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 New Haven Road in Prospect, Connecticut ("Wind Prospect")

Petition No. 980

February 16, 2011

PETITIONER BNE ENERGY INC.'S INTERROGATORY RESPONSES TO THE CONNECTICUT SITING COUNCIL'S INTERROGATORIES DATED FEBRUARY 9, 2011

Petitioner BNE Energy Inc. ("BNE") submits the following responses to interrogatories issued by the Connecticut Siting Council dated February 9, 2011:

Q35. Please provide the following information regarding the Shadow Flicker study submitted to the Council on February 8, 2011.

a. Submit a visual influence map that depicts "probable case" shadow in hours per year, using isolines of 0, 10, 20, 30, 40 hours.
b. How is the receptor defined in the module? (include area and height)
c. Page 6 of the analysis uses a reduction factor of 5% to account for various shadow reducing contributions. How was this reduction factor obtained?
d. Revise Table 3 to include a column for "probable case" maximum minutes/day.

A35.

a. *See* visual influence map attached hereto as Exhibit 1.

b. A "receptor" is defined as an occupied structure within the 2,000-meter study area. The receptors were located using a combination of aerial photography, online assessor information (http://www.equalitycama.com/), and selective field verification. Each receptor was modeled using the WindPRO SHADOW module's "greenhouse" mode, which assumes windows are perpendicular to the wind turbines. The model's default window dimensions were used in the analysis: one square meter (1-meter height by 1-meter width). The receptor windows were assumed to be at 1 meter above ground level. The default slope of the window is vertical 90°.

c. The 5% reduction factor referenced herein included contributions from the following conditions that can limit or reduce shadows:

- Times when the wind turbines are yawed so that the rotor is not perpendicular to the sun, relative to receptor locations. Based on site-specific wind data, prevailing westerly winds occur slightly less than 50% annually and easterly winds about 14% of the time. Potentially affected receptors lie generally east

and west of the project site. It is evident that the positions of the turbines would not be perpendicular to receptors all the time.

- Times when low/ high winds (or operational maintenance activities) inhibit the turbine blades from spinning (at least 11% of the time annually).
- Partly cloudy days (20% to 25% annually in Prospect).
- Fog, air pollution, high humidity and other atmospheric conditions that inhibit shadow casting (typically, higher percentage of occurrences in warm-weather months).
- Conservative simplifications used within the model (as discussed in the *Shadow Flicker Analysis* on pages 4 and 5) that can overestimate shadow flicker duration, including: modeling of the wind turbine blades as discs rather than individual blades; not incorporating a factor specifying the percentage of the sun's area covered by the turbine blade; and, the omission of terrain elevations beyond 2,000 meters of the project site boundaries.

No specific formula was used to create the additional 5% factor (that was then added to the 45% annual cloudy days in Prospect weather data). Instead, it was reasoned that assigning one percent (1%) to each of these conditions was a sufficiently conservative estimate. As just one example, if we were to assume that prevailing winds occurring 50% of the time from a direction other than the west was split between 25% of the time at night and 75% during daytime hours, those receptors to the east would experience a reduction of at least 12.5% of the time. Under a similar scenario, receptors to the west that may be influenced by easterly prevailing winds would see a reduction of 3.5%.

d. *See* revised Table 3 attached hereto as Exhibit 2.

BNE ENERGY INC.

By: /s/ Carrie L. Larson
Attorney For BNE Energy Inc.
Carrie L. Larson, Esq.
clarson@pullcom.com
Pullman & Comley, LLC
90 State House Square
Hartford, CT 06103-3702
Ph. (860) 424-4312
Fax (860) 424-4370

CERTIFICATION

This is to certify that a copy of the foregoing has been mailed this date to all parties and intervenors of record.

Mayor Robert Chatfield
Town Office Building
36 Center Street
Prospect, CT 06712-1699

Jeffrey Tinley
Tinley, Nastri, Renehan & Dost LLP
60 North Main Street
Second Floor
Waterbury, CT 06702

Thomas J. Donohue
Killian & Donohue, LLC
363 Main Street
Hartford, CT 06106

John R. Morissette
Manager-Transmission Siting and Permitting
The Connecticut Light & Power Company
P.O. Box 270
Hartford, CT 06141-0270
Christopher R. Bernard
Manager-Regulatory Policy (Transmission)
The Connecticut Light & Power Company
P.O. Box 270
Hartford, CT 06141-0270

Joaquina Borges King
Senior Counsel
The Connecticut Light & Power Company
P.O. Box 270
Hartford, CT 06141-0270

Nicholas J. Harding
Emily A. Gianquinto
Reid and Riege, P.C.
One Financial Plaza
Hartford, CT 06103

/s/ Carriel L. Larson
Carrie L. Larson

EXHIBIT 1

Legend

- Receptor
- Proposed Wind Turbine Locations
- Proposed Clearing Limits & Access Road
- 2,000-Meter (1.24 - Miles) Radius
- Approximate Project Site Boundary
- Assessor Parcel Boundary

Probable Case Shadow Flicker
Hours Per Year

- <10
- 10-20
- 20-30
- 30-40
- >40

250 125 0 250 500
Meters

Vanasse Hangen Brustlin, Inc.

Probable Case Shadow Flicker
Wind Prospect
BNE Energy, Inc.
178 New Haven Road
Prospect, Connecticut

BNE Energy Inc.
Producer of green clean energy

EXHIBIT 2

Table 3
Shadow Flicker Results - Receptor Locations

Map ID	Site Address	Worst-Case Analysis [1]		Probable Case Scenario [2]				Dates of Predicted Shadow Flicker	Land use	Approximate Distance to Wind Turbine 1	Approximate Distance to Wind Turbine 2
		Hours Per Year	Max minutes (min/day)	Hours Per Year	Max minutes (min/day)	% of Sun Hours/Year[3]	% of Hours/Year[4]				
DG	207 NEW HAVEN RD	67:32:00	47	33:46:00	24	0.758%	0.386%	5/3-8/10	Commercial	1,387 Ft	1,357 Ft
FO	177 NEW HAVEN RD	67:07:00	48	33:33:30	24	0.753%	0.383%	10/29-2/13	Residential	1,392 Ft	2,271 Ft
FQ	210 NEW HAVEN RD	65:10:00	62	32:35:00	31	0.731%	0.372%	2/10-3/21; 9/22-11/2	Residential	1,255 Ft	963 Ft
DH	187 NEW HAVEN RD	45:18:00	52	22:39:00	26	0.508%	0.259%	3/4-4/6; 9/6-10/9	Residential	1,156 Ft	2,574 Ft
C	213 NEW HAVEN RD	43:28:00	51	21:44:00	26	0.488%	0.248%	3/16-4/17; 8/26-9/28	Residential	1,667 Ft	1,176 Ft
FP	177 NEW HAVEN RD	35:37:00	42	17:48:30	21	0.400%	0.203%	1/23-2/24; 10/18-11/20	Residential	1,537 Ft	2,312 Ft
K	4 GEORGE ST	35:36:00	42	17:48:00	21	0.399%	0.203%	4/12-5/14; 7/30-8/31	Residential	2,135 Ft	1,476 Ft
AI	28 LEE RD	35:31:00	30	17:45:30	15	0.398%	0.203%	5/12-8/1	Residential	2,985 Ft	2,214 Ft
L	6 GEORGE ST	29:58:00	40	14:59:00	20	0.336%	0.171%	4/9-5/7; 8/6-9/3	Residential	2,192 Ft	1,571 Ft
FN	220 COOK RD	26:55:00	28	13:27:30	14	0.302%	0.154%	5/8-6/18; 6/24-8/5	Commercial	1,123 Ft	2,360 Ft
M	8 GEORGE ST	25:50:00	38	12:55:00	19	0.290%	0.148%	4/6-5/1; 8/11-9/6	Residential	2,242 Ft	1,652 Ft
O	5 GEORGE ST	24:44:00	38	12:22:00	19	0.278%	0.141%	3/26-4/19; 8/23-9/17	Residential	2,131 Ft	1,625 Ft
P	9 LEE RD	23:39	38	11:49:30	19	0.265%	0.135%	3/11-4/3; 9/9-10/32	Residential	2,000 Ft	1,622 Ft
DY	24 MEADOW LA	22:17	24	11:08:30	12	0.250%	0.127%	11/19-1/23	Residential	2,596 Ft	2,931 Ft
AE	22 LEE RD	21:11	31	10:35:30	16	0.238%	0.121%	4/20-5/15; 7/28-8/23	Residential	2,693 Ft	2,007 Ft
AJ	220 COOK RD	21:04	26	10:32:00	13	0.236%	0.120%	5/7-6/7; 7/5-8/6	Residential	3,220 Ft	2,480 Ft
AF	24 LEE RD	19:03	29	9:31:30	15	0.214%	0.109%	4/23-5/17; 7/27-8/20	Residential	2,829 Ft	2,166 Ft
S	15 LEE RD	17:59	33	8:59:30	17	0.202%	0.103%	3/20-4/9; 9/3-9/23	Residential	2,312 Ft	1,865 Ft
EX	46 WOODCREST DR	16:10	32	8:05:00	16	0.180%	0.092%	2/9-3/2; 10/12-11/3	Residential	2,028 Ft	2,587 Ft
FM	6 WOODCREST DR	15:23	30	7:41:30	15	0.173%	0.088%	2/23-3/13; 9/30-10/19	Residential	2,218 Ft	2,058 Ft
CO	12 WOODCREST DR	15:22	29	7:41:00	15	0.172%	0.088%	2/10-3/1; 10/12-11/1	Residential	2,199 Ft	2,171 Ft
DP	24 WOODCREST DR	14:49	25	7:24:30	13	0.166%	0.085%	1/16-2/7; 11/4-11/26	Residential	2,357 Ft	2,489 Ft
DO	22 WOODCREST DR	14:23	25	7:11:30	13	0.161%	0.082%	1/21-2/19; 10/28-11/17	Residential	2,407 Ft	2,579 Ft
DM	18 WOODCREST DR	14:22	27	7:11:00	14	0.161%	0.082%	1/28-2/17; 10/25-11/13	Residential	2,404 Ft	2,581 Ft
DN	20 WOODCREST DR	14:20	26	7:10:00	13	0.161%	0.082%	1/25-2/19; 10/28-11/17	Residential	2,450 Ft	2,655 Ft
CM	4 WOODCREST DR	14:03	29	7:01:30	15	0.158%	0.080%	2/27-3/16; 9/27-10/15	Residential	2,350 Ft	2,159 Ft
EL	47 WOODCREST DR	13:04	29	6:32:00	15	0.147%	0.075%	2/20-3/10; 10/3-10/22	Residential	2,116 Ft	2,577 Ft
CL	2 WOODCREST DR	12:53	28	6:26:30	14	0.144%	0.074%	3/1-3/17; 9/26-10/13	Residential	2,438 Ft	2,238 Ft
EK	45 WOODCREST DR	12:30	28	6:15:00	14	0.140%	0.071%	2/13-3/4; 10/10-10/29	Residential	2,208 Ft	2,686 Ft
VU	10 ROBINMARK RD	12:23	17	6:11:30	9	0.139%	0.071%	11/25-1/18	Residential	3,516 Ft	3,909 Ft
EJ	43 WOODCREST DR	12:09	27	6:04:30	14	0.136%	0.069%	2/6-2/25; 10/16-11/5	Residential	2,248 Ft	2,780 Ft
CK	11 HEMLOCK RD	11:55	27	5:57:30	14	0.134%	0.068%	3/3-3/18; 9/26-10/11	Residential	2543 Ft	2,322 Ft
EY	36 WOODCREST DR	11:45	24	5:52:30	12	0.132%	0.067%	1/18-2/9; 11/2-11/24	Residential	2,501 Ft	3,131 Ft
VS	8 ROBINMARK RD	11:19	16	5:39:30	8	0.127%	0.065%	11/25-1/17	Residential	3,715 Ft	1,091 Ft
CG	12 HEMLOCK RD	10:18	25	5:09:00	13	0.116%	0.059%	3/3-3/18; 9/25-10/10	Residential	2,114 Ft	2,507 Ft
CW	2 MEADOW LA	7:58	22	3:59:00	11	0.089%	0.045%	2/24-3/9; 10/4-10/18	Residential	2,997 Ft	2,905 Ft
CX	4 MEADOW LA	7:46	21	3:53:00	11	0.087%	0.044%	2/22-3/7; 10/7-10/20	Residential	3,024 Ft	2,963 Ft

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Map ID	Site Address	Worst-Case Analysis [1]		Probable Case Scenario [2]				Dates of Predicted Shadow Flicker	Land use	Approximate Distance to Wind Turbine 1	Approximate Distance to Wind Turbine 2
		Hours Per Year	Max minutes (min/day)	Hours Per Year	Max minutes (min/day)	% of Sun Hours/Year[3]	% of Hours/Year[4]				
UJ	20 ELAINE CT	5:49	13	2:54:30	7	0.065%	0.033%	11/21-12/14; 12/29-1/21	Residential	3,744 Ft	4,360 Ft
[N	46 BARBARA AVE	4:39	13	2:19:30	7	0.052%	0.027%	2/25-3/4; 3/23-5/29; 9/14-9/21; 10/9-10/17	Residential	4,838 Ft	4,807 Ft
[T	18 DEERFIELD DR	3:43	15	1:51:30	8	0.042%	0.021%	2/22-3/3; 10/11-10/20	Residential	4,402 Ft	4,439 Ft
/H	32 VALLEY LA	3:35	15	1:47:30	8	0.040%	0.020%	2/27-3/7; 10/6-10/15	Residential	4,353 Ft	4,300 Ft
[K	42 BARBARA AVE	3:35	14	1:47:30	7	0.040%	0.020%	2/19-2/28; 10/14-10/22	Residential	4,412 Ft	4,433 Ft
[S	17 VALLEY LA	3:34	14	1:47:00	7	0.040%	0.020%	3/23-3/4; 10/10-10/18	Residential	4,433 Ft	4,443 Ft
[L	43 BARBARA AVE	3:30	15	1:45:00	8	0.039%	0.020%	2/21-3/1; 10/12-10/21	Residential	4,471 Ft	4,502 Ft
ZX	61 BARBARA AVE	3:27	14	1:43:30	7	0.039%	0.020%	2/16-2/24; 10/12-10/20	Residential	5,176 Ft	5,185 Ft
YP	155 SILLS AVE	3:23	14	1:41:30	7	0.038%	0.019%	2/8-2/17; 10/25-11/3	Residential	4,655 Ft	4,805 Ft
[R	VALLEY LA	3:22	14	1:41:00	7	0.038%	0.019%	3/2-3/10; 10/3-10/12	Residential	4,553 Ft	4,467 Ft
XP	138 HOWARD AVE	3:21	13	1:40:30	7	0.038%	0.019%	1/31-2/9; 11/2-11/11	Residential	4,820 Ft	5,028 Ft
YR	BOYD DR	3:17	13	1:38:30	7	0.037%	0.019%	2/8-2/17; 10/25-11/4	Residential	4,655 Ft	4,805 Ft
[Q	15 VALLEY LA	3:15	14	1:37:30	7	0.036%	0.019%	2/26-3/6; 10/7-10/15	Residential	4,617 Ft	4,576 Ft
XE	125 HOWARD AVE	3:11	13	1:35:30	7	0.036%	0.018%	1/30-2/9; 11/3-11/12	Residential	4,926 Ft	5,178 Ft
XQ	106 HOWARD AVE	3:09	13	1:34:30	7	0.035%	0.018%	2/2-2/11; 10/31-11/9	Residential	4,880 Ft	5,101 Ft
[P	16 VALLEY LA	3:08	14	1:34:00	7	0.035%	0.018%	2/25-3/4; 10/9-10/17	Residential	4,653 Ft	4,613 Ft
XF	123 ENGLEWOOD AVE	3:07	13	1:33:30	7	0.035%	0.018%	1/29-2/7; 11/4-11/11	Residential	4,926 Ft	5,190 Ft
[O	45 BARBARA AVE	3:03	14	1:31:30	7	0.034%	0.017%	2/24-3/4; 10/10-10/17	Residential	4,624 Ft	4,735 Ft
XK	124 HOWARD AVE	3:03	13	1:31:30	7	0.034%	0.017%	1/3-2/9; 11/2-11/11	Residential	4,842 Ft	5,111 Ft
XH	110 ENGLEWOOD AVE	2:59	12	1:29:30	6	0.033%	0.017%	1/28-2/6; 11/5-11/14	Residential	5,108 Ft	5,360 Ft
ZY	BARBARA AVE	2:57	13	1:28:30	7	0.033%	0.017%	2/22-3/1; 10/12-10/20	Residential	4,501 Ft	4,572 Ft
XJ	108 ENGLEWOOD AVE	2:55	12	1:27:30	6	0.033%	0.017%	1/31-2/9; 11/2-11/11	Residential	5,150 Ft	5,376 Ft
LM	61 EDWARDS ROAD	2:52	11	1:26:00	6	0.032%	0.016%	5/9-5/18; 7/26-8/4	Residential	6,550 Ft	6,232 Ft
ZZ	BARBARA AVE	2:52	13	1:26:00	7	0.032%	0.016%	2/19-2/27; 10/15-10/22	Residential	4,948 Ft	4,994 Ft
_A	43 CANDEE RD	2:48	11	1:24:00	6	0.031%	0.016%	5/10-5/20; 7/23-8/3	Commercial	6,128 Ft	5,488 Ft
XI	109 ENGLEWOOD AVE	2:47	12	1:23:30	6	0.031%	0.016%	1/29-2/7; 11/3-11/12	Residential	5,050 Ft	5,290 Ft
ZE	49 BARBARA AVE	2:36	12	1:18:00	6	0.029%	0.015%	2/9-2/26; 10/15-10/23	Residential	4,789 Ft	4,957 Ft
ZF	48 BARBARA AVE	2:36	12	1:18:00	6	0.029%	0.015%	2/21-2/28; 10/13-10/21	Residential	5,245 Ft	5,289 Ft
US	16 STEPHEN CT	1:59	9	0:59:30	5	0.022%	0.011%	2/2-2/11; 10/31-11/9	Residential	4,155 Ft	4,672 Ft
[M	47 BARBARA AVE	1:41	10	0:50:30	5	0.019%	0.010%	2/23-2/29; 9/14-9/21	Residential	4,997 Ft	4,967 Ft
GK	26 COACHLIGHT CIR	1:01	6	0:30:30	3	0.0114%	0.0058%	2/19-2/24; 10/17-10/23	Residential	4,315 Ft	4,707 Ft
GL	24 COACHLIGHT CIR	0:57	6	0:28:30	3	0.0107%	0.0054%	2/19-2/24; 10/18-10/23	Residential	4,451 Ft	4,854 Ft
GM	22 COACHLIGHT CIR	0:56	6	0:28:00	3	0.0105%	0.0054%	2/19-2/24; 10/18-10/23	Residential	4,656 Ft	5,030 Ft
GN	20 COACHLIGHT CIR	0:51	6	0:25:30	3	0.0096%	0.0049%	2/18-2/23; 10/18-10/23	Residential	4,756 Ft	5,170 Ft
GO	18 COACHLIGHT CIR	0:49	6	0:24:30	3	0.0092%	0.0047%	2/18-2/23; 10/19-10/24	Residential	4,920 Ft	5,340 Ft
GQ	12 COACHLIGHT CIR	0:44	5	0:22:00	3	0.0083%	0.0042%	2/18-2/23; 10/19-10/24	Residential	5,183 Ft	5,597 Ft
GP	16 COACHLIGHT CIR	0:41	5	0:20:30	3	0.0076%	0.0039%	2/19-2/23; 10/18-10/23	Residential	5,061 Ft	5,463 Ft

Notes: [1] Calculations developed from WindPRO SHADOW module using conservative simplifications and assumptions, including but not limited to: the sun is always shining, the wind is always blowing, the blades are always turning and receptors are perpendicular to the turbines.

[2] Calculations based on incorporation of 50% reduction value to account for operational and/or climate-related conditions that limit those times when shadows may be cast.

[3] Calculations of potential sun hours per year based on WindPRO Calendar values (4,457 hours annually, worst-case).

[4] Calculations of hours per year based on maximum of 8,760 hours per year.