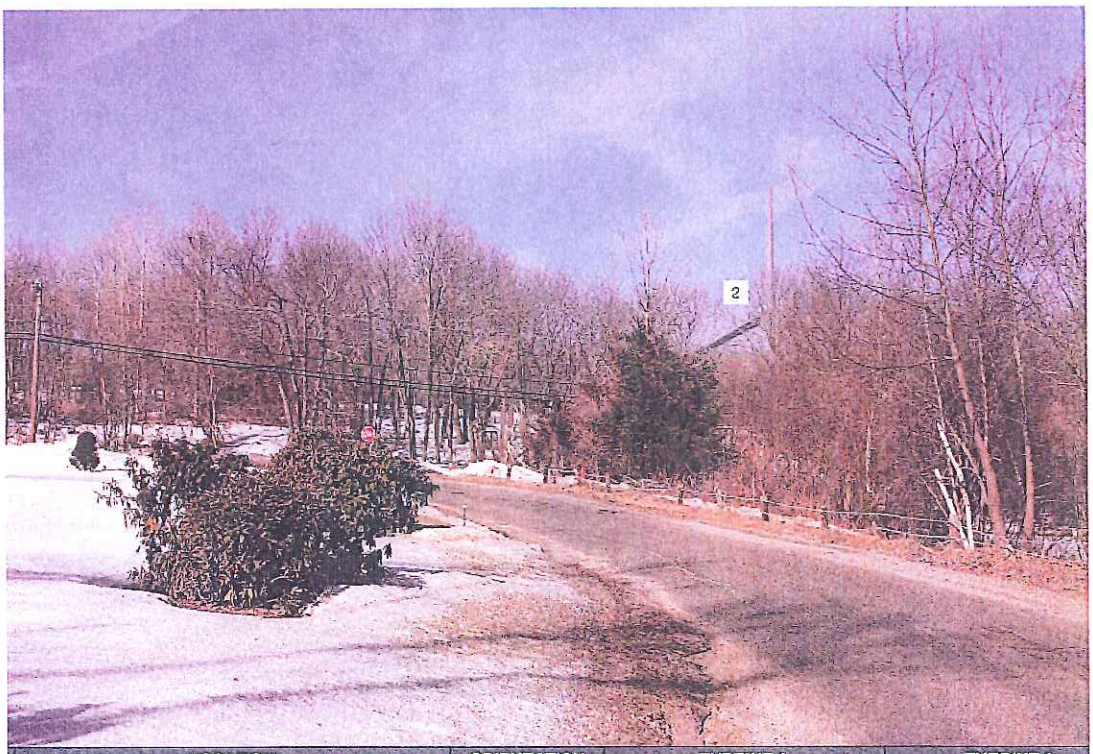


Figure 6: Visibility of turbines using original locations from areas near turbines. Black dashed line represents one-mile radius around turbines. Please note, map under predicts visibility from Lee Road area. (BNE 1, Vol. 3, Tab J; BNE 14, R. 50)

LOCATION	ORIENTATION	TURBINE 1	TURBINE 2
LEE ROAD ADJACENT TO #213 NEW HAVEN AVENUE (24mm focal length)	SOUTHWEST	0.25 MILE +/-	0.33 MILE +/-
		YEAR ROUND	YEAR ROUND (NOT VISIBLE IN PHOTO)



LOCATION	ORIENTATION	TURBINE 1	TURBINE 2
LEE ROAD ADJACENT TO #213 NEW HAVEN AVENUE (24mm focal length)	NORTHWEST	0.25 MILE +/-	0.33 MILE +/-
		YEAR ROUND (NOT VISIBLE IN PHOTO)	YEAR ROUND

Figure 7: Photosimulations of turbines from Lee Road. (BNE 14, R. 50)

LOCATION	ORIENTATION	TURBINE 1	TURBINE 2
RADIO TOWER ROAD AT NEW HAVEN AVENUE (24mm focal length)	NORTHWEST	0.31 MILE +/-	0.50 MILE +/-
		YEAR ROUND	NOT VISIBLE

Figure 8: Photosimulation of southern turbine from Radio Tower Radio / Route 69 intersection. (BNE 14, Q. 50)

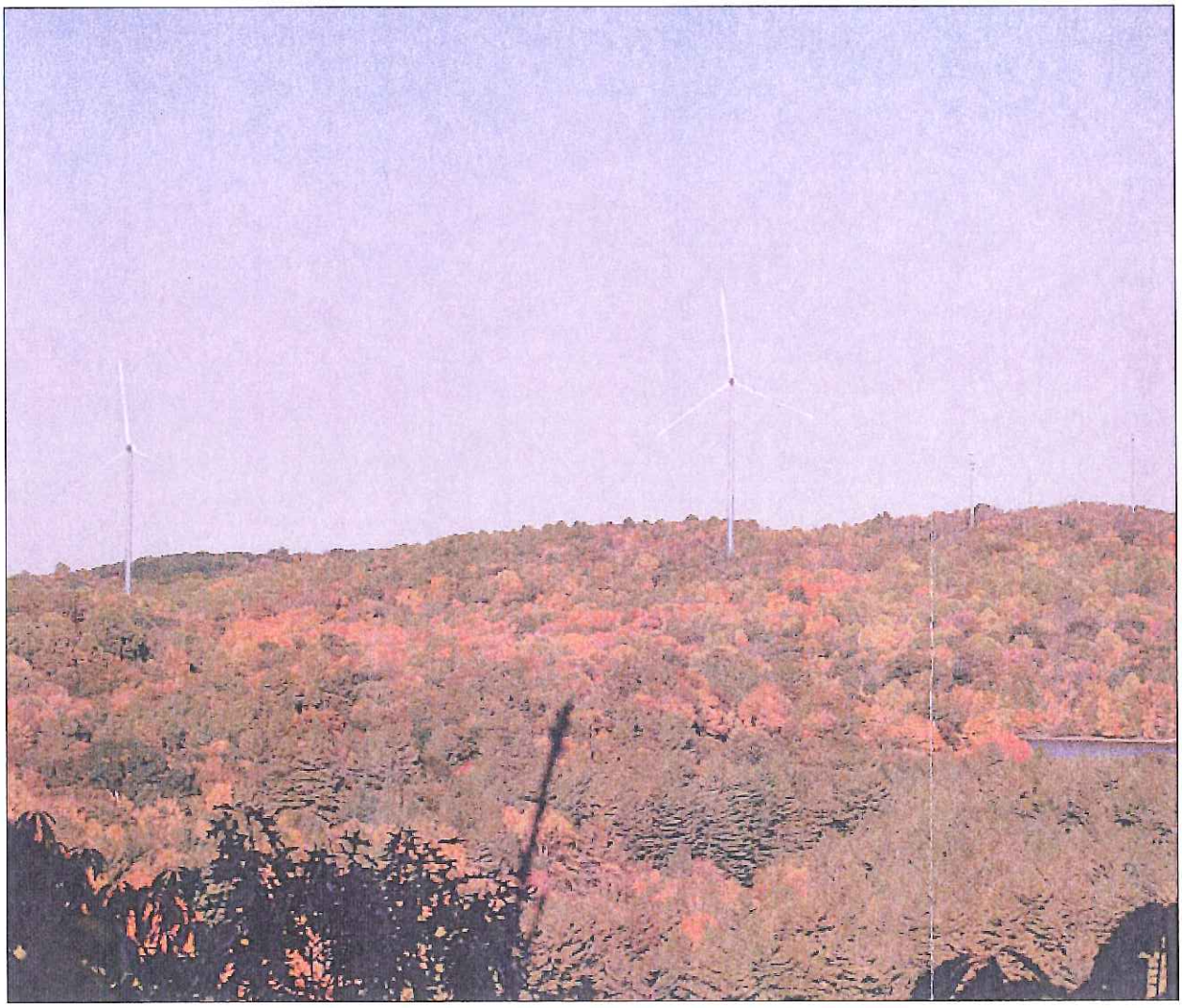


Figure 9: Photosimulation of turbines from Beacon Cap Overlook on Naugatuck hiking trail, approximately 1.8 miles to southwest. (BNE 1, Vol. 2, Tab J)

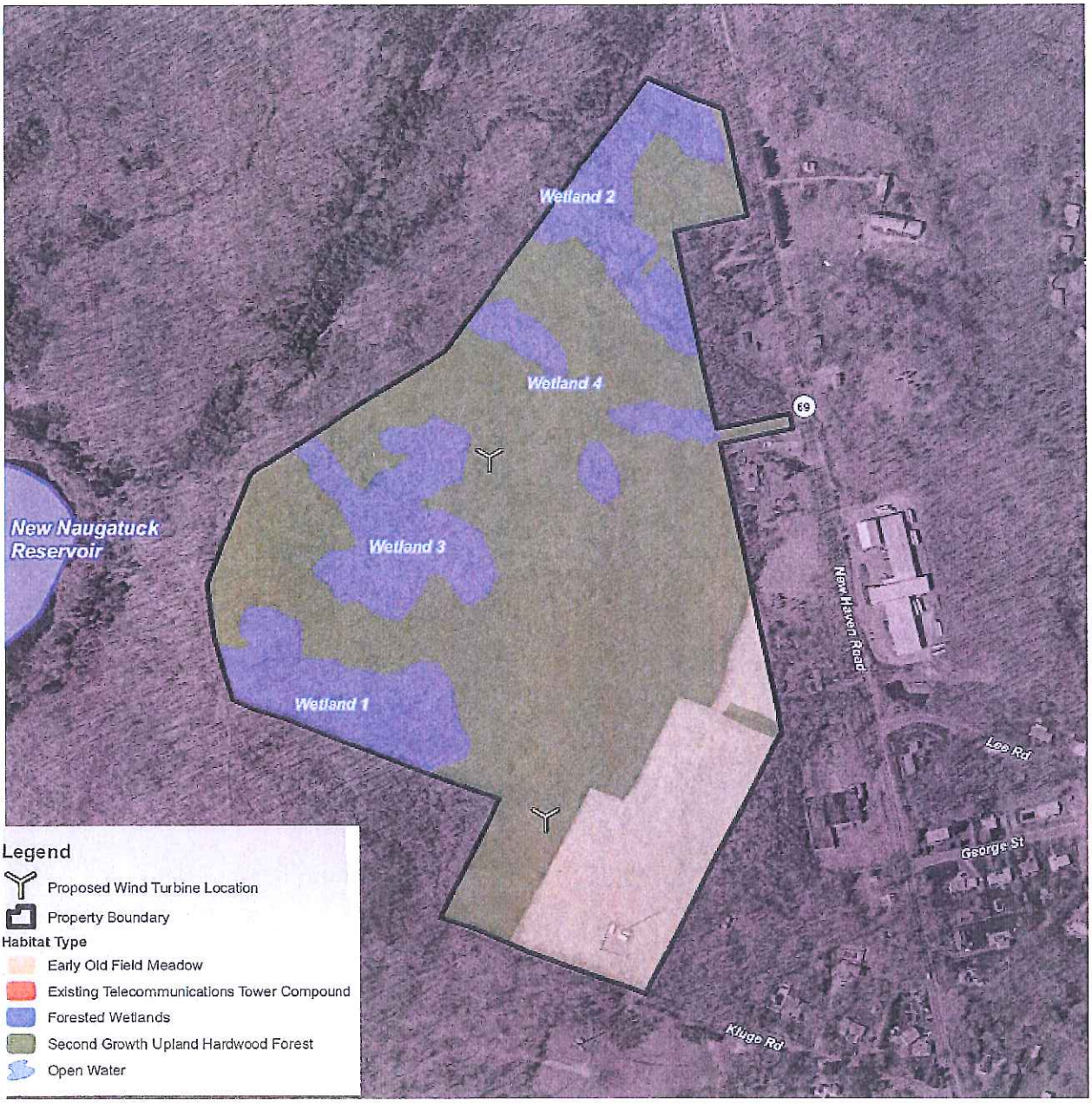


Figure 10: Habitat types on site property. (BNE 1, Vol. 3, Tab I)

LIST OF PARTIES AND INTERVENORS
SERVICE LIST

Status Granted	Document Service	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Applicant	☒ U.S. Mail	BNE Energy, Inc.	Carrie L. Larson, Esq. Pullman & Comley, LLC 90 State House Square Hartford, CT 06103-3702 (860) 424-4312 (860) 424-4370 fax clarson@pullcom.com Paul Corey, Chairman BNE Energy Inc. Town Center, Suite 200 29 South Main Street West Hartford, CT 06107 (860) 561-5101 (888) 891-6450 fax pcorey@bneenergy.com
Party *(granted on 01/06/11)*	☒ U.S. Mail	Town of Prospect	The Honorable Robert J. Chatfield Mayor Prospect Town Office Building 36 Center Street Prospect, CT 06712-1699 (203) 758-4461 Town.of.prspct.@sbcglobal.net
Party *(granted on 01/06/11)*	☒ U.S. Mail	Save Prospect Corp (SPC)	Jeffrey J. Tinley, Esq. Anthony J. Interlandi, Esq. Tinley, Nastri, Renehan & Dost, LLP 60 North Main Street Waterbury, CT 06702 (203) 596-9030 (203) 596-9036 fax jtinley@tnrdlaw.com noisyprospect@comcast.net
Party *(granted 02/08/2011)*	☒ E-Mail	FairwindCT, Inc. P.O. Box 225 Colebrook, CT 06021 (860) 379-6425 info@fairwindct.com	Nicholas J. Harding Emily A. Gianquinto Reid and Riege, P.C. One Financial Plaza, 21st Floor Hartford, CT 06103 (860) 240-1011 (860) 240-1025 nharding@rrlawpc.com egianquinto@rrlawpc.com

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Intervenor *(granted on 02/24/11)*	☒ U.S. Mail	*Grouped with Save Prospect Corp./FairwindCT, Inc.* Eric Bibler 31 Old Hyde Road Weston, CT 06883 (203) 454-7850 (203) 246-2997 – cell ebibler@gmail.com	
Party *(granted on 01/20/11)*	☒ E-Mail	John and Cheryl Lamontagne 225 New Haven Road Prospect, CT 06712 (203) 509-4158 John.lamontagneconstco.com Thomas and Eileen Satkunas 232 New Haven Road Prospect, CT 06712 (203) 592-1344 Tom.satkunas@snet.net	Thomas J. Donohue, Jr., Esq. Killian & Donohue, LLC 363 Main Street Hartford, CT 06106 (860) 560-1977 (860) 249-6638 tj@kdjlaw.com
Party *(granted on 02/24/11)*	☒ U.S. Mail	Connecticut Water Company **STATUS WITHDRAWN 03/30/11**	Andrew W. Lord, Esq. Murtha Cullina LLP CityPlace I – 185 Asylum Street Hartford, CT 06103 (860) 240-6000 alord@murthalaw.com Cindy Gaudino Manager Source Protection & Real Estate Connecticut Water Company 93 West Main Street Clinton, CT 06413 (800) 428-3985

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Status Granted	Document Service	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Intervenor *(granted on 01/20/11)*	☒ E-Mail	The Connecticut Light and Power Company	John R. Morissette Manager – Transmission Siting and Permitting Northeast Utilities Service Company P.O. Box 270 Hartford, CT 06141-0270 (860) 665-2036 (860) 665-6933 fax morisjr@nu.com Christopher R. Bernard Manager, Regulatory Policy (Transmission) The Connecticut Light and Power Company P.O. Box 270 Hartford, CT 06141-0270 (860) 665-5967 (860) 665-3314 fax bernacr@nu.com Joaquina Borges King Senior Counsel Northeast Utilities Service Company P.O. Box 270 Hartford, CT 06141-0270 (860) 665-3678 (860) 665-5504 fax borgej@nu.com