

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

<b>Petition of BNE Energy Inc. for a</b>	<b>:</b>	<b>Petition No. 983</b>
<b>Declaratory Ruling for the Location,</b>	<b>:</b>	
<b>Construction and Operation of a 4.8 MW</b>	<b>:</b>	
<b>Wind Renewable Generating Project on</b>	<b>:</b>	
<b>Flagg Hill Road in Colebrook,</b>	<b>:</b>	
<b>Connecticut (“Wind Colebrook South”)</b>	<b>:</b>	<b>December 4, 2013</b>

**OBJECTION TO BNE ENERGY INC.’S  
DEVELOPMENT AND MANAGEMENT PLAN MODIFICATION**

FairwindCT, Inc., Susan Wagner and Stella and Michael Somers (the “Grouped Parties”) hereby object to the Development and Management (D&M) plan modification submitted by petitioner BNE Energy Inc. (“BNE”) on November 5, 2013 (the “D&M Modification”). The Grouped Parties object because: (1) there is no provision in the statute or the regulations that permit modifying a petition decision by use of the D&M process; (2) the D&M Modification is an attempt to bypass the provisions of §16-50kk of the General Statutes by using the D&M process as a substitute for a petition; (3) the GE 1.6-82.5 wind turbines approved by the Council continue to be manufactured by GE; (4) the electricity output that reasonably can be expected using the GE 2.85-103 wind turbines is no greater than that provided by the GE 1.6 MW wind turbines already approved for the site, because the wind resource will not increase to a level sufficient to have the 2.85 MW turbines reach nameplate capacity; (5) BNE failed to provide noise and shadow flicker studies for the GE 2.85-103 wind turbines, and the studies provided earlier do not support the siting of these new turbines; and (6) BNE failed to provide updated site plans, certified by an engineer, to establish that no additional road or site changes will be required to transport or construct the new turbines.

**I. Equipment Modifications Cannot Be Made by Use of the D&M Process**

BNE points to no authority in the statutes or the regulations that permit modifying a petition decision through the use of the D&M process. The Council is entirely a creature of statute and may only take actions that the legislature has expressly authorized. See, e.g., Ethics Comm'n of Glastonbury v. Freedom of Info. Comm'n, 302 Conn. 1, 8 (2011); S. New Eng. Tel Co. v. Dep't of Pub. Util. Control, 261 Conn. 1, 21-22 (2002) (administrative bodies “cannot modify, abridge or otherwise change the statutory provisions, under which it acquires authority unless the statutes expressly grant it that power”).

General Statutes § 16-50k(a) may grant the Council authority to approve by declaratory ruling a grid-side distributed resources project, but nowhere do the General Statutes give the Council authority to modify a petition by use of the D&M process. Certificates may be amended. Conn. Gen. Stat. §§ 16-50k(c), 16-50l(d). The Council is to hold a hearing on an application for an amendment of a certificate. Conn. Gen. Stat. § 16-50m. No authority is granted to increase capacity by use of BNE’s proposed D&M Modification. The D&M process has been used to “fill up the details” of a project, not double the capacity of the equipment on site. See Middlebury v. Conn. Siting Council, Superior Court, judicial district of New Britain, No. CV010508047S, 2002 WL 442383, at \*5 (Feb. 27, 2002, Cohn, J.). A change from 4.8 MW to a total combined capacity of 8.55 MW is not a “detail” that can be changed without, at a minimum, the use of the petition process and the safeguards that go with it. If increasing capacity from 4.8 MW to 8.55 MW is permitted under the D&M process, then where is the limit? Can the D&M process be used to increase the size of equipment to 16.5 MW? 25 MW?

Any increase in the nameplate rating of the facility requires a new petition or an application.

**II. Use of the D&M Process Would Be An Illegal End Run Around General Statutes § 16-50kk**

Public Act 11-245, effective July 1, 2011, resulted in the adoption of § 16-50kk of the General Statutes. The Act provided that the Siting Council is to adopt regulations concerning the siting of wind turbines and listed a set of topics for which the Council must adopt regulations. The Act provided that the Council is not to act on any application or petition for the siting of the wind turbine until after the adoption of regulations pursuant to a General Statutes § 16-50kk.

Public Act 11-245 had an effective date after the Council's decision approving construction of the three 1.6 MW wind turbines on Flagg Hill Road. The three wind turbines approved by the Council are therefore not subject to the provisions of § 16-50kk. Acting now to approve three new turbines would be in direct violation of the moratorium on siting wind turbine projects in the absence of regulations, which was established by the General Assembly in § 16-50kk(b). Any new or different wind turbines to be sited on Flagg Hill Road, if approved after the effective date of the Act, must conform with the requirements of § 16-50kk and the associated as-yet-unapproved regulations.

**III. GE 1.6-82.5 Wind Turbines Continue to Be Manufactured**

In its D&M Modification, BNE made the following statements: (1) "the GE 1.6-82.5 wind turbines at 100 meter hub heights are no longer available due to changes in its product line"; (2) "BNE is concerned that the 2.85-100 turbines will be phased out and no longer available . . . as was the case with the 1.6-82.5 turbines at 100 meter hub heights"; and (3) "GE's 1.6-82.5 wind turbines at 100 meter hub heights are no longer available given the evolution of its wind turbine product line."<sup>1</sup> (D&M Mod. at 1,3.) These statements do not survive examination.

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<sup>1</sup> It is not clear to the Grouped Parties why the D&M Modification focuses solely on the 1.6-82.5 turbines, since, as noted in the D&M Modification, the Council approved the declaratory ruling seeking to site 1.6 MW turbines with blades up to 100 meters in diameter.

After discovering that the GE 1.6-82.5 wind turbines continue to be advertised on the GE Energy website,<sup>2</sup> an attorney for the Grouped Parties contacted GE Energy to further investigate the truth of the above statements. (See Affidavit of Mary E. Mintel, dated November 29, 2013 (“Mintel Aff.”), ¶¶ 4-5.) Attorney Mintel spoke with Stephen Swift, the General Manager of Sales and Commercial Operations at GE Energy and confirmed that the GE 1.6-82.5 wind turbines continue to be manufactured and sold both domestically and abroad. (Id. ¶¶ 6-10.)

#### **IV. Larger Nameplate Capacity Does Not Mean More Electricity Generation**

BNE notes a 78% increase in nameplate capacity if the 1.6 wind turbines are replaced by 2.85 wind turbines. (D&M Mod. at 1.) Increasing the nameplate capacity does not necessarily mean more electricity will be generated by the project. Electricity is a function of wind speed and the nameplate capacity of the wind turbine. BNE’s conclusion that an increase in nameplate capacity will result “in a substantial increase in renewable electricity production” does not survive examination. (See id. at 1.)

Based on the information provided by BNE, the GE 1.6 MW turbines would actually produce more electricity than the GE 2.85-103 turbines at the Flagg Hill Road site with the prevailing wind conditions. BNE’s wind study found that the average monthly wind speed on this site, over a 14-month period, was 5.86 m/s, with no month exceeding 7.78 m/s. (See BNE Wind Assessment, attached to Exhibit M to BNE’s Petition for Declaratory Ruling, filed December 6, 2010, at 12 (relevant excerpts are attached hereto as Exhibit 1).) In the summer months, when the need for electricity is generally greatest, the average wind speed was 4.51 m/s. (Id.)

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(D&M Mod. at 1.) Only the Council’s approval of Petition No. 984 was conditioned on the use of the shorter blades.

<sup>2</sup> See [http://www.ge-energy.com/products\\_and\\_services/products/wind\\_turbines/ge\\_1.6\\_82.5\\_wind\\_turbine.jsp](http://www.ge-energy.com/products_and_services/products/wind_turbines/ge_1.6_82.5_wind_turbine.jsp).

According to GE power curve graphs provided by BNE, at wind speeds of 7.5 m/s, both the 1.6-100<sup>3</sup> and the 2.85-103 turbines can be expected to produce 1000 kW (or 1 MW) of electricity. (See Power Curves, attached hereto as Exhibit 2.<sup>4</sup>) At wind speeds of 5 m/s, which, as noted above, are not uncommon in Colebrook, the graphs indicate that the 1.6-100 turbines will produce approximately 330 kW of electricity, while the 2.85-103 turbines will produce only approximately 260 kW. (See id.)

BNE claims that using the GE 2.85-103 turbines, instead of the GE 1.6 MW turbines, will result “in significantly more Class I renewable electricity production further helping the State meet its RPS standards.” (D&M Mod. at 4.) The State’s renewable energy portfolio standards are not based on nameplate capacity. See Conn. Gen. Stat. § 16-245a. Thus, what matters is how much electricity is actually generated, and based on BNE’s own submissions, the 1.6 MW turbines actually approved by the Council are likely to generate more, or at least just as much, electricity in the relatively low wind speeds that exist in Colebrook.

The GE 2.85-103 turbines require average wind speeds of over 12.5 m/s to produce electricity at the nameplate capacity. Those wind speeds are not available in Colebrook, or indeed elsewhere in Connecticut. (See Exhibit 1 at 12.)

**V. BNE Should Be Required to Provide New Noise and Shadow Flicker Studies**

BNE claims that new noise studies are not necessary for this modification, because its prior studies used “maximum daytime and nighttime sound levels of the 1.6 wind turbines of 106 dBA.” (D&M Mod. at 3.) That statement conflicts with BNE’s original petition in this docket, in which BNE calculated daytime conditions using 106 dBA, but based its nighttime calculations on a sound level of 104 dBA. (See BNE Noise Evaluation, Exhibit M to BNE’s

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<sup>3</sup> BNE has not provided unsealed information about 1.6-82.5 turbines.

<sup>4</sup> Lines were added by the Grouped Parties for clarity, as the graphs use different scales.

Petition for Declaratory Ruling, filed December 6, 2010 (relevant excerpts are attached hereto as Exhibit 3).

Given BNE's lack of justification for lowering the sound level by 2 dBA, it must be assumed that BNE chose to use a lower sound level in these calculations because it allowed BNE to claim<sup>5</sup> compliance with the noise regulations of the Connecticut Department of Energy and Environmental Protection. BNE also failed to take into account the uncertainty level of 2 dBA, noted in the sealed GE documents. Therefore, BNE should have made both its daytime and nighttime measurements assuming a maximum dBA of 108 for the 1.6 MW turbines and, for the 2.85 MW turbines, a dBA of 107 should be assumed for both daytime and nighttime noise modeling. Until BNE demonstrates that the new turbines are in compliance with DEEP noise regulations, its proposed modification should be rejected.

BNE also claims that the shadow flicker studies were "calculated using 100 meter hub heights and 100 meter diameter blades with a maximum tip height of 492 feet" and, therefore, a new shadow flicker analysis is not needed, because the 2.85 turbines are approximately that same height. (D&M Mod. at 2.) These new turbines are to use 103 meter diameter blades. One hundred meters is not equal to 103 meters. BNE has not cited to any authority that substantiates that the shadow flicker impacts of 100 meter blades is the same as the flicker from 103 meter blades.

Rerunning the WindPro software with one changed parameter would be relatively inexpensive. Given the Council's lack of experience with the actual impacts from wind turbine projects, requiring BNE to submit a presumably simple shadow flicker analysis that would only require rerunning the previous analysis using a diameter of 103 meters would be a worthwhile

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<sup>5</sup> BNE did not model the sound to its property lines, as is required by DEEP regulations, so even this claimed compliance is inaccurate. See Reg. Conn. State Agencies § 22a-69-4(g).

exercise to ensure that there are no unintended consequences associated with BNE's proposed "modification." A naked unsupported claim that there is no impact should not be given credence absent the presentation of a full analysis and its cross-examination.

**VI. BNE Should Be Required to Provide Updated Site Plans, Certified by a Civil or Professional Engineer**

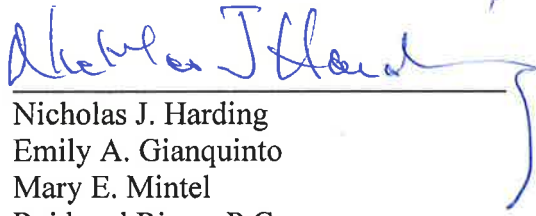
It is highly unlikely that BNE's assertion that substituting GE 2.85-103 turbines for the approved GE 1.6 MW turbines will result in "no other material effects." (D&M Mod. at 2.) This statement is supported solely by an opinion offered by a principal of the petitioner, who boasts no engineering background. The Council should require a full submission equal to the original petition, including an analysis of whether the construction specifications for the 2.85-103 GE turbines require changes to the site layout.

Even if the Council decides to act without a new petition from BNE, the D&M Modification is inadequate for the Council to conduct an adequate analysis of the proposed changes. Without compliance with the requirements of § 16-50kk(a) and either new site plans for the GE 2.85-103 turbines or a certification from a civil or professional engineer that new site plans are unnecessary because no changes to the site layout or road construction will be required, the Council would be setting a new precedent of approving plans without engineering support. New site plans are necessary because any changes would impact the erosion and sediment control plan and is, therefore, of great environmental concern.

WHEREFORE, for the foregoing reasons, the Grouped Parties object to BNE's D&M

Modification.

By:



Nicholas J. Harding  
Emily A. Gianquinto  
Mary E. Mintel  
Reid and Riege, P.C.  
One Financial Plaza, 21st Floor  
Hartford, CT 06103  
Tel. (860) 278-1150  
Fax. (860) 240-1002



# **EXHIBIT 1**

# BNE ENERGY

## COLEBROOK, CT WIND ASSESSMENT

The seal on this document  
Authorized by  
Hala Ballouz, P.E.  
On April 12, 2010



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BNE Energy  
Colebrook, CT Wind Assessment

**Table 6. Monthly site measured mean wind speeds in m/s at 60 m – C5 (Tower)**

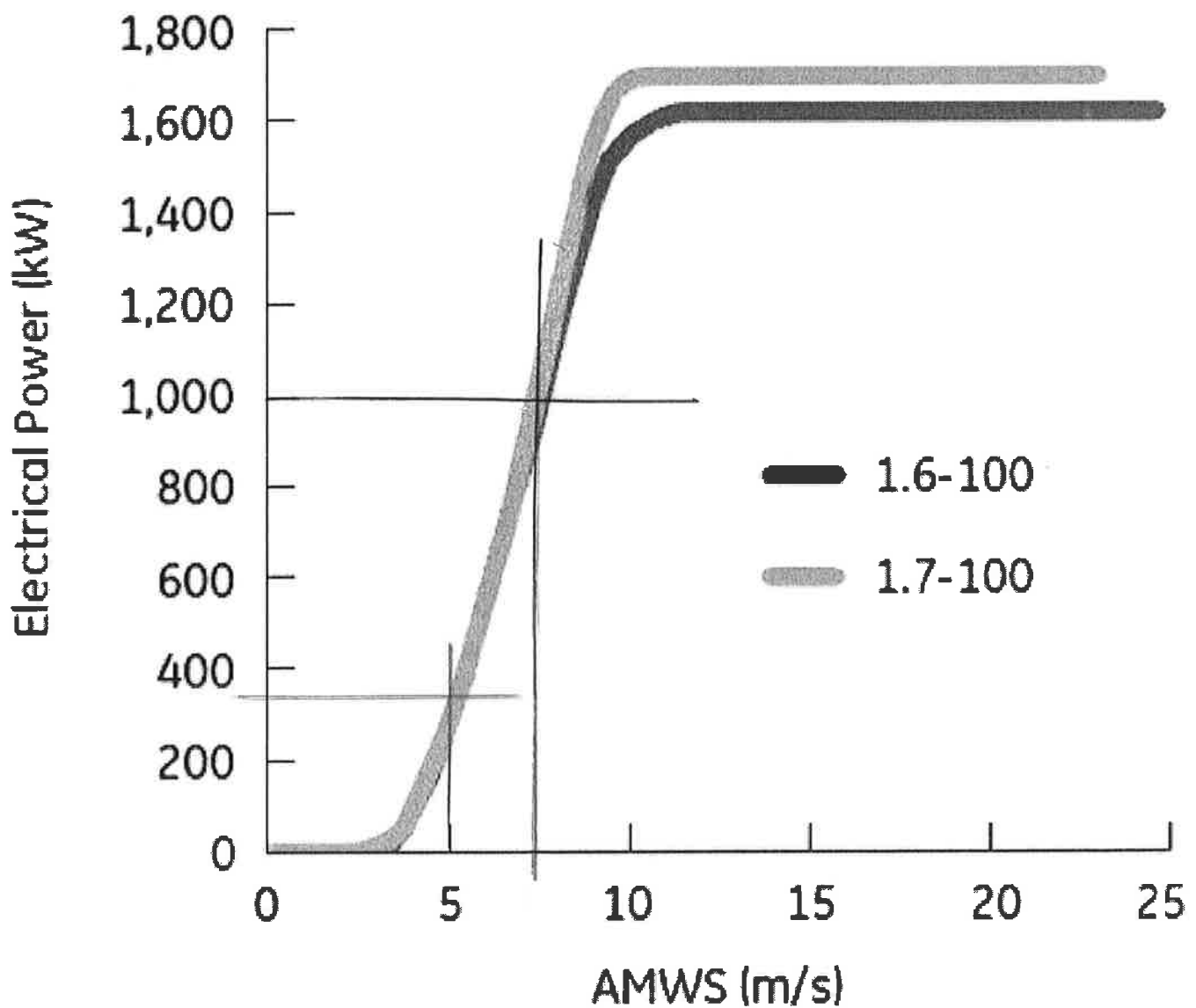
Months	Site average measured wind speeds at 60 m			Mean of all data	Mean of Months
	2008	2009	2010		
January		6.86	7.58	7.18	7.22
February		7.20		7.20	7.20
March		6.03		6.03	6.03
April		6.11		6.11	6.11
May		5.56		5.56	5.56
June		4.21		4.21	4.21
July		4.63		4.63	4.63
August		4.69		4.69	4.69
September		5.44		5.44	5.44
October		5.87		5.87	5.87
November		6.01		6.01	6.01
December	7.04	7.78		7.50	7.41
Mean of Months	5.86				
Mean of all data	6.02				

Note that WindPro uses the mean of all data in the calculations.

# **EXHIBIT 2**

# 1.6-100 and 1.7-100 Specifications

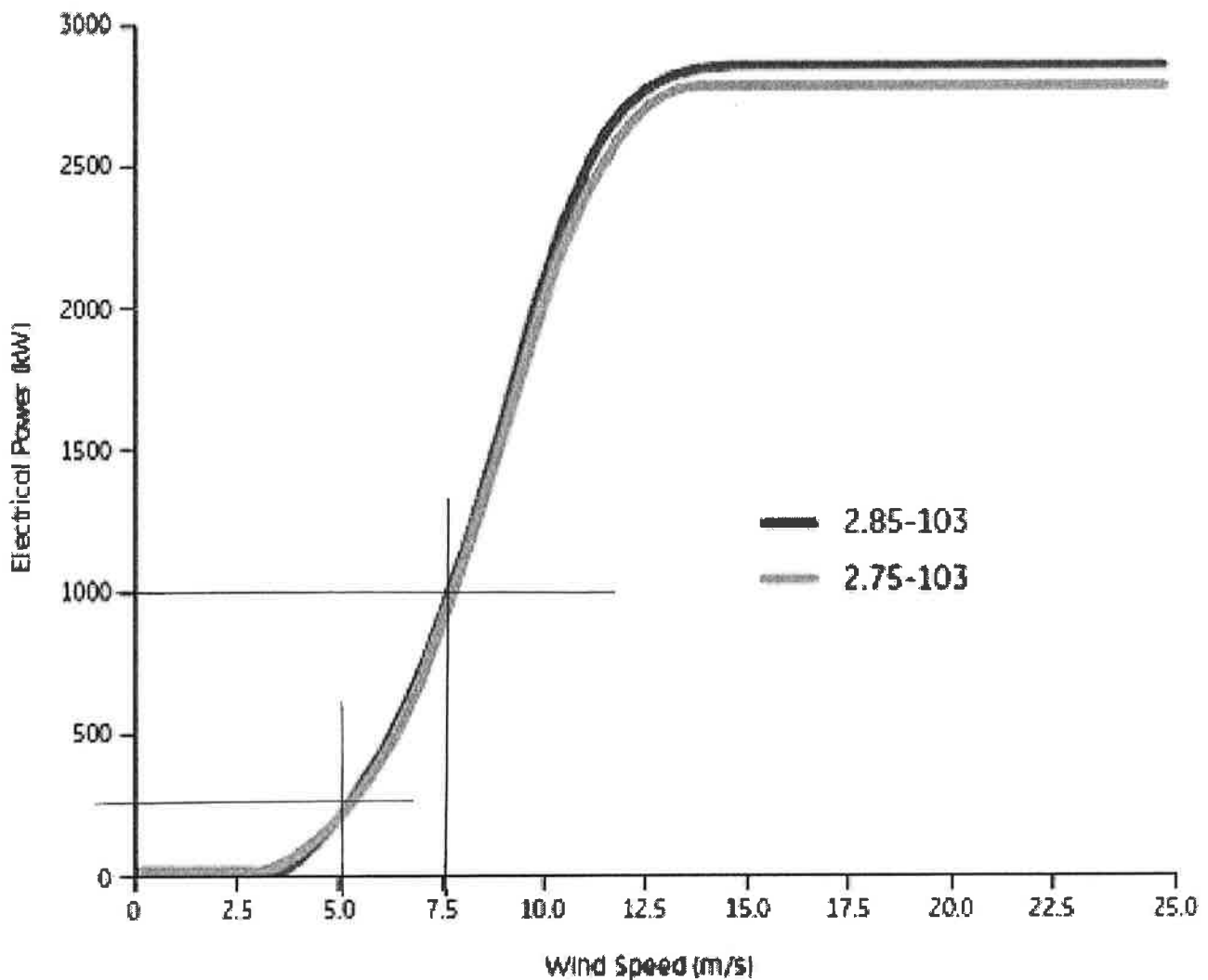
Power Curve Improvement



# Higher Efficiency

The 2.85 MW wind turbine is equipped with a double fed induction generator that enables higher efficiency. Leveraging this power conversion technology from GE's proven 1.x model has reduced the electrical losses in both converter cable systems, improving power generation performance.

## Performance



# **EXHIBIT 3**

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# Sound Level Calculations



## Colebrook South Wind Turbine Noise Model - Daytime Conditions (9 m/s)

hub height            h =    328    ft  
 sound power level    Lw =    106    db  
 absorption coefficient    a =    0.005    db/m

Background Levels, L90 (dBA)		RS1	RS2	RS3	RS4	RS5	RS6	RS7	RS8
Wind Turbine N1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	36.7	36.7
Wind Turbine N2	38.1	38.1	38.1	38.1	38.1	38.1	38.1	36.7	36.7
Wind Turbine N3	38.1	38.1	38.1	38.1	38.1	38.1	38.1	36.7	36.7
Wind Turbine S1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	36.7	36.7
Wind Turbine S2	38.1	38.1	38.1	38.1	38.1	38.1	38.1	36.7	36.7
Wind Turbine S3	38.1	38.1	38.1	38.1	38.1	38.1	38.1	36.7	36.7

Horizontal Distance to Rec. (feet)		RS1	RS2	RS3	RS4	RS5	RS6	RS7	RS8
Wind Turbine N1	1422	1638	3472	4645	5086	7416	6882	6245	7050
Wind Turbine N2	3256	2678	4156	5195	5481	7629	7769	7490	7490
Wind Turbine N3	3665	3374	4967	6033	6344	8496	8533	8533	7490
Wind Turbine S1	2909	2039	585	1233	1780	4059	3215	3215	4117
Wind Turbine S2	3141	2825	1819	2030	2531	4482	2464	2464	3054
Wind Turbine S3	4155	3372	1670	985	1310	3066	2050	2050	4365

Distance to Rec., R (feet)		RS1	RS2	RS3	RS4	RS5	RS6	RS7	RS8
Wind Turbine N1	1459	1671	3487	4657	5097	7423	6890	6255	7058
Wind Turbine N2	3272	2698	4171	5205	5501	7656	7776	7658	7658
Wind Turbine N3	3680	3390	4978	6042	6352	8502	8539	8539	7497
Wind Turbine S1	2927	2065	671	1276	1810	4072	3232	3232	4130
Wind Turbine S2	3158	2844	1848	2056	2562	4474	2486	2486	3072
Wind Turbine S3	4168	3388	1702	1038	1350	3083	2076	2076	4377

Distance to Rec., R (meters)		RS1	RS2	RS3	RS4	RS5	RS6	RS7	RS8
445	509	1063	1420	1554	2263	2040	1602	1602	1602
998	823	1272	1587	1677	2328	2371	2152	2152	2152
1122	1034	1518	1842	1937	2592	2603	2286	2286	2286
893	630	204	389	552	1242	985	1259	1259	1259
963	867	564	627	778	1364	758	936	936	936
1271	1033	519	317	412	940	633	1335	1335	1335

Sound pressure level  
 with atmospheric absorp.  
 $Lp=Lw-20\log R-1.1-ar$

RS1	RS2	RS3	RS4	RS5	RS6	RS7	RS8
39.8	38.3	29.2	24.9	23.4	16.6	18.6	22.9
30.0	32.6	26.6	23.1	22.1	16.0	15.6	17.6
28.4	29.5	23.8	20.5	19.6	13.8	13.7	16.4
31.5	35.9	47.8	41.3	37.4	26.9	30.2	26.7
30.5	31.9	37.2	35.9	33.3	25.5	33.6	30.9
26.6	29.6	38.1	43.4	40.6	30.8	35.8	25.8
41.5	42.0	48.6	46.0	42.9	33.4	38.6	33.8



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**Supplemental Shadow Flicker Analysis**

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# *Wind Colebrook South*

17 and 29 Flagg Hill Road  
Colebrook, Connecticut

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Prepared for



Prepared by

**VHB/Vanasse Hangen Brustlin, Inc.**  
54 Tuttle Place  
Middletown, Connecticut

March 2011

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## Introduction

BNE Energy Inc. ("BNE") proposes to install three wind turbines ("Wind Colebrook South" or the "Project") at 17 and 29 Flagg Hill Road (collectively identified herein as the "Property" or "Site") in the Town of Colebrook, Connecticut. The Project would consist of three General Electric 1.6 megawatt ("MW") wind turbine generators with hub heights of 100 meters (328 feet) above ground level ("AGL"); one each to be located in the south-central, northeast and northwest portions of the Property, respectively. BNE is proposing to use turbines with rotor blades of 41.25 meters (135+ feet). Vanasse Hangen Brustlin, Inc. ("VHB") conducted this supplemental shadow flicker analysis for the Project to evaluate a maximum blade tip height of 141.25 meters (463± feet) AGL and to account for changes in clearing limits resulting from recent Project design modifications.

The wind turbines would be located at the following ground elevations at the Site:

**Table 1**  
**Wind Colebrook South Turbine Locations**

Turbine Number	Location on Site	Elevation*
Turbine 1	Southern	1,450-feet
Turbine 2	Northeastern	1,452-feet
Turbine 3	Northwestern	1,446-feet

\*Expressed in feet Above Mean Sea Level ("AMSL")

The Property is identified in the Town of Colebrook land records as Map 1, Lot 6 (29 Flagg Hill Road) and Map 1, Lot 6-1 (17 Flagg Hill Road) and consists of 79.44 acres of land. A 3.5± acre open field is located in its eastern portion and a 6.7± acre beaver pond lies in the southwest corner. The Property is abutted to the west by the municipal boundary with Norfolk and dense, wooded, and undeveloped land owned by the Nature Conservancy. To the north is wooded and vacant land maintained by the Northwestern Connecticut Sportsmen's Association. Flagg Hill Road, undeveloped woodlands, and a residence bound the Property to the east. About a dozen private residences are located along Flagg Hill Road. Heavily wooded tracts of land lie further east. A residence and additional undeveloped woodlands bound the Property to the south.

Topography surrounding the Site is generally characterized by gently rolling to steep hills with ground elevations that range from approximately 613 feet AMSL to approximately 1,760 feet AMSL. Vegetative cover on and near the Site consists primarily of mixed deciduous hardwood trees, with some stands of intermixed conifers; the average height of the tree canopy is conservatively estimated to be approximately 65 feet AGL.

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## Shadow Flicker

For purposes of this evaluation, shadow flicker from wind turbines is defined as the effect of alternating changes in light intensity of the sun caused by the rotating blades of the turbine casting a moving shadow

**STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL**

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<b>Connecticut (“Wind Colebrook South”)</b>	<b>:</b>	<b>November 29, 2013</b>

**AFFIDAVIT OF MARY E. MINTEL**

The undersigned being duly sworn does hereby depose and say:

1. I am over the age of eighteen, understand the meaning and obligation of an oath, and am competent to testify as to the matters stated herein.
2. I make this Affidavit on personal knowledge.
3. I am an attorney at Reid & Riege, P.C., and I represent FairwindCT, Inc., Stella and Michael Somers and Susan Wagner, parties to Petition No. 983.
4. On November 27, 2013, after reading a submission from BNE Energy Inc. to the Connecticut Siting Council that stated that “the GE 1.6-82.5 wind turbines at 100 meter hub heights are no longer available due to changes in its product line” I went to the GE Energy website to investigate GE’s product line.
5. According to the GE Energy website, the 1.6-82.5 wind turbine is available at 100 meter hub heights. A screenshot of the main webpage advertising the availability of this turbine is attached as Exhibit A, and can be found at: [http://www.ge-energy.com/products\\_and\\_services/products/wind\\_turbines/ge\\_1.6\\_82.5\\_wind\\_turbine.jsp](http://www.ge-energy.com/products_and_services/products/wind_turbines/ge_1.6_82.5_wind_turbine.jsp).

6. To confirm that the 1.6-82.5 wind turbine is available at 100 meter hub heights, despite BNE's claims to the contrary, I called the main phone line for GE Energy. After explaining the nature of my inquiry, I was directed to Stephen Swift.

7. The person directing my call described Mr. Swift as a "VP of Sales," but Mr. Swift's LinkedIn profile lists him as: "General Manager Sales and Commercial Operations at GE Energy."


8. Mr. Swift informed me that GE Energy continues to manufacture and sell the 1.6-82.5 wind turbine at 100 meter hub heights.

9. Mr. Swift also informed me that there is a high demand for the 1.6-82.5 turbines overseas, in locations like Brazil and Kenya, and a smaller (but still existent) demand domestically.

10. Generally, according to Mr. Swift, domestic energy companies like BNE are moving to turbines with bigger nameplates, like the 2.85-103 turbines, but it is not accurate to state that the 1.6-82.5 turbines "are no longer available" from GE Energy.

  
\_\_\_\_\_  
Mary E. Mintel

Subscribed and sworn to before  
me this 29th day of November, 2013.

  
\_\_\_\_\_  
Marc T. Miller  
Commissioner of the Superior Court



ecomagination

# 1.6 - 82.5 Wind turbine

GE continues to advance its 1.5 MW wind turbine series product line with its 1.6-82.5 wind turbine. GE's 1.6-82.5 wind turbine provides additional annual energy production relative to the 1.5-82.5 wind turbine. Coupled with industry-leading low cost of electricity, this additional output equates to higher customer value. Focusing on performance, reliability, efficiency, and multi-generational product evolution, GE's 1.6-82.5 wind turbine continues to deliver wind product leadership.



MEDIA GALLERY



## Features & Benefits

- Higher AEP than its 1.5 predecessors
- Capacity factor leadership in Class II winds
- Designed to meet or exceed the 1.5 MW platform's historic high availability
- Grid friendly options are available - Enhanced Reactive Power, Voltage Ride Thru, Power Factor Control
- Wind Farm Control System; WindSCADA™
- Sharing of components with family products
- Available in both 50 Hz and 60 Hz versions for global suitability

+ Design

+ Specifications

## Contact us

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GE and E.ON Sign Service Agreement for 819 Wind Turbines in Four States

Renova Energia and GE Sign \$394 Million Contract for 230 Wind Turbines

GE to Supply NextEra With 288 Turbines for Ontario Wind Projects

GE Courts Turbine Customers for Solar Before Wind 'Crash'

EXHIBIT

A

tabbles

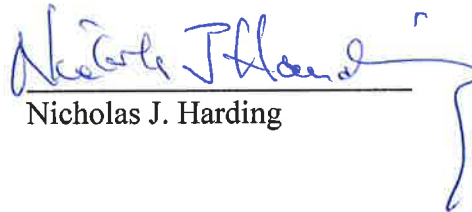
**CERTIFICATION**

I hereby certify that a copy of the foregoing document was delivered by first-class mail and e-mail to the following service list on the 4th day of December, 2013:

Lee D. Hoffman  
Paul Corey  
Thomas D. McKeon  
David M. Cusick  
Richard T. Roznoy  
David R. Lawrence and Jeannie Lemelin  
Walter Zima and Brandy L. Grant  
Eva Villanova

and sent via e-mail only to:

John R. Morissette  
Christopher R. Bernard  
Joaquina Borges King

  
Nicholas J. Harding