

Wind Prospect

178 New Haven Road
Prospect, Connecticut

Prepared for



Prepared by

VHB/Vanasse Hangen Brustlin, Inc.
Middletown, Connecticut

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Introduction

BNE Energy Inc. (“BNE”) proposes to install two wind turbines (“Wind Prospect” or the “Project”) at 178 New Haven Road in Prospect, Connecticut (the “Site”). Vanasse Hangen Brustlin, Inc. (“VHB”) was retained by BNE to conduct this shadow flicker analysis for the Project.

The Project would consist of two General Electric 1.6 megawatt (“MW”) wind turbine generators with hub heights of 100 meters (328 feet) above ground level (“AGL”). BNE is proposing to use turbines with rotor blades of 40.3 meters, but has requesting approval for rotor blades up to 50 meters in length. Therefore, this analysis was performed assuming turbine blades that would extend an additional 50 meters, resulting in a maximum blade tip height of 150 meters (492 feet) AGL. The wind turbines would be located at ground elevations of approximately 640 and 762 feet Above Mean Sea Level (“AMSL”), respectively, on the Site.

The Site consists of approximately 67.5 acres of mostly undeveloped land, the majority of which is heavily wooded. Approximately 9.5 acres of the Site consists of a maintained, open field in its southeast portion, and currently houses a 160-foot tall telecommunications tower. The Site is abutted to the west by the Naugatuck Reservoir and associated water company property, which encompasses nearly 1,050 acres of undeveloped, wooded land. Land use within the general vicinity of the Site is comprised of mixed commercial, industrial and residential development. New Haven Road (State Route 69) extends in a north to south direction immediately east of the Site. Residential properties are located east of the Site, along Route 69 (New Haven Road) and beyond. Vegetative cover on and near the Site consists primarily of mixed deciduous hardwood trees with an average height of approximately 65 feet AGL. Ground elevations in the vicinity of the Site range from approximately 90 feet AMSL to approximately 905 feet AMSL.



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 to a nearby area. The shadow may be perceived as a "flicker" due to the repeated shadow being cast by the rotating blades.

Shadow flicker occurs under a special set of circumstances when the sun passes behind the hub of a wind turbine and casts a shadow over neighboring terrain. Shadow flicker can occur through the windows of structures if a wind turbine is close enough to, and of a specific orientation with, a nearby building. When viewed from within a building, repetitive changes in the brightness of the room may occur as shadows cast from

rotating wind turbine blades pass by and through the windows. When seen outdoors, a viewer may experience the shadows of the rotating blades moving on the ground. Intervening vegetation and other obstructions typically obstruct shadow flicker.

Four conditions must occur simultaneously to cause wind turbine shadow flicker:

1. The turbine must be operating and the blades rotating;
2. The sun must be shining;
3. The turbine must be between an observer and the sun; and,
4. The viewer must be close enough to the object to be within its shadow.

Additionally, the rotor plane of rotation must be close to perpendicular to the line between the sun and the viewer and the sun's rays for shadow flicker to occur.

Shadow Length and Intensity

Shadow length and intensity varies depending on the angle of the sun in the sky and the distance between the turbine and the viewer. The intensity of the shadow flicker is strongest near the wind turbine and diminishes with distance from the turbine. Shadow distance is somewhat dependent on the size of the structure, and the factors that influence the length of a cast shadow include:

- Sun angle and intensity;
- Optic (atmospheric) conditions,, including cloud cover and fog, for example;
- Terrain; and,
- Other obstacles (e.g., intervening trees and buildings).

Regardless of the size of the object casting the shadow and the angle/intensity of the sun, the shadow will only stretch a certain distance. Various studies suggest that maximum shadow distances can range from less than 300 meters (1,000± feet) to 1,500 meters (approximately 0.9 mile). At distances beyond 1,000 feet, shadow flicker is not considered to be a nuisance except during the morning and evening when shadows are long. However, sunlight intensity is also lower during the morning and evening hours, which tends to reduce shadow flicker effects.¹

In Europe,² as another example, it is generally accepted that shadow flicker from wind turbines does not occur at a distance D , to a given wind turbine that is greater than that given by the following formula:

¹ *Environmental Impacts of Wind Energy Projects*, National Academy Press, 2007, p. 160.

² Best Practice Guidelines for the Irish Wind Energy Industry; Irish Wind Energy Association, 2008

$$D = 10 \times (\text{hub height} + \text{rotor radius})$$

Using this formula at the Project Site, the maximum distance of shadow would be approximately 1.5 km (or 0.93 mile).

Shadow Flicker Frequency

Shadow flicker frequency is determined by rotor blade speed and the number of blades on the rotor. This value is measured in Hertz (Hz), with 1 Hz being equivalent to 1 flicker per second. The proposed turbine model, assuming a rotor diameter of 100 meters, will have a nominal speed range of 9.75 to 16.18 revolutions per minute (rpm). This corresponds to a flicker frequency of 0.49 to 0.81 Hz. While flicker frequencies within this range may be considered an annoyance under certain circumstances, exposure to such low frequencies is deemed harmless. The consensus of international experts gathered by the Epilepsy Foundation is that flicker frequencies of 5 to 30 Hz are most likely to trigger seizures in individuals suffering from photosensitive epilepsy. In order to be safe, the consensus recommends that exposure to photosensitive individuals should not exceed 3 Hz.³ Epilepsy Action, a working name for the British Epilepsy Foundation, indicates that there is no evidence that wind farms can trigger seizures. This finding is based on the fact that newer wind turbines are typically built to operate at a frequency of 1 Hz or less.⁴



Shadow Flicker Analysis Methodology

An analysis of potential shadow flicker occurrences resulting from the Project was conducted using the SHADOW module of WindPRO software, a widely-accepted modular-based software package developed by EMD International and designed specifically for the planning and evaluation of wind power projects.

The software model can determine the duration of shadow flicker experienced at a specific viewing location, by using a geometric analysis which accounts for the relative positions of the sun (throughout the time of year and day), the locations of the wind turbines, and the viewing location. The SHADOW module calculates the duration of time that shadow flicker could occur at receptor locations within the program's conservative, default distance of 2,000 meters (6,561 feet) from the Project wind turbine locations. The 2,000-meter distance has been used in this analysis as the "Study Area."

VHB first conducted a "worst case" analysis that assumes that the sun is always shining, the wind is always blowing, and the turbines are always functioning at optimum capacity.

³ Shedding Light on Photosensitivity, <http://www.epilepsyfoundation.org/about/photosensitivity/gerba.cfm>

⁴ Photosensitive Epilepsy, <http://www.epilepsy.org.uk/info/photosensitive/triggers#turbines>

This analysis specifically calculated predicted shadow flicker occurrences for receptors; that is, occupied structures located on neighboring properties within the Study Area. In addition, the receptors identified within the Study Area were input using the module’s “greenhouse mode,” which assumes that there can be windows on each side of the structure. A total of 860 receptor locations were identified within the 2,000-meter Study Area. The following data variables were input into the SHADOW module to conduct the worst case calculations:

Table 1
Worst Case Data Variables

Input Data	Data Source
Wind Turbine Locations	Geographic Coordinates provided by Client
Wind Turbine Model Type	GE 1.6xl (100 meter hub height and 50 meter blade length)
2-foot Contours	Connecticut LiDAR-based Digital Elevation Data (collected in 2000)
Vegetation Cover	Polygon layer digitized by VHB using 2006 and 2010 aerial photographs
860 Receptors	Point layer digitized by VHB using 2010 aerial photographs to represent one point per building

The resultant shadow flicker calculations were prepared with a resolution of one minute; that is, if shadow flicker occurs within any one-minute period (regardless of the number of seconds in duration), the model records this as one minute of shadow flicker. The modeling software assumes that at distances greater than 2,000 meters from the turbines, the frequency of shadow flicker occurrences is low and its intensity is faint enough to not be a distraction to human activities. The WindPRO software accurately calculates the potential locations and durations of shadow flicker, but it does not evaluate intensity and therefore, as a conservative measure, worst-case intensity is assumed at all receptors.

In actuality, shadow flicker occurrences will be less than the calculations because of the conservative simplifications used in the model. For instance:

- The modeling of the wind turbine blades as discs rather than individual blades results in an overestimate of shadow flicker duration. Turbine blades are of varying thickness, with the thickest part of the blade close to the hub and the thinnest part at its tip. Diffusion of sunlight can limit the maximum distance that a shadow can be perceived. This maximum distance will also be dependent on the thickness of the turbine blade, and the human threshold for perception of light intensity variation. As such, a shadow cast by the blade tip will be shorter than the shadow cast by the thickest part of the blade.
- The model does not incorporate a factor specifying the percentage of the sun’s area covered by the turbine blade. As this percentage decreases,

either by the sun location or the viewing distance from the turbine, the shadowing effect decreases significantly.

- The model applies a minimum sun angle of 3 degrees and considers topographic characteristics of surrounding terrain out to approximately 1.3 miles from the Project Site boundaries. Higher elevations beyond the Study Area could obstruct the sun at or above the 3-degree angle and further reduce the effect. This is most likely to occur during dusk/twilight time periods.

VHB reviewed the worst-case calculations and then conducted a modified analysis that considered those conditions that can inhibit shadow flicker occurrences, including: cloud cover; fog; dust/pollution; humidity; and times when the wind turbines are either not perpendicular to the sun (relative to the receptor location) or not functioning due to low and/or high wind conditions. A 50% reduction factor was considered reasonable given historic weather statistics and accounting for periodic operational limitations to provide a more realistic, or “probable case” scenario. All data variables listed above were applied, as were the following local climate sources:

Table 2
Probable Case Data Variables

Input Data	Data Source
Percentage of Possible Sunshine	Climate of Connecticut; Climate Services Branch, National Climatic Data Center, http://cdo.ncdc.noaa.gov/cgi-bin/climatenormals.pl
	Average Climate in Prospect, Connecticut, http://www.city-data.com/city/Prospect-Connecticut.html
Percentage of Possible Humidity	Average Climate in Prospect, Connecticut, http://www.city-data.com/city/Prospect-Connecticut.html

According to the National Climatic Data Center, the annual percentage of possible sunny days state-wide averages 55 to 60 percent (ranging from 45 percent in the interior during the months of November, December and January to near 65 along the coast in the summer). An average of 140 cloudy days occurs annually. One or more prolonged periods of cloudy skies are commonly observed during the winter and early spring.⁵ City-specific climate data supports this information, which indicates an annual average number of cloudy days of approximately 45%.⁶

⁵ Climate Services Branch, National Climatic Data Center, <http://cdo.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl>, *Climate of Connecticut*, p. 5.

⁶ <http://www.city-data.com/city/Prospect-Connecticut.html>

There are several additional conditions that commonly occur which can limit those times when shadows may be cast. For instance, the wind turbine will not always be yawed so that the rotor is perpendicular to the sun, relative to receptor locations, as the model assumes; any other rotor orientation will reduce the area of a projected shadow and resultant shadow flicker. Site-specific wind data (from 2009) documents that the wind blows from the general western direction approximately 47% of the time; about 20% from the south; more than 14% from the east; and over 17% of the time from north⁷. This data indicates that the turbine directions, relative to specific receptor locations, can be highly variable; the WindPRO calculations do not account for this factor.

If we combine the occasions above with periodic low wind conditions (at least 11% of the time annually when the turbine blades would not be spinning) or high wind conditions (when the turbines would automatically shut down) and contributions from partly cloudy days, fog, air pollution, high humidity and other atmospheric conditions that can inhibit the potential shadow flicker effect, it is reasonable to expect additional reductions in the annual hours of shadow flicker predicted by the model at any given receptor. For purposes of this study, VHB added another 5% to the average annual percent of cloudy days to account for the model's conservative simplifications and other conditions that could lessen or nullify shadow flicker occurrences, which ultimately lead to the 50% reduction factor used in the modified analysis.

Receptor locations within the Study Area are depicted in Figure 1, *Receptor Locations*. The resultant shadow flicker calculations expected per receptor are presented in Table 3, *Shadow Flicker Results – Receptor Locations*, located in Tables section. Table 4, *Receptor Locations*, located in Tables section, lists all of the receptors included in this evaluation by street address for reference. Appendix A includes the SHADOW module main results for all receptor locations and Appendix B provides a Calendar (by month and day) table for those receptors predicted to have at least one minute of shadow flicker.



Regulations and Guidelines

No federal, state or local regulations exist regarding shadow flicker effect limits. Shadow flicker duration has been addressed elsewhere, however. Most notably, in Europe guidelines have been established suggesting that shadow flicker impacts to dwellings be limited to 30 hours annually.⁸ A German court ruled that 30 hours of actual shadow flicker per years was acceptable at a neighboring property.⁹ Several communities in the United States have adopted a 30-hour annual limit for shadow flicker occurrences. For comparative purposes, the results of this analysis have been evaluated with respect to the 30 hours per year level.

⁷ Percentages presented are approximate and add up to 98% due to omission of fractions of percents.

⁸ Best Practice Guidelines for the Irish Wind Energy Industry; Irish Wind Energy Association, 2008

⁹ Danish Wind Industry Association, June 8, 2003;

<http://www.windpower.org/en/tour/env/shadow/index.htm>



Results

The Project was analyzed to determine the potential for shadow flicker impacts at the 860 receptors located within the Study Area using a combination of worst-case scenario modeling and the incorporation of a probable-case scenario. A total of 74 receptors are predicted to experience shadow flicker at some time during the year, with annual durations ranging from less than one hour to nearly 34 hours. Three receptors are predicted to experience more than 30 hours per year; two receptors are predicted to experience between 21 and 23 hours; 11 receptors between 10 and 18 hours; 49 between one and ten hours; and, nine less than one hour annually. The three receptors predicted to experience more than 30 hours annually include two residences and one office building.

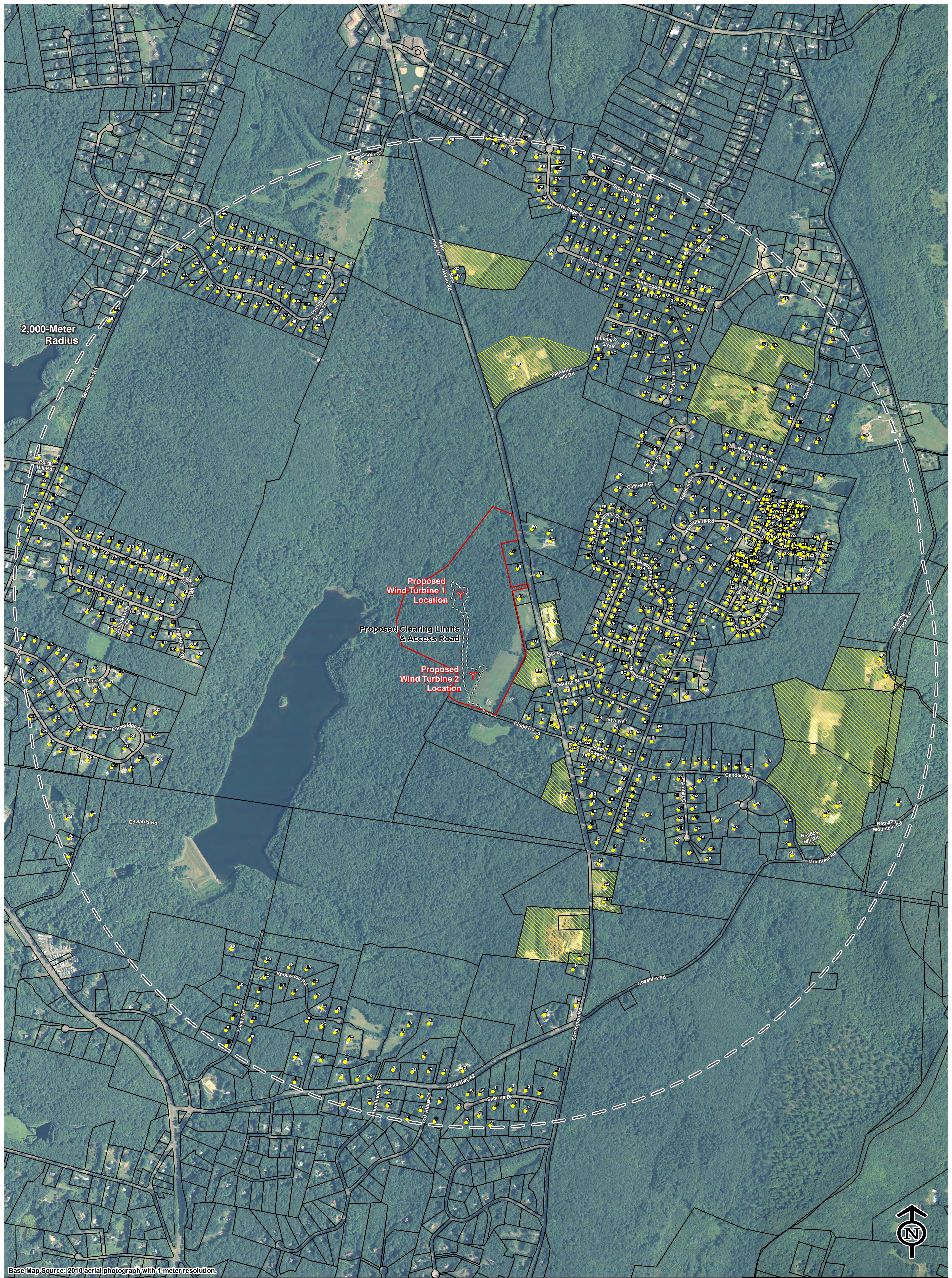
Based on a review of the WindPRO SHADOW Calendar calculations, shadow flicker could occur at locations generally east of the Site typically within an hour or two of sunset, when the sun is very low in the sky. For the few receptors located west of the Site where shadow flicker is predicted to occur, the durations are short (anywhere from 2 to 11 minutes on a given day over 12 to 16 days total, annually) and generally within a half hour after sunrise, again when the sun is low on the horizon.

The analysis of potential shadow flicker impacts from the Project on nearby receptors demonstrates that these occurrences within the Study Area are not expected to create a significant nuisance. The conservative calculations illustrate low occurrence of flicker throughout the majority of the Study Area. Of the 860 receptors evaluated, 74 are predicted to have some shadow flicker events (representing 8.5% of the total locations within the Study Area).

The results of this analysis are intentionally conservative. The actual number of shadow hours experienced will in all likelihood be substantially less than the calculations presented in this report. It is important to note that the WindPRO SHADOW analysis assumes that all the receptors and properties have direct lines-of-sight towards incoming shadow flicker sunlight from all sides of structures. The reality is that windows of many houses do not face the sun directly for the key shadow flicker impact times. In addition, this analysis determined the potential shadow flicker impacts from wind turbines at distances up to 2,000 meters away. Shadow flicker impacts will decrease in intensity the further the distance between receptor and turbine. At the times that shadow flicker is predicted to occur (near sunset and sunrise), the intensity of the sun is also diminished. Even when a probable-case scenario is accounted for, in this case reducing the raw WindPRO SHADOW calculations by 50%, shadow flicker impacts are still expected to be less than estimated with this conservative analysis.



Figure 1



Base Map Source: 2010 aerial photograph with 1-meter resolution.



- Legend**
- Receptor
 - Proposed Wind Turbine Locations
 - Proposed Clearing Limits & Access Road
 - ⊖ 2,000-Meter (1.24 - Miles) Radius
 - ▭ Approximate Property Boundary
 - ▭ Assessor Parcel Boundary
 - ▨ Non-Residential Use



Vanasse Hangen Brustlin, Inc.
Figure 1
Receptor Locations
Wind Prospect
BNE Energy, Inc.
178 New Haven Road
Prospect, Connecticut

Tables

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
		Worst Case Hours Per Year	Max minutes (min/day)	Hours Per Year	% of Sun Hours/Year ⁽³⁾	% of Hours/Year ⁽⁴⁾				
DG	207 NEW HAVEN RD	67:32:00	47	33:46:00	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	0.134%	0.068%	3/3-3/18; 9/26-10/11	Residential	2,543 Ft	2,322 Ft
EY	36 WOODCREST DR	11:45	24	5:52:30	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	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	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	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	0.087%	0.044%	2/22-3/7; 10/7-10/20	Residential	3,024 Ft	2,963 Ft

**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
		Worst Case Hours Per Year	Max minutes (min/day)	Hours Per Year	% of Sun Hours/Year ⁽³⁾	% of Hours/Year ⁽⁴⁾				
UJ	20 ELAINE CT	5:49	13	2:54:30	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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 turbines are always functioning at optimum capacity, and 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 potential hours per year based on maximum of 8,760 hours per year.

**Table 4
Receptor Locations**

Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address
/A	25 DEERFIELD DR	[G	71 BARBARA AVE	]M	215 COOK RD	^S	20 CANDEE RD
/B	26 DEERFIELD DR	[H	72 BARBARA AVE	]N	219 COOK RD	^T	24 CANDEE RD
/C	27 DEERFIELD DR	[I	74 BARBARA AVE	]O	229 COOK RD	^U	6 KNOLLWOOD PL
/D	28 DEERFIELD DR	[J	40 BARBARA AVE	]P	231 COOK RD	^V	10 KNOLLWOOD PL
/E	29 DEERFIELD DR	[K	42 BARBARA AVE	]Q	235 COOK RD	^W	1 KNOLLWOOD PL
/F	30 DEERFIELD DR	[L	43 BARBARA AVE	]R	237 COOK RD	^X	50 CANDEE RD
/G	31 DEERFIELD DR	[M	47 BARBARA AVE	]S	241 COOK RD	^Y	56 CANDEE RD
/H	32 VALLEY LA	[N	46 BARBARA AVE	]T	243 COOK RD	^Z	60 CANDEE RD
/I	33 VALLEY LA	[O	45 BARBARA AVE	]U	245 COOK RD	_A	43 CANDEE RD
/J	34 VALLEY LA	[P	16 VALLEY LA	]V	247 COOK RD	_B	35 CANDEE RD
/K	35 VALLEY LA	[Q	15 VALLEY LA	]W	249 COOK RD	_C	33 CANDEE RD
/L	36 VALLEY LA	[R	VALLEY LA	]X	265 NEW HAVEN RD	_D	29 CANDEE RD
/M	37 VALLEY LA	[S	17 VALLEY LA	]Y	257 COOK RD	_E	27 CANDEE RD
/N	38 VALLEY LA	[T	18 DEERFIELD DR	]Z	868 CARRINGTON RD	_F	19 CANDEE RD
/O	39 VALLEY LA	[U	19 DEERFIELD DR	^A	251 COOK RD	_G	17 CANDEE RD
/P	126 ROARING BROOK RD	[V	20 DEERFIELD DR	^B	239 COOK RD	_H	15 CANDEE RD
/Q	126 ROARING BROOK RD	[W	21 DEERFIELD DR	^C	6 CANDEE RD	_I	13 CANDEE RD
/R	10 VALLEY LA	[X	22 DEERFIELD DR	^D	4 AMBER CT	_J	9 CANDEE RD
/S	9 VALLEY LA	[Y	23 DEERFIELD DR	^E	8 AMBER CT	_K	43 CANDEE RD
/T	8 VALLEY LA	[Z	24 DEERFIELD DR	^F	10 AMBER CT	_L	1200 BETHANY MTN RD
/U	7 VALLEY LA	]A	1 VALLEY LA	^G	12 AMBER CT	_M	817 CARRINGTON RD
/V	6 VALLEY LA	]B	181 COOK RD	^H	14 AMBER CT	_N	809 CARRINGTON RD
/W	5 VALLEY LA	]C	189 COOK RD	^I	16 AMBER CT	_O	779 CARRINGTON RD
/X	4 VALLEY LA	]D	195 COOK RD	^J	18 AMBER CT	_P	227 CHESHIRE RD
/Y	3 VALLEY LA	]E	191 COOK RD	^K	21 AMBER CT	_Q	739 CARRINGTON RD
/Z	2 VALLEY LA	]F	197 COOK RD	^L	19 AMBER CT	_R	8 SABRINA DR
[A	COOK RD	]G	18 SADDLE CT	^M	17 AMBER CT	_S	16 SABRINA DR
[B	VALLEY LA	]H	30 SADDLE CT	^N	15 AMBER CT	_T	24 SABRINA DR
[C	68 BARBARA AVE	]I	201 COOK RD	^O	11 AMBER CT	_U	32 SABRINA DR
[D	68 BARBARA AVE	]J	203 COOK RD	^P	9 AMBER CT	_V	40 SABRINA DR
[E	BARBARA AVE	]K	240 COOK RD	^Q	7 AMBER CT	_W	42 SABRINA DR
[F	70 BARBARA AVE	]L	261 NEW HAVEN RD	^R	5 AMBER CT	_X	17 SABRINA DR

**Table 4
Receptor Locations**

Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address
_Y	25 SABRINA DR	B	3 GEORGE ST	CC	11 WOODCREST DR	DG	207 NEW HAVEN RD
_Z	33 SABRINA DR	'B	41 SABRINA DR	CD	13 WOODCREST DR	DH	187 NEW HAVEN RD
A	1 GEORGE ST	BA	247 NEW HAVEN RD	CE	8 HEMLOCK RD	DI	190 NEW HAVEN RD
'A	35 SABRINA DR	BB	226 COOK RD	CF	10 HEMLOCK RD	DJ	177 NEW HAVEN RD
AA	23 LEE RD	BC	230 COOK RD	CG	12 HEMLOCK RD	DK	17 WOODCREST DR
aA	860 CARRINGTON ROAD	BD	232 COOK RD	CH	16 HEMLOCK RD	DL	19 WOODCREST DR
AB	27 LEE RD	BE	236 COOK RD	CI	14 HEMLOCK RD	DM	18 WOODCREST DR
aB	850 CARRINGTON RD	BF	204 COOK RD	CJ	15 HEMLOCK RD	DN	20 WOODCREST DR
AC	29 LEE RD	BG	251 NEW HAVEN RD	CK	11 HEMLOCK RD	DO	22 WOODCREST DR
AD	31 LEE RD	BH	255 NEW HAVEN RD	CL	2 WOODCREST DR	DP	24 WOODCREST DR
AE	22 LEE RD	BI	259 NEW HAVEN RD	CM	4 WOODCREST DR	DQ	21 WOODCREST DR
AF	24 LEE RD	BJ	206 COOK RD	CN	10 WOODCREST DR	DR	23 WOODCREST DR
AG	30 LEE RD	BK	246 NEW HAVEN RD	CO	12 WOODCREST DR	DS	16 MEADOW LA
AH	26 LEE RD	BL	198 NEW HAVEN RD	CP	15 WOODCREST DR	DT	9 MEADOW LA
AI	28 LEE RD	BM	214 NEW HAVEN RD	CQ	14 WOODCREST DR	DU	18 MEADOW LA
AJ	220 COOK RD	BN	3 HEMLOCK RD	CR	16 WOODCREST DR	DV	20 MEADOW LA
AK	227 NEW HAVEN RD	BO	5 HEMLOCK RD	CS	19 HEMLOCK RD	DW	22 MEADOW LA
AL	3 RADIO TOWER RD	BP	7 HEMLOCK RD	CT	21 HEMLOCK RD	DX	13 MEADOW LA
AM	3 RADIO TOWER RD	BQ	200 COOK RD	CU	23 HEMLOCK RD	DY	24 MEADOW LA
AN	7 RADIO TOWER RD	BR	198 COOK RD	CV	20 HEMLOCK RD	DZ	26 WOODCREST DR
AO	11 RADIO TOWER RD	BS	4 HEMLOCK RD	CW	2 MEADOW LA	E	232 NEW HAVEN RD
AP	15 RADIO TOWER RD	BT	6 HEMLOCK RD	CX	4 MEADOW LA	'E	5 OAK RIDGE DR
AQ	224 COOK RD	BU	9 HEMLOCK RD	CY	6 MEADOW LA	EA	28 WOODCREST DR
AQ	235 NEW HAVEN RD	BV	1 WOODCREST DR	CZ	8 MEADOW LA	EB	30 WOODCREST DR
AR	4 RADIO TOWER RD	BW	192 COOK RD	D	232 NEW HAVEN RD	EC	32 WOODCREST DR
AS	6 RADIO TOWER RD	BX	3 WOODCREST DR	'D	44 SABRINA DR	ED	34 WOODCREST DR
AT	8 RADIO TOWER RD	BY	5 WOODCREST DR	DA	3 MEADOW LA	EE	38 WOODCREST DR
AU	10 RADIO TOWER RD	BZ	7 WOODCREST DR	DB	10 MEADOW LA	EF	35 WOODCREST DR
AV	1 RADIO TOWER RD	C	213 NEW HAVEN RD	DC	12 MEADOW LA	EG	40 WOODCREST DR
AW	235 NEW HAVEN RD	'C	45 SABRINA DR	DD	5 MEADOW LA	EH	39 WOODCREST DR
AY	241 NEW HAVEN RD	CA	9 WOODCREST DR	DE	7 MEADOW LA	EI	41 WOODCREST DR
AZ	245 NEW HAVEN RD	CB	9 WOODCREST DR	DF	14 MEADOW LA	EJ	43 WOODCREST DR

**Table 4
Receptor Locations**

Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address
EK	45 WOODCREST DR	FO	177 NEW HAVEN RD	GS	8 COACHLIGHT CIR	HW	85 COACHLIGHT CIR
EL	47 WOODCREST DR	FP	177 NEW HAVEN RD	GT	92 COACHLIGHT CIR	HX	89 COACHLIGHT CIR
EM	51 WOODCREST DR	FQ	210 NEW HAVEN RD	GU	88 COACHLIGHT CIR	HY	91 COACHLIGHT CIR
EN	53 WOODCREST DR	FR	42 WOODCREST DR	GV	86 COACHLIGHT CIR	HZ	93 COACHLIGHT CIR
EO	25 WOODCREST DR	FS	2 HEMLOCK RD	GW	84 COACHLIGHT CIR	I	232 NEW HAVEN RD
EP	27 WOODCREST DR	FT	3 COACHLIGHT CIR	GX	82 COACHLIGHT CIR	'I	COACHLIGHT CIR
EQ	29 WOODCREST DR	FU	5 COACHLIGHT CIR	GY	80 COACHLIGHT CIR	IA	95 COACHLIGHT CIR
ER	33 WOODCREST DR	FV	7 COACHLIGHT CIR	GZ	78 COACHLIGHT CIR	IB	97 COACHLIGHT CIR
ES	58 WOODCREST DR	FW	9 COACHLIGHT CIR	H	12 KLUGE RD	IC	4 COACHLIGHT CIR
ET	56 WOODCREST DR	FX	11 COACHLIGHT CIR	'H	101 CHESHIRE REAR	ID	195 STRAITSVILLE RD
EU	54 WOODCREST DR	FY	15 COACHLIGHT CIR	HA	76 COACHLIGHT CIR	IE	201 STRAITSVILLE RD
EV	50 WOODCREST DR	FZ	31 COACHLIGHT CIR	HB	74 COACHLIGHT CIR	IF	205 STRAITSVILLE RD
EW	48 WOODCREST DR	G	15 KLUGE RD	HC	72 COACHLIGHT CIR	IG	69 CHESHIRE RD
EX	46 WOODCREST DR	'G	171 CHESHIRE RD	HD	17 FIELDSTONE DR	IH	185 STRAITSVILLE RD
EY	36 WOODCREST DR	GA	29 COACHLIGHT CIR	HE	27 FIELDSTONE DR	II	179 STRAITSVILLE RD
EZ	15 ELAINE CT	GB	27 COACHLIGHT CIR	HF	39 FIELDSTONE DR	IJ	175 STRAITSVILLE RD
F	8 KLUGE RD	GC	25 COACHLIGHT CIR	HG	38 FIELDSTONE DR	IK	183 STRAITSVILLE RD
'F	11 OAKRIDGE DR	GD	23 COACHLIGHT CIR	HH	18 FIELDSTONE DR	IL	6 PORTER HILL RD
FA	9 ELAINE CT	GE	21 COACHLIGHT CIR	HI	2 FIELDSTONE DR	IM	176 STRAITSVILLE RD
FB	3 ELAINE CT	GF	19 COACHLIGHT CIR	HJ	26 FIELDSTONE DR	IN	91 TALMADGE HILL RD
FC	3 CANFIELD CT	GG	17 COACHLIGHT CIR	HK	71 COACHLIGHT CIR	IO	89 TALMADGE HILL RD
FD	6 CANFIELD CT	GH	189 STRAITSVILLE RD	HL	73 COACHLIGHT CIR	IP	180 STRAITSVILLE RD
FE	7 CANFIELD CT	GI	30 COACHLIGHT CIR	HM	75 COACHLIGHT CIR	IQ	184 STRAITSVILLE RD
FF	119 NEW HAVEN RD	GJ	28 COACHLIGHT CIR	HN	77 COACHLIGHT CIR	IR	186 STRAITSVILLE RD
FG	220 NEW HAVEN RD	GK	26 COACHLIGHT CIR	HO	5 COBBLESTONE CT	IS	190 STRAITSVILLE RD
FH	192 COOK RD	GL	24 COACHLIGHT CIR	HP	7 COBBLESTONE CT	IT	194 STRAITSVILLE RD
FI	204 COOK RD	GM	22 COACHLIGHT CIR	HQ	6 COBBLESTONE CT	IU	17 HORIZON VIEW
FJ	184 NEW HAVEN RD	GN	20 COACHLIGHT CIR	HR	4 COBBLESTONE CT	IV	21 HORIZON VIEW
FK	44 WOODCREST DR	GO	18 COACHLIGHT CIR	HS	2 COBBLESTONE CT	IW	68 KNOLLWOOD RD
FL	40 STEPHEN CT	GP	16 COACHLIGHT CIR	HT	81 COACHLIGHT CIR	IX	194 STRAITSVILLE RD
FM	6 WOODCREST DR	GQ	12 COACHLIGHT CIR	HU	83 COACHLIGHT CIR	IY	198 STRAITSVILLE RD
FN	220 COOK RD	GR	10 COACHLIGHT CIR	HV	85 COACHLIGHT CIR	IZ	200 STRAITSVILLE RD

**Table 4
Receptor Locations**

Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address
J	2 GEORGE ST	KC	38 CAMBRIDGE DR	LG	29 KNOLLWOOD RD	MK	12 SKYLINE DR
'J	107 CHESHIRE RD	KD	40 CAMBRIDGE DR	LH	70 LACEY ROAD	ML	28 SKYLINE DR
JA	78 KNOLLWOOD RD	KE	39 CAMBRIDGE DR	LI	57 LACEY ROAD	MM	14 SKYLINE DR
JB	48 KNOLLWOOD RD	KF	41 CAMBRIDGE DR	LJ	51 KNOLLWOOD RD	MN	119 STRAITSVILLE RD
JC	58 KNOLLWOOD RD	KG	43 CAMBRIDGE DR	LK	17 KNOLLWOOD RD	MO	113 STRAITSVILLE RD
JD	53 LACEY RD	KH	47 CAMBRIDGE DR	LL	65 EDWARDS RD	MP	14 DOGWOOD DR
JE	47 LACEY RD	KI	22 CAMBRIDGE DR	LM	61 EDWARDS ROAD	MQ	77 PUTTING GREEN LA
JF	41 LACEY RD	KJ	20 CAMBRIDGE DR	LN	57 EDWARDS RD	MR	73 PUTTING GREEN LA
JG	54 LACEY ROAD	KK	49 CAMBRIDGE DR	LO	49 EDWARDS RD	MS	75 PUTTING GREEN LA
JH	67 KNOLLWOOD RD	KL	51 CAMBRIDGE DR	LP	85 LACEY RD	MT	71 PUTTING GREEN LA
JI	65 CHESHIRE RD	KM	53 CAMBRIDGE DR	LQ	88 LACEY RD	MU	69 PUTTING GREEN LA
JJ	73 CHESHIRE RD	KN	55 CAMBRIDGE DR	LR	9 SKYLINE DR	MV	67 PUTTING GREEN LA
JK	44 LACEY RD	KO	59 CAMBRIDGE DR	LS	3 SKYLINE DR	MW	65 PUTTING GREEN LA
JL	5 CAMBRIDGE DR	KP	52 CAMBRIDGE DR	LT	73 TALMADGE HILL RD	MX	63 PUTTING GREEN LA
JM	7 CAMBRIDGE DR	KQ	54 CAMBRIDGE DR	LU	1 SKYLINE DR	MY	61 PUTTING GREEN LA
JN	9 CAMBRIDGE DR	KR	58 CAMBRIDGE DR	LV	22 SKYLINE DR	MZ	59 PUTTING GREEN LA
JO	11 CAMBRIDGE DR	KS	60 CAMBRIDGE DR	LW	18 SKYLINE DR	N	225 NEW HAVEN RD
JP	11 CAMBRIDGE DR	KT	62 CAMBRIDGE DR	LX	26 SKYLINE DR	'N	143 CHESHIRE RD
JQ	15 CAMBRIDGE DR	KU	64 LACEY RD	LY	6 SKYLINE DR	NA	57 PUTTING GREEN LA
JR	11 YALE FARMS LA	KV	18 CAMBRIDGE DR	LZ	24 SKYLINE DR	NB	55 PUTTING GREEN LA
JS	6 YALE FARMS LA	KW	16 CAMBRIDGE DR	M	8 GEORGE ST	NC	53 PUTTING GREEN LA
JT	10 YALE FARMS LA	KX	14 CAMBRIDGE DR	'M	131 CHESHIRE ROAD	ND	51 PUTTING GREEN LA
JU	12 YALE FARMS LA	KY	10 CAMBRIDGE DR	MA	30 SKYLINE DR	NE	49 PUTTING GREEN LA
JV	17 CAMBRIDGE DR	KZ	8 CAMBRIDGE DR	MB	87 TALMADGE HILL RD	NF	47 PUTTING GREEN LA
JW	19 CAMBRIDGE DR	L	6 GEORGE ST	MC	89 TALMADGE HILL RD	NG	43 PUTTING GREEN LA
JX	25 CAMBRIDGE DR	'L	123 CHESHIRE RD	MD	83 TALMADGE HILL RD	NH	41 PUTTING GREEN LA
JY	31 CAMBRIDGE DR	LA	35 KNOLLWOOD RD	ME	2 SKYLINE DR	NI	39 PUTTING GREEN LA
JZ	33 CAMBRIDGE DR	LB	25 KNOLLWOOD RD	MF	4 SKYLINE DR	NJ	37 PUTTING GREEN LA
K	4 GEORGE ST	LC	78 LACEY RD	MG	85 TALMADGE HILL RD	NK	33 PUTTING GREEN LA
'K	107 CHESHIRE RD	LD	65 LACEY RD	MH	130 STRAITSVILLE RD	NL	31 PUTTING GREEN LA
KA	35 CAMBRIDGE DR	LE	20 KNOLLWOOD RD	MI	134 STRAITSVILLE RD	NM	29 PUTTING GREEN LA
KB	37 CAMBRIDGE DR	LF	28 KNOLLWOOD RD	MJ	8 SKYLINE DR	NN	27 PUTTING GREEN LA

**Table 4
Receptor Locations**

Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address
NO	25 PUTTING GREEN LA	OS	54 PUTTING GREEN LA	PW	15 HERITAGE DR	R	13 LEE RD
NP	23 PUTTING GREEN LA	OT	58 PUTTING GREEN LA	PX	17 HERITAGE DR	'R	115 CHESHIRE RD
NQ	21 PUTTING GREEN LA	OU	62 PUTTING GREEN LA	PY	21 HERITAGE DR	RA	10 HERITAGE DR
NR	19 PUTTING GREEN LA	OV	66 PUTTING GREEN LA	PZ	6 HERITAGE DR	RB	14 STONEFIELD DR
NS	17 PUTTING GREEN LA	OW	62 PUTTING GREEN LA	Q	11 LEE RD	RC	8 STONEFIELD DR
NT	15 PUTTING GREEN LA	OX	46 PUTTING GREEN LA	'Q	119 CHESHIRE RD	RD	6 STONEFIELD DR
NU	11 PUTTING GREEN LA	OY	54 NEW HAVEN RD	QA	3 STONEFIELD DR	RE	2 STONEFIELD DR
NV	9 PUTTING GREEN LA	OZ	103 NEW HAVEN RD	QB	48 TALMADGE HILL RD	RF	45 TALMADGE HILL RD
NW	7 PUTTING GREEN LA	P	9 LEE RD	QC	52 TALMADGE HILL RD	RG	41 TALMADGE HILL RD
NX	7 SKYLINE DR	'P	151 CHESHIRE RD	QD	60 TALMADGE HILL RD	RH	47 TALMADGE HILL RD
NY	5 SKYLINE DR	PA	105 NEW HAVEN RD	QE	2 HORIZON VIEW	RI	47 TALMADGE HILL RD
NZ	10 SKYLINE DR	PB	49 COER RD	QF	6 HORIZON VIEW	RJ	49 TALMADGE HILL RD
O	5 GEORGE ST	PC	47 COER RD	QG	10 HORIZON VIEW	RK	53 TALMADGE HILL RD
'O	153 CHESHIRE RD	PD	49 HERITAGE DR	QH	14 HORIZON VIEW	RL	51 TALMADGE HILL RD
OA	10 PUTTING GREEN LA	PE	45 HERITAGE DR	QI	18 HORIZON VIEW	RM	55 TALMADGE HILL RD
OB	12 PUTTING GREEN LA	PF	35 HERITAGE DR	QJ	14 HERITAGE DR	RN	59 TALMADGE HILL RD
OC	14 PUTTING GREEN LA	PG	15 HORIZON VIEW	QK	30 HERITAGE DR	RO	61 TALMADGE HILL RD
OD	16 PUTTING GREEN LA	PH	5 HORIZON VIEW	QL	34 HERITAGE DR	RP	23 SPRUCE DR
OE	18 PUTTING GREEN LA	PI	1 HORIZON VIEW	QM	38 HERITAGE DR	RQ	15 SPRUCE DR
OF	20 PUTTING GREEN LA	PJ	41 HERITAGE DR	QN	50 HERITAGE DR	RR	15 SPRUCE DR
OG	24 PUTTING GREEN LA	PK	37 HERITAGE DR	QO	23 STONEFIELD DR	RS	20 SPRUCE DR
OH	28 PUTTING GREEN LA	PL	31 HERITAGE DR	QP	15 STONEFIELD DR	RT	14 SPRUCE DR
OI	30 PUTTING GREEN LA	PM	9 HORIZON VIEW	QQ	11 STONEFIELD DR	RU	12 SPRUCE DR
OJ	32 PUTTING GREEN LA	PN	72 TALMADGE HILL RD	QR	22 STONEFIELD DR	RV	6 SPRUCE DR
OK	34 PUTTING GREEN LA	PO	86 BEACH DR	QS	18 STONEFIELD DR	RW	4 SPRUCE DR
OL	38 PUTTING GREEN LA	PP	80 BEACH DR	QT	5 STONEFIELD DR	RX	2 SPRUCE DR
OM	40 PUTTING GREEN LA	PQ	72 BEACH DR	QU	19 STONEFIELD DR	RY	19 DOGWOOD DR
ON	42 PUTTING GREEN LA	PR	66 BEACH DR	QV	46 HERITAGE DR	RZ	21 DOGWOOD DR
OO	44 PUTTING GREEN LA	PS	22 HORIZON VIEW	QW	42 HERITAGE DR	S	15 LEE RD
OP	48 PUTTING GREEN LA	PT	56 TALMADGE HILL RD	QX	22 HERITAGE DR	'S	115 CHESHIRE RD
OQ	50 PUTTING GREEN LA	PU	5 HERITAGE DR	QY	18 HERITAGE DR	SA	23 DOGWOOD DR
OR	52 PUTTING GREEN LA	PV	9 HERITAGE DR	QZ	92 BEACH DR	SB	11 SPRUCE DR

**Table 4
Receptor Locations**

Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address
SC	9 SPRUCE DR	TG	89 COOK RD	UK	26 ELAINE CT	VO	144 COOK RD
SD	7 SPRUCE DR	TH	91 COOK RD	UL	25 ELAINE CT	VP	2 ROBINMARK RD
SE	5 SPRUCE DR	TI	11 SKYLINE DR	UM	29 ELAINE CT	VQ	4 ROBINMARK RD
SF	3 SPRUCE DR	TJ	13 SKYLINE DR	UN	1 ELAINE CT	VR	6 ROBINMARK RD
SG	1 SPRUCE DR	TK	15 SKYLINE DR	UO	30 STEPHEN CT	VS	8 ROBINMARK RD
SH	15 DOGWOOD DR	TL	19 SKYLINE DR	UP	26 STEPHEN CT	VT	29 STEPHEN CT
SI	11 DOGWOOD DR	TM	23 SKYLINE DR	UQ	24 STEPHEN CT	VU	10 ROBINMARK RD
SJ	9 DOGWOOD DR	TN	21 SKYLINE DR	UR	20 STEPHEN CT	VV	37 STEPHEN CT
SK	5 DOGWOOD DR	TO	27 SKYLINE DR	US	16 STEPHEN CT	VW	42 STEPHEN CT
SL	3 DOGWOOD DR	TP	29 SKYLINE DR	UT	12 STEPHEN CT	VX	18 ROBINMARK RD
SM	63 TALMADGE HILL RD	TQ	106 COOK RD	UU	8 STEPHEN CT	VY	20 ROBINMARK RD
SN	57 TALMADGE HILL RD	TR	106 COOK RD	UV	140 COOK RD	VZ	22 ROBINMARK RD
SO	65 TALMADGE HILL RD	TS	104 COOK RD	UW	17 ROY MOUNTAIN RD	W	18 LEE RD
SP	67 TALMADGE HILL RD	TT	122 COOK RD	UX	15 ROY MOUNTAIN RD	'W	11 N HUMISTON DR
SQ	71 TALMADGE HILL RD	TU	109 COOK RD	UY	9 ROY MOUNTAIN RD	WA	172 COOK RD
SR	69 TALMADGE HILL RD	TV	119 COOK RD	UZ	5 ROY MOUNTAIN RD	WB	168 COOK RD
SS	4 DOGWOOD DR	TW	50 ROARING BROOK RD	V	223 NEW HAVEN RD	WC	23 ROBINMARK RD
ST	6 DOGWOOD DR	TX	108 COOK RD	'V	6 OAK RIDGE DR	WD	19 ROBINMARK RD
SU	8 DOGWOOD DR	TY	112 COOK RD	VA	1 ROY MOUNTAIN RD	WE	15 ROBINMARK RD
SV	10 DOGWOOD DR	TZ	116 COOK RD	VB	18 ROY MOUNTAIN RD	WF	7 ROBINMARK RD
SW	12 DOGWOOD DR	U	19 LEE RD	VC	14 ROY MOUNTAIN RD	WG	1 ROBINMARK RD
SX	14 DOGWOOD DR	'U	16 OAK RIDGE DR	VD	10 ROY MOUNTAIN RD	WH	158 COOK RD
SY	16 DOGWOOD DR	UA	118 COOK RD	VE	6 ROY MOUNTAIN RD	WI	162 COOK RD
SZ	18 DOGWOOD DR	UB	117 COOK RD	VF	2 ROY MOUNTAIN RD	WJ	190 COOK RD
T	17 LEE RD	UC	123 COOK RD	VG	133 COOK RD	WK	24 HEMLOCK RD
'T	26 OAK RIDGE DR	UD	121 COOK RD	VH	129 COOK RD	WL	186 COOK RD
TA	20 DOGWOOD DR	UE	19 ELAINE CT	VI	131 COOK RD	WM	184 COOK RD
TB	22 DOGWOOD DR	UF	11 ELAINE CT	VJ	23 STEPHEN CT	WN	182 COOK RD
TC	24 DOGWOOD DR	UG	21 ELAINE CT	VK	19 STEPHEN CT	WO	182 COOK RD
TD	91 GIOVANNI DR	UH	8 ELAINE CT	VL	15 STEPHEN CT	WP	135 COOK RD
TE	90 COOK RD	UI	10 ELAINE CT	VM	11 STEPHEN CT	WQ	117 ENGLEWOOD AVE
TF	COOK RD	UJ	20 ELAINE CT	VN	7 STEPHEN CT	WR	116 ENGLEWOOD AVE

**Table 4
Receptor Locations**

Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address	Receptor Map ID	Receptor Site Address
WS	118 ENGLEWOOD AVE	XW	151 COOK RD	Z	21 LEE RD		
WT	132 HOWARD AVE	XX	151 COOK RD	Z	98 CHESHIRE RD		
WU	130 HOWARD AVE	XY	140 BOYD DR	ZA	53 BARBARA AVE		
WV	119 ENGLEWOOD AVE	XZ	139 BOYD DR	ZB	52 BARBARA AVE		
WW	129 HOWARD AVE	Y	20 LEE RD	ZC	51 BARBARA AVE		
WX	120 ENGLEWOOD AVE	Y	12 N HUMISTON DR	ZD	50 BARBARA AVE		
WY	128 HOWARD AVE	YA	151 PINE DR	ZE	49 BARBARA AVE		
WZ	127 HOWARD AVE	YB	152 PINE DR	ZF	48 BARBARA AVE		
X	225 NEW HAVEN RD	YC	152 PINE DR	ZG	97 SILLS AVE		
X	5 N HUMISTON	YD	153 PINE DR	ZH	95 SILLS AVE		
XA	121 ENGLEWOOD AVE	YE	157 SILLS AVE	ZI	SILLS AVE		
XB	113 ENGLEWOOD AVE	YF	157 SILLS AVE	ZJ	SILLS AVE		
XC	122 ENGLEWOOD AVE	YG	89 SILLS AVE	ZK	92 SILLS AVE		
XD	112 ENGLEWOOD AVE	YH	88 LAKEWOOD DR	ZL	64 SILLS AVE		
XE	125 HOWARD AVE	YI	87 LAKEWOOD DR	ZM	63 SILLS AVE		
XF	123 ENGLEWOOD AVE	YJ	86 LAKEWOOD DR	ZN	11 MEADOW LA		
XG	ENGLEWOOD AVE	YK	90 SILLS AVE	ZO	85 LAKEWOOD DR		
XH	110 ENGLEWOOD AVE	YL	SILLS AVE	ZP	75 BARBARA AVE		
XI	109 ENGLEWOOD AVE	YM	149 PINE DR	ZQ	76 BARBARA AVE		
XJ	108 ENGLEWOOD AVE	YN	PINE DR	ZR	77 BARBARA AVE		
XK	124 HOWARD AVE	YO	154 PINE DR	ZS	78 BARBARA AVE		
XL	133 HOWARD AVE	YP	155 SILLS AVE	ZT	79 BARBARA AVE		
XM	134 HOWARD AVE	YQ	65 BOYD DR	ZU	80 BARBARA AVE		
XN	HOWARD AVE	YR	BOYD DR	ZV	81 BARBARA AVE		
XO	136 HOWARD AVE	YS	103 BOYD DR	ZW	62 BARBARA AVE		
XP	138 HOWARD AVE	YT	BOYD DR	ZX	61 BARBARA AVE		
XQ	106 HOWARD AVE	YU	101 SILLS AVE	ZY	BARBARA AVE		
XR	105 HOWARD AVE	YV	100 SILLS AVE	ZZ	BARBARA AVE		
XS	145 COOK RD	YW	100 SILLS AVE				
XT	143 BOYD DR	YX	99 SILLS AVE				
XU	144 BOYD DR	YY	98 SILLS AVE				
XV	151 COOK RD	YZ	54 SILLS AVE				

Appendix A

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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SHADOW - Main Result

...continued from previous page

UTM NAD27Ex Zone: 18

No.	East	North	Z	Width	Height	Height a.g.l.	Degrees from south cw	Slope of window	Direction mode
			[m]	[m]	[m]	[m]	[°]	[°]	
YW	670,713	4,593,657	198.7	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
YX	670,726	4,593,659	198.3	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
YY	670,741	4,593,651	197.8	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
YZ	670,768	4,593,649	196.3	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
Z	669,867	4,592,998	231.0	1.0	1.0	1.0	24.5	90.0	"Green house mode"
ZA	670,777	4,593,699	195.4	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZB	670,818	4,593,673	194.8	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZC	670,815	4,593,655	194.5	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZD	670,806	4,593,621	194.1	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZE	670,795	4,593,589	193.7	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZF	670,784	4,593,557	193.5	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZG	670,738	4,593,625	197.4	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZH	670,719	4,593,618	198.4	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZI	670,705	4,593,627	198.7	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZJ	670,692	4,593,624	198.7	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZK	670,660	4,593,622	199.3	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZL	670,630	4,593,620	198.9	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZM	670,612	4,593,624	199.4	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZN	669,995	4,593,547	227.7	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZO	670,502	4,593,620	207.5	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZP	670,428	4,593,618	207.9	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZQ	670,441	4,593,615	207.5	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZR	670,448	4,593,613	207.4	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZS	670,467	4,593,599	207.8	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZT	670,481	4,593,597	207.7	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZU	670,490	4,593,588	207.3	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZV	670,506	4,593,587	205.7	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZW	670,564	4,593,578	203.6	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZX	670,582	4,593,561	200.4	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZY	670,701	4,593,521	197.6	1.0	1.0	1.0	-180.0	90.0	"Green house mode"
ZZ	670,709	4,593,556	196.3	1.0	1.0	1.0	-180.0	90.0	"Green house mode"

Calculation Results

Shadow receptor

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
[A]	0:00	0	0:00
[B]	0:00	0	0:00
[C]	0:00	0	0:00
[D]	0:00	0	0:00
[E]	0:00	0	0:00
[F]	0:00	0	0:00
[G]	0:00	0	0:00
[H]	0:00	0	0:00
[I]	0:00	0	0:00
[J]	0:00	0	0:00
[K]	3:35	19	0:14
[L]	3:30	19	0:15
[M]	1:41	15	0:10
[N]	4:39	32	0:13
[O]	3:03	17	0:14

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
[P	3:08	17	0:14
[Q	3:15	18	0:14
[R	3:22	19	0:14
[S	3:34	19	0:14
[T	3:43	20	0:15
[U	0:00	0	0:00
[V	0:00	0	0:00
[W	0:00	0	0:00
[X	0:00	0	0:00
[Y	0:00	0	0:00
[Z	0:00	0	0:00
\A	0:00	0	0:00
\B	0:00	0	0:00
\C	0:00	0	0:00
\D	0:00	0	0:00
\E	0:00	0	0:00
\F	0:00	0	0:00
\G	0:00	0	0:00
\H	3:35	19	0:15
\I	0:00	0	0:00
\J	0:00	0	0:00
\K	0:00	0	0:00
\L	0:00	0	0:00
\M	0:00	0	0:00
\N	0:00	0	0:00
\O	0:00	0	0:00
\P	0:00	0	0:00
\Q	0:00	0	0:00
\R	0:00	0	0:00
\S	0:00	0	0:00
\T	0:00	0	0:00
\U	0:00	0	0:00
\V	0:00	0	0:00
W	0:00	0	0:00
X	0:00	0	0:00
Y	0:00	0	0:00
Z	0:00	0	0:00
JA	0:00	0	0:00
JB	0:00	0	0:00
JC	0:00	0	0:00
JD	0:00	0	0:00
JE	0:00	0	0:00
JF	0:00	0	0:00
JG	0:00	0	0:00
JH	0:00	0	0:00
JI	0:00	0	0:00
JJ	0:00	0	0:00
JK	0:00	0	0:00
JL	0:00	0	0:00
JM	0:00	0	0:00
JN	0:00	0	0:00
JO	0:00	0	0:00
JP	0:00	0	0:00
JQ	0:00	0	0:00

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
JR	0:00	0	0:00
JS	0:00	0	0:00
JT	0:00	0	0:00
JU	0:00	0	0:00
JV	0:00	0	0:00
JW	0:00	0	0:00
JX	0:00	0	0:00
JY	0:00	0	0:00
JZ	0:00	0	0:00
^A	0:00	0	0:00
^B	0:00	0	0:00
^C	0:00	0	0:00
^D	0:00	0	0:00
^E	0:00	0	0:00
^F	0:00	0	0:00
^G	0:00	0	0:00
^H	0:00	0	0:00
^I	0:00	0	0:00
^J	0:00	0	0:00
^K	0:00	0	0:00
^L	0:00	0	0:00
^M	0:00	0	0:00
^N	0:00	0	0:00
^O	0:00	0	0:00
^P	0:00	0	0:00
^Q	0:00	0	0:00
^R	0:00	0	0:00
^S	0:00	0	0:00
^T	0:00	0	0:00
^U	0:00	0	0:00
^V	0:00	0	0:00
^W	0:00	0	0:00
^X	0:00	0	0:00
^Y	0:00	0	0:00
^Z	0:00	0	0:00
_A	2:48	23	0:11
_B	0:00	0	0:00
_C	0:00	0	0:00
_D	0:00	0	0:00
_E	0:00	0	0:00
_F	0:00	0	0:00
_G	0:00	0	0:00
_H	0:00	0	0:00
_I	0:00	0	0:00
_J	0:00	0	0:00
_K	0:00	0	0:00
_L	0:00	0	0:00
_M	0:00	0	0:00
_N	0:00	0	0:00
_O	0:00	0	0:00
_P	0:00	0	0:00
_Q	0:00	0	0:00
_R	0:00	0	0:00
_S	0:00	0	0:00

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SHADOW - Main Result

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Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
_T	0:00	0	0:00
_U	0:00	0	0:00
_V	0:00	0	0:00
_W	0:00	0	0:00
_X	0:00	0	0:00
_Y	0:00	0	0:00
_Z	0:00	0	0:00
`A	0:00	0	0:00
`B	0:00	0	0:00
`C	0:00	0	0:00
`D	0:00	0	0:00
`E	0:00	0	0:00
`F	0:00	0	0:00
`G	0:00	0	0:00
`H	0:00	0	0:00
`I	0:00	0	0:00
`J	0:00	0	0:00
`K	0:00	0	0:00
`L	0:00	0	0:00
`M	0:00	0	0:00
`N	0:00	0	0:00
`O	0:00	0	0:00
`P	0:00	0	0:00
`Q	0:00	0	0:00
`R	0:00	0	0:00
`S	0:00	0	0:00
`T	0:00	0	0:00
`U	0:00	0	0:00
`V	0:00	0	0:00
`W	0:00	0	0:00
`X	0:00	0	0:00
`Y	0:00	0	0:00
`Z	0:00	0	0:00
A	0:00	0	0:00
AA	0:00	0	0:00
aA	0:00	0	0:00
aB	0:00	0	0:00
AB	0:00	0	0:00
AC	0:00	0	0:00
AD	0:00	0	0:00
AE	21:11	53	0:31
AF	19:03	50	0:29
AG	0:00	0	0:00
AH	0:00	0	0:00
AI	35:31	82	0:30
AJ	21:04	65	0:26
AK	0:00	0	0:00
AL	0:00	0	0:00
AM	0:00	0	0:00
AN	0:00	0	0:00
AO	0:00	0	0:00
AP	0:00	0	0:00
AQ	0:00	0	0:00
AR	0:00	0	0:00

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Project:

Wind Prospect

Description:

Wind Prospect Worst Case Analysis

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SHADOW - Main Result

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Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
AS	0:00	0	0:00
AT	0:00	0	0:00
AU	0:00	0	0:00
AV	0:00	0	0:00
AW	0:00	0	0:00
AX	0:00	0	0:00
AY	0:00	0	0:00
AZ	0:00	0	0:00
B	0:00	0	0:00
BA	0:00	0	0:00
BB	0:00	0	0:00
BC	0:00	0	0:00
BD	0:00	0	0:00
BE	0:00	0	0:00
BF	0:00	0	0:00
BG	0:00	0	0:00
BH	0:00	0	0:00
BI	0:00	0	0:00
BJ	0:00	0	0:00
BK	0:00	0	0:00
BL	0:00	0	0:00
BM	0:00	0	0:00
BN	0:00	0	0:00
BO	0:00	0	0:00
BP	0:00	0	0:00
BQ	0:00	0	0:00
BR	0:00	0	0:00
BS	0:00	0	0:00
BT	0:00	0	0:00
BU	0:00	0	0:00
BV	0:00	0	0:00
BW	0:00	0	0:00
BX	0:00	0	0:00
BY	0:00	0	0:00
BZ	0:00	0	0:00
C	43:28	67	0:51
CA	0:00	0	0:00
CB	0:00	0	0:00
CC	0:00	0	0:00
CD	0:00	0	0:00
CE	0:00	0	0:00
CF	0:00	0	0:00
CG	10:18	32	0:25
CH	0:00	0	0:00
CI	0:00	0	0:00
CJ	0:00	0	0:00
CK	11:55	34	0:27
CL	12:53	35	0:28
CM	14:03	37	0:29
CN	0:00	0	0:00
CO	15:22	41	0:29
CP	0:00	0	0:00
CQ	0:00	0	0:00
CR	0:00	0	0:00

To be continued on next page...

Project: **Wind Prospect**
 Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
CS	0:00	0	0:00
CT	0:00	0	0:00
CU	0:00	0	0:00
CV	0:00	0	0:00
CW	7:58	29	0:22
CX	7:46	28	0:21
CY	0:00	0	0:00
CZ	0:00	0	0:00
D	0:00	0	0:00
DA	0:00	0	0:00
DB	0:00	0	0:00
DC	0:00	0	0:00
DD	0:00	0	0:00
DE	0:00	0	0:00
DF	0:00	0	0:00
DG	67:32	100	0:47
DH	45:18	68	0:52
DI	0:00	0	0:00
DJ	0:00	0	0:00
DK	0:00	0	0:00
DL	0:00	0	0:00
DM	14:22	41	0:27
DN	14:20	42	0:26
DO	14:23	44	0:25
DP	14:49	46	0:25
DQ	0:00	0	0:00
DR	0:00	0	0:00
DS	0:00	0	0:00
DT	0:00	0	0:00
DU	0:00	0	0:00
DV	0:00	0	0:00
DW	0:00	0	0:00
DX	0:00	0	0:00
DY	22:17	66	0:24
DZ	0:00	0	0:00
E	0:00	0	0:00
EA	0:00	0	0:00
EB	0:00	0	0:00
EC	0:00	0	0:00
ED	0:00	0	0:00
EE	0:00	0	0:00
EF	0:00	0	0:00
EG	0:00	0	0:00
EH	0:00	0	0:00
EI	0:00	0	0:00
EJ	12:09	41	0:27
EK	12:30	40	0:28
EL	13:04	39	0:29
EM	0:00	0	0:00
EN	0:00	0	0:00
EO	0:00	0	0:00
EP	0:00	0	0:00
EQ	0:00	0	0:00
ER	0:00	0	0:00

To be continued on next page...

Project: **Wind Prospect** Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
ES	0:00	0	0:00
ET	0:00	0	0:00
EU	0:00	0	0:00
EV	0:00	0	0:00
EW	0:00	0	0:00
EX	16:10	44	0:32
EY	11:45	46	0:24
EZ	0:00	0	0:00
F	0:00	0	0:00
FA	0:00	0	0:00
FB	0:00	0	0:00
FC	0:00	0	0:00
FD	0:00	0	0:00
FE	0:00	0	0:00
FF	0:00	0	0:00
FG	0:00	0	0:00
FH	0:00	0	0:00
FI	0:00	0	0:00
FJ	0:00	0	0:00
FK	0:00	0	0:00
FL	0:00	0	0:00
FM	15:23	39	0:30
FN	26:55	85	0:28
FO	67:07	108	0:48
FP	35:37	66	0:42
FQ	65:10	83	1:02
FR	0:00	0	0:00
FS	0:00	0	0:00
FT	0:00	0	0:00
FU	0:00	0	0:00
FV	0:00	0	0:00
FW	0:00	0	0:00
FX	0:00	0	0:00
FY	0:00	0	0:00
FZ	0:00	0	0:00
G	0:00	0	0:00
GA	0:00	0	0:00
GB	0:00	0	0:00
GC	0:00	0	0:00
GD	0:00	0	0:00
GE	0:00	0	0:00
GF	0:00	0	0:00
GG	0:00	0	0:00
GH	0:00	0	0:00
GI	0:00	0	0:00
GJ	0:00	0	0:00
GK	1:01	13	0:06
GL	0:57	12	0:06
GM	0:56	13	0:06
GN	0:51	12	0:06
GO	0:49	12	0:06
GP	0:41	11	0:05
GQ	0:44	12	0:05
GR	0:00	0	0:00

To be continued on next page...

Project: **Wind Prospect**
 Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
GS	0:00	0	0:00
GT	0:00	0	0:00
GU	0:00	0	0:00
GV	0:00	0	0:00
GW	0:00	0	0:00
GX	0:00	0	0:00
GY	0:00	0	0:00
GZ	0:00	0	0:00
H	0:00	0	0:00
HA	0:00	0	0:00
HB	0:00	0	0:00
HC	0:00	0	0:00
HD	0:00	0	0:00
HE	0:00	0	0:00
HF	0:00	0	0:00
HG	0:00	0	0:00
HH	0:00	0	0:00
HI	0:00	0	0:00
HJ	0:00	0	0:00
HK	0:00	0	0:00
HL	0:00	0	0:00
HM	0:00	0	0:00
HN	0:00	0	0:00
HO	0:00	0	0:00
HP	0:00	0	0:00
HQ	0:00	0	0:00
HR	0:00	0	0:00
HS	0:00	0	0:00
HT	0:00	0	0:00
HU	0:00	0	0:00
HV	0:00	0	0:00
HW	0:00	0	0:00
HX	0:00	0	0:00
HY	0:00	0	0:00
HZ	0:00	0	0:00
I	0:00	0	0:00
IA	0:00	0	0:00
IB	0:00	0	0:00
IC	0:00	0	0:00
ID	0:00	0	0:00
IE	0:00	0	0:00
IF	0:00	0	0:00
IG	0:00	0	0:00
IH	0:00	0	0:00
II	0:00	0	0:00
IJ	0:00	0	0:00
IK	0:00	0	0:00
IL	0:00	0	0:00
IM	0:00	0	0:00
IN	0:00	0	0:00
IO	0:00	0	0:00
IP	0:00	0	0:00
IQ	0:00	0	0:00
IR	0:00	0	0:00

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Project: **Wind Prospect** Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
IS	0:00	0	0:00
IT	0:00	0	0:00
IU	0:00	0	0:00
IV	0:00	0	0:00
IW	0:00	0	0:00
IX	0:00	0	0:00
IY	0:00	0	0:00
IZ	0:00	0	0:00
J	0:00	0	0:00
JA	0:00	0	0:00
JB	0:00	0	0:00
JC	0:00	0	0:00
JD	0:00	0	0:00
JE	0:00	0	0:00
JF	0:00	0	0:00
JG	0:00	0	0:00
JH	0:00	0	0:00
JI	0:00	0	0:00
JJ	0:00	0	0:00
JK	0:00	0	0:00
JL	0:00	0	0:00
JM	0:00	0	0:00
JN	0:00	0	0:00
JO	0:00	0	0:00
JP	0:00	0	0:00
JQ	0:00	0	0:00
JR	0:00	0	0:00
JS	0:00	0	0:00
JT	0:00	0	0:00
JU	0:00	0	0:00
JV	0:00	0	0:00
JW	0:00	0	0:00
JX	0:00	0	0:00
JY	0:00	0	0:00
JZ	0:00	0	0:00
K	35:36	66	0:42
KA	0:00	0	0:00
KB	0:00	0	0:00
KC	0:00	0	0:00
KD	0:00	0	0:00
KE	0:00	0	0:00
KF	0:00	0	0:00
KG	0:00	0	0:00
KH	0:00	0	0:00
KI	0:00	0	0:00
KJ	0:00	0	0:00
KK	0:00	0	0:00
KL	0:00	0	0:00
KM	0:00	0	0:00
KN	0:00	0	0:00
KO	0:00	0	0:00
KP	0:00	0	0:00
KQ	0:00	0	0:00
KR	0:00	0	0:00

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Project: **Wind Prospect** Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
KS	0:00	0	0:00
KT	0:00	0	0:00
KU	0:00	0	0:00
KV	0:00	0	0:00
KW	0:00	0	0:00
KX	0:00	0	0:00
KY	0:00	0	0:00
KZ	0:00	0	0:00
L	29:58	58	0:40
LA	0:00	0	0:00
LB	0:00	0	0:00
LC	0:00	0	0:00
LD	0:00	0	0:00
LE	0:00	0	0:00
LF	0:00	0	0:00
LG	0:00	0	0:00
LH	0:00	0	0:00
LI	0:00	0	0:00
LJ	0:00	0	0:00
LK	0:00	0	0:00
LL	0:00	0	0:00
LM	2:52	20	0:11
LN	0:00	0	0:00
LO	0:00	0	0:00
LP	0:00	0	0:00
LQ	0:00	0	0:00
LR	0:00	0	0:00
LS	0:00	0	0:00
LT	0:00	0	0:00
LU	0:00	0	0:00
LV	0:00	0	0:00
LW	0:00	0	0:00
LX	0:00	0	0:00
LY	0:00	0	0:00
LZ	0:00	0	0:00
M	25:50	53	0:38
MA	0:00	0	0:00
MB	0:00	0	0:00
MC	0:00	0	0:00
MD	0:00	0	0:00
ME	0:00	0	0:00
MF	0:00	0	0:00
MG	0:00	0	0:00
MH	0:00	0	0:00
MI	0:00	0	0:00
MJ	0:00	0	0:00
MK	0:00	0	0:00
ML	0:00	0	0:00
MM	0:00	0	0:00
MN	0:00	0	0:00
MO	0:00	0	0:00
MP	0:00	0	0:00
MQ	0:00	0	0:00
MR	0:00	0	0:00

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
MS	0:00	0	0:00
MT	0:00	0	0:00
MU	0:00	0	0:00
MV	0:00	0	0:00
MW	0:00	0	0:00
MX	0:00	0	0:00
MY	0:00	0	0:00
MZ	0:00	0	0:00
N	0:00	0	0:00
NA	0:00	0	0:00
NB	0:00	0	0:00
NC	0:00	0	0:00
ND	0:00	0	0:00
NE	0:00	0	0:00
NF	0:00	0	0:00
NG	0:00	0	0:00
NH	0:00	0	0:00
NI	0:00	0	0:00
NJ	0:00	0	0:00
NK	0:00	0	0:00
NL	0:00	0	0:00
NM	0:00	0	0:00
NN	0:00	0	0:00
NO	0:00	0	0:00
NP	0:00	0	0:00
NQ	0:00	0	0:00
NR	0:00	0	0:00
NS	0:00	0	0:00
NT	0:00	0	0:00
NU	0:00	0	0:00
NV	0:00	0	0:00
NW	0:00	0	0:00
NX	0:00	0	0:00
NY	0:00	0	0:00
NZ	0:00	0	0:00
O	24:44	51	0:38
OA	0:00	0	0:00
OB	0:00	0	0:00
OC	0:00	0	0:00
OD	0:00	0	0:00
OE	0:00	0	0:00
OF	0:00	0	0:00
OG	0:00	0	0:00
OH	0:00	0	0:00
OI	0:00	0	0:00
OJ	0:00	0	0:00
OK	0:00	0	0:00
OL	0:00	0	0:00
OM	0:00	0	0:00
ON	0:00	0	0:00
OO	0:00	0	0:00
OP	0:00	0	0:00
OQ	0:00	0	0:00
OR	0:00	0	0:00

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
OS	0:00	0	0:00
OT	0:00	0	0:00
OU	0:00	0	0:00
OV	0:00	0	0:00
OW	0:00	0	0:00
OX	0:00	0	0:00
OY	0:00	0	0:00
OZ	0:00	0	0:00
P	23:39	48	0:38
PA	0:00	0	0:00
PB	0:00	0	0:00
PC	0:00	0	0:00
PD	0:00	0	0:00
PE	0:00	0	0:00
PF	0:00	0	0:00
PG	0:00	0	0:00
PH	0:00	0	0:00
PI	0:00	0	0:00
PJ	0:00	0	0:00
PK	0:00	0	0:00
PL	0:00	0	0:00
PM	0:00	0	0:00
PN	0:00	0	0:00
PO	0:00	0	0:00
PP	0:00	0	0:00
PQ	0:00	0	0:00
PR	0:00	0	0:00
PS	0:00	0	0:00
PT	0:00	0	0:00
PU	0:00	0	0:00
PV	0:00	0	0:00
PW	0:00	0	0:00
PX	0:00	0	0:00
PY	0:00	0	0:00
PZ	0:00	0	0:00
Q	0:00	0	0:00
QA	0:00	0	0:00
QB	0:00	0	0:00
QC	0:00	0	0:00
QD	0:00	0	0:00
QE	0:00	0	0:00
QF	0:00	0	0:00
QG	0:00	0	0:00
QH	0:00	0	0:00
QI	0:00	0	0:00
QJ	0:00	0	0:00
QK	0:00	0	0:00
QL	0:00	0	0:00
QM	0:00	0	0:00
QN	0:00	0	0:00
QO	0:00	0	0:00
QP	0:00	0	0:00
QQ	0:00	0	0:00
QR	0:00	0	0:00

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Project: **Wind Prospect** Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
QS	0:00	0	0:00
QT	0:00	0	0:00
QU	0:00	0	0:00
QV	0:00	0	0:00
QW	0:00	0	0:00
QX	0:00	0	0:00
QY	0:00	0	0:00
QZ	0:00	0	0:00
R	0:00	0	0:00
RA	0:00	0	0:00
RB	0:00	0	0:00
RC	0:00	0	0:00
RD	0:00	0	0:00
RE	0:00	0	0:00
RF	0:00	0	0:00
RG	0:00	0	0:00
RH	0:00	0	0:00
RI	0:00	0	0:00
RJ	0:00	0	0:00
RK	0:00	0	0:00
RL	0:00	0	0:00
RM	0:00	0	0:00
RN	0:00	0	0:00
RO	0:00	0	0:00
RP	0:00	0	0:00
RQ	0:00	0	0:00
RR	0:00	0	0:00
RS	0:00	0	0:00
RT	0:00	0	0:00
RU	0:00	0	0:00
RV	0:00	0	0:00
RW	0:00	0	0:00
RX	0:00	0	0:00
RY	0:00	0	0:00
RZ	0:00	0	0:00
S	17:59	42	0:33
SA	0:00	0	0:00
SB	0:00	0	0:00
SC	0:00	0	0:00
SD	0:00	0	0:00
SE	0:00	0	0:00
SF	0:00	0	0:00
SG	0:00	0	0:00
SH	0:00	0	0:00
SI	0:00	0	0:00
SJ	0:00	0	0:00
SK	0:00	0	0:00
SL	0:00	0	0:00
SM	0:00	0	0:00
SN	0:00	0	0:00
SO	0:00	0	0:00
SP	0:00	0	0:00
SQ	0:00	0	0:00
SR	0:00	0	0:00

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Project: **Wind Prospect** Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
SS	0:00	0	0:00
ST	0:00	0	0:00
SU	0:00	0	0:00
SV	0:00	0	0:00
SW	0:00	0	0:00
SX	0:00	0	0:00
SY	0:00	0	0:00
SZ	0:00	0	0:00
T	0:00	0	0:00
TA	0:00	0	0:00
TB	0:00	0	0:00
TC	0:00	0	0:00
TD	0:00	0	0:00
TE	0:00	0	0:00
TF	0:00	0	0:00
TG	0:00	0	0:00
TH	0:00	0	0:00
TI	0:00	0	0:00
TJ	0:00	0	0:00
TK	0:00	0	0:00
TL	0:00	0	0:00
TM	0:00	0	0:00
TN	0:00	0	0:00
TO	0:00	0	0:00
TP	0:00	0	0:00
TQ	0:00	0	0:00
TR	0:00	0	0:00
TS	0:00	0	0:00
TT	0:00	0	0:00
TU	0:00	0	0:00
TV	0:00	0	0:00
TW	0:00	0	0:00
TX	0:00	0	0:00
TY	0:00	0	0:00
TZ	0:00	0	0:00
U	0:00	0	0:00
UA	0:00	0	0:00
UB	0:00	0	0:00
UC	0:00	0	0:00
UD	0:00	0	0:00
UE	0:00	0	0:00
UF	0:00	0	0:00
UG	0:00	0	0:00
UH	0:00	0	0:00
UI	0:00	0	0:00
UJ	5:49	48	0:13
UK	0:00	0	0:00
UL	0:00	0	0:00
UM	0:00	0	0:00
UN	0:00	0	0:00
UO	0:00	0	0:00
UP	0:00	0	0:00
UQ	0:00	0	0:00
UR	0:00	0	0:00

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Project: **Wind Prospect** Description: Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
US	1:59	20	0:09
UT	0:00	0	0:00
UU	0:00	0	0:00
UV	0:00	0	0:00
UW	0:00	0	0:00
UX	0:00	0	0:00
UY	0:00	0	0:00
UZ	0:00	0	0:00
V	0:00	0	0:00
VA	0:00	0	0:00
VB	0:00	0	0:00
VC	0:00	0	0:00
VD	0:00	0	0:00
VE	0:00	0	0:00
VF	0:00	0	0:00
VG	0:00	0	0:00
VH	0:00	0	0:00
VI	0:00	0	0:00
VJ	0:00	0	0:00
VK	0:00	0	0:00
VL	0:00	0	0:00
VM	0:00	0	0:00
VN	0:00	0	0:00
VO	0:00	0	0:00
VP	0:00	0	0:00
VQ	0:00	0	0:00
VR	0:00	0	0:00
VS	11:19	54	0:16
VT	0:00	0	0:00
VU	12:23	54	0:17
VV	0:00	0	0:00
VW	0:00	0	0:00
VX	0:00	0	0:00
VY	0:00	0	0:00
VZ	0:00	0	0:00
W	0:00	0	0:00
WA	0:00	0	0:00
WB	0:00	0	0:00
WC	0:00	0	0:00
WD	0:00	0	0:00
WE	0:00	0	0:00
WF	0:00	0	0:00
WG	0:00	0	0:00
WH	0:00	0	0:00
WI	0:00	0	0:00
WJ	0:00	0	0:00
WK	0:00	0	0:00
WL	0:00	0	0:00
WM	0:00	0	0:00
WN	0:00	0	0:00
WO	0:00	0	0:00
WP	0:00	0	0:00
WQ	0:00	0	0:00
WR	0:00	0	0:00

To be continued on next page...

Project:

Wind Prospect

Description:

Wind Prospect Worst Case Analysis

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SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
WS	0:00	0	0:00
WT	0:00	0	0:00
WU	0:00	0	0:00
WV	0:00	0	0:00
WW	0:00	0	0:00
WX	0:00	0	0:00
WY	0:00	0	0:00
WZ	0:00	0	0:00
X	0:00	0	0:00
XA	0:00	0	0:00
XB	0:00	0	0:00
XC	0:00	0	0:00
XD	0:00	0	0:00
XE	3:11	20	0:13
XF	3:07	20	0:13
XG	0:00	0	0:00
XH	2:59	20	0:12
XI	2:47	20	0:12
XJ	2:55	20	0:12
XK	3:03	20	0:13
XL	0:00	0	0:00
XM	0:00	0	0:00
XN	0:00	0	0:00
XO	0:00	0	0:00
XP	3:21	20	0:13
XQ	3:09	20	0:13
XR	0:00	0	0:00
XS	0:00	0	0:00
XT	0:00	0	0:00
XU	0:00	0	0:00
XV	0:00	0	0:00
XW	0:00	0	0:00
XX	0:00	0	0:00
XY	0:00	0	0:00
XZ	0:00	0	0:00
Y	0:00	0	0:00
YA	0:00	0	0:00
YB	0:00	0	0:00
YC	0:00	0	0:00
YD	0:00	0	0:00
YE	0:00	0	0:00
YF	0:00	0	0:00
YG	0:00	0	0:00
YH	0:00	0	0:00
YI	0:00	0	0:00
YJ	0:00	0	0:00
YK	0:00	0	0:00
YL	0:00	0	0:00
YM	0:00	0	0:00
YN	0:00	0	0:00
YO	0:00	0	0:00
YP	3:23	20	0:14
YQ	0:00	0	0:00
YR	3:17	20	0:13

To be continued on next page...

Project: **Wind Prospect**
 Description: Wind Prospect Worst Case Analysis

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 2/3/2011 9:27 AM/2.7.449

SHADOW - Main Result

...continued from previous page

Shadow, worst case

No.	Shadow hours per year [h/year]	Shadow days per year [days/year]	Max shadow hours per day [h/day]
YS	0:00	0	0:00
YT	0:00	0	0:00
YU	0:00	0	0:00
YV	0:00	0	0:00
YW	0:00	0	0:00
YX	0:00	0	0:00
YY	0:00	0	0:00
YZ	0:00	0	0:00
Z	0:00	0	0:00
ZA	0:00	0	0:00
ZB	0:00	0	0:00
ZC	0:00	0	0:00
ZD	0:00	0	0:00
ZE	2:36	17	0:12
ZF	2:36	17	0:12
ZG	0:00	0	0:00
ZH	0:00	0	0:00
ZI	0:00	0	0:00
ZJ	0:00	0	0:00
ZK	0:00	0	0:00
ZL	0:00	0	0:00
ZM	0:00	0	0:00
ZN	0:00	0	0:00
ZO	0:00	0	0:00
ZP	0:00	0	0:00
ZQ	0:00	0	0:00
ZR	0:00	0	0:00
ZS	0:00	0	0:00
ZT	0:00	0	0:00
ZU	0:00	0	0:00
ZV	0:00	0	0:00
ZW	0:00	0	0:00
ZX	3:27	19	0:14
ZY	2:57	17	0:13
ZZ	2:52	17	0:13

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Worst case [h/year]	Expected [h/year]
1	GE WIND ENERGY GE 1.5 xle 1500 82.5 !O! hub: 100.0 m (1)	315:45	
2	GE WIND ENERGY GE 1.5 xle 1500 82.5 !O! hub: 100.0 m (2)	252:39	

Appendix B

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: AE - Shadow Receptor: 1.0 x 1.0 Azimuth: -155.3° Slope: 90.0° (31)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	18:42 (1) 19:13 (1)	05:21 20:18	05:22 20:30	05:46 20:12	18:56 (1) 19:18 (1)	06:18 19:27	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	18:42 (1) 19:13 (1)	05:21 20:19	05:22 20:30	05:47 20:10	18:55 (1) 19:19 (1)	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	18:42 (1) 19:13 (1)	05:20 20:20	05:23 20:30	05:48 20:09	18:55 (1) 19:20 (1)	06:20 19:23	06:50 18:32	06:26 16:46
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	18:42 (1) 19:12 (1)	05:20 20:21	05:24 20:30	05:49 20:08	18:54 (1) 19:20 (1)	06:21 19:22	06:52 18:30	06:27 16:45
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	18:42 (1) 19:12 (1)	05:20 20:21	05:24 20:30	05:50 20:07	18:53 (1) 19:21 (1)	06:22 19:20	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	18:42 (1) 19:12 (1)	05:19 20:22	05:25 20:29	05:51 20:06	18:52 (1) 19:21 (1)	06:23 19:18	06:54 18:27	06:29 16:42
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	18:43 (1) 19:12 (1)	05:19 20:23	05:25 20:29	05:52 20:05	18:52 (1) 19:22 (1)	06:24 19:17	06:55 18:25	06:30 16:41
8	07:19 16:39	06:57 17:16	06:17 18:50	06:25 19:24	05:42 19:57	18:44 (1) 19:11 (1)	05:19 20:23	05:26 20:29	05:53 20:03	18:51 (1) 19:22 (1)	06:25 19:15	06:56 18:24	06:32 16:40
9	07:19 16:40	06:56 17:18	06:15 18:51	06:24 19:26	05:41 19:58	18:44 (1) 19:10 (1)	05:19 20:24	05:27 20:28	05:54 20:02	18:51 (1) 19:22 (1)	06:26 19:13	06:57 18:22	06:33 16:39
10	07:18 16:41	06:55 17:19	06:14 18:53	06:22 19:27	05:39 19:59	18:45 (1) 19:10 (1)	05:18 20:25	05:27 20:28	05:55 20:01	18:51 (1) 19:22 (1)	06:27 19:12	06:58 18:21	06:34 16:38
11	07:18 16:42	06:54 17:20	06:12 18:54	06:20 19:28	05:38 20:00	18:46 (1) 19:09 (1)	05:18 20:25	05:28 20:28	05:56 20:00	18:51 (1) 19:22 (1)	06:28 19:10	06:59 18:19	06:35 16:37
12	07:18 16:44	06:52 17:22	06:11 18:55	06:19 19:29	05:37 20:00	18:47 (1) 19:08 (1)	05:18 20:26	05:29 20:27	05:57 19:57	18:51 (1) 19:22 (1)	06:29 19:08	07:00 18:17	06:37 16:36
13	07:18 16:45	06:51 17:23	06:09 18:56	06:17 19:30	05:36 20:01	18:49 (1) 19:06 (1)	05:18 20:26	05:30 20:27	05:58 19:56	18:51 (1) 19:22 (1)	06:30 19:06	07:01 18:16	06:38 16:35
14	07:17 16:46	06:50 17:24	06:07 18:57	06:15 19:31	05:35 20:02	18:50 (1) 19:04 (1)	05:18 20:27	05:30 20:26	05:59 19:54	18:51 (1) 19:21 (1)	06:31 19:05	07:02 18:14	06:39 16:34
15	07:17 16:47	06:49 17:25	06:06 18:58	06:14 19:32	05:34 20:03	18:53 (1) 19:02 (1)	05:18 20:27	05:31 20:26	06:00 19:53	18:51 (1) 19:21 (1)	06:32 19:03	07:03 18:13	06:40 16:33
16	07:16 16:48	06:47 17:27	06:04 18:59	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:25	05:32 20:25	06:01 19:51	18:51 (1) 19:20 (1)	06:33 19:01	07:05 18:11	06:41 16:32
17	07:16 16:49	06:46 17:28	06:02 19:00	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	05:33 20:24	06:02 19:50	18:52 (1) 19:19 (1)	06:34 19:00	07:06 18:09	06:43 16:32
18	07:15 16:50	06:44 17:29	06:00 19:02	06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:24	05:33 20:24	06:03 19:48	18:52 (1) 19:18 (1)	06:35 18:58	07:07 18:08	06:44 16:31
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	05:33 20:23	06:04 19:47	18:53 (1) 19:17 (1)	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	05:29 20:08	05:18 19:02 (1)	05:35 20:22	05:33 20:22	06:06 19:46	18:54 (1) 19:15 (1)	06:37 18:54	07:09 18:05	06:46 16:29
21	07:14 16:54	06:40 17:33	06:55 19:05	06:05 19:39	05:29 20:09	05:19 19:06 (1)	05:36 20:22	05:33 20:22	06:07 19:44	18:56 (1) 19:13 (1)	06:38 18:53	07:10 18:03	06:47 16:29
22	07:13 16:55	06:39 17:34	06:54 19:06	06:03 19:40	05:28 20:10	05:20 18:51 (1)	05:37 20:21	05:33 20:21	06:08 19:43	18:58 (1) 19:11 (1)	06:39 18:51	07:11 18:02	06:48 16:28
23	07:12 16:56	06:37 17:35	06:52 19:07	06:02 19:41	05:27 20:11	05:19 19:10 (1)	05:38 20:20	05:33 20:20	06:09 19:41	19:03 (1) 19:05 (1)	06:40 18:49	07:13 18:00	06:50 16:27
24	07:12 16:58	06:36 17:36	06:50 19:08	06:00 19:42	05:26 20:12	05:19 19:11 (1)	05:39 20:19	05:33 20:19	06:10 19:39	19:05 (1) 19:07 (1)	06:41 18:47	07:14 17:59	06:51 16:27
25	07:11 16:59	06:34 17:37	06:49 19:09	05:59 19:43	05:26 20:13	05:20 19:11 (1)	05:40 20:18	05:33 20:18	06:11 19:38	19:06 (1) 19:08 (1)	06:42 18:46	07:15 17:58	06:52 16:26
26	07:10 17:00	06:33 17:39	06:47 19:10	05:57 19:44	05:25 20:13	05:20 18:45 (1)	05:41 20:18	05:33 20:18	06:12 19:36	19:07 (1) 19:10 (1)	06:43 18:44	07:16 17:56	06:53 16:26
27	07:09 17:01	06:31 17:40	06:45 19:11	05:56 19:45	05:24 20:14	05:20 19:12 (1)	05:42 20:17	05:33 20:17	06:13 19:35	19:11 (1) 19:13 (1)	06:44 18:42	07:17 17:55	06:54 16:25
28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	05:24 20:15	05:20 18:43 (1)	05:42 20:16	05:33 20:16	06:14 19:36	19:06 (1) 19:10 (1)	06:45 18:41	07:18 17:54	06:55 16:25
29	07:08 17:04	06:29 17:42	06:42 19:14	05:53 19:47	05:23 20:16	05:20 18:43 (1)	05:43 20:16	05:33 20:16	06:15 19:37	19:02 (1) 19:14 (1)	06:46 18:39	07:20 17:52	06:56 16:24
30	07:07 17:05	06:28 17:43	06:40 19:15	05:52 19:48	05:22 20:17	05:20 18:43 (1)	05:44 20:17	05:33 20:16	06:16 19:38	19:00 (1) 19:16 (1)	06:47 18:37	07:21 17:51	06:57 16:24
31	07:06 17:06	06:27 17:44	06:38 19:16	05:21 19:49	05:21 20:18	05:20 19:14 (1)	05:45 20:18	05:33 20:16	06:17 19:39	18:58 (1) 19:16 (1)	06:17 18:37	07:22 17:50	06:58 16:32
Potential sun hours	296	297	370	400	449	454	460	429	589	375	344	297	286
Total, worst case				258	374		50						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: AF - Shadow Receptor: 1.0 x 1.0 Azimuth: -162.0° Slope: 90.0° (32)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	18:48 (1) 19:17 (1)	05:21 20:18	05:22 20:30	05:46 20:12	19:00 (1) 19:23 (1)	06:18 19:27	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	18:48 (1) 19:17 (1)	05:21 20:19	05:22 20:30	05:47 20:10	18:59 (1) 19:24 (1)	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	18:48 (1) 19:17 (1)	05:20 20:20	05:23 20:30	05:48 20:09	18:59 (1) 19:25 (1)	06:20 19:23	06:50 18:32	06:26 16:46
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	18:47 (1) 19:16 (1)	05:20 20:21	05:24 20:30	05:49 20:08	18:58 (1) 19:25 (1)	06:21 19:22	06:52 18:30	06:27 16:45
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	18:47 (1) 19:16 (1)	05:20 20:21	05:24 20:30	05:50 20:07	18:58 (1) 19:26 (1)	06:22 19:20	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	18:47 (1) 19:16 (1)	05:19 20:22	05:25 20:29	05:51 20:06	18:57 (1) 19:26 (1)	06:23 19:18	06:54 18:27	06:29 16:42
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	18:48 (1) 19:16 (1)	05:19 20:23	05:25 20:29	05:52 20:05	18:57 (1) 19:26 (1)	06:24 19:17	06:55 18:25	06:30 16:41
8	07:19 16:39	06:57 17:16	06:17 18:50	06:25 19:24	05:42 19:57	18:48 (1) 19:16 (1)	05:19 20:23	05:26 20:29	05:53 20:03	18:57 (1) 19:26 (1)	06:25 19:15	06:56 18:24	06:32 16:40
9	07:19 16:40	06:56 17:18	06:15 18:51	06:24 19:26	05:41 19:58	18:49 (1) 19:15 (1)	05:19 20:24	05:27 20:28	05:54 20:02	18:57 (1) 19:26 (1)	06:26 19:13	06:57 18:22	06:33 16:39
10	07:18 16:41	06:55 17:19	06:14 18:53	06:22 19:27	05:39 19:59	18:49 (1) 19:15 (1)	05:18 20:25	05:27 20:28	05:55 20:01	18:57 (1) 19:26 (1)	06:27 19:12	06:58 18:21	06:34 16:38
11	07:18 16:42	06:54 17:20	06:12 18:54	06:20 19:28	05:38 20:00	18:50 (1) 19:14 (1)	05:18 20:25	05:28 20:28	05:56 20:00	18:57 (1) 19:26 (1)	06:28 19:10	06:59 18:19	06:35 16:37
12	07:18 16:44	06:52 17:22	06:10 18:55	06:19 19:29	05:37 20:00	18:51 (1) 19:13 (1)	05:18 20:26	05:29 20:27	05:57 19:57	18:57 (1) 19:25 (1)	06:29 19:08	07:00 18:17	06:37 16:36
13	07:18 16:45	06:51 17:23	06:09 18:56	06:17 19:30	05:36 20:01	18:52 (1) 19:12 (1)	05:18 20:26	05:30 20:27	05:58 19:56	18:57 (1) 19:25 (1)	06:30 19:06	07:01 18:16	06:38 16:35
14	07:17 16:46	06:50 17:24	06:07 18:57	06:15 19:31	05:35 20:02	18:53 (1) 19:11 (1)	05:18 20:27	05:30 20:26	05:59 19:54	18:57 (1) 19:24 (1)	06:31 19:05	07:02 18:14	06:39 16:34
15	07:17 16:47	06:49 17:25	06:06 18:58	06:14 19:32	05:34 20:03	18:54 (1) 19:10 (1)	05:18 20:27	05:31 20:26	06:00 19:53	18:58 (1) 19:23 (1)	06:32 19:03	07:03 18:13	06:40 16:33
16	07:16 16:48	06:47 17:27	06:04 18:59	06:12 19:33	05:33 20:04	18:56 (1) 19:08 (1)	05:18 20:28	05:32 20:25	06:01 19:51	18:59 (1) 19:22 (1)	06:33 19:01	07:05 18:11	06:41 16:32
17	07:16 16:49	06:46 17:28	06:02 19:00	06:11 19:34	05:32 20:05	18:59 (1) 19:05 (1)	05:18 20:28	05:33 20:24	06:02 19:50	19:00 (1) 19:21 (1)	06:34 19:00	07:06 18:09	06:43 16:32
18	07:15 16:50	06:44 17:29	06:00 19:02	06:09 19:35	05:31 20:06	19:05 (1) 20:28	05:18 20:24	05:33 20:24	06:03 19:48	19:01 (1) 19:19 (1)	06:35 18:58	07:07 18:08	06:44 16:31
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	05:30 20:07	20:28	05:18 20:23	05:34 20:23	06:04 19:47	19:03 (1) 19:17 (1)	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	05:29 20:08	20:28	05:18 20:22	05:35 20:22	06:06 19:46	19:06 (1) 19:13 (1)	06:37 18:54	07:09 18:05	06:46 16:29
21	07:14 16:54	06:40 17:33	06:55 19:05	06:05 19:39	05:29 20:09	20:29	05:19 20:22	05:36 20:22	06:07 19:44	06:38 18:53	07:10 18:03	07:10 18:03	06:47 16:29
22	07:13 16:55	06:39 17:34	06:54 19:06	06:03 19:40	05:28 20:10	20:29	05:19 20:21	05:37 20:21	06:08 19:43	06:39 18:51	07:11 18:02	07:11 18:02	06:48 16:28
23	07:12 16:56	06:37 17:35	06:52 19:07	06:02 19:41	05:27 19:41	18:59 (1) 19:08 (1)	05:27 20:11	05:38 20:20	06:09 19:41	19:13 (1) 18:49	06:40 18:00	07:13 18:00	06:50 16:27
24	07:12 16:58	06:36 17:36	06:50 19:08	06:00 19:42	05:26 19:42	18:56 (1) 19:12 (1)	05:26 20:12	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	07:14 17:59	06:51 16:27
25	07:11 16:59	06:34 17:37	06:49 19:09	05:59 19:43	05:25 19:43	18:54 (1) 19:13 (1)	05:26 20:13	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	07:15 17:58	06:52 16:26
26	07:10 17:00	06:33 17:39	06:47 19:10	05:57 19:44	05:24 21	18:53 (1) 19:14 (1)	05:25 20:13	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	07:16 17:56	06:53 16:26
27	07:09 17:01	06:31 17:40	06:45 19:11	05:56 19:45	05:23 23	18:51 (1) 19:14 (1)	05:24 20:14	05:42 20:17	06:13 19:17 (1)	19:08 (1) 19:17 (1)	06:13 19:35	07:17 18:55	06:54 16:25
28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	05:23 26	18:50 (1) 19:16 (1)	05:24 20:15	05:42 20:16	06:14 19:20 (1)	19:06 (1) 19:20 (1)	06:14 19:33	07:18 18:41	06:55 16:25
29	07:08 17:04	06:29 19:14	06:42 19:14	05:53 19:47	05:23 26	18:50 (1) 19:16 (1)	05:23 20:16	05:43 20:15	06:15 19:21 (1)	19:04 (1) 19:21 (1)	06:15 19:32	07:19 18:39	06:56 16:24
30	07:07 17:05	06:28 19:15	06:40 19:15	05:52 19:48	05:22 28	18:49 (1) 19:17 (1)	05:22 20:17	05:44 20:14	06:16 19:22 (1)	19:03 (1) 19:22 (1)	06:16 19:30	07:20 17:51	06:57 16:24
31	07:06 17:06	06:27 19:16	06:38 19:16	05:51 19:48	05:21 28	18:48 (1) 19:16 (1)	05:21 20:17	05:45 20:13	06:17 19:23 (1)	19:01 (1) 19:23 (1)	06:17 19:28	07:21 17:50	06:57 16:32
Potential sun hours	296	297	370	400	400	454	460	494	494	375	344	297	286
Total, worst case				168	400		81						

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 10
 Licensed user: **Vanasse Hangen Brustlin, Inc.**
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: AI - Shadow Receptor: 1.0 x 1.0 Azimuth: -155.9° Slope: 90.0° (35)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December			
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	19:08 (1) 19:38 (1)	05:22 20:30	19:17 (1) 19:43 (1)	05:46 20:12	19:28 (1) 19:36 (1)	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	19:09 (1) 19:38 (1)	05:22 20:30	19:16 (1) 19:43 (1)	05:47 20:10	19:25 19:32	06:19 19:25	06:49 18:34	06:24 16:47	07:00 16:23
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	19:09 (1) 19:38 (1)	05:23 20:30	19:17 (1) 19:44 (1)	05:48 20:09	19:20 19:23	06:20 19:23	06:50 18:32	06:26 16:46	07:01 16:23
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	05:20 20:21	19:10 (1) 19:38 (1)	05:24 20:30	19:16 (1) 19:43 (1)	05:49 20:08	19:21 19:22	06:21 19:22	06:52 18:30	06:27 16:45	07:02 16:23
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:21	19:10 (1) 19:38 (1)	05:24 20:30	19:17 (1) 19:44 (1)	05:50 20:07	19:22 19:20	06:22 19:20	06:53 18:29	06:28 16:43	07:03 16:23
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	05:19 20:22	19:10 (1) 19:38 (1)	05:25 20:29	19:16 (1) 19:44 (1)	05:51 20:06	19:23 19:18	06:23 19:18	06:54 18:27	06:29 16:42	07:04 16:23
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	05:19 20:23	19:10 (1) 19:38 (1)	05:25 20:29	19:16 (1) 19:45 (1)	05:52 20:05	19:24 19:17	06:24 19:17	06:55 18:25	06:30 16:41	07:05 16:23
8	07:19 16:39	06:57 17:16	07:17 18:50	06:25 19:24	05:42 19:57	05:19 20:23	19:11 (1) 19:38 (1)	05:26 20:29	19:17 (1) 19:45 (1)	05:53 20:03	19:25 19:15	06:25 19:15	06:56 18:24	06:32 16:40	07:05 16:23
9	07:19 16:40	06:56 17:18	07:15 18:51	06:24 19:26	05:41 19:58	05:19 20:24	19:12 (1) 19:38 (1)	05:27 20:28	19:16 (1) 19:45 (1)	05:54 20:02	19:26 19:13	06:26 19:13	06:57 18:22	06:33 16:39	07:06 16:22
10	07:18 16:41	06:55 17:19	07:14 18:53	06:22 19:27	05:39 19:59	05:18 20:25	19:12 (1) 19:39 (1)	05:27 20:28	19:16 (1) 19:46 (1)	05:55 20:01	19:27 19:12	06:27 19:12	06:58 18:21	06:34 16:38	07:07 16:23
11	07:18 16:42	06:54 17:20	07:12 18:54	06:20 19:28	05:38 20:00	05:18 20:25	19:13 (1) 19:39 (1)	05:28 20:28	19:17 (1) 19:46 (1)	05:56 20:00	19:28 19:10	06:28 19:10	06:59 18:19	06:35 16:37	07:08 16:23
12	07:18 16:44	06:52 17:22	07:10 18:55	06:19 19:29	05:37 20:00	19:17 (1) 19:28 (1)	19:12 (1) 19:15 (1)	05:29 05:18	19:16 (1) 19:16 (1)	05:57 05:58	19:29 19:08	06:29 19:08	07:00 18:17	06:37 16:36	07:09 16:23
13	07:18 16:45	06:51 17:23	07:09 18:56	06:17 19:30	05:36 20:01	19:15 (1) 19:30 (1)	19:12 (1) 19:13 (1)	05:30 05:18	19:16 (1) 19:17 (1)	05:59 05:59	19:30 19:06	06:30 19:06	07:01 18:16	06:38 16:35	07:10 16:23
14	07:17 16:46	06:50 17:24	07:07 18:57	06:15 19:31	05:35 20:02	19:13 (1) 19:31 (1)	19:13 (1) 19:12 (1)	05:30 05:31	19:17 (1) 19:17 (1)	05:59 06:00	19:31 19:05	06:31 19:05	07:02 18:14	06:39 16:34	07:10 16:23
15	07:17 16:47	06:49 17:25	07:06 18:58	06:14 19:32	05:34 20:03	19:12 (1) 19:32 (1)	19:13 (1) 19:11 (1)	05:31 05:18	19:18 (1) 19:16 (1)	06:00 06:01	19:32 19:03	06:32 19:03	07:03 18:13	06:40 16:33	07:11 16:23
16	07:16 16:48	06:47 17:27	07:04 18:59	06:12 19:33	05:33 20:04	19:11 (1) 19:33 (1)	19:13 (1) 19:10 (1)	05:32 05:18	19:18 (1) 19:15 (1)	06:01 06:02	19:33 19:01	06:33 19:01	07:05 18:11	06:41 16:32	07:12 16:24
17	07:16 16:49	06:46 17:28	07:02 19:00	06:11 19:34	05:32 20:05	19:10 (1) 19:34 (1)	19:15 (1) 19:11 (1)	05:33 05:24	19:17 (1) 19:17 (1)	06:02 06:03	19:34 19:00	06:34 19:00	07:06 18:08	06:43 16:31	07:13 16:24
18	07:15 16:50	06:44 17:29	07:00 19:02	06:09 19:35	05:31 20:06	19:09 (1) 19:35 (1)	19:15 (1) 19:11 (1)	05:33 05:24	19:18 (1) 19:17 (1)	06:03 06:04	19:35 19:01	06:35 19:01	07:07 18:08	06:44 16:31	07:14 16:24
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	05:30 20:07	19:09 (1) 19:35 (1)	19:15 (1) 19:11 (1)	05:34 05:23	19:18 (1) 19:17 (1)	06:04 06:05	19:36 19:02	06:36 19:02	07:08 18:06	06:45 16:30	07:14 16:25
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	05:29 20:08	19:08 (1) 19:35 (1)	19:15 (1) 19:11 (1)	05:35 05:22	19:18 (1) 19:17 (1)	06:06 06:07	19:37 19:03	06:37 19:03	07:09 18:05	06:46 16:29	07:14 16:25
21	07:14 16:54	06:40 17:33	06:55 19:05	06:05 19:39	05:29 20:09	19:08 (1) 19:37 (1)	19:15 (1) 19:11 (1)	05:36 05:22	19:18 (1) 19:17 (1)	06:07 06:08	19:38 19:04	06:38 19:04	07:10 18:03	06:47 16:29	07:15 16:25
22	07:13 16:55	06:39 17:34	06:54 19:06	06:03 19:40	05:28 20:10	19:08 (1) 19:37 (1)	19:15 (1) 19:11 (1)	05:37 05:21	19:18 (1) 19:18 (1)	06:08 06:09	19:39 19:05	06:39 19:05	07:11 18:02	06:48 16:28	07:16 16:26
23	07:12 16:56	06:37 17:35	06:52 19:07	06:02 19:41	05:27 20:11	19:08 (1) 19:37 (1)	19:16 (1) 19:12 (1)	05:38 05:20	19:18 (1) 19:16 (1)	06:09 06:10	19:40 19:06	06:40 19:06	07:13 18:00	06:50 16:27	07:16 16:26
24	07:12 16:58	06:36 17:36	06:50 19:08	06:00 19:42	05:26 20:12	19:07 (1) 19:37 (1)	19:16 (1) 19:12 (1)	05:39 05:20	19:19 (1) 19:16 (1)	06:10 06:11	19:41 19:07	06:41 19:07	07:14 18:00	06:51 16:27	07:16 16:26
25	07:11 16:59	06:34 17:37	06:49 19:09	05:59 19:43	05:26 20:13	19:08 (1) 19:37 (1)	19:16 (1) 19:12 (1)	05:40 05:21	19:20 (1) 19:17 (1)	06:11 06:12	19:42 19:08	06:42 19:08	07:15 18:00	06:52 16:26	07:17 16:28
26	07:10 17:00	06:33 17:39	06:47 19:10	05:57 19:44	05:25 20:13	19:07 (1) 19:37 (1)	19:17 (1) 19:13 (1)	05:41 05:21	19:21 (1) 19:18 (1)	06:12 06:13	19:43 19:09	06:43 19:09	07:16 18:00	06:53 16:26	07:17 16:28
27	07:09 17:01	06:31 17:40	06:45 19:11	05:56 19:45	05:24 20:14	19:08 (1) 19:38 (1)	19:16 (1) 19:12 (1)	05:42 05:21	19:22 (1) 19:19 (1)	06:13 06:14	19:44 19:10	06:44 19:10	07:17 18:00	06:54 16:25	07:18 16:29
28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	05:24 20:15	19:08 (1) 19:38 (1)	19:16 (1) 19:12 (1)	05:42 05:21	19:23 (1) 19:20 (1)	06:14 06:15	19:45 19:11	06:45 19:11	07:18 18:00	06:55 16:25	07:18 16:30
29	07:08 17:04	06:29 17:42	06:42 19:14	05:53 19:47	05:23 20:16	19:08 (1) 19:38 (1)	19:17 (1) 19:13 (1)	05:43 05:21	19:24 (1) 19:21 (1)	06:15 06:16	19:46 19:12	06:46 19:12	07:19 18:00	06:56 16:24	07:18 16:30
30	07:07 17:05	06:28 17:43	06:40 19:15	05:52 19:48	05:22 20:17	19:08 (1) 19:38 (1)	19:16 (1) 19:12 (1)	05:44 05:21	19:25 (1) 19:22 (1)	06:16 06:17	19:47 19:13	06:47 19:13	07:20 18:00	06:57 16:24	07:18 16:30
31	07:06 17:06	06:27 17:44	06:38 19:16	06:38 19:49	05:22 20:18	19:09 (1) 19:38 (1)	19:15 (1) 19:11 (1)	05:45 05:21	19:26 (1) 19:23 (1)	06:17 06:18	19:48 19:14	06:48 19:14	07:21 18:00	06:58 16:24	07:19 16:31
Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286			
Total, worst case					514	774	835	8							

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 11
 Licensed user: **Vanasse Hangen Brustlin, Inc.**
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: AJ - Shadow Receptor: 1.0 x 1.0 Azimuth: 121.7° Slope: 90.0° (36)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	19:15 (1) 19:32 (1)	05:22 20:30	05:46 20:12	19:22 (1) 19:43 (1)	06:18 19:27	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	19:17 (1) 19:32 (1)	05:22 20:30	05:47 20:10	19:23 (1) 19:42 (1)	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	19:17 (1) 19:31 (1)	05:23 20:30	05:48 20:09	19:24 (1) 19:41 (1)	06:20 19:23	06:50 18:32	06:26 16:46
4	07:19 16:36	07:02 17:11	06:23 17:46	06:32 19:20	05:47 19:53	05:20 20:21	19:18 (1) 19:31 (1)	05:24 20:30	05:49 20:08	19:25 (1) 19:40 (1)	06:21 19:22	06:51 18:30	06:27 16:45
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:21	19:20 (1) 19:30 (1)	05:24 20:30	19:30 (1) 20:07	19:27 (1) 19:38 (1)	06:22 19:20	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	05:19 20:22	19:20 (1) 19:29 (1)	05:25 20:29	19:27 (1) 20:06	19:30 (1) 19:35 (1)	06:23 19:18	06:54 18:27	06:29 16:42
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	05:19 20:23	19:19 (1) 19:27 (1)	05:19 20:29	19:26 (1) 20:05	19:26 (1) 19:36 (1)	06:24 19:17	06:55 18:25	06:30 16:41
8	07:19 16:39	06:57 17:16	06:18 17:50	06:26 19:24	05:42 19:57	05:19 20:24	19:16 (1) 19:29 (1)	05:19 20:29	19:26 (1) 20:03	19:25 (1) 19:38 (1)	06:25 19:15	06:56 18:24	06:32 16:40
9	07:19 16:40	06:56 17:18	06:17 18:51	06:25 19:25	05:41 19:58	05:19 20:25	19:15 (1) 19:31 (1)	05:19 20:28	19:25 (1) 20:02	19:24 (1) 19:38 (1)	06:26 19:13	06:57 18:22	06:33 16:39
10	07:18 16:41	06:55 17:19	06:16 18:53	06:24 19:26	05:40 19:59	05:18 20:26	19:14 (1) 19:32 (1)	05:18 20:28	19:24 (1) 20:01	19:23 (1) 19:39 (1)	06:27 19:12	06:58 18:21	06:34 16:38
11	07:18 16:42	06:54 17:20	06:15 18:54	06:23 19:27	05:39 20:00	05:18 20:27	19:13 (1) 19:33 (1)	05:18 20:28	19:24 (1) 20:00	19:22 (1) 19:40 (1)	06:28 19:10	06:59 18:19	06:35 16:37
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15	07:17 16:47	06:49 17:25	06:11 18:58	06:19 19:32	05:34 20:03	05:18 20:27	19:10 (1) 19:35 (1)	05:18 20:26	19:22 (1) 19:53	19:18 (1) 19:43 (1)	06:32 19:03	07:03 18:13	06:40 16:33
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18	07:15 16:50	06:44 17:29	06:08 19:02	06:16 19:35	05:31 20:06	05:18 20:28	19:10 (1) 19:36 (1)	05:18 20:24	19:21 (1) 19:48	19:15 (1) 19:44 (1)	06:35 18:58	07:07 18:08	06:44 16:31
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22	07:13 16:55	06:39 17:34	06:04 19:06	06:12 19:40	05:28 20:10	05:19 20:29	19:10 (1) 19:36 (1)	05:19 20:21	19:20 (1) 19:43	19:11 (1) 19:45 (1)	06:39 18:51	07:11 18:02	06:48 16:28
23	07:12 16:56	06:37 17:35	06:02 19:07	06:11 19:41	05:27 20:11	05:19 20:30	19:10 (1) 19:35 (1)	05:19 20:20	19:20 (1) 19:41	19:10 (1) 19:46 (1)	06:40 18:49	07:13 18:00	06:50 16:27
24	07:12 16:58	06:36 17:36	06:00 19:08	06:10 19:42	05:26 20:12	05:19 20:30	19:10 (1) 19:35 (1)	05:19 20:19	19:20 (1) 19:39	19:09 (1) 19:46 (1)	06:41 18:47	07:14 17:59	06:51 16:27
25	07:11 16:59	06:34 17:37	05:59 19:09	06:09 19:43	05:26 20:13	05:20 20:30	19:11 (1) 19:35 (1)	05:20 20:18	19:20 (1) 19:38	19:08 (1) 19:46 (1)	06:42 18:46	07:15 17:58	06:52 16:26
26	07:10 17:00	06:33 17:39	05:57 19:10	06:07 19:44	05:25 20:13	05:21 20:30	19:11 (1) 19:35 (1)	05:21 20:17	19:20 (1) 19:36	19:07 (1) 19:46 (1)	06:43 18:44	07:16 17:56	06:53 16:26
27	07:09 17:01	06:31 17:40	05:55 19:11	06:05 19:45	05:24 20:14	05:22 20:30	19:13 (1) 19:35 (1)	05:22 20:17	19:20 (1) 19:35	19:06 (1) 19:46 (1)	06:44 18:42	07:17 17:55	06:54 16:25
28	07:08 17:03	06:30 17:41	05:54 19:13	06:04 19:46	05:24 20:15	05:21 20:30	19:13 (1) 19:34 (1)	05:21 20:16	19:21 (1) 19:33	19:05 (1) 19:46 (1)	06:45 18:41	07:18 17:53	06:55 16:25
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31	07:06 17:06	06:28 17:44	05:51 19:16	06:01 19:49	05:21 20:18	05:21 20:30	19:15 (1) 19:33 (1)	05:21 20:13	19:21 (1) 19:28	19:02 (1) 19:44 (1)	06:48 18:36	07:22 17:50	06:58 16:23
Potential sun hours	296	297	370	400	449	454	83	460	429	88	375	344	297
Total, worst case													

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 2/3/2011 9:39 AM / 55

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: C - Shadow Receptor: 1.0 x 1.0 Azimuth: 81.4° Slope: 90.0° (3)

Assumptions for shadow calculations

Maximum distance for influence **2,000 m**
 Minimum sun height over horizon for influence **3 °**
 Day step for calculation **1 days**
 Time step for calculation **1 minutes**

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	17:32 (1) 18:22 (1)	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	17:35 (1) 18:12 (1)	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	17:32 (1) 18:22 (1)	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	17:33 (1) 18:13 (1)	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	17:32 (1) 18:21 (1)	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	17:32 (1) 18:14 (1)	06:50 18:32	06:26 16:46
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	17:32 (1) 18:21 (1)	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	17:30 (1) 18:14 (1)	06:52 18:30	06:27 16:45
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	17:32 (1) 18:20 (1)	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	17:29 (1) 18:14 (1)	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	17:32 (1) 18:19 (1)	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	17:28 (1) 18:15 (1)	06:54 18:27	06:29 16:42
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16	07:16 16:48	06:47 17:27	07:04 18:59	06:12 17:53 (1)	17:45 (1) 18:10 (1)	05:33 19:33	05:18 20:28	05:32 20:25	06:01 19:51	06:33 19:01	17:23 (1) 18:12 (1)	07:05 18:11	06:41 16:32
17	07:16 16:49	06:46 17:28	07:02 19:00	06:11 17:49 (1)	17:51 (1) 18:13 (1)	05:32 19:34	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	17:23 (1) 18:11 (1)	07:06 18:09	06:43 16:32
18	07:15 16:50	06:44 17:29	07:00 19:02	06:09 17:47 (1)	17:56 (1) 18:16 (1)	05:31 19:35	05:18 20:28	05:34 20:24	06:03 19:49	06:35 18:58	17:23 (1) 18:10 (1)	07:07 18:08	06:44 16:31
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31	07:06 17:06	06:27 17:44	06:41 19:16	05:51 17:32 (1)	18:22 (1) 18:22 (1)	05:51 19:49	05:20 20:30	05:45 20:13	06:17 19:28	06:48 18:11 (1)	17:51 (1) 18:37	07:21 17:50	06:58 16:32
Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	
Total, worst case			653	639				143	1173				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 2/3/2011 9:39 AM / 62

Licensed user:
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 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: CG - Shadow Receptor: 1.0 x 1.0 Azimuth: 120.3° Slope: 90.0° (85)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	17:37 (1) 18:01 (1)	06:23 16:48	06:59 16:24
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27	07:09 17:01	06:31 17:40	06:45 19:11	05:56 19:45	05:24 20:14	05:20 20:30	05:42 20:17	06:13 19:35	06:44 18:42	17:43 (1) 17:59 (1)	17:41 (1) 17:52 (1)	06:51 16:21	07:23 16:29
28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	17:41 (1) 18:00 (1)	17:41 (1) 17:52 (1)	06:52 16:20	07:24 16:30
29	07:08 17:04	06:29 17:42	06:42 19:14	05:53 19:47	05:23 20:16	05:21 20:30	05:43 20:15	06:15 19:32	06:46 18:39	17:39 (1) 18:01 (1)	17:41 (1) 17:52 (1)	06:53 16:19	07:25 16:30
30	07:07 17:05	06:28 17:43	06:40 19:15	05:52 19:48	05:22 20:17	05:21 20:30	05:44 20:14	06:16 19:30	06:47 18:37	17:38 (1) 18:01 (1)	17:41 (1) 17:52 (1)	06:54 16:18	07:26 16:31
31	07:06 17:06	06:27 17:44	06:38 19:16	05:51 19:49	05:21 20:18	05:20 20:30	05:45 20:13	06:17 19:28	06:48 18:36	17:37 (1) 18:00 (1)	17:41 (1) 17:52 (1)	06:55 16:17	07:27 16:32
Potential sun hours	296	297	370	311	400	454	460	429	375	344	297	286	
Total, worst case													

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 66
 Licensed user: **Vanasse Hangen Brustlin, Inc.**
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: CK - Shadow Receptor: 1.0 x 1.0 Azimuth: 120.6° Slope: 90.0° (89)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42		06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27			
2	07:19 16:34	07:04 17:09	06:27 17:43	11	17:04 (1) 17:15 (1)	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	25	17:59 (1) 17:33 (1)	
3	07:19 16:35	07:03 17:10	06:25 17:45	16	17:02 (1) 17:18 (1)	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	26	17:59 (1) 17:33 (1)	
4	07:19 16:35	07:02 17:11	06:24 17:46	19	17:00 (1) 17:19 (1)	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	27	17:59 (1) 17:33 (1)	
5	07:19 16:36	07:01 17:13	06:22 17:47	22	16:58 (1) 17:20 (1)	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	26	17:59 (1) 17:33 (1)	
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7	07:19 16:38	06:58 17:15	06:19 17:49	26	17:55 (1) 17:22 (1)	06:25 19:23	05:42 19:56	05:19 20:23	05:26 20:29	05:53 20:05	24	17:59 (1) 17:33 (1)	
8	07:19 16:39	06:57 17:16	06:17 18:50	26	17:55 (1) 18:21 (1)	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	23	17:59 (1) 17:33 (1)	
9	07:19 16:40	06:56 17:18	07:15 18:51	26	17:56 (1) 18:22 (1)	06:24 19:26	05:41 19:58	05:19 20:24	05:27 20:28	05:54 20:02	21	17:59 (1) 17:33 (1)	
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12	07:18 16:44	06:52 17:22	07:10 18:55	26	17:55 (1) 18:21 (1)	06:19 19:29	05:37 20:00	05:18 20:26	05:29 20:27	05:57 19:57	7	17:59 (1) 17:33 (1)	
13	07:18 16:45	06:51 17:23	07:09 18:56	25	17:55 (1) 18:20 (1)	06:17 19:30	05:36 20:01	05:18 20:26	05:29 20:27	05:58 19:56		17:59 (1) 17:33 (1)	
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15	07:17 16:47	06:49 17:25	07:05 18:58	21	17:57 (1) 18:18 (1)	06:14 19:32	05:34 20:03	05:18 20:27	05:31 20:26	06:00 19:53		17:59 (1) 17:33 (1)	
16	07:16 16:48	06:47 17:26	07:04 18:59	18	17:58 (1) 18:16 (1)	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:25	06:01 19:51		17:59 (1) 17:33 (1)	
17	07:16 16:49	06:46 17:28	07:02 19:00	14	17:59 (1) 18:13 (1)	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50		17:59 (1) 17:33 (1)	
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22	07:13 16:55	06:39 17:34	06:54 19:06		06:03 19:40	05:28 20:10	05:19 20:29	05:37 20:21	06:08 19:43	06:39 18:51		17:59 (1) 17:33 (1)	
23	07:12 16:56	06:37 17:35	06:52 19:07		06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49		17:59 (1) 17:33 (1)	
24	07:12 16:58	06:36 17:36	06:50 19:08		06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47		17:59 (1) 17:33 (1)	
25	07:11 16:59	06:34 17:37	06:49 19:09		05:59 19:43	05:25 20:13	05:20 20:30	05:40 20:18	06:11 19:38	06:42 18:46		17:59 (1) 17:33 (1)	
26	07:10 17:00	06:33 17:39	06:47 19:10		05:57 19:44	05:25 20:13	05:20 20:30	05:41 20:18	06:12 19:36	06:43 18:44	12	17:59 (1) 17:33 (1)	
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29	07:08 17:04	06:29 17:42	06:42 19:14		05:53 19:47	05:23 20:16	05:21 20:30	05:43 20:15	06:15 19:32	06:46 18:39	23	17:59 (1) 17:33 (1)	
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Potential sun hours	296	297	370	357	400	449	454	460	429	375	96	344	
Total, worst case											262	297	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page:
 2/3/2011 9:39 AM / 67

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: CL - Shadow Receptor: 1.0 x 1.0 Azimuth: 8.9° Slope: 90.0° (90)

Assumptions for shadow calculations

Maximum distance for influence **2,000 m**
 Minimum sun height over horizon for influence **3 °**
 Day step for calculation **1 days**
 Time step for calculation **1 minutes**

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	12 17:02 (1) 17:14 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	17:32 (1) 17:57 (1)	06:23 16:48	06:59 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	17 16:59 (1) 17:16 (1)	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	17:31 (1) 17:57 (1)	06:24 16:47	07:00 16:23
3	07:19 16:35	07:03 17:10	06:25 17:45	20 16:58 (1) 17:18 (1)	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	17:30 (1) 17:57 (1)	06:26 16:46	07:01 16:23
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13	07:18 16:45	06:51 17:23	07:09 18:56	25 17:53 (1) 18:18 (1)	06:17 19:30	05:36 20:01	05:18 20:26	05:30 20:27	05:58 19:06	06:30 19:06	07:01 18:16	17:36 (1) 17:45 (1)	06:38 16:35	07:10 16:23
14	07:17 16:46	06:50 17:24	07:07 18:57	23 17:53 (1) 18:16 (1)	06:15 19:31	05:35 20:02	05:18 20:27	05:30 20:26	05:59 19:54	06:31 19:05	07:02 18:14	17:36 (1) 17:45 (1)	06:39 16:34	07:11 16:23
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16	07:16 16:48	06:47 17:26	07:04 18:59	17 17:56 (1) 18:13 (1)	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:25	06:01 19:51	06:33 19:01	07:05 18:11	17:37 (1) 17:45 (1)	06:41 16:32	07:12 16:24
17	07:16 16:49	06:46 17:28	07:02 19:00	12 17:58 (1) 18:10 (1)	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	17:38 (1) 17:45 (1)	06:43 16:32	07:13 16:24
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20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	06:06 20:08	05:29 20:29	05:18 20:22	05:35 20:22	06:06 19:46	06:37 18:54	07:09 18:05	17:41 (1) 17:45 (1)	06:46 16:29	07:14 16:25
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Potential sun hours	296	297	370	382	400	454	460	429	375	89	344	302	297	286
Total, worst case														

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: Wind Prospect	Description: Wind Prospect Worst Case Analysis	Printed/Page: 2/3/2011 9:39 AM / 68
		Licensed user: Vanasse Hangen Brustlin, Inc. 1001 Walnut Street US-WATERTOWN, MA 02472 +1 (617) 924 1770 Nicole Dentamaro, ndentamaro@vhb.com
		Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: CM - Shadow Receptor: 1.0 x 1.0 Azimuth: 13.5° Slope: 90.0° (91)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	16:54 (1) 17:15 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	17:29 (1) 18:35	06:23 16:48	06:59 16:24	
2	07:19 16:34	07:04 17:09	06:27 17:43	16:52 (1) 17:15 (1)	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	17:27 (1) 18:34	16:48 16:23	07:00 16:23	
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Potential sun hours	296	297	31	370	400	449	454	460	429	375	61	344	297	286
Total, worst case														

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 70

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: CO - Shadow Receptor: 1.0 x 1.0 Azimuth: 123.6° Slope: 90.0° (93)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	16:38 (1) 16:48 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	16:11 (1) 16:17 (1)	06:59 16:24
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Potential sun hours	296	297	447	370	400	449	454	460	429	375	344	459	297	286
Total, worst case				10								6		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 78
 Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: CW - Shadow Receptor: 1.0 x 1.0 Azimuth: 120.7° Slope: 90.0° (101)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	16:55 (1) 17:16 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24
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11	07:18 16:42	06:54 17:20	06:15 18:54	07:12 19:28	06:20 20:00	05:38 20:25	05:18 20:28	05:28 20:28	05:56 20:00	06:28 19:10	06:59 18:19	06:35 17:50 (1)	07:09 16:37
12	07:18 16:44	06:52 17:22	06:14 18:55	07:10 19:29	06:19 20:00	05:37 20:26	05:18 20:27	05:29 20:27	05:57 19:57	06:29 19:08	07:00 18:17	06:37 17:49 (1)	07:10 16:36
13	07:18 16:45	06:51 17:23	06:13 18:56	07:09 19:30	06:17 20:01	05:36 20:26	05:18 20:27	05:29 20:27	05:58 19:56	06:30 19:06	07:01 18:16	06:38 17:48 (1)	07:11 16:35
14	07:17 16:46	06:50 17:24	06:12 18:57	07:07 19:31	06:15 20:02	05:35 20:27	05:18 20:26	05:30 20:26	05:59 19:54	06:31 19:05	07:02 18:14	06:39 17:48 (1)	07:12 16:34
15	07:17 16:47	06:49 17:25	06:11 18:58	07:05 19:32	06:14 20:03	05:34 20:27	05:18 20:26	05:31 20:26	06:00 19:53	06:32 19:03	07:03 18:13	06:40 17:47 (1)	07:13 16:33
16	07:16 16:48	06:47 17:26	06:10 18:59	07:04 19:33	06:12 20:04	05:33 20:28	05:18 20:25	05:32 19:51	06:01 19:01	06:33 18:11	07:05 17:45 (1)	06:41 17:32 (1)	07:12 16:32
17	07:16 16:49	06:46 17:28	06:09 19:00	07:02 19:34	06:11 20:05	05:32 20:28	05:18 20:24	05:33 19:50	06:02 19:00	06:34 18:09	07:06 17:43 (1)	06:43 17:35 (1)	07:13 16:31
18	07:15 16:50	06:44 17:29	06:08 19:02	07:00 19:35	06:09 20:06	05:31 20:28	05:18 20:24	05:33 19:48	06:03 19:48	06:35 18:58	07:07 18:08	06:44 17:39 (1)	07:14 16:30
19	07:15 16:52	06:43 17:30	06:07 19:03	06:59 19:36	06:08 20:07	05:30 20:29	05:18 20:23	05:34 19:47	06:04 18:56	06:36 18:06	07:08 17:50 (1)	06:45 16:30	07:14 16:25
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21	07:14 16:54	06:40 17:33	06:05 19:05	06:55 19:39	06:05 20:09	05:29 20:29	05:19 20:22	05:36 19:44	06:07 18:53	06:38 18:03	07:10 17:45 (1)	06:47 16:28	07:15 16:25
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23	07:12 16:56	06:37 17:35	06:02 19:07	06:52 19:41	06:02 20:11	05:27 20:30	05:19 20:20	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	06:50 16:27	07:16 16:26
24	07:12 16:58	06:36 17:36	06:01 19:08	06:50 17:02 (1)	06:00 19:08	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27	07:17 16:27
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26	07:10 17:00	06:33 17:39	05:59 19:10	06:47 16:57 (1)	05:57 19:10	05:25 20:13	05:20 20:30	06:12 19:36	06:13 18:44	06:43 17:56	07:16 17:56	06:53 16:26	07:17 16:28
27	07:09 17:01	06:31 17:40	05:58 19:11	06:45 17:15 (1)	05:56 19:11	05:24 20:14	05:20 20:30	06:13 19:35	06:14 18:42	06:44 17:55	07:17 17:55	06:54 16:25	07:18 16:29
28	07:09 17:03	06:30 17:41	05:57 19:13	06:44 17:15 (1)	05:55 19:13	05:24 20:15	05:21 20:30	06:14 19:33	06:15 18:41	06:45 17:53	07:18 18:41	06:55 16:25	07:18 16:30
29	07:08 17:04	06:29 17:42	05:56 19:14	06:42 19:14	05:53 19:14	05:23 20:16	05:21 20:30	06:15 19:32	06:16 18:39	06:46 17:52	07:19 18:39	06:56 16:24	07:18 16:30
30	07:07 17:05	06:28 17:43	05:55 19:15	06:40 19:15	05:52 19:15	05:22 20:17	05:21 20:30	06:16 19:30	06:17 18:37	06:47 17:51	07:20 18:37	06:57 16:24	07:18 16:31
31	07:06 17:06	06:27 17:44	05:54 19:16	06:38 19:16	06:38 19:16	05:21 20:18	05:20 20:13	06:17 19:28	06:18 18:28	06:48 17:50	07:21 18:37	06:58 16:32	07:19 16:26
Potential sun hours	296	297	75	370	400	449	454	460	429	375	344	297	286
Total, worst case				164							239		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 79
 Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: CX - Shadow Receptor: 1.0 x 1.0 Azimuth: 105.7° Slope: 90.0° (102)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	16:53 (1) 17:14 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24	
2	07:19 16:34	07:04 17:09	06:27 17:43	16:52 (1) 17:13 (1)	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	07:00 16:23	
3	07:19 16:35	07:03 17:10	06:25 17:45	16:53 (1) 17:13 (1)	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:46	07:01 16:23	
4	07:19 16:35	07:02 17:11	06:23 17:46	16:53 (1) 17:12 (1)	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:51 18:30	06:27 16:45	07:02 16:23	
5	07:19 16:36	07:01 17:13	06:22 17:47	16:54 (1) 17:10 (1)	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:43	07:03 16:23	
6	07:19 16:37	07:00 17:14	06:20 17:48	16:56 (1) 17:09 (1)	06:28 19:22	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	06:54 18:27	06:29 16:42	07:04 16:23	
7	07:19 16:38	06:58 17:15	06:19 17:49	16:59 (1) 17:05 (1)	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	17:33 (1) 17:43 (1)	06:30 16:41	07:05 16:23
8	07:19 16:39	06:57 17:16	07:17 18:50	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	06:25 19:15	06:56 18:24	17:31 (1) 17:45 (1)	06:32 16:40	07:05 16:22	
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17	07:16 16:49	06:46 17:28	07:02 19:00	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	17:26 (1) 17:44 (1)	06:43 16:32	07:13 16:24	
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Potential sun hours	296	297	300	300	300	300	300	300	300	300	300	297	286	
Total, worst case	296	297	300	300	300	300	300	300	300	300	300	297	286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 89

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: DG - Shadow Receptor: 1.0 x 1.0 Azimuth: 79.9° Slope: 90.0° (111)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	18:56 (2) 19:41 (2)	05:22 20:30	19:04 (2) 20:12	05:46 19:08 (2)	06:18 19:46 (2)	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	18:57 (2) 19:42 (2)	05:22 20:30	19:04 (2) 20:10	05:47 19:45 (2)	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	19:13 (2) 19:24 (2)	18:57 (2) 19:41 (2)	05:23 20:30	19:04 (2) 20:09	05:48 19:11 (2)	06:20 19:22	06:50 18:32	06:26 16:46
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	19:09 (2) 19:27 (2)	18:57 (2) 19:42 (2)	05:24 20:30	19:04 (2) 20:08	05:49 19:12 (2)	06:21 19:22	06:52 18:30	06:27 16:45
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	19:06 (2) 19:29 (2)	18:58 (2) 19:42 (2)	05:24 20:30	19:04 (2) 20:07	05:50 19:13 (2)	06:22 19:20	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	19:04 (2) 19:31 (2)	18:57 (2) 19:41 (2)	05:25 20:29	19:04 (2) 20:06	05:51 19:15 (2)	06:23 19:17	06:54 18:27	06:29 16:42
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	19:03 (2) 19:32 (2)	18:58 (2) 19:42 (2)	05:25 20:29	19:04 (2) 20:05	05:52 19:16 (2)	06:24 19:15	06:55 18:25	06:30 16:41
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14	07:17 16:46	06:50 17:24	06:07 18:57	06:15 19:31	05:35 20:02	18:57 (2) 19:39 (2)	18:59 (2) 19:42 (2)	05:30 20:26	19:04 (2) 19:54	05:59 19:05	06:31 18:14	07:02 18:13	06:39 16:34
15	07:17 16:47	06:49 17:25	06:06 18:58	06:14 19:32	05:34 20:03	18:56 (2) 19:39 (2)	18:59 (2) 19:42 (2)	05:31 20:26	19:05 (2) 19:53	06:00 19:03	06:32 18:13	07:03 18:12	06:40 16:33
16	07:16 16:48	06:47 17:27	06:04 18:59	06:12 19:33	05:33 20:04	18:56 (2) 19:39 (2)	19:01 (2) 19:42 (2)	05:32 20:25	19:04 (2) 19:51	06:01 19:01	06:33 18:11	07:05 18:10	06:41 16:32
17	07:16 16:49	06:46 17:28	06:02 19:00	06:11 19:34	05:32 20:05	18:55 (2) 19:40 (2)	19:02 (2) 19:43 (2)	05:33 20:24	19:04 (2) 19:50	06:02 19:00	06:34 18:09	07:06 18:08	06:43 16:31
18	07:15 16:50	06:44 17:29	06:00 19:02	06:09 19:35	05:31 20:06	18:55 (2) 19:40 (2)	19:02 (2) 19:43 (2)	05:34 20:24	19:05 (2) 19:49	06:03 19:08	06:35 18:08	07:07 18:07	06:44 16:30
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	05:30 20:07	18:55 (2) 19:40 (2)	19:02 (2) 19:43 (2)	05:34 20:23	19:06 (2) 19:47	06:04 18:56	06:36 18:06	07:08 18:05	06:45 16:30
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	05:29 20:08	18:54 (2) 19:40 (2)	19:02 (2) 19:43 (2)	05:35 20:22	19:07 (2) 19:46	06:06 19:04	06:37 18:54	07:09 18:05	06:46 16:29
21	07:14 16:54	06:40 17:33	06:55 19:05	06:05 19:39	05:29 20:09	18:55 (2) 19:41 (2)	19:02 (2) 19:43 (2)	05:36 20:22	19:08 (2) 19:44	06:07 19:04	06:38 18:53	07:10 18:03	06:47 16:29
22	07:13 16:55	06:39 17:34	06:54 19:06	06:03 19:40	05:28 20:10	18:55 (2) 19:41 (2)	19:02 (2) 19:43 (2)	05:37 20:21	19:09 (2) 19:43	06:08 19:05	06:39 18:51	07:11 18:02	06:48 16:28
23	07:12 16:56	06:37 17:35	06:52 19:07	06:02 19:41	05:27 20:11	18:55 (2) 19:41 (2)	19:03 (2) 19:44 (2)	05:38 20:20	19:10 (2) 19:41	06:09 19:06	06:40 18:49	07:13 18:00	06:50 16:27
24	07:12 16:58	06:36 17:36	06:50 19:08	06:00 19:42	05:26 20:12	18:54 (2) 19:41 (2)	19:03 (2) 19:44 (2)	05:39 20:19	19:11 (2) 19:39	06:10 19:05	06:41 18:47	07:14 17:59	06:51 16:27
25	07:11 16:59	06:34 17:37	06:49 19:09	05:59 19:43	05:26 20:13	18:55 (2) 19:41 (2)	19:03 (2) 19:44 (2)	05:40 20:18	19:12 (2) 19:38	06:11 19:06	06:42 18:46	07:15 17:58	06:52 16:26
26	07:10 17:00	06:33 17:39	06:47 19:10	05:57 19:44	05:25 20:13	18:55 (2) 19:41 (2)	19:04 (2) 19:45 (2)	05:41 20:18	19:13 (2) 19:36	06:12 19:06	06:43 18:44	07:16 17:56	06:53 16:26
27	07:09 17:01	06:31 17:40	06:45 19:11	05:56 19:45	05:24 20:14	18:55 (2) 19:42 (2)	19:04 (2) 19:45 (2)	05:42 20:17	19:14 (2) 19:35	06:13 19:07	06:44 18:42	07:17 17:55	06:54 16:25
28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	05:24 20:15	18:55 (2) 19:41 (2)	19:03 (2) 19:45 (2)	05:42 20:16	19:15 (2) 19:33	06:14 19:08	06:45 18:41	07:18 17:54	06:55 16:25
29	07:08 17:04	06:29 17:42	06:43 19:14	05:54 19:47	05:23 20:16	18:56 (2) 19:42 (2)	19:04 (2) 19:46 (2)	05:43 20:15	19:16 (2) 19:32	06:15 19:09	06:46 18:39	07:19 17:52	06:56 16:24
30	07:07 17:05	06:28 17:43	06:42 19:15	05:53 19:48	05:22 20:17	18:57 (2) 19:41 (2)	19:05 (2) 19:46 (2)	05:44 20:14	19:17 (2) 19:30	06:16 19:10	06:47 18:37	07:20 17:51	06:57 16:24
31	07:06 17:06	06:27 17:44	06:41 19:16	05:52 19:49	05:21 20:18	18:58 (2) 19:40 (2)	19:06 (2) 19:47 (2)	05:45 20:13	19:18 (2) 19:28	06:17 19:11	06:48 18:37	07:21 17:50	06:58 16:32
Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	
Total, worst case					1140	1268	1377	267					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: Wind Prospect
 Description: Wind Prospect Worst Case Analysis

Printed/Page: 2/3/2011 9:39 AM / 90

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: DH - Shadow Receptor: 1.0 x 1.0 Azimuth: 85.7° Slope: 90.0° (112)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:

- The sun is shining all the day, from sunrise to sunset
- The rotor plane is always perpendicular to the line from the WTG to the sun
- The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	17:34 (2) 18:10 (2)	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	17:13 (2) 17:59 (2)	06:23 16:48	06:59 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	17:35 (2) 18:08 (2)	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:11	06:19 19:25	06:49 18:34	17:14 (2) 17:57 (2)	06:24 16:47	07:00 16:23
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	17:36 (2) 18:06 (2)	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	17:14 (2) 17:56 (2)	06:26 16:46	07:01 16:23
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	17:39 (2) 18:04 (2)	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:52 18:30	17:15 (2) 17:54 (2)	06:27 16:45	07:02 16:23
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	16:49 (2) 17:08 (2)	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:07	06:22 19:20	06:53 18:29	17:17 (2) 17:53 (2)	06:28 16:43	07:03 16:23
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	16:46 (2) 17:12 (2)	06:28 19:22	05:44 19:55	05:19 20:22	05:51 20:06	06:23 19:18	17:43 (2) 17:50 (2)	17:19 (2) 17:51 (2)	06:29 16:42	07:04 16:23
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	16:43 (2) 17:13 (2)	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:05	06:24 19:17	17:37 (2) 17:55 (2)	17:21 (2) 17:49 (2)	06:30 16:41	07:05 16:23
8	07:19 16:39	06:57 17:16	07:17 18:50	06:25 19:24	17:41 (2) 18:15 (2)	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:03	06:25 19:15	17:34 (2) 17:52 (2)	17:23 (2) 17:45 (2)	06:32 16:40	07:06 16:23
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12	07:18 16:44	06:52 17:22	07:11 18:55	06:19 19:29	17:35 (2) 18:20 (2)	06:19 19:29	05:37 20:00	05:18 20:26	05:29 20:01	06:29 19:08	17:25 (2) 18:03 (2)	17:24 (2) 18:17	07:00 16:36	07:09 16:23
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14	07:17 16:46	06:50 17:24	07:07 18:57	06:15 19:31	17:32 (2) 18:20 (2)	06:15 19:31	05:35 20:02	05:18 20:26	05:30 19:54	06:31 19:05	17:21 (2) 18:05 (2)	17:22 (2) 18:14	07:02 16:34	07:10 16:23
15	07:17 16:47	06:49 17:25	07:06 18:58	06:14 19:32	17:32 (2) 18:21 (2)	06:14 19:32	05:34 20:03	05:18 20:26	05:31 20:06	06:32 19:03	17:20 (2) 18:05 (2)	17:22 (2) 18:13	07:03 16:33	07:11 16:23
16	07:16 16:48	06:47 17:27	07:04 18:59	06:12 19:33	18:21 (2) 19:33	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:05	06:33 19:01	17:19 (2) 18:06 (2)	17:19 (2) 18:11	07:05 16:32	07:12 16:24
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18	07:15 16:50	06:44 17:29	07:00 19:02	06:09 19:35	17:30 (2) 18:22 (2)	06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:04	06:35 19:49	17:17 (2) 18:06 (2)	17:17 (2) 18:08	07:07 16:44	07:13 16:24
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23	07:12 16:56	06:37 17:35	06:52 19:07	06:02 19:41	18:20 (2) 17:29 (2)	06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:40 19:41	18:05 (2) 17:13 (2)	18:04 (2) 17:14 (2)	07:12 16:51	07:16 16:27
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28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	18:16 (2) 17:31 (2)	05:55 19:46	05:24 20:15	05:21 20:30	05:42 20:16	06:45 19:33	18:02 (2) 17:13 (2)	18:02 (2) 17:14 (2)	07:17 16:56	07:18 16:30
29	07:08 17:04	06:29 17:42	06:43 19:14	05:54 19:47	18:15 (2) 17:32 (2)	05:54 19:47	05:23 20:16	05:21 20:30	05:43 20:15	06:46 19:32	18:01 (2) 17:13 (2)	18:01 (2) 17:15 (2)	07:18 16:57	07:18 16:30
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Potential sun hours	296	297	370	400	449	454	460	429	375	302	297	286		
Total, worst case			1201	149					1066					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 95
 Licensed user: **Vanasse Hangen Brustlin, Inc.**
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: DM - Shadow Receptor: 1.0 x 1.0 Azimuth: 115.4° Slope: 90.0° (117)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	16:20 (1) 16:40 (1)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	15:48 (1) 16:14 (1)	06:59 16:24
2	07:19 16:34	07:04 17:09	16:19 (1) 16:41 (1)	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	15:47 (1) 16:14 (1)	07:00 16:23
3	07:19 16:35	07:03 17:10	16:18 (1) 16:42 (1)	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:46	15:47 (1) 16:14 (1)	07:01 16:23
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8	07:19 16:39	06:57 17:16	16:17 (1) 16:44 (1)	07:17 18:50	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	06:25 19:15	06:56 18:24	06:32 16:40	15:49 (1) 16:13 (1)	07:05 16:22
9	07:19 16:40	06:56 17:18	16:17 (1) 16:44 (1)	07:15 18:51	06:24 19:26	05:41 19:58	05:19 20:24	05:27 20:28	05:54 20:02	06:26 19:13	06:57 18:22	06:33 16:39	15:50 (1) 16:12 (1)	07:06 16:22
10	07:18 16:41	06:55 17:19	16:18 (1) 16:44 (1)	07:14 18:53	06:22 19:27	05:39 19:59	05:18 20:25	05:27 20:28	05:55 20:01	06:27 19:12	06:58 18:21	06:34 16:38	15:51 (1) 16:11 (1)	07:07 16:23
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15	07:17 16:47	06:49 17:25	16:22 (1) 16:40 (1)	07:06 18:58	06:14 19:32	05:34 20:03	05:18 20:27	05:31 20:26	06:00 19:53	06:32 19:03	07:03 18:13	06:40 16:33	15:58 (1) 16:07 (1)	07:11 16:23
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18	07:15 16:50	06:44 17:29	07:00 19:02	07:00 19:02	06:09 19:35	05:31 20:06	05:18 20:24	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31	16:10 (1) 16:10 (1)	07:14 16:23
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	05:30 20:07	05:18 20:07	05:18 20:23	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30	16:11 (1) 16:11 (1)	07:14 16:25
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	05:29 20:08	05:18 20:08	05:18 20:22	05:35 19:46	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29	16:12 (1) 16:12 (1)	07:14 16:25
21	07:14 16:54	06:40 17:33	06:55 19:05	06:05 19:39	05:29 20:09	05:19 20:09	05:19 20:22	05:36 19:44	06:07 19:44	06:38 18:53	07:10 18:03	06:47 16:29	16:13 (1) 16:13 (1)	07:15 16:25
22	07:13 16:55	06:39 17:34	06:54 19:06	06:03 19:40	05:28 20:10	05:19 20:09	05:19 20:21	05:37 19:43	06:08 19:43	06:39 18:51	07:11 18:02	06:48 16:28	16:14 (1) 16:14 (1)	07:16 16:26
23	07:12 16:56	06:37 17:35	06:52 19:07	06:02 19:41	05:27 20:11	05:19 20:10	05:19 20:20	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	06:50 16:27	16:15 (1) 16:15 (1)	07:16 16:26
24	07:12 16:58	06:36 17:36	06:50 19:08	06:00 19:42	05:26 20:12	05:19 20:10	05:19 20:20	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27	16:16 (1) 16:16 (1)	07:16 16:27
25	07:11 16:59	06:34 17:37	06:49 19:09	05:59 19:43	05:25 20:13	05:20 20:10	05:20 20:18	05:40 19:38	06:11 18:46	06:42 17:58	07:15 17:58	06:52 16:28	16:17 (1) 16:17 (1)	07:17 16:28
26	07:10 17:00	06:33 17:39	06:47 19:10	05:57 19:44	05:25 20:13	05:20 20:10	05:21 20:18	06:12 19:36	06:43 18:44	06:43 17:56	07:16 17:56	06:53 (1) 16:29	16:18 (1) 16:18 (1)	07:17 16:28
27	07:09 17:01	06:31 17:40	06:45 19:11	05:56 19:45	05:24 20:14	05:20 20:10	05:22 20:17	06:13 19:35	06:44 18:42	06:44 17:55	07:17 17:55	06:54 (1) 16:30	16:19 (1) 16:19 (1)	07:18 16:29
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29	07:08 17:04	16:24 (1) 11 16:35 (1)	06:28 (1) 19:14	06:42 19:47	05:53 20:16	05:23 20:10	05:21 20:15	06:15 19:32	06:46 18:39	06:46 17:52	07:20 17:52	06:56 (1) 16:32	16:21 (1) 16:21 (1)	07:18 16:30
30	07:07 17:05	16:22 (1) 15 16:37 (1)	06:26 (1) 19:15	06:40 19:48	05:52 20:17	05:22 20:10	05:21 20:30	06:16 19:30	06:47 18:37	06:47 17:51	07:21 17:51	06:57 (1) 16:33	16:22 (1) 16:22 (1)	07:18 16:31
31	07:06 17:06	16:21 (1) 17 16:38 (1)	06:25 (1) 19:16	06:38 19:16	06:38 19:16	05:22 20:18	05:22 20:13	06:17 19:28	06:17 19:28	07:22 17:50	07:22 17:50	06:58 (1) 16:34	16:23 (1) 16:23 (1)	07:19 16:32
Potential sun hours	296	297	384	370	400	449	454	460	429	375	344	143	297	286
Total, worst case	45	297	384	370	400	449	454	460	429	375	344	143	297	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 96
 Licensed user: **Vanasse Hangen Brustlin, Inc.**
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: DN - Shadow Receptor: 1.0 x 1.0 Azimuth: 115.6° Slope: 90.0° (118)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	16:14 (1) 16:39 (1)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	15:46 (1) 16:08 (1)	06:59 16:24
2	07:19 16:34	07:04 17:09	16:14 (1) 16:39 (1)	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	15:45 (1) 16:09 (1)	07:00 16:23
3	07:19 16:35	07:03 17:10	16:14 (1) 16:40 (1)	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:46	15:45 (1) 16:09 (1)	07:01 16:23
4	07:19 16:35	07:02 17:11	16:14 (1) 16:40 (1)	06:24 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:52 18:30	06:27 16:45	15:45 (1) 16:10 (1)	07:02 16:23
5	07:19 16:36	07:01 17:13	16:14 (1) 16:40 (1)	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:43	15:44 (1) 16:10 (1)	07:03 16:23
6	07:19 16:37	07:00 17:14	16:15 (1) 16:40 (1)	06:20 17:48	06:28 19:22	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	06:54 18:27	06:29 16:42	15:44 (1) 16:10 (1)	07:04 16:23
7	07:19 16:38	06:58 17:15	16:15 (1) 16:40 (1)	06:19 17:49	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	06:30 16:41	15:44 (1) 16:10 (1)	07:05 16:23
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Potential sun hours	296	297	302	370	400	454	460	429	375	344	297	372	286	286
Total, worst case	125	302	370	400	449	460	429	375	344	61	372	286	286	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 97
 Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: DO - Shadow Receptor: 1.0 x 1.0 Azimuth: 130.1° Slope: 90.0° (119)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	16:10 (1) 16:35 (1)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	15:47 (1) 16:00 (1)	06:59 16:24
2	07:19 16:34	07:04 17:09	16:10 (1) 16:35 (1)	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	15:45 (1) 16:02 (1)	07:00 16:23
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20	07:14 16:53	06:42 17:31	16:22 (1) 19:03	06:57 19:37	06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29	15:49 (1) 16:02 (1)	07:14 16:25
21	07:14 16:54	06:40 17:33	16:22 (1) 19:04	06:55 19:38	06:05 19:39	05:29 20:09	05:19 20:29	05:36 20:22	06:07 19:47	06:38 18:53	07:10 18:03	06:47 16:29	15:50 (1) 16:01 (1)	07:15 16:25
22	07:13 16:55	06:39 17:34	16:22 (1) 19:05	06:53 19:39	06:03 19:40	05:28 20:10	05:19 20:29	05:37 20:21	06:08 19:43	06:39 18:51	07:11 18:02	06:48 16:28	15:51 (1) 16:00 (1)	07:16 16:26
23	07:12 16:56	06:38 17:35	16:22 (1) 19:06	06:52 19:41	06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	06:49 16:27	15:52 (1) 16:00 (1)	07:16 16:26
24	07:12 16:58	06:36 17:36	16:22 (1) 19:07	06:50 19:42	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:50 16:27	15:53 (1) 16:00 (1)	07:17 16:26
25	07:11 16:59	06:34 17:37	16:22 (1) 19:08	06:49 19:43	05:59 19:43	05:25 20:13	05:20 20:30	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	06:51 16:26	15:54 (1) 16:00 (1)	07:17 16:28
26	07:10 17:00	06:33 17:39	16:22 (1) 19:09	06:47 19:44	05:57 19:44	05:25 20:13	05:20 20:30	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	06:52 16:26	15:55 (1) 16:00 (1)	07:17 16:28
27	07:09 17:01	06:31 17:40	16:22 (1) 19:10	06:45 19:45	05:55 19:45	05:24 20:14	05:20 20:30	05:42 20:17	06:13 19:35	06:44 18:42	07:17 17:55	06:53 16:25	15:56 (1) 16:00 (1)	07:18 16:29
28	07:09 17:03	06:30 17:41	16:22 (1) 19:11	06:44 19:46	05:54 19:46	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	07:18 17:53	06:54 16:25	15:57 (1) 16:00 (1)	07:18 16:30
29	07:08 17:04	06:29 17:42	16:22 (1) 19:12	06:43 19:47	05:53 19:47	05:23 20:16	05:21 20:30	05:43 20:15	06:15 19:32	06:46 18:39	07:19 17:52	06:55 16:24	15:58 (1) 16:00 (1)	07:18 16:30
30	07:07 17:05	06:28 17:43	16:22 (1) 19:13	06:42 19:48	05:52 19:48	05:22 20:17	05:21 20:30	05:44 20:14	06:16 19:30	06:47 18:37	07:20 17:51	06:56 16:24	15:59 (1) 16:00 (1)	07:18 16:31
31	07:06 17:06	06:27 17:44	16:22 (1) 19:14	06:41 19:49	05:51 19:49	05:21 20:18	05:20 20:30	05:45 20:13	06:17 19:28	06:48 18:36	07:21 17:50	06:57 16:24	16:00 (1) 16:56 (1)	07:19 16:32
Potential sun hours	296	297	298	299	300	301	302	303	304	305	306	307	308	309
Total, worst case	212	218	224	230	236	242	248	254	260	266	272	278	284	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 98
 Licensed user: **Vanasse Hangen Brustlin, Inc.**
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: DP - Shadow Receptor: 1.0 x 1.0 Azimuth: 109.3° Slope: 90.0° (120)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	16:07 (1) 16:30 (1)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	16:08 (1) 16:30 (1)	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	16:08 (1) 16:29 (1)	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:46
4	07:19 16:35	07:02 17:11	16:10 (1) 16:28 (1)	06:24 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:52 18:30	06:27 16:45
5	07:19 16:36	07:01 17:13	16:11 (1) 16:28 (1)	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	16:13 (1) 16:26 (1)	06:20 17:48	06:28 19:22	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	06:54 18:27	06:29 16:42
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8	07:19 16:39	06:57 17:16	07:17 18:50	06:17 17:49	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	06:25 19:15	06:56 18:24	06:32 16:40
9	07:19 16:40	06:56 17:18	07:15 18:51	06:15 17:48	06:24 19:26	05:41 19:58	05:19 20:24	05:27 20:28	05:54 20:02	06:26 19:13	06:57 18:22	06:33 16:39
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11	07:18 16:42	06:54 17:20	07:12 18:54	06:13 17:46	06:20 19:28	05:38 20:00	05:18 20:25	05:28 20:28	05:56 20:00	06:28 19:10	06:59 18:19	06:35 16:37
12	07:18 16:44	06:52 17:22	07:10 18:55	06:12 17:45	06:19 19:29	05:37 20:00	05:18 20:26	05:29 20:27	05:57 19:57	06:29 19:08	07:00 18:17	06:37 16:36
13	07:18 16:45	06:51 17:23	07:09 18:56	06:11 17:44	06:17 19:30	05:36 20:01	05:18 20:26	05:29 20:27	05:58 19:56	06:30 19:06	07:01 18:16	06:38 16:35
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18	07:15 16:50	06:44 17:29	07:00 19:02	06:06 17:39	06:09 19:35	05:31 20:06	05:18 20:24	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31
19	07:15 16:52	06:43 17:30	06:59 19:03	06:05 17:38	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	06:42 17:31	06:57 19:04	06:04 17:37	06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29
21	07:14 16:54	06:41 17:33	06:55 19:05	06:03 17:36	06:05 19:39	05:29 20:09	05:19 20:29	05:36 20:22	06:07 19:44	06:38 18:53	07:10 18:03	06:47 16:29
22	07:13 16:55	06:40 17:34	06:54 19:06	06:02 17:35	06:03 19:40	05:28 20:10	05:19 20:29	05:37 20:21	06:08 19:43	06:39 18:51	07:11 18:02	06:48 16:28
23	07:12 16:56	06:39 17:35	06:53 19:07	06:01 17:34	06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	06:50 16:27
24	07:12 16:58	06:38 17:36	06:52 19:08	06:00 17:33	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27
25	07:11 16:59	06:37 17:37	06:51 19:09	05:59 17:32	05:59 19:43	05:25 20:13	05:20 20:30	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	06:52 16:26
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28	07:09 17:03	06:34 17:41	06:48 19:13	05:56 17:29	05:55 19:46	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	07:18 17:53	06:55 16:25
29	07:08 17:04	06:33 17:42	06:47 19:14	05:55 17:28	05:54 19:47	05:24 20:16	05:21 20:30	05:43 20:15	06:15 19:32	06:46 18:39	07:20 17:52	06:56 16:24
30	07:07 17:05	06:32 17:43	06:46 19:15	05:54 17:27	05:53 19:48	05:24 20:17	05:21 20:30	05:44 20:14	06:16 19:30	06:47 18:37	07:21 17:51	06:57 16:24
31	07:06 17:06	06:31 17:44	06:45 19:16	05:53 17:26	06:38 19:49	05:22 20:18	05:22 20:30	05:45 20:13	06:17 19:28	06:48 17:50	07:22 17:50	06:58 16:23
Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	266
Total, worst case	319	122	370	400	449	454	460	429	375	344	297	266

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: DY - Shadow Receptor: 1.0 x 1.0 Azimuth: 91.0° Slope: 90.0° (129)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	15:43 (1) 16:05 (1)	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48
2	07:19 16:34	15:44 (1) 16:06 (1)	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	15:44 (1) 16:06 (1)	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:46
4	07:19 16:35	15:44 (1) 16:07 (1)	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:51 18:30	06:27 16:45
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7	07:19 16:38	15:45 (1) 16:08 (1)	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	06:30 16:41
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11	07:18 16:42	15:47 (1) 16:10 (1)	06:54 17:20	06:12 17:54	06:20 19:28	05:38 20:00	05:18 20:25	05:28 20:28	05:56 20:00	06:28 19:10	06:59 18:19	06:35 16:37
12	07:18 16:44	15:47 (1) 16:10 (1)	06:52 17:22	06:10 17:55	06:19 19:29	05:37 20:00	05:18 20:26	05:29 20:27	05:57 19:57	06:29 19:08	07:00 18:17	06:37 16:36
13	07:18 16:45	15:47 (1) 16:10 (1)	06:51 17:23	06:09 17:56	06:17 19:30	05:36 20:01	05:18 20:26	05:29 20:27	05:58 19:56	06:30 19:06	07:01 18:16	06:38 16:35
14	07:17 16:46	15:48 (1) 16:10 (1)	06:50 17:24	06:07 17:57	06:15 19:31	05:35 20:02	05:18 20:27	05:30 20:26	05:59 19:54	06:31 19:05	07:02 18:14	06:39 16:34
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16	07:16 16:48	15:50 (1) 16:11 (1)	06:47 17:26	06:04 17:59	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:25	06:01 19:51	06:33 19:01	07:05 18:11	06:41 16:32
17	07:16 16:49	15:50 (1) 16:10 (1)	06:46 17:28	06:02 18:00	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	06:43 16:32
18	07:15 16:50	15:51 (1) 16:10 (1)	06:44 17:29	06:00 18:02	06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31
19	07:15 16:52	15:52 (1) 16:10 (1)	06:43 17:30	05:59 18:03	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	15:54 (1) 16:10 (1)	06:42 17:31	05:57 18:04	06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29
21	07:14 16:54	15:55 (1) 16:09 (1)	06:40 17:33	05:55 18:05	06:05 19:39	05:29 20:09	05:19 20:29	05:36 20:22	06:07 19:47	06:38 18:53	07:10 18:03	06:47 16:29
22	07:13 16:55	15:57 (1) 16:07 (1)	06:39 17:34	05:54 18:06	06:03 19:40	05:28 20:10	05:19 20:30	05:37 20:21	06:08 19:43	06:39 18:51	07:11 18:02	06:48 16:28
23	07:12 16:56	15:59 (1) 16:04 (1)	06:37 17:35	05:52 18:07	06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	06:50 16:27
24	07:12 16:58	16:04 (1) 17:36	06:36 19:08	05:50 18:08	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	266
Total, worst case	464										213	660

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: EJ - Shadow Receptor: 1.0 x 1.0 Azimuth: 97.6° Slope: 90.0° (140)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	16:12 (2) 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	16:12 (2) 16:23
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5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:43	16:19 (2) 16:23
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7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	06:30 16:41	16:16 (2) 16:23
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Potential sun hours	296	297	362	400	449	454	461	429	375	344	297	286
Total, worst case												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 120

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: EK - Shadow Receptor: 1.0 x 1.0 Azimuth: 100.8° Slope: 90.0° (141)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	16:50 (2) 17:11 (2)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24
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Potential sun hours	296	297	315	370	400	449	454	460	429	375	344	297	286
Total, worst case				59							376		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page
 2/3/2011 9:39 AM / 121

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: EL - Shadow Receptor: 1.0 x 1.0 Azimuth: 96.9° Slope: 90.0° (142)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to the sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	16:53 (2) 17:21 (2)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24	
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20	07:14 16:53	06:42 17:31	17:02 (2) 19:04	19:37 19:37	06:06 20:08	05:29 20:08	05:18 20:22	05:35 20:22	06:06 19:46	06:37 18:54	07:09 18:05	17:30 (2) 17:42 (2)	06:46 16:29	07:14 16:25
21	07:14 16:54	06:40 17:33	17:00 (2) 19:05	19:38 19:39	06:05 20:09	05:29 20:09	05:19 20:22	05:36 20:22	06:07 19:44	06:38 18:53	07:10 18:03	17:32 (2) 17:40 (2)	06:47 16:29	07:15 16:25
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Potential sun hours	296	297	157	234	400	454	460	429	375	344	393	297	266	
Total, worst case														

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 133

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: EX - Shadow Receptor: 1.0 x 1.0 Azimuth: 94.0° Slope: 90.0° (154)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	16:45 (2) 17:01 (2)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	16:17 (2) 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	16:48 (2) 16:57 (2)	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	16:22 (2) 16:23
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Potential sun hours	296	297	459	370	400	449	454	460	429	375	344	476	297
Total, worst case				25								10	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker
			(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: EY - Shadow Receptor: 1.0 x 1.0 Azimuth: 69.2° Slope: 90.0° (155)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	16:20 (2) 16:43 (2)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48
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19	07:15 16:52	16:21 (2) 16:26 (2)	06:43 17:30	06:59 19:03	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	16:21 (2) 16:28 (2)	06:42 17:31	06:57 19:04	06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29
21	07:14 16:54	16:20 (2) 16:29 (2)	06:40 17:33	06:55 19:05	06:05 19:39	05:29 20:09	05:19 20:29	05:36 20:22	06:07 19:44	06:38 18:53	07:10 18:03	06:47 16:29
22	07:13 16:55	16:20 (2) 16:30 (2)	06:39 17:34	06:54 19:06	06:03 19:40	05:28 20:10	05:19 20:30	05:37 20:21	06:08 19:43	06:39 18:51	07:11 18:02	06:48 16:28
23	07:12 16:56	16:19 (2) 16:31 (2)	06:37 17:35	06:52 19:07	06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	06:50 16:27
24	07:12 16:58	16:20 (2) 16:33 (2)	06:36 17:36	06:50 19:08	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27
25	07:11 16:59	16:19 (2) 16:34 (2)	06:34 17:37	06:49 19:09	05:59 19:43	05:25 20:13	05:20 20:30	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	06:52 16:26
26	07:10 17:00	16:19 (2) 16:35 (2)	06:33 17:39	06:47 19:10	05:57 19:44	05:25 20:13	05:20 20:30	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	06:53 16:26
27	07:09 17:01	16:19 (2) 16:36 (2)	06:31 17:40	06:45 19:11	05:56 19:45	05:24 20:14	05:20 20:30	05:42 20:17	06:13 19:35	06:44 18:42	07:17 17:55	06:54 16:25
28	07:09 17:03	16:19 (2) 16:38 (2)	06:30 17:41	06:44 19:13	05:55 19:46	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	07:18 17:53	06:55 16:25
29	07:08 17:04	16:19 (2) 16:39 (2)		06:42 19:14	05:53 19:47	05:23 20:16	05:21 20:30	05:43 20:15	06:15 19:32	06:46 18:39	07:20 17:52	06:56 16:24
30	07:07 17:05	16:19 (2) 16:40 (2)		06:40 19:15	05:52 19:48	05:22 20:17	05:21 20:30	05:44 20:14	06:16 19:30	06:47 18:37	07:21 17:51	06:57 16:24
31	07:06 17:06	16:19 (2) 16:42 (2)		06:38 19:16		05:22 20:18	05:45 20:13	06:17 19:28	06:17 19:28	07:22 17:50		07:19 16:23
Potential sun hours	296	297	162	370	400	454	461	429	375	344	297	266
Total, worst case	189	162	370	400	449	461	429	375	344	297	354	266

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 149
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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: FM - Shadow Receptor: 1.0 x 1.0 Azimuth: 23.1° Slope: 90.0° (169)

Assumptions for shadow calculations

- Maximum distance for influence 2,000 m
- Minimum sun height over horizon for influence 3 °
- Day step for calculation 1 days
- Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	16:44 (1) 17:13 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:12	05:46 20:12	06:18 19:27	06:48 18:35	17:27 (1) 17:43 (1)	06:23 16:48	06:59 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	16:43 (1) 17:12 (1)	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	17:24 (1) 17:44 (1)	06:24 16:47	07:00 16:23
3	07:19 16:35	07:03 17:10	06:25 17:45	16:43 (1) 17:13 (1)	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	17:22 (1) 17:45 (1)	06:26 16:46	07:01 16:23
4	07:19 16:35	07:02 17:11	06:24 17:46	16:43 (1) 17:13 (1)	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:52 18:30	17:21 (1) 17:46 (1)	06:27 16:45	07:02 16:23
5	07:19 16:36	07:01 17:13	06:22 17:47	16:42 (1) 17:12 (1)	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	17:21 (1) 17:48 (1)	06:28 16:43	07:03 16:23
6	07:19 16:37	07:00 17:14	06:20 17:48	16:43 (1) 17:12 (1)	06:28 19:22	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	06:54 18:27	17:19 (1) 17:48 (1)	06:29 16:42	07:04 16:23
7	07:19 16:38	06:58 17:15	06:19 17:49	16:43 (1) 17:11 (1)	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	17:19 (1) 17:48 (1)	06:30 16:41	07:05 16:23
8	07:19 16:39	06:57 17:16	06:18 17:49	17:43 (1) 18:10 (1)	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	06:25 19:15	06:56 18:24	17:17 (1) 17:48 (1)	06:32 16:40	07:06 16:22
9	07:19 16:40	06:56 17:18	06:17 18:51	17:44 (1) 18:10 (1)	06:24 19:26	05:41 19:58	05:19 20:24	05:27 20:28	05:54 20:02	06:26 19:13	06:57 18:22	17:17 (1) 17:47 (1)	06:33 16:39	07:07 16:22
10	07:18 16:41	06:55 17:19	06:16 18:53	17:44 (1) 18:08 (1)	06:22 19:27	05:39 19:59	05:18 20:25	05:27 20:28	05:55 20:01	06:27 19:12	06:58 18:21	17:17 (1) 17:47 (1)	06:34 16:38	07:08 16:23
11	07:18 16:42	06:54 17:20	06:15 18:54	17:45 (1) 18:06 (1)	06:20 19:28	05:38 20:00	05:18 20:25	05:28 20:28	05:56 20:00	06:28 19:10	06:59 18:19	17:17 (1) 17:46 (1)	06:35 16:37	07:09 16:23
12	07:18 16:44	06:52 17:22	06:14 18:55	17:47 (1) 18:05 (1)	06:19 19:29	05:37 20:00	05:18 20:26	05:29 20:27	05:57 19:57	06:29 19:08	07:00 18:17	17:17 (1) 17:46 (1)	06:37 16:36	07:10 16:23
13	07:18 16:45	06:51 17:23	06:13 18:56	17:49 (1) 18:02 (1)	06:17 19:30	05:36 20:01	05:18 20:26	05:30 20:27	05:58 19:56	06:30 19:06	07:01 18:16	17:17 (1) 17:45 (1)	06:38 16:35	07:11 16:23
14	07:17 16:46	06:50 17:24	06:12 18:57	18:02 (1) 19:31	06:15 20:02	05:35 20:27	05:18 20:26	05:30 20:26	05:59 19:54	06:31 19:05	07:02 18:14	17:18 (1) 17:45 (1)	06:39 16:34	07:12 16:23
15	07:17 16:47	06:49 17:25	06:11 18:58	19:06 20:03	06:14 20:03	05:34 20:27	05:18 20:26	05:31 20:26	06:00 19:53	06:32 19:03	07:03 18:13	17:19 (1) 17:43 (1)	06:40 16:33	07:11 16:23
16	07:16 16:48	06:47 17:27	06:10 18:59	20:04 19:33	06:12 20:04	05:33 20:28	05:18 20:25	05:32 20:25	06:01 19:51	06:33 19:01	07:05 18:11	17:20 (1) 17:42 (1)	06:41 16:32	07:12 16:24
17	07:16 16:49	06:46 17:28	06:09 19:00	20:05 19:34	06:11 20:05	05:32 20:28	05:18 20:24	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	17:21 (1) 17:40 (1)	06:43 16:32	07:13 16:24
18	07:15 16:50	06:44 17:29	06:08 19:02	20:06 19:35	06:10 20:06	05:31 20:28	05:18 20:24	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	17:23 (1) 17:37 (1)	06:44 16:31	07:13 16:24
19	07:15 16:52	06:43 17:30	06:07 19:03	20:07 19:36	06:08 20:07	05:30 20:29	05:18 20:23	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	17:26 (1) 17:33 (1)	06:45 16:30	07:14 16:25
20	07:14 16:53	06:42 17:31	06:06 19:04	20:08 19:37	06:06 20:08	05:29 20:29	05:18 20:22	05:35 20:22	06:06 19:46	06:37 18:54	07:09 18:05	17:27 (1) 17:41 (1)	06:46 16:29	07:14 16:25
21	07:14 16:54	06:40 17:33	06:05 19:05	20:09 19:39	06:05 20:09	05:29 20:29	05:19 20:22	05:36 19:44	06:07 19:47	06:38 18:53	07:10 18:03	17:28 (1) 17:42 (1)	06:47 16:29	07:15 16:25
22	07:13 16:55	06:39 17:34	06:04 19:06	20:10 19:40	06:03 20:10	05:28 20:29	05:19 20:21	05:37 19:43	06:08 19:43	06:39 18:51	07:11 18:02	17:29 (1) 17:43 (1)	06:48 16:28	07:16 16:26
23	07:12 16:56	06:37 17:35	06:03 19:07	20:11 19:41	06:02 20:11	05:27 20:30	05:19 20:20	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	17:30 (1) 17:44 (1)	06:50 16:27	07:16 16:26
24	07:12 16:58	06:36 17:36	06:02 19:08	20:12 19:42	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	17:45 (1) 17:59 (1)	06:51 16:27	07:17 16:27
25	07:11 16:59	06:34 17:37	06:01 19:09	20:13 19:43	05:59 19:43	05:25 20:13	05:20 20:30	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	17:46 (1) 17:52 (1)	06:52 16:26	07:17 16:28
26	07:10 17:00	06:33 17:39	06:00 19:10	20:14 19:44	05:57 19:44	05:24 20:13	05:20 20:30	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	17:47 (1) 17:53 (1)	06:53 16:26	07:17 16:28
27	07:09 17:01	06:31 17:40	05:59 19:11	20:15 19:45	05:56 19:45	05:24 20:14	05:20 20:30	05:42 20:17	06:13 19:35	06:44 18:42	07:17 17:55	17:48 (1) 17:54 (1)	06:54 16:25	07:18 16:29
28	07:09 17:03	06:30 17:41	05:58 19:13	20:16 19:46	05:55 19:46	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	07:18 17:53	17:49 (1) 17:55 (1)	06:55 16:25	07:18 16:30
29	07:08 17:04	06:29 17:42	05:57 19:14	20:17 19:47	05:54 19:47	05:24 20:16	05:22 20:30	05:43 20:15	06:15 19:32	06:46 18:39	07:19 17:52	17:50 (1) 17:56 (1)	06:56 16:24	07:18 16:30
30	07:07 17:05	06:28 17:41	05:56 19:15	20:18 19:48	05:53 19:48	05:24 20:17	05:23 20:30	05:44 20:14	06:16 19:30	06:47 18:37	07:20 17:51	17:51 (1) 17:57 (1)	06:57 16:24	07:18 16:31
31	07:06 17:06	06:27 17:40	05:55 19:16	20:19 19:49	05:52 19:49	05:24 20:18	05:24 20:30	05:45 20:13	06:17 19:28	06:48 18:36	07:21 17:52	17:52 (1) 17:58 (1)	06:58 16:24	07:19 16:32
Potential sun hours	296	297	300	303	304	305	306	307	308	309	310	311	312	286
Total, worst case		121	370	334	400	449	454	460	429	375	10	344	458	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project: Wind Prospect
Description: Wind Prospect Worst Case Analysis

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Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: FN - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (170)

Assumptions for shadow calculations

- Maximum distance for influence 2,000 m
Minimum sun height over horizon for influence 3 °
Day step for calculation 1 days
Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

Table with columns for months (January to December) and rows for days (1 to 31). Each cell contains sun rise and set times in hh:mm format. Includes summary rows for 'Potential sun hours' and 'Total, worst case'.

Table layout: For each day in each month the following matrix apply

Matrix with 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

Project: Wind Prospect
Description: Wind Prospect Worst Case Analysis

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Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: FO - Shadow Receptor: 1.0 x 1.0 Azimuth: 4.2° Slope: 90.0° (171)

Assumptions for shadow calculations

- Maximum distance for influence: 2,000 m
Minimum sun height over horizon for influence: 3 °
Day step for calculation: 1 days
Time step for calculation: 1 minutes

The calculated times are "worst case" given by the following assumptions:
The sun is shining all the day, from sunrise to sunset
The rotor plane is always perpendicular to the line from the WTG to the sun
The WTG is always operating

Calendar table showing shadow calculations for each day of the year from January to December. Columns include month and day, and rows include start and end times and potential sun hours.

Table layout: For each day in each month the following matrix apply

Matrix table with columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 Licensed user:
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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: FP - Shadow Receptor: 1.0 x 1.0 Azimuth: 4.5° Slope: 90.0° (172)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	15:49 (2) 16:25 (2)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 15:17 (2)	06:59 16:24
2	07:19 16:34	07:04 17:09	15:49 (2) 16:26 (2)	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:11	06:19 19:25	06:49 18:34	06:24 15:17 (2)	07:00 16:23
3	07:19 16:35	07:03 17:10	15:48 (2) 16:27 (2)	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 15:18 (2)	07:01 16:23
4	07:19 16:35	07:02 17:11	15:48 (2) 16:28 (2)	06:24 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:52 18:30	06:27 15:18 (2)	07:02 16:23
5	07:19 16:36	07:01 17:13	15:48 (2) 16:28 (2)	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 15:18 (2)	07:03 16:23
6	07:19 16:37	07:00 17:14	15:48 (2) 16:29 (2)	06:20 17:48	06:28 19:22	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	06:54 18:27	06:29 15:18 (2)	07:04 16:23
7	07:19 16:38	06:58 17:15	15:48 (2) 16:30 (2)	06:19 17:49	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	06:30 15:18 (2)	07:05 16:23
8	07:19 16:39	06:57 17:16	15:47 (2) 16:29 (2)	07:17 18:50	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	06:25 19:15	06:56 18:24	06:32 15:19 (2)	07:05 16:23
9	07:19 16:40	06:56 17:18	15:47 (2) 16:29 (2)	07:15 18:51	06:24 19:26	05:41 19:58	05:19 20:24	05:27 20:28	05:54 20:02	06:26 19:13	06:57 18:22	06:33 15:20 (2)	07:06 16:22
10	07:18 16:41	06:55 17:19	15:48 (2) 16:30 (2)	07:14 18:53	06:22 19:27	05:39 19:59	05:18 20:25	05:27 20:28	05:55 20:01	06:27 19:12	06:58 18:21	06:34 15:22 (2)	07:07 16:23
11	07:18 16:42	06:54 17:20	15:48 (2) 16:30 (2)	07:12 18:54	06:20 19:28	05:38 20:00	05:18 20:25	05:28 20:28	05:56 20:00	06:28 19:10	06:59 18:19	06:35 15:22 (2)	07:08 16:23
12	07:18 16:44	06:52 17:22	15:48 (2) 16:29 (2)	07:11 18:55	06:19 19:29	05:37 20:00	05:18 20:26	05:29 20:27	05:57 19:57	06:29 19:08	07:00 18:17	06:37 15:22 (2)	07:09 16:23
13	07:18 16:45	06:51 17:23	15:48 (2) 16:29 (2)	07:09 18:56	06:17 19:30	05:36 20:01	05:18 20:26	05:30 20:27	05:58 19:56	06:30 19:06	07:01 18:16	06:38 15:24 (2)	07:10 16:23
14	07:17 16:46	06:50 17:24	15:49 (2) 16:29 (2)	07:07 18:57	06:15 19:31	05:35 20:02	05:18 20:27	05:30 20:26	05:59 19:54	06:31 19:05	07:02 18:14	06:39 15:24 (2)	07:10 16:23
15	07:17 16:47	06:49 17:25	15:49 (2) 16:28 (2)	07:06 18:58	06:14 19:32	05:34 20:03	05:18 20:27	05:31 20:26	06:00 19:53	06:32 19:03	07:03 18:13	06:40 15:25 (2)	07:11 16:23
16	07:16 16:48	06:47 17:27	15:50 (2) 16:28 (2)	07:04 18:59	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:25	06:01 19:51	06:33 19:01	07:05 18:11	06:41 15:26 (2)	07:12 16:24
17	07:16 16:49	06:46 17:28	15:51 (2) 16:27 (2)	07:02 19:00	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	06:43 15:27 (2)	07:13 16:24
18	07:15 16:50	06:44 17:29	15:52 (2) 16:26 (2)	07:00 19:02	06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:24	06:03 19:49	06:35 18:58	07:07 18:08	16:35 (2) 16:31	06:44 15:28 (2)
19	07:15 16:52	06:43 17:30	15:53 (2) 16:25 (2)	06:59 19:03	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	16:32 (2) 16:30	06:45 10 15:45 (2)
20	07:14 16:53	06:42 17:31	15:54 (2) 16:23 (2)	06:57 19:04	06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:06 19:46	06:37 18:54	07:09 18:05	16:29 (2) 16:21	06:46 22 16:51 (2)
21	07:14 16:54	06:40 17:33	15:56 (2) 16:22 (2)	06:55 19:05	06:05 19:39	05:29 20:09	05:19 20:29	05:36 20:22	06:07 19:44	06:38 18:53	07:10 18:03	16:26 (2) 16:24	06:47 27 16:53 (2)
22	07:13 16:55	06:39 17:34	15:58 (2) 16:19 (2)	06:54 19:06	06:03 19:40	05:28 20:10	05:19 20:30	05:37 20:21	06:08 19:43	06:39 18:51	07:11 18:02	16:24 (2) 16:22	06:48 30 16:54 (2)
23	07:12 16:56	06:37 16:00 (2)	16:01 (2) 16:17 (2)	06:52 19:07	06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	16:23 (2) 16:22 (2)	06:50 32 16:55 (2)
24	07:12 16:58	06:36 16:14 (2)	16:07 (2) 16:10 (2)	06:50 19:08	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	16:22 (2) 16:21 (2)	06:51 35 16:57 (2)
25	07:11 16:59	06:34 16:16 (2)	16:09 (2) 16:16 (2)	06:49 19:09	05:59 19:43	05:26 20:13	05:20 20:30	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	16:21 (2) 16:20 (2)	06:52 36 16:57 (2)
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28	07:09 17:03	06:30 16:21 (2)	16:21 (2) 16:21 (2)	06:44 17:41	05:55 19:13	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	07:18 17:54	16:19 (2) 16:18 (2)	06:55 40 16:59 (2)
29	07:08 17:04	06:29 16:22 (2)	16:22 (2) 16:22 (2)	06:43 17:42	05:54 19:14	05:24 20:16	05:22 20:30	05:43 20:15	06:15 19:32	06:46 18:39	07:19 17:52	16:18 (2) 16:17 (2)	06:56 41 16:59 (2)
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	266	
Total, worst case	224	839	370	400	449	454	460	429	375	344	297	266	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 2/3/2011 9:39 AM / 153

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Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: FQ - Shadow Receptor: 1.0 x 1.0 Azimuth: 82.9° Slope: 90.0° (173)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	15:39 (1) 16:40 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	16:21 (1) 17:12 (1)	06:23 16:48	15:30 (1) 15:49 (1)	06:59 16:24
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3	07:19 16:35	07:03 17:10	06:25 17:45	15:39 (1) 16:40 (1)	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	16:18 (1) 17:13 (1)	06:26 16:46	15:36 (1) 15:43 (1)	07:01 16:23
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Potential sun hours	296	297	370	400	449	454	460	429	375	299	344	297	26	286
Total, worst case		929	1012							1644				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: GK - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (193)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24	
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Potential sun hours	296	297	297	370	400	454	460	429	375	344	297	286	
Total, worst case		29								32			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: GL - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (194)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24	
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4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:52 18:31	06:27 16:45	07:02 16:23	
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Potential sun hours	296	297	297	300	300	300	300	300	300	300	297	286	
Total, worst case		29	370	400	449	454	460	429	375	344	28	286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: GM - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (195)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:51	05:21 20:19	05:23 20:30	05:47 20:11	06:19 19:25	06:49 18:34	06:25 16:47	07:00 16:23
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Potential sun hours	296	297	28	370	400	454	460	429	375	344	297	286
Total, worst case			28								28	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: GN - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (196)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
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 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
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 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24
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Potential sun hours	296	297	300	370	400	454	460	429	375	344	297	286
Total, worst case		26								25		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 178

Licensed user:
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 1001 Walnut Street
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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: GO - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (197)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24
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Potential sun hours	296	297	297	370	400	454	460	429	375	344	297	286
Total, worst case		25								24		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 179

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: GP - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (198)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24
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22	07:13 16:55	06:39 17:34	06:01 19:06	06:03 19:40	05:28 20:10	05:19 20:30	05:37 20:21	06:08 19:43	06:39 18:51	07:12 18:02	06:48 16:27	07:18 16:26
23	07:13 16:56	06:37 17:35	06:00 19:07	06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:01	06:49 16:27	07:19 16:26
24	07:12 16:58	06:36 17:36	05:59 19:08	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:40	06:41 18:48	07:14 17:59	06:50 16:27	07:20 16:27
25	07:11 16:59	06:34 17:38	05:58 19:09	05:59 19:43	05:25 20:13	05:20 20:30	05:40 20:19	06:11 19:38	06:42 18:46	07:15 17:58	06:51 16:26	07:21 16:28
26	07:10 17:00	06:33 17:39	05:57 19:10	05:57 19:44	05:25 20:14	05:20 20:30	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	06:52 16:26	07:22 16:28
27	07:09 17:01	06:31 17:40	05:56 19:12	05:56 19:45	05:24 20:14	05:20 20:30	05:42 20:17	06:13 19:35	06:44 18:42	07:17 17:55	06:53 16:25	07:23 16:29
28	07:09 17:03	06:30 17:41	05:55 19:13	05:55 19:46	05:24 20:15	05:21 20:30	05:43 20:16	06:14 19:33	06:45 18:41	07:19 17:54	06:54 16:25	07:24 16:30
29	07:08 17:04	06:29 17:42	05:54 19:14	05:54 19:47	05:23 20:16	05:21 20:30	05:44 20:15	06:15 19:32	06:46 18:39	07:20 17:52	06:55 16:24	07:25 16:30
30	07:07 17:05	06:28 17:43	05:53 19:15	05:53 19:48	05:22 20:17	05:22 20:30	05:44 20:14	06:16 19:30	06:47 18:37	07:21 17:51	06:56 16:24	07:26 16:31
31	07:06 17:06	06:27 17:44	05:52 19:16	05:52 19:49	05:21 20:18	05:21 20:30	05:45 20:13	06:17 19:28	06:48 18:36	07:22 17:50	06:57 16:24	07:27 16:32
Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286
Total, worst case		19								22		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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Vanasse Hangen Brustlin, Inc.
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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: GQ - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (199)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:51	05:21 20:19	05:23 20:30	05:47 20:11	06:19 19:25	06:49 18:34	06:25 16:47	07:00 16:23
3	07:19 16:35	07:03 17:10	06:25 17:45	06:34 19:19	05:48 19:52	05:21 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:51 18:32	06:26 16:46	07:01 16:23
4	07:19 16:36	07:02 17:12	06:24 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	06:52 18:31	06:27 16:45	07:02 16:23
5	07:19 16:37	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:22	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:44	07:03 16:23
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17	07:16 16:49	06:46 17:28	06:02 19:01	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:25	06:03 19:50	06:34 19:00	07:06 18:10	06:43 16:32	07:13 16:24
18	07:16 16:50	06:45 17:29	06:01 19:02	06:09 19:35	05:31 20:06	05:18 20:28	05:34 20:24	06:04 19:49	06:35 18:58	07:07 18:08	06:44 16:31	07:13 16:24
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22	07:13 16:55	06:39 17:34	06:59 19:06	06:03 19:40	05:28 20:10	05:19 20:30	05:37 20:21	06:08 19:43	06:39 18:51	07:12 18:02	06:49 16:28	07:16 16:26
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24	07:12 16:58	06:36 17:36	06:58 19:08	06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:40	06:41 18:48	07:14 17:59	06:51 16:27	07:17 16:27
25	07:11 16:59	06:34 17:38	06:49 19:09	05:59 19:43	05:26 20:13	05:20 20:30	05:40 20:19	06:11 19:38	06:42 18:46	07:15 17:58	06:52 16:26	07:18 16:28
26	07:10 17:00	06:33 17:39	06:47 19:10	05:57 19:44	05:25 20:14	05:20 20:30	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	06:53 16:26	07:19 16:28
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28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	05:24 20:15	05:21 20:30	05:43 20:16	06:14 19:33	06:45 18:41	07:19 17:54	06:55 16:25	07:18 16:30
29	07:08 17:04	06:29 17:42	06:42 19:14	05:53 19:47	05:23 20:16	05:21 20:30	05:44 20:15	06:15 19:32	06:46 18:39	07:20 17:52	06:56 16:24	07:18 16:30
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31	07:06 17:06	06:27 17:44	06:39 19:16	05:51 19:49	05:22 20:18	05:22 20:30	05:45 20:13	06:17 19:28	06:48 17:50	07:22 17:50	06:59 16:23	07:19 16:32
Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286
Total, worst case		21								23		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 1001 Walnut Street
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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: K - Shadow Receptor: 1.0 x 1.0 Azimuth: 175.5° Slope: 90.0° (11)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	18:19 (1) 18:59 (1)	05:21 20:18	05:22 20:30	05:46 20:12	18:39 (1) 18:58 (1)	06:18 19:27	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	18:20 (1) 18:59 (1)	05:21 20:19	05:22 20:30	05:47 20:10	18:37 (1) 19:00 (1)	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	18:20 (1) 18:58 (1)	05:20 20:20	05:23 20:30	05:48 20:09	18:35 (1) 19:01 (1)	06:20 19:23	06:50 18:32	06:26 16:46
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	18:21 (1) 18:58 (1)	05:20 20:21	05:24 20:30	05:49 20:08	18:34 (1) 19:03 (1)	06:21 19:22	06:52 18:30	06:27 16:45
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	18:21 (1) 18:56 (1)	05:20 20:21	05:24 20:30	05:50 20:07	18:33 (1) 19:04 (1)	06:22 19:20	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	18:22 (1) 18:55 (1)	05:19 20:22	05:25 20:29	05:51 20:06	18:32 (1) 19:05 (1)	06:23 19:18	06:54 18:27	06:29 16:42
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11	07:18 16:42	06:54 17:20	06:12 18:54	06:20 19:28	05:38 20:00	18:28 (1) 18:50 (1)	05:18 20:25	05:28 20:28	05:56 20:00	18:28 (1) 19:07 (1)	06:28 19:10	06:59 18:19	06:35 16:37
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13	07:18 16:45	06:51 17:23	06:09 18:56	06:17 19:30	05:36 18:52 (1)	18:33 (1) 18:46 (1)	05:36 20:01	05:30 20:27	05:58 19:56	18:27 (1) 19:08 (1)	06:30 19:06	07:01 18:16	06:38 16:35
14	07:17 16:46	06:50 17:24	06:07 18:57	06:15 19:31	05:35 18:55 (1)	18:31 (1) 18:41 (1)	05:35 20:02	05:30 20:26	05:59 19:54	18:27 (1) 19:08 (1)	06:31 19:05	07:02 18:14	06:39 16:34
15	07:17 16:47	06:49 17:25	06:06 18:58	06:14 19:32	05:34 18:28 (1)	18:31 (1) 18:56 (1)	05:34 20:03	05:31 20:26	06:00 19:53	18:26 (1) 19:08 (1)	06:32 19:03	07:03 18:13	06:40 16:33
16	07:16 16:48	06:47 17:27	06:04 18:59	06:12 19:33	05:33 18:26 (1)	18:33 (1) 18:57 (1)	05:33 20:04	05:32 20:25	06:01 19:51	18:26 (1) 19:08 (1)	06:33 19:01	07:05 18:11	06:41 16:32
17	07:16 16:49	06:46 17:28	06:02 19:00	06:11 19:34	05:32 18:25 (1)	18:34 (1) 18:58 (1)	05:32 20:05	05:33 20:24	06:02 19:50	18:26 (1) 19:07 (1)	06:34 19:00	07:06 18:09	06:43 16:32
18	07:15 16:50	06:44 17:29	06:00 19:02	06:09 19:35	05:31 18:23 (1)	18:34 (1) 18:58 (1)	05:31 20:06	05:34 20:24	06:03 19:48	18:26 (1) 19:07 (1)	06:35 18:58	07:07 18:08	06:44 16:31
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	05:30 18:23 (1)	18:35 (1) 19:00 (1)	05:30 20:07	05:34 20:23	06:04 19:47	18:25 (1) 19:07 (1)	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	05:29 18:21 (1)	18:35 (1) 18:59 (1)	05:29 20:08	05:35 20:22	06:06 19:46	18:25 (1) 19:06 (1)	06:37 18:54	07:09 18:05	06:46 16:29
21	07:14 16:54	06:40 17:33	06:55 19:05	06:05 19:39	05:29 18:21 (1)	18:36 (1) 19:00 (1)	05:29 20:09	05:36 20:22	06:07 19:44	18:26 (1) 19:06 (1)	06:38 18:53	07:10 18:03	06:47 16:29
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	
Total, worst case				666	396		24	1050					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: L - Shadow Receptor: 1.0 x 1.0 Azimuth: 172.0° Slope: 90.0° (12)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	18:22 (1) 18:52 (1)	05:21 20:18	05:22 20:12	05:46 20:12	06:18 19:27	18:28 (1) 18:52 (1)	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	18:23 (1) 18:51 (1)	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	18:29 (1) 18:50 (1)	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	18:25 (1) 18:50 (1)	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	18:32 (1) 18:47 (1)	06:50 18:32	07:01 16:46
4	07:19 16:36	07:02 17:11	06:24 17:46	06:32 19:20	05:47 19:53	18:26 (1) 18:49 (1)	05:20 20:21	05:24 20:30	05:49 20:08	06:21 19:22	18:47 (1) 18:30	06:52 16:45	07:02 16:23
5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	18:27 (1) 18:46 (1)	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	18:30 18:29	06:53 16:43	07:03 16:23
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	18:30 (1) 18:44 (1)	05:19 20:22	05:25 20:29	05:51 20:06	18:42 (1) 18:52 (1)	06:23 19:18	06:54 18:27	07:04 16:23
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	18:34 (1) 18:40 (1)	05:19 20:23	05:25 20:29	05:52 20:05	18:38 (1) 18:55 (1)	06:24 19:17	06:55 18:25	07:05 16:41
8	07:19 16:39	06:57 17:16	06:17 18:50	06:25 19:24	05:42 19:57	18:40 (1) 18:35 (1)	05:19 20:23	05:26 20:29	05:53 20:03	18:36 (1) 18:57 (1)	06:25 19:15	06:56 18:24	07:05 16:40
9	07:19 16:40	06:56 17:18	06:15 18:51	06:24 19:26	05:41 19:58	18:35 (1) 18:50 (1)	05:19 20:24	05:27 20:28	05:54 20:02	18:34 (1) 18:58 (1)	06:26 19:13	06:57 18:22	07:06 16:39
10	07:18 16:41	06:55 17:19	06:14 18:53	06:22 19:27	05:39 19:59	18:31 (1) 18:52 (1)	05:19 20:25	05:27 20:28	05:55 20:01	18:33 (1) 18:59 (1)	06:27 19:12	06:58 18:21	07:07 16:38
11	07:18 16:42	06:54 17:20	06:12 18:54	06:20 19:28	05:38 19:58	18:29 (1) 18:53 (1)	05:18 20:25	05:28 20:28	05:56 20:00	18:32 (1) 19:00 (1)	06:28 19:10	06:59 18:19	07:08 16:37
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14	07:17 16:46	06:50 17:24	06:07 18:57	06:15 19:31	05:35 20:02	18:24 (1) 18:57 (1)	05:18 20:27	05:30 20:26	05:59 20:05	18:28 (1) 19:03 (1)	06:31 19:05	07:02 18:14	07:10 16:34
15	07:17 16:47	06:49 17:25	06:06 18:58	06:14 19:32	05:34 20:03	18:23 (1) 18:58 (1)	05:18 20:27	05:31 20:26	06:00 19:53	18:28 (1) 19:03 (1)	06:32 19:03	07:03 18:13	07:11 16:33
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Potential sun hours	296	297	370	400	449	454	460	429	845	60	344	297	286
Total, worst case				748	145								

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker (WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker (WTG causing flicker last time)
	Minutes with flicker	

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 311

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: LM - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (326)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:51 19:49	05:21 20:19	05:22 20:30	05:46 20:12	06:12 (1) 06:23 (1)	06:18 19:27	06:48 18:36	06:23 16:48	06:59 16:24
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	
Total, worst case					83		56	33					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 325

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: M - Shadow Receptor: 1.0 x 1.0 Azimuth: 173.8° Slope: 90.0° (13)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	18:30 (1) 18:42 (1)	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	18:23 (1) 18:54 (1)	06:48 18:35	06:23 16:48
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12	07:18 16:44	06:52 17:22	06:11 18:55	06:19 19:29	05:37 20:00	18:23 (1) 18:56 (1)	05:18 20:26	05:29 20:27	05:57 19:57	18:37 (1) 18:51 (1)	06:29 19:08	07:00 18:17	06:37 16:36
13	07:18 16:45	06:51 17:23	06:09 18:56	06:17 19:30	05:36 20:01	18:22 (1) 18:56 (1)	05:18 20:26	05:30 20:27	05:58 19:56	18:35 (1) 18:53 (1)	06:30 19:06	07:01 18:16	06:38 16:35
14	07:17 16:46	06:50 17:24	06:07 18:57	06:15 19:31	05:35 20:02	18:21 (1) 18:57 (1)	05:18 20:27	05:30 20:26	05:59 19:54	18:33 (1) 18:55 (1)	06:31 19:05	07:02 18:14	06:39 16:34
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16	07:16 16:48	06:47 17:27	06:04 18:59	06:12 19:33	05:33 20:04	18:19 (1) 18:56 (1)	05:18 20:28	05:32 20:25	06:01 19:51	18:30 (1) 18:57 (1)	06:33 19:01	07:05 18:11	06:41 16:32
17	07:16 16:49	06:46 17:28	06:02 19:00	06:11 19:34	05:32 20:05	18:20 (1) 18:57 (1)	05:18 20:28	05:33 20:24	06:02 19:50	18:28 (1) 18:58 (1)	06:34 19:00	07:06 18:09	06:43 16:32
18	07:15 16:50	06:44 17:29	06:00 19:02	06:09 19:35	05:31 20:06	18:19 (1) 18:56 (1)	05:18 20:28	05:33 20:24	06:03 19:48	18:27 (1) 18:59 (1)	06:35 18:58	07:07 18:08	06:44 16:31
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	05:30 20:07	18:19 (1) 18:56 (1)	05:18 20:29	05:34 20:23	06:04 19:47	18:26 (1) 18:59 (1)	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	05:29 20:08	18:19 (1) 18:55 (1)	05:18 20:29	05:35 20:22	06:06 19:46	18:25 (1) 19:00 (1)	06:37 18:54	07:09 18:05	06:46 16:29
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24	07:12 16:58	06:36 17:36	06:50 19:08	06:00 19:42	05:26 20:12	18:21 (1) 18:54 (1)	05:19 20:30	05:39 20:19	06:10 19:39	18:23 (1) 18:23 (1)	06:41 18:47	07:14 17:59	06:51 16:27
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26	07:10 17:00	06:33 17:39	06:47 19:10	05:57 19:44	05:25 20:13	18:22 (1) 18:51 (1)	05:20 20:30	05:41 20:18	06:12 19:36	18:22 (1) 18:22 (1)	06:43 18:44	07:16 17:56	06:53 16:26
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29	07:08 17:04	06:29 17:42	06:42 19:14	05:53 19:47	05:23 20:16	18:25 (1) 18:47 (1)	05:21 20:30	05:43 20:15	06:15 19:32	18:22 (1) 18:22 (1)	06:46 18:39	07:20 17:52	06:56 16:24
30	07:07 17:05	06:28 17:41	06:40 19:15	05:52 19:48	05:22 20:17	18:28 (1) 18:45 (1)	05:21 20:30	05:44 20:14	06:16 19:30	18:22 (1) 18:22 (1)	06:47 18:37	07:21 17:51	06:57 16:24
31	07:06 17:06	06:27 17:40	06:38 19:16	05:51 19:49	05:21 20:18	18:29 (1) 18:46 (1)	05:20 20:30	05:45 20:13	06:17 19:28	18:22 (1) 18:55 (1)	06:48 18:37	07:22 17:50	06:58 16:32
Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	
Total, worst case				756	12			637	145				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 379
 Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: O - Shadow Receptor: 1.0 x 1.0 Azimuth: -16.0° Slope: 90.0° (15)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	18:10 (1) 18:43 (1)	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	18:05 (1) 18:40 (1)	06:48 18:35	06:23 16:48
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	18:09 (1) 18:44 (1)	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	18:04 (1) 18:40 (1)	06:49 18:34	06:24 16:47
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	18:08 (1) 18:44 (1)	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	18:03 (1) 18:40 (1)	06:50 18:32	06:26 16:46
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5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	18:07 (1) 18:44 (1)	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	18:02 (1) 18:40 (1)	06:53 18:29	06:28 16:43
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	18:06 (1) 18:44 (1)	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	18:02 (1) 18:40 (1)	06:54 18:27	06:29 16:42
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16	07:16 16:48	06:47 17:27	07:04 18:59	06:12 19:33	18:09 (1) 18:35 (1)	05:33 20:04	05:18 20:28	05:32 20:25	06:01 19:51	06:33 19:01	18:08 (1) 18:26 (1)	07:05 18:11	06:41 16:32
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18	07:15 16:50	06:44 17:29	07:00 19:02	06:09 19:35	18:12 (1) 18:31 (1)	05:31 20:06	05:18 20:28	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 18:18	06:44 16:31
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Potential sun hours	296	297	370	400	449	454	460	429	211	375	344	297	266
Total, worst case			131	605						537			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
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Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 406

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: P - Shadow Receptor: 1.0 x 1.0 Azimuth: 14.9° Slope: 90.0° (16)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	17:51 (1) 18:15 (1)	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	17:38 (1) 17:57 (1)	06:23 16:48	06:59 16:24
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15	07:17 16:47	06:49 17:25	07:06 18:58	06:14 19:32	17:53 (1) 18:22 (1)	05:34 20:03	05:18 20:27	05:31 20:26	06:00 19:53	06:32 19:03	17:37 (1) 18:10 (1)	07:03 18:13	06:40 16:33	07:11 16:23
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17	07:16 16:49	06:46 17:28	07:02 19:00	06:11 19:34	17:50 (1) 18:23 (1)	05:32 20:05	05:18 20:24	05:33 20:24	06:02 19:50	06:34 19:00	17:35 (1) 18:11 (1)	07:06 18:09	06:43 16:32	07:13 16:24
18	07:15 16:50	06:44 17:29	07:00 19:02	06:09 19:35	17:50 (1) 18:24 (1)	05:31 20:06	05:18 20:24	05:33 20:24	06:03 19:48	06:35 18:58	17:34 (1) 18:11 (1)	07:07 18:08	06:44 16:31	07:14 16:23
19	07:15 16:52	06:43 17:30	06:59 19:03	06:08 19:36	17:49 (1) 18:24 (1)	05:30 20:07	05:18 20:23	05:34 20:23	06:04 19:47	06:36 18:56	17:33 (1) 18:11 (1)	07:08 18:06	06:45 16:30	07:14 16:25
20	07:14 16:53	06:42 17:31	06:57 19:04	06:06 19:37	17:48 (1) 18:24 (1)	05:29 20:08	05:18 20:22	05:35 20:22	06:06 19:46	06:37 18:54	17:33 (1) 18:10 (1)	07:09 18:05	06:46 16:29	07:14 16:25
21	07:14 16:54	06:40 17:33	06:55 19:05	06:05 19:39	17:47 (1) 18:24 (1)	05:29 20:09	05:19 20:22	05:36 19:44	06:07 18:53	06:38 18:53	17:32 (1) 18:10 (1)	07:10 18:03	06:47 16:29	07:15 16:25
22	07:13 16:55	06:39 17:34	06:54 19:06	06:03 19:40	17:47 (1) 18:25 (1)	05:28 20:10	05:19 20:29	05:37 20:21	06:08 19:43	06:39 18:51	17:32 (1) 18:09 (1)	07:11 18:02	06:48 16:28	07:16 16:26
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25	07:11 16:59	06:34 17:37	06:49 19:09	05:59 19:43	17:47 (1) 18:23 (1)	05:26 20:13	05:20 20:30	05:40 20:18	06:11 19:38	06:42 18:46	17:32 (1) 18:07 (1)	07:15 17:58	06:52 16:26	07:17 16:28
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28	07:09 17:03	06:30 17:41	06:44 19:13	05:55 19:46	17:48 (1) 18:21 (1)	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	17:33 (1) 18:03 (1)	07:18 17:54	06:55 16:25	07:18 16:30
29	07:08 17:04	06:29 17:42	06:43 19:14	05:53 19:47	17:48 (1) 18:20 (1)	05:23 20:16	05:21 20:30	05:43 20:15	06:15 19:32	06:46 18:39	17:34 (1) 18:01 (1)	07:20 17:52	06:56 16:24	07:18 16:30
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31	07:06 17:06	06:27 17:44	06:41 19:16	05:51 19:49	17:49 (1) 18:16 (1)	05:22 20:18	05:20 20:30	05:45 20:13	06:17 19:28	06:48 18:37	17:37 (1) 17:59 (1)	07:22 17:50	06:58 16:24	07:19 16:32
Potential sun hours	296	297	370	400		449	454	460	429	375	685	344	297	286
Total, worst case			647	55								32		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 487

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: S - Shadow Receptor: 1.0 x 1.0 Azimuth: 87.0° Slope: 90.0° (19)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	18:09 (1) 18:40 (1)	05:50 19:49	05:21 20:18	05:22 20:12	05:46 20:27	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24	
2	07:19 16:34	07:04 17:09	06:27 17:43	06:35 19:18	18:08 (1) 18:39 (1)	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	07:00 16:23	
3	07:19 16:35	07:03 17:10	06:25 17:45	06:33 19:19	18:08 (1) 18:38 (1)	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	18:14 (1) 18:25 (1)	06:50 18:32	06:26 16:46	07:01 16:23
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5	07:19 16:36	07:01 17:13	06:22 17:47	06:30 19:21	18:10 (1) 18:36 (1)	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	18:08 (1) 18:29 (1)	06:53 18:29	06:28 16:43	07:03 16:23
6	07:19 16:37	07:00 17:14	06:20 17:48	06:28 19:22	18:10 (1) 18:34 (1)	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	18:06 (1) 18:30 (1)	06:54 18:27	06:29 16:42	07:04 16:23
7	07:19 16:38	06:58 17:15	06:19 17:49	06:27 19:23	18:12 (1) 18:33 (1)	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	18:05 (1) 18:31 (1)	06:55 18:25	06:30 16:41	07:05 16:23
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17	07:16 16:49	06:46 17:28	07:02 19:00	06:11 19:34	18:37 (1) 20:05	05:32 20:28	05:18 20:24	05:33 20:00	06:02 19:50	06:34 19:00	17:59 (1) 18:30 (1)	07:06 18:09	06:43 16:32	07:13 16:24
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	266		
Total, worst case			317	220					542					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 2/3/2011 9:39 AM / 551

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: UJ - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (558)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	16:04 (2) 16:07 (2)	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24	15:49 (2) 15:58 (2)
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16	07:16 16:48	16:10 (2) 16:22 (2)	06:47 17:26	06:04 18:59	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:25	06:01 19:51	06:33 19:01	07:05 18:11	06:41 16:32	07:12 16:23	16:23
17	07:16 16:49	16:11 (2) 16:23 (2)	06:46 17:28	06:02 19:00	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	06:43 16:32	07:13 16:24	16:24
18	07:15 16:50	16:12 (2) 16:25 (2)	06:44 17:29	06:00 19:02	06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31	07:14 16:24	16:24
19	07:15 16:51	16:13 (2) 16:24 (2)	06:43 17:30	06:00 19:03	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30	07:14 16:24	16:24
20	07:14 16:53	16:15 (2) 16:24 (2)	06:42 17:31	06:00 19:04	06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29	07:14 16:25	16:25
21	07:14 16:54	16:18 (2) 16:21 (2)	06:40 17:33	06:00 19:05	06:05 19:39	05:29 20:09	05:18 20:29	05:36 20:22	06:06 19:44	06:38 18:53	07:10 18:03	06:47 16:29	07:15 15:53 (2)	16:25
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27	07:09 17:01	16:56 17:40	06:34 19:11	06:00 19:11	06:00 19:45	05:23 20:14	05:19 20:30	05:42 20:17	06:13 19:35	06:44 18:42	07:17 17:55	06:54 16:25	07:21 15:49 (2)	16:29
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Potential sun hours	296	297	370	400	449	454	461	429	375	344	297	103	78	
Total, worst case	168													

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 560

Licensed user:
Vanasse Hangen Brustlin, Inc.
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 US-WATERTOWN, MA 02472
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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: US - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (567)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08		06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:16 (2)	06:59 16:24
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3	07:19 16:35	07:03 17:10	3	16:43 (2) 17:45	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:14 (2)	07:01 16:23
4	07:19 16:35	07:02 17:11	4	16:42 (2) 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:23 20:30	05:49 20:08	06:21 19:22	06:51 18:30	06:27 16:15 (2)	07:02 16:23
5	07:19 16:36	07:01 17:13	6	16:43 (2) 17:47	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:13 (2)	07:03 16:23
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Potential sun hours	296	297		370	400	449	454	461	429	375	344	297	266
Total, worst case		59								5		55	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 587

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Vanasse Hangen Brustlin, Inc.
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 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: VS - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (593)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	15:54 (1) 16:07 (1)	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:59 16:24	15:40 (1) 15:56 (1)
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24	07:12 16:58	16:18 (1) 17:36	06:38 19:08	06:00 19:08	06:02 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27	07:16 16:27	15:51 (1) 16:01 (1)
25	07:11 16:59	16:19 (1) 17:37	06:37 19:09	06:00 19:09	06:01 19:43	05:25 20:13	05:19 20:30	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	06:52 16:26	07:17 16:26	15:51 (1) 16:01 (1)
26	07:10 17:00	16:20 (1) 17:39	06:36 19:10	06:00 19:10	06:00 19:44	05:24 20:13	05:19 20:30	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	06:53 16:26	07:17 16:26	15:51 (1) 16:01 (1)
27	07:09 17:01	16:21 (1) 17:40	06:35 19:11	06:00 19:11	06:00 19:45	05:23 20:14	05:19 20:30	05:42 20:17	06:13 19:35	06:44 18:42	07:17 17:55	06:54 16:25	07:18 16:25	15:52 (1) 16:03 (1)
28	07:09 17:03	16:22 (1) 17:41	06:34 19:13	06:00 19:13	06:00 19:46	05:22 20:15	05:19 20:30	05:43 20:16	06:14 19:33	06:45 18:41	07:18 17:53	06:55 16:25	07:19 16:25	15:52 (1) 16:03 (1)
29	07:08 17:04	16:23 (1) 17:42	06:33 19:14	06:00 19:14	06:00 19:47	05:21 20:16	05:19 20:30	05:44 20:15	06:15 19:32	06:46 18:39	07:19 17:52	06:56 16:24	07:20 16:24	15:53 (1) 16:04 (1)
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Potential sun hours	296	297	300	400	449	454	461	429	375	344	297	286	286	377
Total, worst case	234										68			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: VU - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (595)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	15:52 (1) 16:07 (1)	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48
2	07:19 16:34	15:52 (1) 16:08 (1)	07:04 17:09	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47
3	07:19 16:35	15:53 (1) 16:09 (1)	07:03 17:10	06:25 17:45	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:46
4	07:19 16:35	15:53 (1) 16:10 (1)	07:02 17:11	06:23 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:23 20:30	05:49 20:08	06:21 19:22	06:51 18:30	06:27 16:45
5	07:19 16:36	15:53 (1) 16:10 (1)	07:01 17:13	06:22 17:47	06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:43
6	07:19 16:37	15:54 (1) 16:11 (1)	07:00 17:14	06:20 17:48	06:28 19:22	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	06:54 18:27	06:29 16:42
7	07:19 16:38	15:54 (1) 16:11 (1)	06:58 17:15	06:19 17:49	06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	06:30 16:41
8	07:19 16:39	15:55 (1) 16:12 (1)	06:57 17:16	06:17 17:50	06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	06:25 19:15	06:56 18:24	06:32 16:40
9	07:19 16:40	15:56 (1) 16:12 (1)	06:56 17:18	06:15 18:51	06:23 19:26	05:41 19:58	05:19 20:24	05:27 20:28	05:54 20:02	06:26 19:13	06:57 18:22	06:33 16:39
10	07:18 16:41	15:56 (1) 16:12 (1)	06:55 17:19	06:14 18:53	06:22 19:27	05:39 19:59	05:18 20:25	05:27 20:28	05:55 20:01	06:27 19:12	06:58 18:20	06:34 16:38
11	07:18 16:42	15:57 (1) 16:12 (1)	06:54 17:20	06:12 18:54	06:20 19:28	05:38 20:00	05:18 20:25	05:28 20:28	05:56 20:00	06:28 19:10	06:59 18:19	06:35 16:37
12	07:18 16:44	15:58 (1) 16:13 (1)	06:52 17:21	06:10 18:55	06:19 19:29	05:37 20:00	05:18 20:26	05:29 20:27	05:57 19:57	06:29 19:08	07:00 18:17	06:37 16:36
13	07:18 16:45	15:58 (1) 16:12 (1)	06:51 17:23	06:09 18:56	06:17 19:30	05:36 20:01	05:18 20:26	05:29 20:27	05:58 19:56	06:30 19:06	07:01 18:16	06:38 16:35
14	07:17 16:46	16:00 (1) 16:12 (1)	06:50 17:24	06:07 18:57	06:15 19:31	05:35 20:02	05:18 20:27	05:30 20:26	05:59 19:54	06:31 19:05	07:02 18:14	06:39 16:34
15	07:17 16:47	16:00 (1) 16:11 (1)	06:49 17:25	06:05 18:58	06:14 19:32	05:34 20:03	05:18 20:27	05:31 20:26	06:00 19:53	06:32 19:03	07:03 18:12	06:40 16:33
16	07:16 16:48	16:02 (1) 16:11 (1)	06:47 17:26	06:04 18:59	06:12 19:33	05:33 20:04	05:18 20:28	05:32 20:25	06:01 19:51	06:33 19:01	07:05 18:11	06:41 16:32
17	07:16 16:49	16:05 (1) 16:08 (1)	06:46 17:28	06:02 19:00	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	06:43 16:32
18	07:15 16:50	16:08 (1) 16:12 (1)	06:44 17:29	06:00 19:02	06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31
19	07:15 16:51	16:08 (1) 16:13 (1)	06:43 17:30	06:00 19:03	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30
20	07:14 16:53	16:09 (1) 16:14 (1)	06:42 17:31	06:00 19:04	06:08 19:37	05:30 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29
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22	07:13 16:55	16:11 (1) 16:28 (1)	06:40 17:34	06:00 19:06	06:08 19:40	05:30 20:10	05:18 20:29	05:37 20:21	06:08 19:43	06:39 18:51	07:11 18:02	06:48 16:28
23	07:12 16:56	16:12 (1) 16:37 (1)	06:39 17:35	06:00 19:07	06:08 19:41	05:30 20:11	05:18 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	06:50 16:27
24	07:12 16:58	16:13 (1) 16:42 (1)	06:38 17:36	06:00 19:08	06:08 19:42	05:30 20:12	05:18 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27
25	07:11 16:59	16:14 (1) 16:51 (1)	06:37 17:37	06:00 19:09	06:08 19:43	05:30 20:13	05:18 20:30	05:40 20:18	06:11 19:38	06:42 18:46	07:15 17:58	06:52 16:26
26	07:10 17:00	16:15 (1) 17:39 (1)	06:36 19:10	06:00 19:10	06:08 19:44	05:30 20:13	05:18 20:30	05:41 20:18	06:12 19:36	06:43 18:44	07:16 17:56	06:53 16:26
27	07:09 17:01	16:16 (1) 17:40 (1)	06:35 19:11	06:00 19:11	06:08 19:45	05:30 20:14	05:18 20:30	05:42 20:17	06:13 19:35	06:44 18:42	07:17 17:55	06:54 16:25
28	07:09 17:03	16:17 (1) 17:41 (1)	06:34 19:13	06:00 19:13	06:08 19:46	05:30 20:15	05:18 20:30	05:43 20:16	06:14 19:33	06:45 18:41	07:18 17:53	06:55 16:25
29	07:08 17:04	16:18 (1) 19:14 (1)	06:33 19:14	06:00 19:14	06:08 19:47	05:30 20:16	05:18 20:30	05:44 20:15	06:15 19:32	06:46 18:39	07:19 17:52	06:56 16:24
30	07:07 17:05	16:19 (1) 19:15 (1)	06:32 19:15	06:00 19:15	06:08 19:48	05:30 20:17	05:18 20:30	05:45 20:14	06:16 19:30	06:47 18:37	07:21 17:51	06:57 16:24
31	07:06 17:06	16:20 (1) 19:16 (1)	06:31 19:16	06:00 19:16	06:08 19:49	05:30 20:18	05:18 20:30	05:46 20:13	06:17 19:28	06:48 18:37	07:22 17:50	06:58 16:24
Potential sun hours	296	297	370	400	449	454	461	429	375	344	297	286
Total, worst case	243										62	438

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XE - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (631)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	16:33 (1) 17:42	06:28 19:17	06:37 19:49	05:50 20:18	05:21 20:30	05:22 20:12	05:46 19:27	06:18 18:35	06:48 16:48	06:23 16:48	
2	07:19 16:34	07:04 17:09	16:33 (1) 17:43	06:27 19:18	06:35 19:50	05:49 20:19	05:21 20:30	05:22 20:10	05:47 19:25	06:19 18:34	06:49 16:47	06:24 16:23	
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18	07:15 16:50	06:44 17:29	19:01 19:02	19:35 19:35	20:06 20:06	20:28 20:28	20:24 20:24	19:48 19:48	18:58 18:58	18:08 18:08	16:31 16:31	16:24 16:24	
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31	07:06 17:06	16:34 (1) 16:42 (1)	06:38 19:16	06:38 19:16	05:22 20:18	05:22 20:18	05:45 20:13	06:17 19:28	07:22 17:50	07:22 17:50	16:24 16:24	07:19 16:32	
Potential sun hours	296	297	83	370	400	449	454	461	429	375	344	297	286
Total, worst case	13	83	370	400	449	454	461	429	375	344	297	286	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XF - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (632)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	16:32 (1) 16:43 (1)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	
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Potential sun hours	296	297	73	370	400	449	454	461	429	375	344	297	286
Total, worst case	20	73	370	400	449	454	461	429	375	344	297	286	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 630
 Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XH - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (634)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	16:32 (1) 17:42	06:28 19:17	06:37 19:49	05:50 20:18	05:21 20:30	05:22 20:12	05:46 19:27	06:18 18:35	06:48 16:48	06:23 16:24		
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Potential sun hours	296	297	63	370	400	449	454	461	429	375	344	297	89	286
Total, worst case	27	63	370	400	449	454	461	429	375	344	297	89	286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 631
 Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XI - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (635)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	16:34 (1) 17:42	06:28 19:17	06:37 19:49	05:50 20:18	05:21 20:30	05:22 20:12	05:46 19:27	06:18 18:35	06:48 16:48	06:23 16:24
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18	07:15 16:50	06:44 17:29	16:44 (1) 18:10	06:09 19:35	06:31 19:56	05:18 20:28	05:17 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31	07:14 16:24
19	07:15 16:51	06:43 17:30	16:44 (1) 18:11	06:08 19:36	06:30 19:57	05:18 20:29	05:17 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30	07:15 16:24
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21	07:14 16:54	06:40 17:33	16:44 (1) 18:13	06:05 19:39	06:28 19:59	05:18 20:29	05:15 20:22	06:06 19:44	06:38 18:53	07:10 18:03	06:47 16:29	07:17 16:25
22	07:13 16:55	06:39 17:34	16:44 (1) 18:14	06:03 19:40	06:27 19:58	05:19 20:29	05:14 20:21	06:07 19:42	06:39 18:51	07:11 18:02	06:48 16:28	07:18 16:26
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24	07:12 16:58	06:36 17:36	16:44 (1) 18:16	06:00 19:42	06:25 19:58	05:19 20:30	05:12 20:19	06:10 19:39	06:41 18:47	07:14 17:59	06:51 16:27	07:20 16:27
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27	07:09 17:01	06:31 17:40	16:44 (1) 18:19	05:56 19:45	06:22 19:55	05:20 20:30	05:09 20:17	06:13 19:35	06:44 18:42	07:17 17:55	06:54 16:25	07:23 16:29
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31	07:06 17:06	16:35 (1) 17:44	16:44 (1) 18:23	06:38 19:16	06:52 20:18	05:22 20:30	05:05 20:13	06:17 19:28	06:50 17:50	07:22 17:50	07:01 16:32	07:27 16:32
Potential sun hours	296	297	297	370	400	449	454	461	429	375	344	297
Total, worst case	13	71	370	400	449	454	461	429	375	344	297	83

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XJ - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (636)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	6 16:37 (1) 17:42	06:28 19:17	06:37 19:49	05:50 20:18	05:21 20:30	05:22 20:12	05:46 19:27	06:18 18:35	06:48 16:48	06:23 16:24
2	07:19 16:34	07:04 17:09	8 16:36 (1) 17:43	06:27 19:18	06:35 19:50	05:49 20:19	05:21 20:30	05:22 20:10	05:47 19:25	06:19 18:34	06:49 16:47	06:24 5 16:14 (1) 16:23
3	07:19 16:35	07:03 17:10	10 16:36 (1) 17:45	06:25 19:19	06:33 19:51	05:48 20:20	05:20 20:30	05:23 20:09	05:48 19:23	06:20 18:32	06:50 16:46	06:26 9 16:16 (1) 16:23
4	07:19 16:35	07:02 17:11	11 16:36 (1) 17:46	06:23 19:20	06:32 19:53	05:47 20:21	05:20 20:30	05:23 20:08	05:49 19:22	06:21 18:30	06:51 16:45	06:27 11 16:17 (1) 16:23
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6	07:19 16:37	07:00 17:14	12 16:36 (1) 17:48	06:20 19:22	06:28 19:55	05:44 20:22	05:19 20:29	05:25 20:06	05:51 19:18	06:23 18:27	06:24 16:42	06:29 12 16:18 (1) 16:23
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9	07:19 16:40	06:56 17:18	8 16:46 (1) 18:50	06:23 19:24	05:40 19:57	05:40 20:23	05:19 20:29	05:27 20:03	05:54 19:15	06:26 18:24	06:33 16:40	06:33 11 16:17 (1) 16:22
10	07:18 16:41	06:55 17:19	4 16:44 (1) 18:51	06:23 19:26	05:40 19:58	05:40 20:24	05:19 20:28	05:27 20:02	05:55 19:13	06:27 18:22	06:34 16:39	06:34 8 16:15 (1) 16:22
11	07:18 16:42	06:54 17:20	07:14 18:53	06:22 19:27	05:39 19:59	05:18 20:25	05:27 20:28	05:55 20:01	06:27 19:12	06:58 18:20	06:34 16:38	06:34 6 16:14 (1) 16:22
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18	07:15 16:50	06:44 17:28	07:02 19:00	06:11 19:34	05:32 20:05	05:18 20:28	05:33 20:24	06:02 19:50	06:34 19:00	07:06 18:09	06:43 16:31	06:43 07:14 16:24
19	07:15 16:51	06:43 17:29	07:00 19:02	06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31	06:44 07:14 16:24
20	07:14 16:53	06:42 17:30	06:59 19:03	06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30	06:45 07:14 16:24
21	07:14 16:54	06:41 17:31	06:57 19:04	06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29	06:46 07:15 16:25
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31	07:06 17:06	06:28 17:43	06:40 19:15	05:52 19:48	05:22 20:17	05:21 20:30	05:44 20:14	06:16 19:30	06:47 18:37	07:21 17:51	06:57 16:24	06:57 07:19 16:31
Potential sun hours	296	297	370	400	449	454	461	429	375	344	297	286
Total, worst case	4	82	370	400	449	454	461	429	375	344	297	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XK - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (637)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	16:36 (1) 16:43 (1)	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48
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4	07:19 16:35	07:02 17:11	16:35 (1) 16:47 (1)	06:23 17:46	06:32 19:20	05:47 19:53	05:20 20:21	05:23 20:30	05:49 20:08	06:21 19:22	06:51 18:30	06:27 16:45
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Potential sun hours	296	297	297	370	400	449	454	461	429	375	344	297
Total, worst case	4	87	87	370	400	449	454	461	429	375	344	297

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XP - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (643)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	8 16:35 (1) 17:42	06:28 19:17	06:37 19:49	05:50 20:18	05:21 20:30	05:22 20:12	05:46 19:27	06:18 18:35	06:48 16:48	06:23 16:24
2	07:19 16:34	07:04 17:09	10 16:34 (1) 17:43	06:27 19:18	06:35 19:50	05:49 20:19	05:21 20:30	05:22 20:10	05:47 19:25	06:19 18:34	06:49 16:47	7 16:07 (1) 16:23
3	07:19 16:35	07:03 17:10	12 16:34 (1) 17:45	06:25 19:19	06:33 19:51	05:48 20:20	05:20 20:30	05:23 20:09	05:48 19:23	06:20 18:32	06:50 16:46	9 16:15 (1) 16:23
4	07:19 16:35	07:02 17:11	13 16:34 (1) 17:46	06:23 19:20	06:32 19:53	05:47 20:21	05:20 20:30	05:23 20:08	05:49 19:22	06:21 18:30	06:51 16:45	12 16:16 (1) 16:23
5	07:19 16:36	07:01 17:13	13 16:34 (1) 17:47	06:22 19:21	06:30 19:54	05:45 20:21	05:20 20:30	05:24 20:07	05:50 19:20	06:22 18:29	06:53 16:43	12 16:17 (1) 16:23
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Potential sun hours	296	297	370	400	449	454	461	429	375	344	297	286
Total, worst case	6	94									101	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 639

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Vanasse Hangen Brustlin, Inc.
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 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: XQ - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (644)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:18 (1)	06:58 16:24
2	07:19 16:34	07:04 17:09	16:40 (1) 16:44 (1)	06:27 17:43	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:19 (1)
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Potential sun hours	296	297	93	370	400	449	454	461	429	375	344	297
Total, worst case										6		286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 665

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: YP - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (669)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	16:14 (1) 16:25 (1)	06:58 16:24
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16	07:16 16:48	06:47 17:26	16:45 (1) 16:54 (1)	07:04 18:59	06:12 19:33	05:33 20:04	05:18 20:25	06:01 19:51	06:33 19:01	07:05 18:11	06:41 16:32	16:21 (1)	07:12 16:23
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18	07:15 16:50	06:44 17:29	16:52 (1) 16:59 (1)	07:00 19:02	06:09 19:35	05:31 20:06	05:18 20:24	06:03 19:48	06:35 18:58	07:07 18:08	06:44 16:31	16:21 (1)	07:13 16:24
19	07:15 16:51	06:43 17:30	16:59 (1) 17:03 (1)	07:00 19:03	06:08 19:36	05:30 20:07	05:18 20:23	06:04 19:47	06:36 18:56	07:08 18:06	06:45 16:30	16:21 (1)	07:14 16:24
20	07:14 16:53	06:42 17:31	17:00 (1) 17:04 (1)	07:00 19:04	06:07 19:37	05:29 20:08	05:18 20:22	06:05 19:46	06:37 18:54	07:09 18:05	06:46 16:29	16:21 (1)	07:14 16:25
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Potential sun hours	296	297	100	370	400	449	454	429	375	344	297	24	286
Total, worst case			100	370	400	449	454	429	375	344	297	24	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: YR - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (671)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	16:15 (1) 16:25 (1)	06:58 16:24	
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Potential sun hours	296	297		370	400	449	454	460	429	375	344	297	286	
Total, worst case		99								77		21		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 681

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: ZE - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (684)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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29	07:08 17:04	06:30 17:41	19:13 19:47	06:42 19:47	05:53 20:16	05:23 20:30	06:15 20:15	06:16 19:31	06:46 18:39	07:20 17:52	17:45 (1) 17:50 (1)	06:56 16:24	07:19 16:30
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31	07:06 17:06	06:30 17:41	19:15 19:49	06:38 19:49	05:22 20:18	05:22 20:30	06:17 20:13	06:18 19:28	06:48 18:37	07:22 17:52	17:47 (1) 17:52 (1)	06:58 16:23	07:19 16:32
Potential sun hours	296	297	78	370	400	454	460	429	375	344	297	286	
Total, worst case			78								78		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: ZF - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (685)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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22	07:13 16:55	06:39 17:34	06:04 17:02 (1)	06:03 19:06	05:28 19:06	05:19 20:29	05:37 20:21	06:07 19:42	06:39 18:51	07:11 18:02	17:39 (1)	06:48 16:28	07:15 16:26
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24	07:12 16:58	06:36 17:36	06:02 17:00 (1)	06:00 19:08	05:26 19:08	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59	17:39 (1)	06:51 16:27	07:16 16:27
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Potential sun hours	296	297	78	370	400	454	460	429	375	344	297	286	
Total, worst case			78								78		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: ZX - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (703)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 18:24	
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Potential sun hours	296	297	101	370	400	454	460	429	375	344	297	286	
Total, worst case			101	370	400	454	460	429	375	344	297	286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 2/3/2011 9:39 AM / 701

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: ZY - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (704)

Assumptions for shadow calculations

Maximum distance for influence **2,000 m**
 Minimum sun height over horizon for influence **3 °**
 Day step for calculation **1 days**
 Time step for calculation **1 minutes**

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	17:03 (1) 19:17	06:37 19:49	05:50 20:18	05:21 20:30	05:22 20:12	05:46 19:27	06:18 18:35	06:48 16:24	06:58 16:24
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Potential sun hours	296	297	370		400	449	454	460	429	375	344	297
Total, worst case		80		8							89	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 702

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
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 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: ZZ - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (705)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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Potential sun hours	296	297	87	370	400	454	460	429	375	344	297	286	
Total, worst case			87	370	400	454	460	429	375	344	85	286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 713

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [K - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (716)]

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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22	07:13 16:55	06:39 17:34	06:04 16:55 (1)	06:03 19:06	05:28 20:10	05:19 20:29	05:37 20:21	06:08 19:42	06:39 18:51	07:11 18:02	17:29 (1) 17:37 (1)	06:48 16:28	07:16 16:26
23	07:12 16:56	06:37 17:35	06:03 16:55 (1)	06:02 19:07	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00	17:31 (1) 17:40 (1)	06:50 16:27	07:16 16:26
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26	07:10 17:00	06:33 17:39	06:00 16:55 (1)	06:00 19:10	05:24 20:13	05:20 20:30	05:41 20:17	06:12 19:36	06:43 18:44	07:16 17:56	17:31 (1) 17:40 (1)	06:53 16:26	07:17 16:28
27	07:09 17:01	06:31 17:40	06:00 16:57 (1)	06:00 19:11	05:24 20:14	05:20 20:30	05:41 20:17	06:13 19:35	06:44 18:42	07:17 17:55	17:31 (1) 17:40 (1)	06:54 16:25	07:18 16:29
28	07:08 17:03	06:30 17:41	06:00 16:59 (1)	06:00 19:13	05:24 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	07:18 17:53	17:31 (1) 17:40 (1)	06:55 16:25	07:18 16:29
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Potential sun hours	296	297	109	370	400	454	460	429	375	344	106	297	286
Total, worst case													

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 2/3/2011 9:39 AM / 714

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [L - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (717)]

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	7 17:01 (1) 19:17	06:37 19:49	05:50 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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4	07:19 16:35	07:02 17:11	06:23 17:46	19:19	06:32 19:53	05:47 20:21	05:20 20:30	05:49 20:08	06:21 19:22	06:51 18:30	06:27 16:45	07:02 16:23	
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	
Total, worst case		99	370	7	400	449	454	429	375	344	104	286	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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Licensed user:
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 1001 Walnut Street
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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [M - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (718)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:19 16:33	07:05 17:08	06:28 17:42	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	
Total, worst case			48						53				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [N - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (719)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	17:05 (1) 17:18 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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Potential sun hours	296	297	43	370	400	449	454	460	429	375	52	344	297	286
Total, worst case			43	370	400	449	454	460	429	375	52	344	297	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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SHADOW - Calendar

Shadow receptor: [O - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (720)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	17:04 (1) 17:17 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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Potential sun hours	296	297	53	370	400	449	454	460	429	375	344	297	286	
Total, worst case			53	42							88			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
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SHADOW - Calendar

Shadow receptor: [P - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (721)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

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Potential sun hours	296	297	370		400	449	454	460	429	375	344	297	286
Total, worst case		44	370	46							98		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 719
 Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [Q - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (722)]

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	17:05 (1) 17:18 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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Potential sun hours	296	297	370	370	400	449	454	460	429	375	344	297	286	
Total, worst case		24		73							98			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 720

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [R - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (723)]

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42		06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
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21	07:14 16:54	06:40 17:33	06:55 19:05		06:05 19:39	05:29 20:09	05:18 20:29	05:36 20:22	06:06 19:44	06:38 18:53	07:10 18:03		06:47 16:29	07:15 16:25
22	07:13 16:55	06:39 17:34	06:54 19:06		06:03 19:40	05:28 20:10	05:19 20:29	05:37 20:21	06:08 19:42	06:39 18:51	07:11 18:02		06:48 16:28	07:15 16:26
23	07:12 16:56	06:37 17:35	06:52 19:07		06:02 19:41	05:27 20:11	05:19 20:30	05:38 20:20	06:09 19:41	06:40 18:49	07:13 18:00		06:50 16:27	07:16 16:26
24	07:12 16:58	06:36 17:36	06:50 19:08		06:00 19:42	05:26 20:12	05:19 20:30	05:39 20:19	06:10 19:39	06:41 18:47	07:14 17:59		06:51 16:27	07:16 16:27
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28	07:08 17:03	06:30 17:41	06:43 19:13		05:55 19:46	05:23 20:15	05:21 20:30	05:42 20:16	06:14 19:33	06:45 18:41	07:18 17:53		06:55 16:25	07:18 16:29
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Potential sun hours	296	297	370		400	449	454	460	429	375	344		297	286
Total, worst case			100								102			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

Printed/Page: 2/3/2011 9:39 AM / 721
 Licensed user:
Vanasse Hangen Brustlin, Inc.
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 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [S - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (724)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:19 16:33	07:05 17:08	06:28 17:42	17:00 (1) 17:14 (1)	06:37 19:17	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24	
2	07:19 16:34	07:04 17:09	06:27 17:43	17:01 (1) 17:13 (1)	06:35 19:18	05:49 19:50	05:21 20:19	05:22 20:30	05:47 20:10	06:19 19:25	06:49 18:34	06:24 16:47	07:00 16:23	
3	07:19 16:35	07:03 17:10	06:25 17:45	17:01 (1) 17:11 (1)	06:33 19:19	05:48 19:51	05:20 20:20	05:23 20:30	05:48 20:09	06:20 19:23	06:50 18:32	06:26 16:46	07:01 16:23	
4	07:19 16:35	07:02 17:11	06:23 17:46	17:05 (1) 17:08 (1)	06:32 19:20	05:47 19:53	05:20 20:21	05:23 20:30	05:49 20:08	06:21 19:22	06:51 18:30	06:27 16:45	07:02 16:23	
5	07:19 16:36	07:01 17:13	06:22 17:47		06:30 19:21	05:45 19:54	05:20 20:21	05:24 20:30	05:50 20:07	06:22 19:20	06:53 18:29	06:28 16:43	07:03 16:23	
6	07:19 16:37	07:00 17:14	06:20 17:48		06:28 19:22	05:44 19:55	05:19 20:22	05:25 20:29	05:51 20:06	06:23 19:18	06:54 18:27	06:29 16:42	07:04 16:23	
7	07:19 16:38	06:58 17:15	06:19 17:49		06:27 19:23	05:43 19:56	05:19 20:23	05:25 20:29	05:52 20:05	06:24 19:17	06:55 18:25	06:30 16:41	07:04 16:23	
8	07:19 16:39	06:57 17:16	06:18 17:50		06:25 19:24	05:42 19:57	05:19 20:23	05:26 20:29	05:53 20:03	06:25 19:15	06:56 18:24	06:32 16:40	07:05 16:22	
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13	07:18 16:45	06:51 17:23	06:13 18:56		06:17 19:30	05:36 20:01	05:18 20:26	05:29 20:27	05:58 19:56	06:30 19:06	07:01 18:16	12 17:46 (1)	06:38 16:35	07:10 16:23
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18	07:15 16:50	06:44 17:29	06:08 19:02		06:09 19:35	05:31 20:06	05:18 20:28	05:33 20:24	06:03 19:48	06:35 18:58	07:07 18:08	9 17:43 (1)	06:44 16:31	07:13 16:24
19	07:15 16:51	06:43 17:30	06:07 19:03		06:08 19:36	05:30 20:07	05:18 20:29	05:34 20:23	06:04 19:47	06:36 18:56	07:08 18:06		06:45 16:30	07:14 16:24
20	07:14 16:53	06:42 17:31	06:06 19:04		06:06 19:37	05:29 20:08	05:18 20:29	05:35 20:22	06:05 19:46	06:37 18:54	07:09 18:05		06:46 16:29	07:14 16:25
21	07:14 16:54	06:40 17:33	06:05 19:05		06:05 19:39	05:29 20:09	05:18 20:29	05:36 20:22	06:06 19:44	06:38 18:53	07:10 18:03		06:47 16:29	07:15 16:25
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29	07:08 17:04			06:42 19:14	05:53 19:47	05:23 20:16	05:21 20:30	06:43 20:15	06:15 19:32	06:46 18:39	07:20 17:52		06:56 16:24	07:18 16:30
30	07:07 17:05			06:40 19:15	05:52 19:48	05:22 20:17	05:21 20:30	06:44 20:14	06:16 19:30	06:47 18:37	07:21 17:51		06:57 16:24	07:18 16:31
31	07:06 17:06			06:38 19:16		05:22 20:18		06:17 20:13	06:17 19:28	07:22 17:50			06:58 16:32	07:19 16:28
Potential sun hours	296	297	70	370	39	400	449	454	460	429	375	344	297	286
Total, worst case			70	370	39	400	449	454	460	429	375	344	297	286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect** Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: [T - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (725)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:42	16:59 (1) 19:17	06:37 19:49	05:50 20:18	05:21 20:30	05:22 20:12	05:46 19:27	06:18 18:35	06:48 16:24	06:58 16:24
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Potential sun hours	296	297	88	370	400	449	454	460	429	375	344	297
Total, worst case			88	23						112		286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: **Wind Prospect**
 Description: **Wind Prospect Worst Case Analysis**

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 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated:
 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: \H - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (739)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:19 16:33	07:05 17:08	06:28 17:06 (1)	06:37 17:18 (1)	05:50 19:49	05:21 20:18	05:22 20:30	05:46 20:12	06:18 19:27	06:48 18:35	06:23 16:48	06:58 16:24
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Potential sun hours	296	297	370	370	400	449	454	460	429	375	344	297
Total, worst case		16	90							109		286

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

Project: Wind Prospect
 Description: Wind Prospect Worst Case Analysis

Printed/Page: 2/3/2011 9:39 AM / 807

Licensed user:
Vanasse Hangen Brustlin, Inc.
 1001 Walnut Street
 US-WATERTOWN, MA 02472
 +1 (617) 924 1770
 Nicole Dentamaro, ndentamaro@vhb.com
 Calculated: 2/3/2011 9:27 AM/2.7.449

SHADOW - Calendar

Shadow receptor: A - Shadow Receptor: 1.0 x 1.0 Azimuth: -180.0° Slope: 90.0° (811)

Assumptions for shadow calculations

Maximum distance for influence 2,000 m
 Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

The calculated times are "worst case" given by the following assumptions:
 The sun is shining all the day, from sunrise to sunset
 The rotor plane is always perpendicular to the line from the WTG to the sun
 The WTG is always operating

	January	February	March	April	May	June	July	August	September	October	November	December	
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Potential sun hours	296	297	370	400	449	454	460	429	375	344	297	286	286
Total, worst case					84		73	11					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker (WTG causing flicker first time)	Minutes with flicker	Last time (hh:mm) with flicker (WTG causing flicker last time)
	Sun set (hh:mm)			