STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

March 14, 2011

Daniel F. Caruso, Chairman
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

RE: 3.2 MW Wind Turbine Generating Project
BNE Energy, Inc.
Prospect, Connecticut
Petition No. 980

Dear Chairman Caruso:

Staff of this department have reviewed the above-referenced Petition for a Declaratory Ruling and have visited the proposed site for the facility. Based on these evaluations, the following comments are offered to the Council for your use in this proceeding.

BNE Energy, Inc. proposes to construct and operate two 1.6 MW wind turbines on a 67.5 acre site west of Route 69 (New Haven Road) in southern Prospect near the Bethany town line. The BNE proposal is the first commercial wind power project proposed in Connecticut. Numerous State policies favor the development of renewable energy technologies to foster energy independence and to reduce our reliance on fossil fuels. However, as the proposal at hand is a new technology for Connecticut and specifically for the Council, your initiative to secure independent expertise in the form of Epsilon Associates, Inc. to assist in evaluating this project was a wise decision which will benefit all parties and stakeholders in this proceeding.

Page 11 of Volume I of the Petition provides a quantification of the reductions in the emissions of nitrogen oxides, sulfur oxides and carbon dioxide postulated to result from the operation of the two proposed turbines based on the use of fossil fuel generation as the source of the electricity displaced by the output of the turbines. While it is entirely reasonable and justified to expect emissions reductions to result from the operation of these turbines as opposed to alternate sources of generation in their absence, experience has shown that it is very difficult to predict exactly which existing sources of generation would be displaced by any new source and, therefore, what the resultant emissions reductions would be. Nevertheless, a non-emitting source of electricity will result in emissions reductions over time as virtually every competing source of replacement power will yield emissions, and many of the generation units that would be called upon at the margins are older, less efficient and higher emitting units.

Site Description

The proposed site at 178 New Haven Road is currently undeveloped, except for the SBA Communications tower on Kluge Road at the entrance to the access road. It is mostly forested with the exception of some old field habitat at the southeast corner of the property. Access to the site would be off Kluge Road and would extend generally northward from the terminus of Kluge Road immediately after the enclosure for the first of the two cell phone towers, the SBA tower facility. At the time of the DEP site visits on February 10 and 21, 2011, approximately three feet of snow covered the host property, which compromised the ability to inspect certain aspects of the site such as wetland boundaries, watercourses, ground surface conditions, and any ground level stakes or monuments depicting the exact turbine locations. Nevertheless, the copious amounts of blue blazing on the trees along the access road alignment allowed both the road and the general sites of both turbines to be located. On the second DEP site visit on February 21, 8' long 2x4s topped with 2' of florescent orange paint had been placed at the sites of the two turbines, allowing the proposed sites to be more precisely located.

The southern turbine site sits on a moderately sloping forested hillside slightly less than 100' from the edge of the open field in which the meteorological tower stands. Red maple and black birch are the dominant species at the site, with lesser amounts of pin cherry and red cedar. The access road descends in elevation from the open field to the southern turbine site and then continues to descend to the northern turbine site, which was similarly marked by an orange tipped 2x4 on the latter visit. This turbine site is also moderately sloped and is located well down the hillside from the open field, perhaps three quarters of the way down. A water tank atop the hill to the north is the only manmade structure visible from the site. Larger trees on the site are red maple to 18" dbh, with smaller black birch and some tulip poplar at the site. Japanese barberry, common to the understory of the forest, begins to thin out as the latter turbine site is approached and that species disappears altogether just after the northern turbine site. Grape vines are common throughout the forest.

Wetland #3, located just west of turbine site 2, is substantially similar in forest cover to the turbine site but has a larger red maple fraction, approximately the same fraction of black birch, and fewer tulip poplars.

Visual Impacts and Project Scale

The foremost impact of the proposed wind turbines will be their visual impact. Principal receptors of this impact will be homes to the east of the host site, and to a lesser extent, to the southeast. The scale of the turbines frustrates efforts to minimize or screen their visual impact. Depending on whether the turbines ultimately employ 100-meter or 82-meter diameter blades, the overall structure height will be either 492' or 463'.

Mitigating the scale of these structures is the reasonably large size of the host site and the presence of the undeveloped Connecticut Water Company property to the west and north. The host turbine sites have a remote feel to them, with no homes visible from either site and with topography screening the sites from homes to the east and southeast, at least at ground level.

Any opportunity to shift the turbine locations slightly to the north would increase their separation from the majority of the nearest homes and would slightly decrease the ground elevation on which they sit. The proximity of the Connecticut Water Company property boundary to the site of the northern turbine, as well as the rapidly steepening slope just north of the proposed site, preclude any meaningful shift of the location of this turbine. For the southern turbine, there may be some opportunity to shift its location northward and downslope, perhaps by 100', which would marginally lessen its visibility to the east and south. Any lessening of visual impact is more important for the southern turbine due to its higher ground elevation and closer proximity to more homes.

The four homes along Kluge Road southeast of the host property are located 900'-1200' from the south turbine and possess some degree of deciduous screening. They are also located outside of any area that may be subject to flicker effect because of their location sufficiently south of the turbines..

Route 69, New Haven Road, was walked from Kluge Road to the northern end of the host property. The stretch contains eleven homes fronting on New Haven Road. Homes along the western side of New Haven Road are generally closer to the turbine sites and, except for 220 New Haven Road, abut the host property. The homes at 184 New Haven Road, a small 'A' frame, and 190 New Haven Road, which is currently for sale, sit on heavily wooded sites and have ample, though deciduous, screening. The home at 198 New Haven Road sits above the road and is probably the closest to the northern turbine site at a distance of just over 800'. This home is not reflected in Table 3 of the Shadow Flicker Analysis report, though homes to the north and south of it are included. This home has minimal on-site screening along the back of its property but is immediately adjacent to tree cover on the host property. The home at 210 New Haven Road will likely have a very prominent view of the southern turbine, while the home at 220 New Haven Road possesses at least a small amount of deciduous screening on its wooded lot.

Along the east side of Route 69, the home at 213 New Haven Road will have an unscreened direct view of the south turbine, perhaps the most prominent view from any residence. The home at 187 New Haven Road, which sits slightly above the highway, will similarly have a prominent view of both turbines. Among other proximal residences, 2 George Street, at the corner of New Haven Road, faces the host property with an unscreened view across the intersection of those two roads and may be the second most significantly impacted home. Due to the opening created by the alignment of George Street, the four homes on the south side of that street will likely have clearer views of the turbines than the homes along the north side of George Street. The home at 1 George Street has a row of blue spruce at the west end of its yard, offering some visual screening for the closest home on the north side of that street.

Of the five homes on Lee Road between Route 69 and George Street, the homes closer to George Street (#s 13, 15 and 17) are at a higher elevation and probably have a clearer view of the host property because of the curve of that road than do the two homes closer to Route 69 but at a lower elevation and with more screening.

Streets farther east from Route 69 were not surveyed by DEP nor were any streets west of the Connecticut Water Company property.

The Council has a challenging responsibility to strike an appropriate balance between the scale and aesthetic impact of the proposed turbines and the public policy and environmental benefits of developing clean alternative energy facilities. As a densely populated state, there are no locations in Connecticut which are miles from neighboring land uses, including residences. Some level of impact upon neighboring properties cannot be avoided in the siting of facilities such as that proposed in this petition. The critical considerations are whether, after all appropriate siting optimization and mitigation measures are incorporated, the level of impact is tolerable and justified, and whether the scale of the facility is appropriate. DEP is confident that the Council will be very deliberate and diligent in determining if the impacts at hand are appropriate and acceptable.

US Cap and Jacket Remediation Site

A small former industrial site is located at 214 New Haven Road, approximately 900' east of the southern turbine site and directly across Route 69 from the home at 213 New Haven Road. This site has been the subject of a 2003 EPA Targeted Brownfield Assessment to address soil and groundwater contamination issues from the operation of U. S. Cap and Jacket, which was located at the site. A previous EPA-sponsored remediation effort removed contaminated soil from the site. The facility itself has recently been demolished and removed.

Concern has been expressed regarding the potential for groundwater from the U.S. Cap and Jacket site to spread as a result of turbine site work, specifically any blasting necessary for the turbine structure foundations, and the potential to contaminate groundwater at homes east of the U. S. Cap and Jacket site. The existing contamination plume has affected the home at 213 New Haven Road at which DEP installed a water filtration system in 2003. To date, no other wells have been affected. DEP has performed wellwater sampling in nearby homes in 1994, 1996, 2000, 2001, and 2003 and found no evidence of further migration of the groundwater contamination which consists predominantly of perchloroethylene (PCE) and trichloroethylene (TCE).

The southern turbine site is located approximately 900' west of U. S. Cap and Jacket and the northern turbine site is 2,000' northwest of the former factory site. As ground contours rise 30-40' to the west of the U.S. Cap and Jacket before the ground again slopes off toward the turbine sites, surficial groundwater flows from U. S. Cap and Jacket would not be likely to migrate in the direction of the turbines. Groundwater flows in bedrock are more erratic and difficult to predict. However, the degree of contamination in the bedrock at the factory site is not significant. The amount of blasting necessary for foundation work is also likely to be sufficiently minor that it would be unlikely, though not impossible, for it to fracture bedrock 1,000' away. Assuming that some blasting will be necessary to prepare the turbine foundation sites, it would be prudent for BNE Energy to conduct pre-blasting survey work at selected residences to establish baseline water quality data, specifically for volatile organic compounds and for iron and manganese, two metals which can be subject to mobilization by blasting. BNE may also wish to consider having a handful of monitoring sites in the more proximal residential areas to monitor potential blasting shockwaves from foundation work to document the level of or absence of blasting-induced vibration.

Box Turtle, Bat Survey and Bird Survey Issues

The following comments relate to Exhibits K, L and M, respectively, of the BNE petition.

Exhibit K
Eastern Box Turtle Habitat Survey

The information provided by VHB is in general acceptable to the DEP Wildlife Division. A follow up response letter from wildlife biologist, Julie Victoria, dated October 26, 2010 was not included in this exhibit. One item recommended in both letters from Ms. Victoria is for the applicant to review habitat conservation guidelines prepared by the U.S. Fish & Wildlife Service and which can be found at the following site:
http://www.fws.gov/habitatconservation/windpower/wind_turbine_advisory_committee.html
There is no indication as to whether or not the applicant referenced this resource.

Also, the applicant indicates that turtle observations will be reported to DEP, but there is no indication of when or to whom such reports would be made. Any eastern box turtles found at the site should be reported promptly (< one week) to the Ms. Julie Victoria of the Wildlife Division at (860) 642-7239. In Section 3b (Reporting) of the October 22, 2010 protocol submitted by VHB, it states that specific location and disposition information for eastern box turtles will be provided. It is unclear if this means that the applicant or their agent will provide GPS coordinates for release locations for any turtles captured and relocated on site but outside the construction area. DEP requests that this information be provided to the Wildlife Division through Ms. Victoria. If any turtles are found dead or are accidentally killed, the carcasses should be retained and submitted to the DEP Wildlife at the earliest possible time to our Sessions Woods field office at 341 Milford Street in Burlington. DEP's Sessions Woods facility can be reached at (860) 675-8130.

Exhibit L
Acoustic Bat Surveys

In general, the methods and process used for the acoustic bat surveys are appropriate, but a few modifications could have improved the results. The Interim Report in Exhibit L indicates that the purpose of the survey was to document activity during the maternity season but it goes on to note that most bat mortality from turbines occurs during the migratory period for tree-roosting bats. Both these species were documented in the project area and the report indicates that their use of the area could be greater than reported due to degradation in the calls recorded. Both are listed as species of special concern under the Connecticut Endangered Species Act and have been noted as species of regional conservation concern. The report indicates that anticipated fatality rates are low to moderate, yet again it notes that the real rate could be higher due to the sampling issue previously discussed. It is possible that the placement of Anabat detectors at a higher position within the forest canopy may have increased the quality and detection rate of hoary bats in particular. This species forages at the top of the canopy and can be very difficult to sample accurately. It is also the species most often negatively impacted by turbines. We also note that the start date for the "maternity" surveys is a bit later than ideal for our area as the vast majority of our bats give birth in late May and early June.

Though greater levels of bat activity were documented during the maternity season, a greater proportion of the bat activity in the migratory period was attributable to silver haired,

hoary and red bats. These species of tree-roosting bats are State-listed species and are more susceptible to turbine mortality than are other bat species. Indeed, as noted on page 21 of the Final Report, these tree-roosting species comprise about 75% of turbine-related bat mortality. Hoary bats are particularly susceptible to turbine mortality. It is also interesting that a fair number of silver-haired bats were detected at the site as we have very little data overall on the statewide distribution of this species.

Though page 18 of the Final Report notes that the Prospect Wind site "is not in the vicinity of any known bat colonies or features likely to attract large numbers of bats", the presence of forested wetlands and field edges on the site is a resource that is favorable to supporting bat populations. The lack of any documented bat colonies does not necessarily mean that none exist in the area.

The dearth of little brown bats and long-eared bats at the Prospect Wind site is noted on page 20 of the report. White-nose Syndrome is listed as a possible cause for their absence, particularly for the little brown bats. In our opinion, there is little doubt that White-nose Syndrome is responsible for the lack of these species at the site. In contrast, we note that tree-roosting bats are not being impacted as heavily by White-nose Syndrome as are other bat species.

DEP requests that a post-construction bat monitoring program be established at the Prospect site, preferably for three years but, at a minimum, for two years to monitor bat mortality from the turbines. A one-year survey would not be sufficient because of the possibility of anomalous weather affecting the results in a given year. The monitoring should be done for a six month period from May through the end of October. It is also strongly recommended that bat researchers familiar with northeastern bat species be used to perform this survey work. Should additional turbine sites be developed in Connecticut by the applicant, the same study team could be used at other locations. In the event that post-construction monitoring is not performed, then, at a minimum, DEP Wildlife Division biologists should be given permission to access the site to search for bat carcasses.

BNE Energy should feel free to contact Jenny Dickson of the DEP Wildlife Division at (860) 424-3494 in regard to these bat issues and to post-construction monitoring, including guidance regarding qualified bat biologists and academic institutions able to conduct these types of studies..

Exhibit M
Breeding Bird Surveys

The survey period reported (June 28, July 5 and July 12) is not ideal for an accurate estimate of breeding birds. By these dates, many of our nesting species are calling for greatly limited time periods or using only call and chip notes, making accurate identification extremely challenging. In addition, the survey period of five minutes is too short to adjust for this reduced level of calling activity. Assessment of the breeding bird survey is made more complicated because no information was provided on the credentials of the observers and thus on their skill level and their ability to detect or identify birds not completing full calls or songs. A notation of 58 unidentified passerines confirms that identification during this timeframe was challenging. The report indicates that no sensitive species were recorded and yet reports on several species

that are of regional conservation concern due to declining population trends and habitat loss. Several of those are listed as species of greatest conservation need in the Wildlife Actions Plans of several states in the region. A few examples include chestnut-sided warbler, chimney swift, and Eastern towhee, a species described as common on site. The report also indicates that no high-value bird habitats are located in the proposed development areas and yet describes grassland and early successional habitat, both of which are active management targets both in Connecticut and in the Northeast. Despite these inaccuracies and the late timing of the surveys, DEP does not anticipate significant negative impacts to these species by the proposed project.

Miscellaneous Petition Commentary

The petition is unclear as to whether the 1.6 MW rating on the proposed General Electric turbine is predicated on the 82-meter diameter blades or the 100-meter diameter blades? If it is based on the 82-meter blade diameter initially proposed, what is the rating with the 100-meter blades? As the larger blades add approximately thirty feet to the overall structure height, it would be useful to know how much additional power is generated and to weigh that against the incremental visual impact.

On table 3 of the Shadow Flicker Analysis report, no listing of the homes at 1 and 2 George Street is shown. As these homes are closer to the southern turbine than the other listed homes on George Street, is the absence of the homes at 1 and 2 George Street due to being at a slightly more southerly bearing from the south turbine or is there another reason for their absence from this table?

The scale on Plan C-002of Exhibit I is wrong. At the indicated 200' to the inch, the distance from the southern turbine site to the former U.S. Cap and Jacket property is approximately 400'. According to other maps in the petition, the correct distance between these two locations is about 900', indicating that the scale on Plan C-002 is off by a factor of roughly 2.

Thank you for the opportunity to review this petition and to submit these comments to the Council. Should you, other Council members or Council staff have any questions, please feel free to call me at (860) 424-4110.

Respectfully yours,

Frederick L. Riese

Frederick L. Riese
Senior Environmental Analyst

cc: Daniel C. Esty, Acting Commissioner