

**STATE OF CONNECTICUT**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**



April 6, 2011

Robert Stein, Chairman  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

RE: 4.8 MW Wind Turbine Generating Project  
BNE Energy, Inc.  
Wind Colebrook North  
Colebrook, Connecticut  
Petition No. 984

Dear Chairman Stein:

Staff of this department have reviewed the above-referenced Petition for a Declaratory Ruling and have visited the proposed site for this 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 three 1.6 MW wind turbines on a 125 acre site northeast of the intersection of US-44 and Rock Hall Road in the southwestern portion of Colebrook. This proposed facility would be one of the first commercial wind generation facilities in Connecticut. 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

Three 1.6 MW turbines are proposed for the Colebrook North project site. Turbine 1, the westernmost of the three turbines and the closest to Rock Hall Road, has been proposed to be relocated from the originally proposed site, south of Mill Brook, as contained in the Petition, to a site north of Mill Brook on the same access drive as Turbines 2 and 3. Although no homes or structures are visible from either the originally-proposed or the revised Turbine 1 sites, the revised site, north of Mill Brook, is substantially more removed from homes along US-44 and Greenwoods Turnpike than the original site. This is especially true for the five homes along US-44 between Rock Hall Road and Greenwoods Turnpike (including #s 1 and 4 Greenwoods Turnpike at the intersection of those two roads) and the homes at the northern end of Greenwoods Turnpike, including #s 12A, 12B and 17, all of which are 400' to 550' farther removed from the revised Turbine 1 site as compared to the site proposed in the Petition. The revised Turbine 1 site is also farther removed from Wetland #1. The original site is adjacent to an area of moderate slope descending to Wetland #1 while the revised site is on flatter terrain with less potential for sedimentation impacts into that wetland.

The currently proposed site for Turbine 1 possesses a slight slope toward Wetland 1. Sugar maple, red maple, black cherry and hemlock are the dominant species at the site. In common with the original Turbine 1 site, the new site is strewn with boulders.

The Turbine 2 site is fairly level and sits on a shelf that drops off to the south and west. Forest cover consists of black birch, ash and hemlock less than 12" dbh, with less amounts of red maple. No structures are seen from the Turbine 2 site but road noise from US-44 is easily perceptible.

Turbine site 3, the highest of the three sites, occupies a slightly westward-sloping forested site of beech, red maple, hemlock and yellow birch with lesser ash. This site is near a recently cleared area which hosts a Sodar wind monitor. Trees felled to clear this area still have some leaves attached, attesting to the recent nature of the clearing. Again, no homes or structures are visible from turbine site 3 although road noise from US-44 is heard. Also, noise from the shooting range at the Northwestern Connecticut's Sportsmen's Association property just south of US-44 is easily heard throughout the Colebrook North site.

On both DEP visits to the site on March 15 and 19, there was a considerable flow of snowmelt coming down the old logging road on the hillside section between the watercourse crossing and the junction of the Turbine 2 access road with the old logging road. The new access road alignment will be just slightly north of the old road and it will have a somewhat steeper grade to it in this section. For the protection of the road itself from erosion and to prevent sedimentation into the larger of the two crossed watercourses, it is important that drainage along the access road be adequately sized to convey stormwater and snowmelt flows and that the sides of the roadway along this steeper segment be armored to prevent washouts.

Lastly, it would be helpful for field reviews of future projects if photos of the actual turbine sites from several directions could be included in the petitions or applications. This would assist in locating the proposed turbine sites more precisely before signing or staking occurs, especially in conditions of significant snow cover such as were encountered in Colebrook.

### Visual Impacts and Project Scale

The relocation of Turbine 1 from the originally proposed site south of Mill Brook to the revised location north of Mill Brook will significantly reduce the prominence of that turbine to the homes along US-44 and Greenwoods Turnpike. US-44 from Rock Hall Road to Greenwoods Turnpike and all of Greenwoods Turnpike were walked to assess the amount of screening available at each house. DEP became aware of the relocation of Turbine 1 subsequent to the March 15 site visit when the screening review was done. As mentioned earlier, the revised Turbine 1 location adds 400' to 550' of separation between these homes and Turbine 1. Of the homes along US-44 and Greenwoods Turnpike, the home at 12A Greenwoods Turnpike is the most directly impacted home from a visual perspective as it does not possess any proximal visual screening and will probably have the most unobstructed view of Turbine 1 of any residence. The other homes on these two streets all benefit from some screening, mostly of a deciduous nature, either in their yards or, in the cases of #s 17 and 25 Greenwoods Turnpike, along that road on the opposite side. The home at 12B Greenwoods Turnpike possesses only very partial screening toward Turbine 1. However, that turbine will not be as prominent from these homes as it would have been if placed at the originally proposed site south of Mill Brook.

The closest homes on Rock Hall Road, #s 40 and 44, appear to correspond to noise receptor location R-13 in Exhibit M and would therefore be approximately 1,200' from either Turbine 1 or 3, the closest turbines. Most of the homes along Rock Hall Road are on wooded lots with mature trees close to the homes, as well as screening along the east side of that road. The home at 44 Rock Hall Road is oriented perpendicular to the road and would be the most likely to have significant views of the turbines to the south from a distance of 1,200'. A driveway at 49 Rock Hall Road led to a clearing near the road and then into the forest to what appeared to be a residence, but the nature of this structure was not identified from the road without entering private property. This would be the closest residence to the turbines, at least on Rock Hall Road, and is located on a well wooded lot with tree cover in close proximity. Based on an approximate scaling from Google Maps, this house or structure would be just over 900' from the Turbine 3 site. Due to the scale of the turbines, intermittent views of them from points along Stillman Hill Road to the north of the BNE property and from Pinney Street to the east will be available from distances in excess of 3,000'.

As indicated in Exhibit J, for site line 5 from the lookout tower at Haystack Mountain State Park, the turbines would be easily visible at a distance of slightly over four miles. As the Colebrook South turbines would be similarly visible from Haystack Mountain at approximately the same distance, a simulation showing all six turbines from that vantage point would be useful. While DEP would, in an ideal world, prefer to keep the view from the Haystack Mountain lookout tower as undeveloped as possible, the visibility of the turbines from a distance of over four miles does not change the overall richness of the view from that vantage point.

On a related note, should the Council ultimately approve the BNE Energy petition, DEP requests that the Council require the applicant to submit post-construction photos of the actual Colebrook North turbines from the same vantage points as the six sight lines in Exhibit J to verify the accuracy of the visual modeling techniques, given that a balloon float was not employed for the visual analysis.

As DEP noted in our Petition 980 comments on BNE's Prospect facility, 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.

#### Acoustic Bat Survey – Exhibit K

It is not possible to provide accurate conclusions on the acoustic bat survey without the final report and additional survey data that spans the migratory period for tree bat species, the group of bats most likely to be negatively impacted by turbines. This final report is not available at the time these comments are being submitted.

In general, the methods and process used in the bat survey were appropriate, but a few modifications would have improved the results. The Interim Report indicates that the purpose of the survey was to document activity during the maternity season and yet goes on to note that most strike hazards from turbines to bats occur during the migratory period for red and hoary bats. Both species were documented in the project area and the report indicated their use of the area could be greater than reported due to degradation in the calls recorded. Both red and hoary bats 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 notes that the real rate could be higher due to the sampling issue previously discussed. It is possible that 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 forest canopy and can be very difficult to sample accurately. It is also the species most often negatively impacted by turbines. The interim report indicated that numbers for red and hoary bats increased in late August which is consistent with migratory movements of these species and suggested that site use during migration should be better evaluated. Without the final report, it is impossible to determine if this assessment was completed.

The start date used for the "maternity" surveys is a bit later than ideal for our area. (The vast majority of our bats give birth in late May and early June.) The interim report indicates that the project is not in the vicinity of known maternity colonies. What the report does not mention is that the project area is not far from several known large hibernacula locations. This increases the likelihood that cave bats heading for over-wintering sites are more likely to be moving through this area in large numbers at certain times of the year. This has the potential to increase the risk of mortality associated with turbine operation. Again, the level of risk cannot be accurately evaluated without additional data.

Based solely on the interim report, it appears that negative impacts to some of these species are likely. At a minimum, post-construction monitoring should be completed to

document any mortality and allow for adaptive management if possible. Ideally, funding for post-construction monitoring preferably conducted by an experienced in-state academic institution should be provided. If multiple turbine projects are permitted by the Siting Council, similar work could be conducted at other locations as part of one large project. Minimally, the DEP Wildlife Division should be given permission to access the site to search for bat carcasses. The design of the post-construction monitoring studies and the qualifications of the entity doing that work should be coordinated with Jenny Dickson of the DEP Wildlife Division who can be reached at (860) 424-3494.

As a minor note, there appears to be an error in the listed hoary bat activity period as described in page 11 (“...between August 27 and August 3.”)

#### Breeding Bird Surveys – Exhibit L

The survey period reported (June 29, July 6 and July 15) is not ideal for an accurate estimate of breeding birds, especially for species using heavily forested areas. By these dates, many of our nesting species are calling for greatly limited time periods or using call and chip notes, making accurate species identification extremely challenging. In addition, the survey period of 5 minutes is too short to adjust for this reduced level of calling activity. No information was provided to assess the skill level of the observers to determine their ability to detect or identify birds not completing full calls or songs. A notation of 46 unidentified passerines confirms that identification during this timeframe was challenging. The report indicates that no sensitive species were recorded. Despite the late timing of the surveys and based on the species list provided, we do not anticipate significant negative impacts to these species by the proposed project. However, it is important to recognize that, due to the late survey period, species of regional conservation interest could occur in the vicinity of the project and may not have been documented.

#### Natural Diversity Data Base Listed Species

The smooth green snake (*Liochlorophis vernalis*), a State Species of Special Concern, was identified from the Natural Diversity Data Base as potentially occurring in the vicinity of the Colebrook North wind project. Based on information provided to DEP by the applicant, we concur that suitable habitat for the smooth green snake does not occur within the boundaries of the project parcel and that the proposed activity is unlikely to have an impact on this species.

#### Watercourse Crossings

The crossing of two intermittent streams by the access road is proposed to reach the sites of Turbines 2 and 3. According to information on page 30 of Volume 1 of the petition, three sided box culverts will be used at these watercourse crossings. This is consistent with the recommendations of the Stream Crossing Guidelines of the DEP Inland Fisheries Division in that these types of crossing structures allow for the maintenance of natural stream bottom substrates. Care should be taken to incorporate a representative amount of boulders into the stream bottom of the culverted stream segment if culvert placement activities disturb the existing substrate. The boulders are valuable in slowing stream velocity and discouraging erosion of the stream bottom. The construction window of June 1 to September 30 mentioned on page 30 is consistent with the Stream Crossing Guidelines to take advantage of seasonal low flow conditions.

### Upland Meadow Vegetative Treatment

Sheet C-312 of Exhibit F contains some specifications for upland meadow creation and a planting schedule for the areas so noted in cross-hatching on the site plan. The larger blocks of upland meadow creation include the blade assembly areas at the turbine sites. As a general rule, it is preferable to minimize the extent of breaks in the forest canopy. Therefore, if the blade assembly areas or other portions of the areas designated for upland meadow creation do not require permanent maintenance in a grassed, open state, these areas should be allowed to naturally revert to forest. Any supplemental plantings should be made with native shrubs.

For those areas that do require maintenance in an open state, native grasses should be favored in the seed mix. If site conditions are suitable, warm season grasses such as little blue stem and Indian grass would be a preferred alternative. These grasses often grow better in areas of limited topsoil and provide additional benefits to native wildlife species. Additional information on establishing and maintaining grasslands and other early successional habitats can be found on the DEP web site as follows: [http://www.ct.gov/dep/cwp/view.asp?a=2723&q=325732&depNav\\_GID=1655](http://www.ct.gov/dep/cwp/view.asp?a=2723&q=325732&depNav_GID=1655). The minimization or avoidance of supplementing the on-site topsoil will reduce chances for invasive species to be introduced to the site via off-site soils. It also reduces the opportunity for such species to access the site on machinery. The Council should require that the disturbed sites be monitored for invasive species and that such species be removed as necessary for a period of at least three years.

Lastly, the applicant is commended for adding specification no. 5 under the upland meadow creation section. Too often erosion control barriers are not removed from the site after the affected areas have been planted and stabilized. It is beneficial to get barrier materials, which can often include plastic sheeting, off the site as soon as practical.

### Miscellaneous Petition Commentary

As additional wind projects are submitted for the review of the Siting Council, DEP believes that the process of evaluating and siting wind turbines would be assisted by having regulations in place for these facilities. Regulations providing guidance as to setbacks from property lines and residences, noise levels, flicker effect and other pertinent parameters would add consistency and predictability to the process, but should also include flexibility to address site-specific concerns.

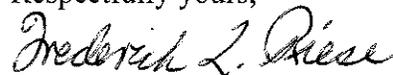
Page 3 of the Petition refers to the project's location in Litchfield County which it cites as one of the most constrained capacity areas in New England. Studies submitted in connection with previous transmission and generation project applications to the Council have documented that the Southwestern Connecticut demand region (SWCT), along with the Boston metro region, are the most constrained capacity areas in New England. The SWCT region encompasses roughly the southwestern quadrant of Connecticut but does not include Litchfield County. A similar statement on page 3 of Petition 980 for Prospect is accurate for that project because of Prospect's location within the SWCT region, but this statement is not accurate for Colebrook.

The reference to Wind Colebrook South on page 2 should be Wind Colebrook North.

The petition states (Exh. I, p. 19) that the proximity of adjacent habitat similar to that at the turbine sites will allow for wildlife species to relocate off-site to avoid construction-related noise and disturbance. While this may be the case, if the surrounding habitat areas are already at their carrying capacities for any given species, resident species on the project site would not be able to relocate without stressing either themselves or individuals in the adjacent areas. Thus, while the statement on page 19 may be correct, such assumptions cannot be made in a blanket fashion for all species in all similar situations.

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  
Senior Environmental Analyst

cc: Daniel C. Esty, Commissioner