

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

**Petition of BNE Energy Inc. for a
Declaratory Ruling for the Location,
Construction and Operation of a 3.2 MW
Wind Renewable Generating Project on
Winsted-Norfolk Road in Colebrook,
Connecticut (“Wind Colebrook North”)**

Petition No. 984

May 3, 2011

REBUTTAL TESTIMONY OF MICHAEL LIBERTINE, LEP

Q1. What is the purpose of filing this rebuttal testimony?

A. On April 27, 2011, I met with the state’s Historic Preservation and Museum Division (“agency” or “SHPO”) Environmental Review Coordinators, Susan Chandler, Historical Architect, and Daniel Forrest, Archaeologist, to discuss the project and its potential effect on Rock Hall, a property listed on the National Register of Historic Places. At the meeting I was also provided a copy of information that was submitted to the agency by Emily Gianquinto of Reid and Reige, P.C., representing FairwindCT, Inc. and Stella and Michael Somers (owners of Rock Hall) on April 11, 2011. This information consisted of several items, including (among other) photographs of the Rock Hall property, National Register nomination forms, renderings of the proposed project from locations on the Rock Hall property created by Planimetrics, Inc. (“Planimetrics”) which are part of the record for this proceeding, and VHB’s photo-simulations (also entered into the record for this Petition). After reviewing Ms. Gianquinto’s cover letter, a copy of which I have included as Exhibit 1, I felt compelled to respond to specific statements therein.

Q2. What statements are you referring to?

A. First, the end of the opening paragraph urges the agency to issue an adverse effect determination on Rock Hall, Beckley Bog (a National Natural Landmark), and two nearby historic districts. An opinion from the SHPO regarding potential adverse effects to Rock Hall is pending.

However, I find it curious that the letter mentions adverse effects on Beckley Bog because SHPO does not have authority over this designation. Established on May 18, 1962, The National Natural Landmark (“NNL”) program recognizes the best examples of biological and geological features in both public and private ownership. The National Park Service administers the NNL Program and it does not have the protective features of Section 106 of the National Historic Preservation Act. The designation of a National Natural Landmark presently constitutes only an agreement with the owner to preserve, to the extent possible, the significant natural values of the site or area. The SHPO’s review role is limited to historic properties either listed, or eligible for inclusion on, the National Historic Register.

With respect to the two historic districts, which are revisited on page 9, limited visibility is predicted from Colebrook North at two select locations within the Colebrook Center Historic

District, located two-plus miles to the northeast. No visibility is predicted within the Norfolk Historic District. This information was provided to SHPO as part of VHB's 2010 submission. The SHPO's letter of March 21, 2011, which rescinds the "no effect" determination letter of November 29, 2010, is specific and solely requests additional information relative to Rock Hall.

Secondly, the discussion of the visual impact analyses submitted by VHB and Planimetrics, Inc. (beginning on page 3 and extending to page 5) includes misleading and inaccurate information. The second paragraph on page 3 claims the VHB visual materials are "inadequate for several reasons." It states that "the submission is comprised of a selection of photographs that appears designed to minimize the visual effects on Rock Hall. For example, VHB/BNE chose to submit simulations from the tennis courts, which are on the opposite side of the Rock Hall property, so that most of the view is blocked by Rock Hall itself." This allegation is false. In fact, according to Rock Hall's own consultant (from Charter Oak Environmental) who was on-site with VHB during the photo-documentation activities, the shots submitted by VHB were selected by Stella Somers, the owner of the Rock Hall property.

Further, this discussion continues with the statement that "VHB/BNE submitted only one simulation from the eastern side of the grounds – and that simulation appears to be deliberately cropped or positioned to show only the view of the Colebrook North Turbines." Again, the locations of the photographs were chosen by Rock Hall representatives, not VHB. I also would like to point out that we disagree with the notion that the photographs were in any way manipulated to omit views of additional turbines. It is clear from the materials submitted in Petition 983 that the Colebrook South would not be visible from the pool location. Limited views of Colebrook South may be obtained farther east towards the property boundary, but these views are anticipated to be generally seasonal, through the trees, if achieved at all.

The opening paragraph on page 5 makes reference to visibility of the Colebrook South project at Rock Hall, citing BNE's Petitions for both Dockets 983 and 984 and my Pre-Filed Testimonies associated with these Petitions. I believe that the statements in this paragraph are not indicative of the information included in the Visual Resource Evaluation ("VRE") Reports. As the viewshed map (Figure 3 in the VRE Report for 983) demonstrates, limited visibility from Colebrook South may be achieved along a short stretch of Rock Hall Road which could extend slightly into the western edge of the Rock Hall property; in the case of Colebrook South, this would be limited to seasonal ("leaf-off" conditions). Two of the photo-simulations provided in Exhibit 4 to my Pre-Filed Testimony of March 23, 2011 bear this out. Views 1 and 2 include the Colebrook South turbines, which are obstructed by intervening topography and vegetation. In the VRE Report associated with 984, Figure 3 depicts more extensive seasonal visibility on the Rock Hall property; however, the site reconnaissance and photo-simulations produced at the Rock Hall property demonstrate the conservative assumptions used in the VRE and clearly over-predicts those views. I would also point out that the last statement of this paragraph is incorrect. I reject the premise that the "hub of the turbines will be visible from Rock Hall". We believe that, at best, one of the Colebrook North turbine hubs may be seen through the trees during "leaf-off" conditions (see View 4 of Exhibit 4 to my Pre-Filed Testimony of March 23, 2011). In addition, the strobe light has been clearly mentioned in the Visual Resource Evaluation Reports associated with both Petitions.

The second paragraph on page 5 suggests that the March 21, 2011 (SHPO) submission is inadequate because it focuses only on the potential views from Rock Hall. The point of the

March 21, 2011 submission to SHPO was to focus on Rock Hall, at their and the intervenor's requests. Information regarding additional considerations, including potential shadow flicker, has been filed as part of this Petition. Paragraph 1 on page 7 discusses the effect commonly referred to as shadow flicker. Again, many of the statements herein are misleading and inaccurate. The letter suggests that the shadow flicker results obtained by BNE/VHB used "overly favorable assumptions to reach its alleged "probable case" conditions". I would argue that the scenarios employed to determine the "probable case" scenario, which are based on publicly-available data, are extremely conservative. Again, I reject the premise of the 2nd to last sentence of that paragraph which claims the methodology used in our analysis was "flawed". To date, I am not aware of any studies prepared by the intervenor's which dispute our findings. Therefore, I find it hard to understand the claim in the next paragraph that "BNE's wind turbines will cause substantial changes to the character and integrity of the region's historic and cultural resources, including Beckley Bog". At best, less than 10 hours of potential shadow flicker are predicted along the west side of the bog resulting from the Colebrook South project—not the Colebrook North project. Contrary to the statements on page 8, paragraph 1, most of the Beckley Bog is included with the Shadow Flicker Analysis conducted for Colebrook North; no shadow flicker is expected to occur from this project's turbines. Similarly, we have shown that Colebrook South will be visible from western portions of the bog; Colebrook North will not be visible from any areas of the bog.

I would also note that this correspondence to SHPO is misleading in that Reid and Reige never specifically advised the SHPO that their own visual report erroneously depicts seven turbines even though they are fully aware that the combined petition 983 and 984 projects only propose six turbines—not seven. I would further note that VHB extended the Rock Hall owners the courtesy of providing drafts of its proposed SHPO submissions prior to such submission. As of the date hereof, that courtesy was never extended back to VHB regarding the materials submitted by their consultant. This lack of candor and professional courtesy is noteworthy.

My final thought is just to reiterate that the proposed projects would not affect the character and integrity of the Colebrook Center Historic District and Norfolk Historic Districts, as demonstrated by both the VRE reports and Shadow Flicker Analyses.

Q3. Do you have any additional information you wish to share?

A. Yes. At my meeting with the representatives of the SHPO, I was asked if we could depict the turbines "activated" - that is, showing the units with the turbines rotating in motion. VHB prepared animated sequences of the 100-meter hub height turbines depicting both the cut-in and maximum rotation speeds from the Rock Hall property (View 4). These sequences include three separate "yaw" positions to provide a representation of the different angles that may be achieved under varying wind directions. I have included this on compact disc as Exhibit 2 herein.

Q4. Would you like to respond to information submitted in this petition since the date of your pre-filed testimony?

A. Yes. I would like to respond to some of the information presented by Glenn Chalder, AICP, and President of Planimetrics during his pre-filed testimony (dated April 7, 2011),

comments made during cross examination on April 21, 2011 in the petition 983 proceeding and supplemental pre-filed testimony submitted on May 3, 2011.

Q5. Why?

A. Because the information Planimetrics provided will likely be compared directly with VHB's work prepared for this Petition and, in my opinion, the resultant presentations are two distinctly different products and should be viewed independently. In review of the Planimetrics submission, it appears they used VHB's methodologies to create a three-dimensional ("3D") terrain model of the project area, including topographic contours and interpretation of aerial imagery, and incorporated the locations of the proposed turbines. There are, however, significant differences between these work products which should be identified for the record.

Q3. What differences in methodology exist?

A. Let me first say that the underlying models used by VHB and Planimetrics were created using the same components and software. The Planimetrics model is no more or less conservative than VHB's viewshed model. They are both based on the same principles and incorporate important data such as topographic contours, aerial photography, conservative tree heights, and locations of the proposed structures. The primary distinction between VHB's and Planimetrics' efforts lies in the presentation of results. Where VHB elected to present a two-dimensional viewshed map of potential visibility projected across a defined 5-mile study area, Planimetrics presented its results in a three-dimensional space from select, representative locations. Recognizing that a 3D model alone cannot adequately depict real world conditions, VHB took the modeling components and linked them to specific locations measured in the field, ultimately creating a 3D model that accurately resides spatially within a photograph, and resulting in what I believe to represent more accurate, or real world, conditions. Let me also say that the Planimetrics submitted an identical visual report for both petitions 983 and 984. Finally, I would note that Planimetrics report is misleading in that they show a total of seven turbines for the combined 983 and 984 projects. It is clear from the record in this proceeding and in petition 984 that BNE is only proposing six turbines, not seven.

The substantive differences between VHB's work and the Planimetrics April submission include:

- Field Verifications – VHB drove the 5-mile Study Area after creating a preliminary viewshed map and 3-D model, both to field-truth real-world conditions and to obtain photographs for future simulations. Field observations and ground coordinates were incorporated into the final work product. Contrary to Mr. Chalder's assertions in his May 3, 2011 testimony, based on evidentiary testimony on April 21, 2011 in the petition 983 proceeding, by Mr. Chalder, Planimetrics admitted that they did not go out to the site to verify their materials until after those materials were submitted to the Council ("We have been out in the field **subsequent** to the preparation of this exhibit to evaluate the validity of this simulation." See April 21, 2011 Transcript at page 120 (emphasis added). The significance is that the specific locations of Planimetrics' renderings were developed solely from the model and that those locations may not be accurate due to the resolution and spatial reference of underlying aerial photography and GIS

data. VHB's photo locations were field-surveyed with GPS accuracy to within +/- 3 feet.

- Areas of Vegetation – Under cross examination in petition 983, when questioned about using 30 feet as the assumed widths of roads in the area, Mr. Chalder indicated that the road dimensions were not the most important criteria, but rather that the locations of trees were more significant. I certainly agree with the latter. According to Mr. Chalder's pre-filed testimony regarding Planimetrics' methods in developing its materials, "To depict vegetation, Planimetrics estimated the extent of tree cover from the aerial photographs and randomly located trees within the tree cover area. Deciduous and coniferous trees were randomly located within the tree cover area." The use of "stylized" tree specimens randomly spaced within vegetated areas does provide a preliminary basis for evaluating views. VHB used its 3-D model specifically for that purpose - to identify potential locations with unobstructed direct lines of sight. However, populating a computer model with randomly-spaced trees results in an arbitrary tree density and does not accurately reflect what exists in the field. By his own account, Mr. Chalder stated on the record that certain conifers were not in correct locations in simulations created from the "pool area".

VHB's Visual Resource Evaluation Report uses a conservative average tree height of 65 feet, which Planimetrics also incorporated into its model. It is evident that there are numerous specimens throughout the area that in reality ascend substantially above 65 feet high. This influences the rise of the turbines above the assumed canopy and tends to overestimate the amount of the structure that may be visible from Planimetrics' selected locations.

The combination of inconsistencies among these factors (tree locations, density and conservative canopy height) creates over predictions of views of the proposed turbines.

- Rock Hall Laux Lodging Simulations - Figures 2, 3 and 4 of the Planimetrics submission represent views "behind" the residence, defined by Mr. Chalder as to the east of the building near the pool area. I do not believe these three simulations provide useful information because they reportedly depict conditions from 10, 20 and 30 feet above ground level. When asked under cross examination about these simulations and the incremental view heights in the petition 983 proceeding, Mr. Chalder suggested that the property rises upward from the pool and that the three scenes provide views from varying heights as one steps away from the pool onto presumably higher ground. However, it is clear from the materials submitted and substantiated by Mr. Chalder when asked, that these shots are all from the same location; the "eye level" of the computer model's lens was simply raised in 10-foot increments. A review of LiDAR topographic data for the property (obtained from the same source used by both Planimetrics and VHB to create the respective terrain models) indicates that the approximate ground elevation at the pool area is 1450± feet and gradually increases to a high point of 1462± feet then drops back down in elevation to 1440±, all over a distance of approximately 450 linear feet to the northern property line. Beyond a distance of approximately 120 feet north of

the pool, the property is wooded. See the aerial photograph provided in Exhibit 3 of this document for reference. Although the use of a 10-foot height above ground level is arguable, I find no basis for assuming 20 or 30 feet elevation gains on the property.

The computer model is an informative tool, but it has limitations and should not be considered a truly comparable substitute for what occurs in the real world. Planimetrics' model is a fine tool to use as a starting point, but the resultant renderings should not be interpreted as anything more than general representations of possible scenarios. A comparison of VHB's photo-simulations with those provided by Planimetrics clearly demonstrates the differences between computer-generated renderings and photo-simulations incorporating existing conditions.

A review of the supplemental submission submitted on May 3, 2011 shows that the Planimetrics computer model has underestimated the tree density and height in the vicinity of the Project, and these photographs were taken in leaf-off conditions. For example, a review of Exhibit 1 attached to the May 3, 2011 submission and Figure 7 and Figure 8 of that exhibit clearly shows that the Planimetrics model severely underestimates the tree density and height in the area. In addition, a review of Figure 8 also clearly demonstrates that the Planimetrics model has severely overestimated the width of Rock Hall Road. On close inspection of Figures 5 and E, it appears that the road alignments (and possibly the elevations) in the Planimetrics' model does not match existing conditions as depicted in accompanying photographs. This raises a question as to the adequacy of execution of the procedures used to merge the terrain model and the photographs. It is difficult for me to assess the specific degree to which the terrain model and photo-simulations might be off because there is no discussion in Mr. Chalder's May 3rd submission regarding the methodology employed to tie the model with real-world locations. It is possible that the camera pitch and/or height of the camera above ground level may not have been taken into consideration when recording the photo locations.

A few additional observations of note regarding the Planimetrics May 3rd submission:

- In several views (F-Rock Hall Road #2 and D – Rock Hall Luxe Lodging, 19 Rock Hall Road, as examples), although portions of the turbines would be seen seasonally significant portions of those units would be screened by trees. The photo-simulations are misleading because they depict the units in the foreground of the photograph.
- In some of the photo-simulations provided by Planimetrics, the proposed turbines appear to be floating in space and not directly tied to topographic contours, which would account for the differences of apparent heights of the units when compared to VHB's submissions. For example, in Planimetrics' Figure B - Rock Hall Luxe Lodging, 19 Rock Hall Road, the base of turbine CS-3 barely (if at all) makes contact with the existing tree line, which is anywhere from 65 to 85 feet above the digital contours representative of the ridgeline upon which that unit would be placed. As a result, all turbines in that shot could be depicted at exaggerated heights anywhere from 75 to 100 feet. Similar conditions appear to exist in Figure C (also from Rock Hall Luxe Lodging) and Figure I (12A/12B Greenwoods Turnpike).

My point is not to refute that there are locations where the turbines will be visible. That is clearly documented in VHB's VRE reports and supplemental filings. In fact, most of the

locations presented by Planimetrics correspond to locations of VHB's viewshed maps depicting either seasonal or year-round visibility. However, I question the degree to which the visibility is represented in the Planimetrics submissions. It is my opinion that they overstate the views and, in some cases, are substantially taller than what is proposed.

The statements above are true and accurate to the best of my knowledge.

May 3, 2011
Date

Michael P. Libertine
Michael P. Libertine

EXHIBIT 1



REID AND RIEGE, P.C.
COUNSELLORS AT LAW

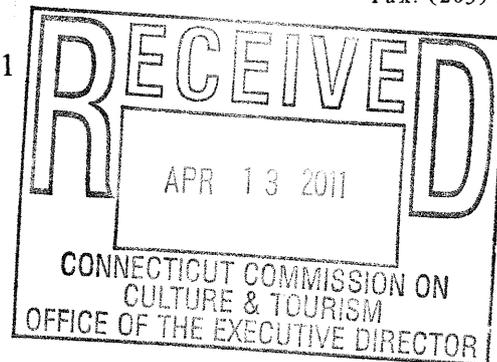
ONE FINANCIAL PLAZA
HARTFORD, CT 06103
Voice: (860) 278-1150
Fax: (860) 240-1002

Emily A. Gianquinto
860-240-1025
egianquinto@rrlawpc.com

195 CHURCH STREET
15TH FLOOR
NEW HAVEN, CT 06510
Voice: (203) 777-8008
Fax: (203) 777-6304

April 11, 2011

Susan Chandler, Historical Architect
Historic Preservation and Museum Division
Connecticut Commission on Culture & Tourism
One Constitution Plaza, Second Floor
Hartford, CT 06103



**Re: Adverse Effect of Proposed Wind Turbine Projects
on Historic and Cultural Resources in Northwestern Connecticut,
Including Rock Hall in Colebrook and Beckley Bog in Norfolk**

Dear Ms. Chandler:

I write at your request in order to clarify the position of FairwindCT, Inc. and Stella and Michael Somers, the owners of Rock Hall, a property on the National Register of Historic Places, concerning the adverse effects that will be suffered by nearby historic and cultural resources, including a National Natural Landmark, should the plans of BNE Energy Inc. ("BNE") to site six industrial wind turbines in Colebrook be approved. As the following will demonstrate, siting six turbines at the proposed locations will have a deleterious effect on Connecticut's cultural and historic resources, including Rock Hall and Beckley Bog, a National Natural Landmark. We therefore urge your office to work to ensure the protection of those resources by declining to issue the "no effect" letters that BNE has requested and instead issuing a declaration that BNE's proposed projects will have adverse effects on Rock Hall, Beckley Bog and the character and integrity of two nearby historic districts.

In Petition Nos. 983 and 984, currently pending before the Connecticut Siting Council, BNE proposes to build six industrial wind turbines in Colebrook. One of those turbines will be only 2600 feet from Rock Hall, also known as Rock Hall Luxe Lodging, a historic property located at 19 Rock Hall Road in Colebrook. Three of these turbines will be within less than half a mile from the Rock Hall property line, and all six will be within 1.5 miles of the Rock Hall property.

According to BNE's petitions, these wind turbines will have a hub height of 100 meters, or approximately 328 feet, above grade and will have a rotor sweep area of up to 100 meters in diameter – meaning the structures will have a maximum elevation above grade of approximately 492 feet. Conceptually, this means BNE is seeking approval to build six structures that reach nearly as high as CityPlace I. Attached to each of those structures will be whirling rotors with the span of a football field.

Susan Chandler
April 11, 2011
Page 2 of 9

As you know, the most developed source of law discussing how to assess potential impacts on historic properties is the National Historic Preservation Act, 16 U.S.C. § 470 *et seq.* (“NHPA”). Section 106 of the NHPA requires that any federal undertaking consider the effects of such undertaking on any historic properties. The Act further imposes several responsibilities upon the State Historic Preservation Officer, including to “advise and assist, as appropriate, Federal and State agencies and local governments in carrying out their historic preservation responsibilities,” to “cooperate with the Secretary, the Advisory Council on Historic Preservation, and other Federal and State agencies, local governments, and organizations and individuals to ensure that historic properties are taken into consideration at all levels of planning and development,” and to “provide public information, education, and training, and technical assistance in historic preservation.” 16 U.S.C. § 470a(b)(3).

Connecticut also has enacted several statutes demonstrating a government commitment to preservation efforts, including General Statutes § 22a-19a, which authorizes a party to sue to prevent “the unreasonable destruction of historic structures and landmarks of the state,” and General Statutes § 10-409, which establishes the Historic Preservation Council. The Historic Preservation Council is tasked with advising the Commission on Culture and Tourism on how to best carry out its preservation efforts, including encouraging and recommending the “development, preservation and marking of such historic structures and landmarks found to have educational, recreational and historical significance,” and reviewing “planned state and federal actions to determine their impact on historic structures and landmarks.” *Id.*

The statutes authorizing the Siting Council to render decisions with respect to locating power-generating facilities also explicitly recognize the import of historic preservation by acknowledging the possible adverse effects of such facilities on our state’s historic resources. In fact, the very purpose of the statutory scheme is to balance the requirement for utility services with the need “to minimize damage to scenic, historic, and recreational values.” Conn. Gen. Stat. §16-50g.

Pursuant to the regulations implementing Section 106 of the NHPA, the agency responsible for the undertaking must, in consultation with the SHPO, identify any historic properties within the “area of potential effects,” defined by the regulations as “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.” 36 C.F.R. § 800.16.

As one example of what constitutes an area of potential effects, the Federal Communications Commission has promulgated regulations relating to its responsibilities under Section 106 of the NHPA. In those regulations, the FCC has determined that the presumptive

Susan Chandler
April 11, 2011
Page 3 of 9

area of potential visual effects for “towers”¹ that are more than 400 feet high is anywhere within 1.5 miles from the proposed tower site. 47 C.F.R. part 1, app’x C, section VI.C. Admittedly, there is no federal rule or regulation that is specific to conducting a Section 106 review of a wind turbine project. However, that 1.5-mile presumption should logically serve as a guide for your review of these projects. We urge the SHPO to consider the 1.5-miles as only a minimum presumptive area of potential effects, because the size, scope, movement and noise associated with the wind turbines that BNE seeks to site obviously make their impacts far greater than the stationary towers that are the subject of the FCC regulation. (See, e.g., Petition Nos. 983/984, Pre-Filed Testimony of Wilson H. Faude, dated Mar. 15, 2011, at 4.)

There is no dispute that Rock Hall is listed on the National Register of Historic Places, and is located within even the conservative 1.5-mile area of potential effects identified by the FCC. Based on calculations performed by one of our engineers, Rock Hall is located less than half a mile from the nearest proposed turbine and is less than three-quarters of a mile from each proposed turbine location at Colebrook North, the project that is the subject of Petition No. 984. Rock Hall is located within 1.5 miles of the three proposed turbine locations at Colebrook South, the project that is the subject of Petition No. 983.

The visual impact analysis submitted by VHB on behalf of BNE on March 21, 2011 is inadequate for several reasons. First, the submission is comprised of a selection of photographs that appears designed to minimize the visual effects on Rock Hall. For example, VHB/BNE chose to submit simulations from the tennis courts, which are on the opposite side of the Rock Hall property, so that most of the view is blocked by Rock Hall itself. (See VHB/BNE submission, dated Mar. 21, 2011, Views 2 and 3.) The greatest visual effect will be on the eastern side of the Rock Hall property, where the pool, patio and meadow of wildflowers is located, and on the south side of Rock Hall, where several windows and balconies face south, towards the proposed turbines. Despite these facts, VHB/BNE submitted only one simulation from the eastern side of the grounds – and that simulation appears to be deliberately cropped or positioned to show only the view of the Colebrook North turbines. (See VHB/BNE submission, dated Mar. 21, 2011, View 4.) The Colebrook South turbines will also be visible from that part

¹ “Tower” is defined by the regulations as “Any structure built for the sole or primary purpose of supporting Commission-licensed or authorized Antennas, including the on-site fencing, equipment, switches, wiring, cabling, power sources, shelters, or cabinets associated with that Tower but not installed as part of an Antenna as defined herein.” 47 C.F.R. part 1, app’x C, section II.A.14.

Susan Chandler
April 11, 2011
Page 4 of 9

of the Rock Hall property, as shown by our simulations attached to this correspondence. (See Wind Turbine Visibility, dated April 2011, Figures 2-4.)²

The VHB submission did not include any simulations from the balconies or windows of Rock Hall. VHB employees were invited inside Rock Hall to take the photographs necessary for such simulations when they visited the property, but declined to do so based on instructions from BNE's attorneys. The March 21, 2011 simulation is inadequate on that point alone, because the SHPO cannot conduct an analysis of the potential adverse effect without considering the visual impact from inside Rock Hall itself. VHB's submission is also inadequate because it includes simulations for blade lengths shorter than 50 meters. Although various BNE witnesses have stated that BNE will use shorter blade lengths, BNE's petitions seek approval for up to the 50-meter length. The SHPO should analyze the visual effects of the 50-meter blades, rather than the 41.25-meter blade lengths that VHB used in its simulations.

Despite the inadequacies and inaccuracies in that March 21, 2011 submission, however, it is clear that even under the analysis of BNE's own experts, the proposed turbines will be visible from Rock Hall. In Views 1 and 2, BNE concedes that turbines will be visible seasonally. In View 4, BNE concedes that turbines will be visible year round. BNE's own submission therefore demonstrates an adverse effect on Rock Hall.

Our simulations, attached to this correspondence, show the potential visual effects on Rock Hall using the 50-meter blade length, a wider viewshed and from the approximate heights of the balconies on the southern side of Rock Hall. The simulations were created using an assumed tree canopy height of 65 feet, based on BNE's assumptions for other visual analyses, and using the same turbine dimensions used by VHB in the visual resources exhibits attached to BNE's petition. The results of our expert's analysis show much more significant adverse visual effects on Rock Hall. Not surprisingly, the visual effects worsen as the height of the perspective increases. There is no question, based on these simulations and the simulations submitted by BNE's own expert, that these proposed projects will have an adverse visual effect on Rock Hall, because all seven proposed turbine locations will be visible from Rock Hall.³

² These simulations were provided to the Siting Council and all other parties to that proceeding, including BNE, as an attachment to the Pre-Filed Testimony of Glenn Chalder, dated April 7, 2011.

³ BNE seeks approval for six turbines, but has proposed two alternate locations for one of its Colebrook North turbines. Therefore, our expert included all seven potential turbine locations in our simulations. The original turbine location is labeled "CN-1" in the simulations and the proposed alternative turbine location is labeled "CN-1a."

Susan Chandler
April 11, 2011
Page 5 of 9

The visual exhibit to BNE's petition only drives home that point. Rock Hall is within the area from which BNE anticipates that turbines at Colebrook North with either the 41.25- or 50-meter blades will be visible year-round, and also appears to be within the area in which the turbines at Colebrook South will likely be visible year-round and will be visible seasonally. (See Petition No. 984, Ex. J, Figure 4; Petition No. 984, Pre-Filed Testimony of M. Libertine, dated Mar. 23, 2011, Ex. 3, Figure 4; Petition No. 983, Ex. J, Figure 3; Petition No. 983, Pre-Filed Testimony of M. Libertine, dated Mar. 15, 2011, Ex. 3, Figure 3.) Since the hub of the turbines will be visible from Rock Hall, BNE concedes that the night-time red strobe light required by the Federal Aviation Administration will also be visible. (See, e.g., Petition No. 984, Pre-Filed Testimony of M. Libertine, dated Mar. 23, 2011, Ex. 2, at 7.) BNE's submission makes no mention of that strobe light.

The March 21, 2011 submission is also inadequate because it focuses only on the potential views from Rock Hall. Visual effects are certainly not the only possible adverse effects that may be suffered by historic resources in conjunction with significant undertakings located nearby, as the regulations implementing Section 106 make clear. Those regulations, which require the relevant agency to consult with the SHPO to apply certain criteria of adverse effects, are quoted in full as follows:

(1) Criteria of adverse effect. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

(2) Examples of adverse effects. Adverse effects on historic properties include, but are not limited to:

- (i) Physical destruction of or damage to all or part of the property;
- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- (iii) Removal of the property from its historic location;

Susan Chandler
April 11, 2011
Page 6 of 9

- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- (v) Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vii) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

36 C.F.R. § 800.5(a).

As FairwindCT and the Somers have emphasized, there are many other considerations that fall within these criteria of adverse effect that will be suffered in the event that the BNE turbines are sited at the proposed locations. VHB's March 21, 2011 submission makes no mention of other adverse effects that accompany turbines, the most significant of which are shadow flicker and noise.

One of our experts has evaluated the noise that will be emitted from BNE's proposed wind turbines and has concluded that worst-case sound levels from the proposed turbines will exceed the Connecticut Department of Environmental Protection's noise regulations at the point of compliance for five of the six turbines. The expert has determined that even apart from the fact that the projected noise levels will not comply with state noise regulations, the specific nature of the noise caused by wind turbines will have even greater an impact on the surrounding area, including Rock Hall. Our expert had the background noise monitored for one week in one location and three days at another location. In contrast, BNE monitored background noise levels for a total of 50 minutes at two locations for Colebrook South and a total of 35 minutes at one location for Colebrook North. (See Petition No. 983, Ex. M, at 5 & Appendix, Noise Monitoring Summary; Petition No. 984, Ex. M, at 5 & Appendix, Noise Monitoring Summary.) The net result of our expert's monitoring was that the average background noise in the area is so low that the addition of the six wind turbines would quadruple the noise levels at the property line of BNE's proposed sites. Our expert opines this is an extreme increase in noise levels. The introduction of this type of audible disruption, as noted above, is expressly contemplated by the regulations implementing the NHPA as satisfying the criteria for a finding of an adverse effect.

Susan Chandler

April 11, 2011

Page 7 of 9

Shadow flicker refers to the shadows caused by the alternating rotation of turbine blades. BNE defines shadow flicker as “the effect of alternating changes in light intensity of the sun caused by the rotating blades of the turbine casting a moving shadow to a nearby area. The shadow may be perceived as a ‘flicker’ due to the repeated shadow being cast by the rotating blades.” (Petition No. 984, Pre-Filed Testimony of M. Libertine, dated Mar. 24, 2011, Ex. 3, at 1-2.) People who have experienced shadow flicker liken it to being in a room in which the light switch is repeatedly turned on and off. The shadow flicker analysis provided by BNE’s own expert reveals that several “receptors” (also known as houses and other residential structures) located in the areas surrounding the proposed locations of the turbines will likely experience more than 10 hours of shadow flicker per year, which is the threshold established by recently enacted wind turbine regulations on Cape Cod. BNE’s expert obtained this data notwithstanding the fact that it used overly favorable assumptions to reach its alleged “probable case” conditions and that it used modeling software that is sympathetic to the wind industry and produces results that have not been subject to peer review. BNE’s expert states that flicker effects have been shown to reach for nearly 1 mile, but claims that Rock Hall will not experience flicker. We have little faith in that claim given the flawed methodology used by BNE’s expert. In fact, the manual for the software used by BNE’s expert to conduct the shadow flicker analysis acknowledges that shadow impacts could extend as far as approximately 3 miles.

With the biases listed above taken into account, we have no doubt that the shadow flicker caused by BNE’s wind turbines will cause substantial changes to the character and integrity of the region’s historic and cultural resources, including Beckley Bog, a National Natural Landmark. Beckley Bog is the most southerly sphagnum-heath-black spruce bog in New England and possesses all of the principal elements of a boreal bog. It is a rare relic of the early Pleistocene epoch and was designated a National Natural Landmark in 1977. Connecticut has only 8 of the 586 sites listed on the National Registry of Natural Landmarks.

The entire Beckley Bog, located on a Nature Conservancy property in Norfolk that abuts the proposed Colebrook South site, is located within 1 mile of one of BNE’s planned turbines. Substantially all of the bog is located within 1.25 miles of two of the other turbines and at least half of the bog is located within 1.25 miles of still a fourth turbine.

As you know, the National Natural Landmarks Program focuses attention on areas of exceptional natural value to the nation as a whole rather than to one particular state or locality. A National Natural Landmark is an area that has been designated by the Secretary of the Interior as being of national significance to the United States because it is an outstanding example of a major biological and geological feature found within the boundaries of the United States. 36 C.F.R. § 62.2. The regulation states that one of the benefits of National Natural Landmark status includes the positive recognition and appreciation of nationally significant resources and

Susan Chandler
April 11, 2011
Page 8 of 9

the ability of public agencies and private individuals and organizations to make more informed development and planning decisions early in the regional planning processes.

BNE's viewshed analyses show that the proposed Colebrook South project will be visible year-round from almost the entirety of the Beckley Bog, regardless of whether BNE uses the 41.25- or 50-meter blades. (See Petition No. 983, Ex. J, Figure 4; Petition No. 983, Pre-Filed Testimony of M. Libertine, dated Mar. 15, 2011, Ex. 2, Figure 4.) BNE's "probable case shadow flicker" for the Colebrook South site shows that most of Beckley Bog will be subject to shadow flicker. (Petition No. 984, Pre-Filed Testimony of M. Libertine, dated Mar. 15, 2011, Ex. 3, Figure 1.) BNE's "probable case shadow flicker" for the Colebrook North site was done using a radius of 1.24 miles, which left nearly all of Beckley Bog just out of the circle of analysis. (Petition No. 983, Pre-Filed Testimony of M. Libertine, dated Mar. 24, 2011, Ex. 3, Figure 1.) BNE has not provide any environmental assessment regarding the potential impact of its projects on the bog or wildlife that use the bog. At the public hearing in Colebrook regarding these projects, a member of the Colebrook Land Conservancy spoke about the significance of this site. (Tr. of Mar. 23, 2011 public hearing, 32:16-34:17 (excerpt attached).)

The SHPO should also be concerned about the effect of BNE's proposed projects on the nearby Colebrook Center Historic District (listed on the National Register of Historic Places in 1991) and Norfolk Historic District (listed on the National Register of Historic Places in 1979). Although these districts are outside of the FCC presumptive area of potential effects for towers, both districts are sufficiently close to the locations of the proposed turbines – approximately 2 miles and 3 miles, respectively – that the SHPO should consider the effect that BNE's plans will have on the character and integrity of those historic districts.

We also note that if BNE's proposals to site industrial wind turbines in Colebrook are approved, their presence will likely have a profound impact on the ability of Rock Hall to maintain profitability. (See Petition Nos. 983/984, Pre-Filed Testimony of Stella Somers, dated Mar. 15, 2011, at 8-9.) This, of course, presents not just a problem for the Somers and their bed and breakfast business, but also for the broader preservation efforts directed toward Rock Hall and its grounds. The income received from successfully operating Rock Hall as a bed and breakfast allows for maintenance of Rock Hall in its current state and is accordingly the primary means by which the estate can be preserved as a historical resource. Should Rock Hall fail commercially as a result of BNE's wind turbines, the preservation efforts related to the site also will fail, and Rock Hall will fall gradually back into the state of disrepair it experienced prior to its introduction to Stella and Michael Somers. This example proves a larger principle: If industry is permitted to so alter the character of our recognized historic resources so as to render them commercially unviable, that historic character will inevitably be destroyed.

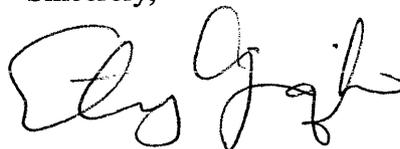
Susan Chandler
April 11, 2011
Page 9 of 9

If BNE is permitted to site the six wind turbines in Colebrook within the area of potential effects, the Litchfield Hills will be assaulted by similar industrial wind turbine projects. BNE is evaluating a site in Canaan and is on record as stating that it intends to site other turbines throughout Connecticut. While we recognize that at this time, the SHPO is faced with considering only these projects, we urge the SHPO to seize this opportunity to set a policy for considering these types of projects and establish its own presumptive area of potential effects that protects our historic, cultural and national landmarks. If the SHPO does not do so early in this new push to site industrial wind turbine projects in our state, who knows how many historic, cultural and archaeological resources will ultimately be adversely affected?

Accordingly, we urge the SHPO to assist in protecting the historic and cultural resources of Litchfield County, including one of Connecticut's few National Natural Landmarks, by publicly opposing BNE's proposals to site six industrial wind turbines in close proximity to Rock Hall and the other important resources in the area. We ask that the SHPO not only reject BNE's request for the issuance of new "no effect" letters, but instead issue its own declaration and opinion that the proposed projects will have adverse effects on Rock Hall, Beckley Bog and the character and integrity of two nearby historic districts.

I look forward to the opportunity to speak with you and other SHPO staff about this matter.

Sincerely,



Emily A. Gianquinto

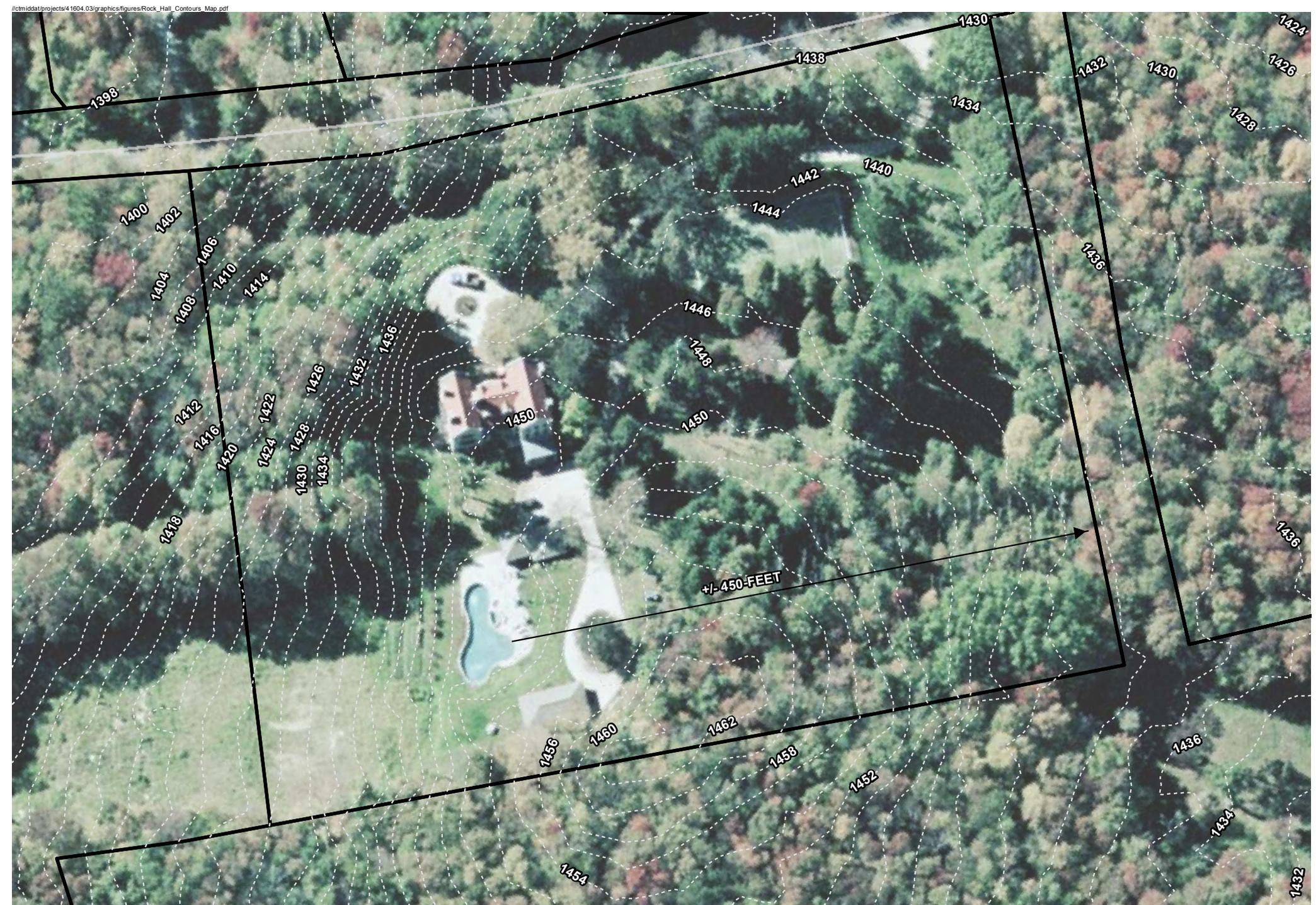
Enclosures

cc: Christopher Bergstrom
David Bahlman
Jared I. Edwards
Helen Higgins

EXHIBIT 2

(Provided on compact disk)

EXHIBIT 3



Legend
 - - - - 2-Foot Contours □ Approximate Assessor Parcel Boundary

**Exhibit 3 - Libertine Rebuttal Testimony 4-25-2011
 Rock Hall Property**

BNE Energy, Inc.
 Wind Colebrook
 Colebrook, Connecticut

