Appendix D: Analysis and Supporting Documentation

Attachment D-1: Wind Speed and Energy Estimates

iii) The energy and wind speed estimates provided below were prepared by Wes Slaymaker, P.E. of WES Engineering, who is also Chicago View Wind's Project Engineer. The estimates were prepared using several specialized software tools including Windographer, WASP and Windfarmer.

The Energy Analysis for the Project was prepared using wind speed data obtained from the meteorological "met" tower on the property. A longer term data set, including ten years of airport data were used to correlate to the site data to prepare the below monthly speed and energy estimates. Figure 1 above shows the tower location. This tower was installed in June 2009. This 50m speed can then be extrapolated to 61.5m speed of 6.11 m/s, see below table:

Vensys 1.5MW 77m rotor, 61.5m tower Month	Hub Height Wind Speed (m/s)	Time At Zero Output (%)	Time At Rated Output (%)	Mean Net Power Output (kW)	Mean Net Energy Output (kWh/yr)	Net Capacity Factor (%)
Jan	6.39	3.83	0.09	405.9	302,025	27.1
Feb	6.42	4.18	0.27	413.1	277,579	27.5
Mar	6.18	6.78	1.21	381.2	283,628	25.4
Apr	6.99	2.25	0.67	462.3	332,882	30.8
May	6.6	2.58	0.67	401.7	298,878	26.8
Jun	5.25	8.69	0.08	234.8	169,076	15.7
Jul	5.12	6.18	0.11	198.9	147,973	13.3
Aug	5.34	7.17	0	227.5	169,295	15.2
Sep	4.23	17.29	0.81	150.1	108,062	10
Oct	6.15	2.59	0.63	345.2	256,852	23
Nov	6.29	3.67	0.03	368.1	265,055	24.5
Dec	6.76	4.82	1.18	467.7	347,958	31.2
Overall	**6.11**	**5.31**	**0.5**	**357.8**	**3,134,164**	**23.9**

Table 1- Estimated turbine output using site data- 61.5m tower

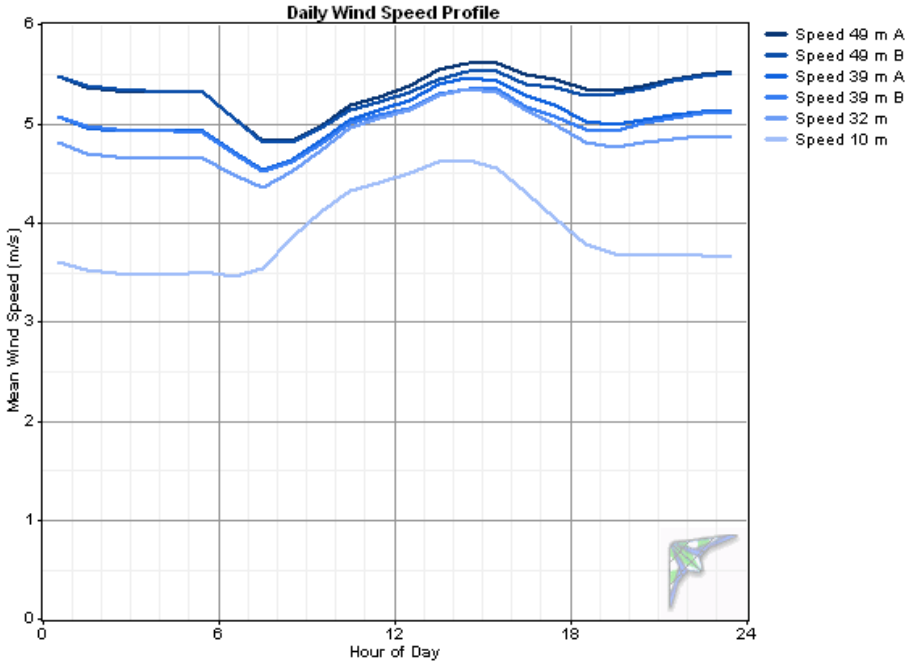

Figure 3- Daily Profile

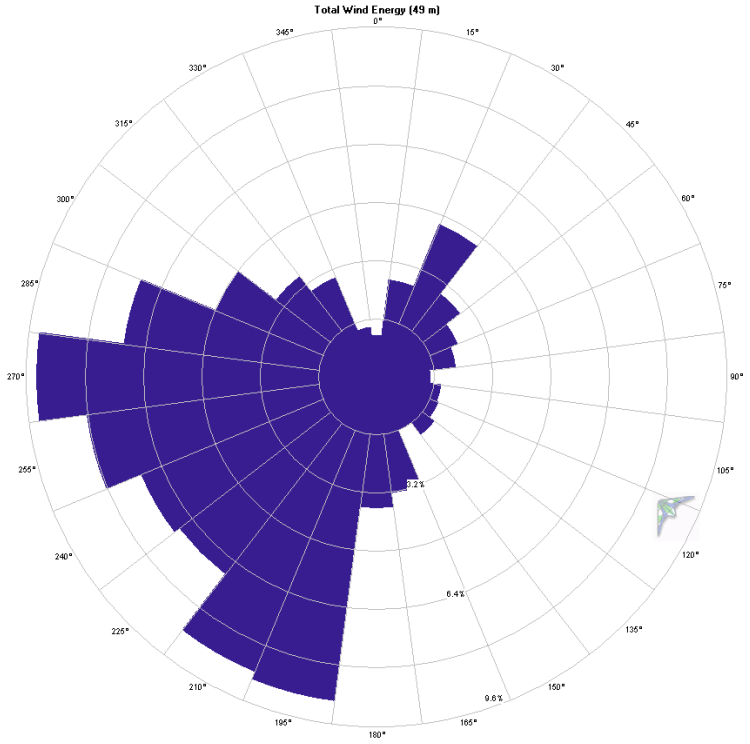

Figure 4- Wind Rose

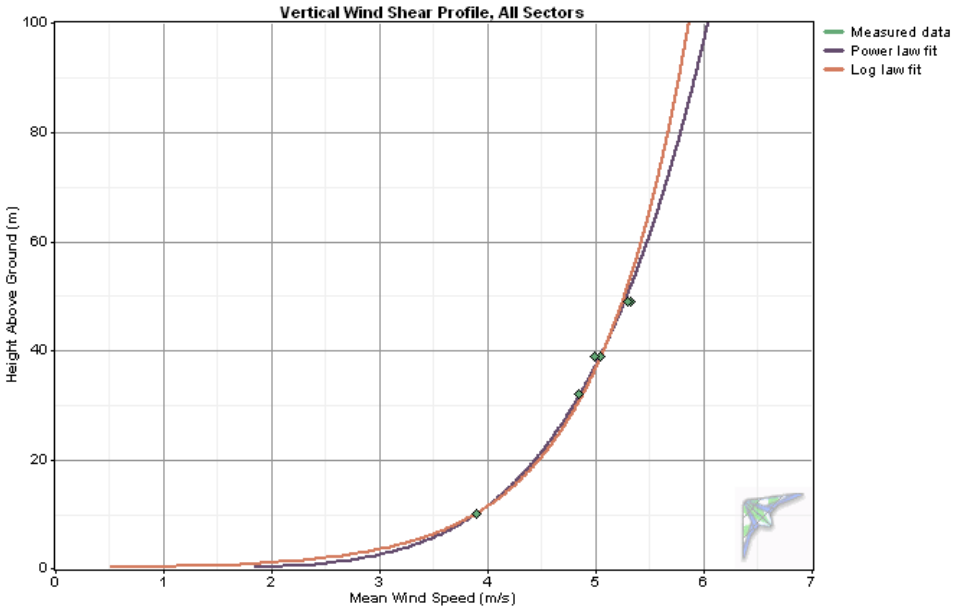

Figure 5- Wind Shear

ii The Chicago View Wind data was collected from a 50m met tower.

Site Photo 3- Chicago View Wind 60m met tower

Attachment D-2: Vensys 77 Information and Technical Data Sheet

VENSYS 1,5 MW

Kurzbeschreibung / Short description

Rev. B
Datum / Date:02.11.2009

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Im Zweifelsfall ist der deutsche Text bindend.
In case of doubt, the German text is binding.

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Allgemein

Die Windenergieanlagen des Typs VENSYS 1,5 MW sind getriebelose Anlagen, die mit einem Dreiblattrotor und drehzahlvariabler Betriebsweise ausgestattet sind. Alle Anlagen besitzen eine Nennleistung von 1.500 kW und sind in unterschiedlichen Nabenhöhen erhältlich:

VENSYS 70: Nabenhöhen 65 m und 85 m
VENSYS 77: Nabenhöhen 61,5 m, 85 m und 100 m
VENSYS 82: Nabenhöhen 85 m und 100 m

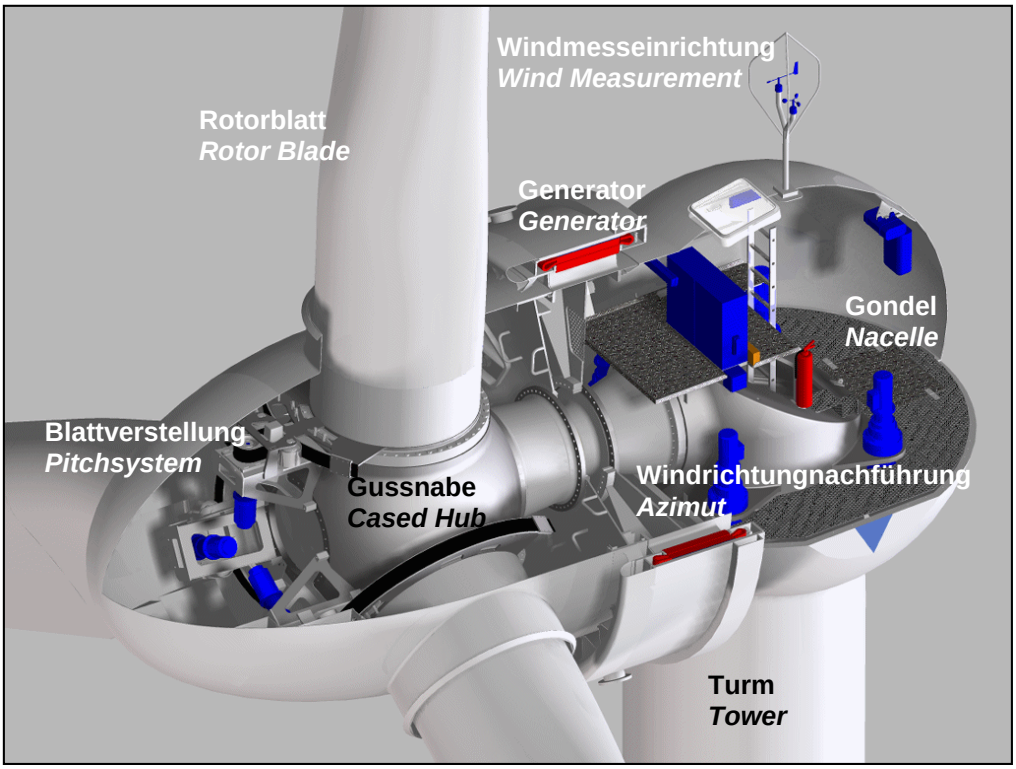
Die Lebensdauer der VENSYS – Windenergieanlagen ist auf einen überschlägigen Wert von 20 Jahren ausgelegt..

In General

The wind energy converters (WEC) VENSYS 1.5 MW are gearless turbines with a three-blade rotor. They can be operated at variable speed and have a rated power of 1500 kW. VENSYS provides different hub heights for those WEC:

VENSYS 70: hub heights 65 m and 85 m
VENSYS 77: hub heights 61.5 m, 85 m and 100 m
VENSYS 82: hub heights 85 m and 100 m

The VENSYS turbines are dimensioned for a 20 year life span.



VENSYS Turmkopf / VENSYS Main Components

Rotor

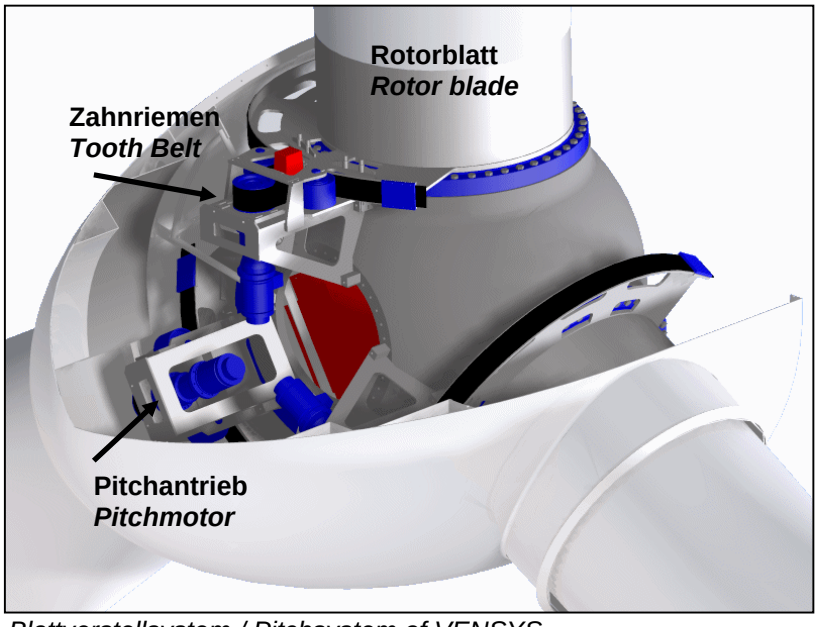
Die Rotoren der Windenergieanlagen vom Typ VENSYS 1,5 MW verfügen über einen Dreiblattrotor mit aktiver Blattverstellung („Pitch“). Die Rotorblätter der Firma LM Glasfiber A/S bestehen aus glasfaserverstärktem Kunststoff (GFK) und haben, je nach Ausführung, eine Länge von 34 m (VENSYS 70), 37 m (VENSYS 77) und 40 m (VENSYS 82). Mit diesen Rotoren wird eine Fläche von 3.850 m², 4.657 m² bzw. 5.026 m² überstrichen. In die Blätter selbst ist ein Blitzschutz integriert. Dabei werden Blitzschläge von den Rotorblättern über die Gussteile und den Turm in das Fundament abgeleitet.

Jedes Rotorblatt ist über ein Drehkranzlager mit der Gussnabe verschraubt. Mit Hilfe der Blattverstellung (Pitchantrieb) werden die Rotorblätter entsprechend der Windgeschwindigkeit verstellt, um die Leistungsabgabe des Rotors konstant zu halten bzw. verschleißfrei abzubremsen. Bei Wartungsarbeiten kann der Rotor durch eine Arretierung festgesetzt werden.

Rotor

The rotor of the VENSYS 1.5 MW is a three-blade rotor with active pitch system. The rotor blades, delivered by the Danish company LM Glasfiber A/S, are made of fibre-class reinforced plastic (GRP) with lengths of 34 m (VENSYS 70), 37 m (VENSYS 77) and 40 m (VENSYS 82). The swept areas of those rotors are 3.850 m², 4.657 m² and 5.026 m². The blades are equipped with lightning protection. Lightning strokes are deflected from the blades over the casted parts and the tower into the foundation.

Each rotor blade is connected with the casted hub by a pitch bearing. Pitch drives turn the blades into the direction of the wind to keep the power output constant or to brake the machine down wear-free. During maintenance, the rotor can be locked with a special locking device.



Blattverstellsystem / Pitchsystem of VENSYS

Generator

Die getriebelose Windenergieanlage VENSYS 1,5 MW besitzt einen direkt vom Rotor angetriebenen Synchrongenerator mit Permanentmagneterregung. Dieser besitzt keine Lüfter, sondern wird passiv durch den vorbei strömenden Wind gekühlt. Der Generator wandelt die Rotationsenergie des Rotors in elektrischen Strom um. Er besteht aus zwei Komponenten: zum einen aus dem Generatorständer mit Drehstromwicklung und zum anderen aus dem Generatorläufer mit Permanentmagneten. Der Generator ist verschleißfrei und bis auf das Hauptlager wartungsfrei.

Generator

The gearless WEC VENSYS 1.5 MW are equipped with a synchronous generator with permanent magnet excitation which is directly driven by the rotor. As the cool airflow, which drives the rotor, is also used to cool the generator, no fans are needed. The generator converts the rotational energy of the rotor into electric current. It is made of two parts: the generator-stator with the windings and the generator-rotor with the permanent magnets. The generator is completely wearfree and only the main bearing needs some basic maintenance.

Umrichtersystem

Die Anbindung an das öffentliche Stromnetz erfolgt über ein Umrichtersystem und einen nachgeschalteten Transformator. Beide Komponenten befinden sich im Turmfuß der Anlage, so dass eine zusätzliche, getrennte Trafostation entfallen kann. Selbstverständlich kann der Transformator jedoch außerhalb der Anlage aufgestellt werden.

Der speziell für die Verwendung von Synchrongeneratoren konzipierte Umrichter, über den die gesamte Leistung ins Stromnetz geführt wird, ermöglicht eine vollständige Entkopplung der Generatorseite von der Netzseite. Dies erlaubt einen drehzahlvariablen Betrieb der Anlage zwischen 9 und 19 U/min (VENSYS70) bzw. 17,3 U/min (VENSYS 77 und 82), was im Teillastbereich eine bessere Energieausbeute zur Folge hat und im Volllastbereich zu einer Entlastung der Anlagenstruktur beiträgt.

Converter system

The machine is connected to the public grid by means of the converter system and a transformer. Both components are located in the tower base, thus an additional separate transformer substation is not necessary. Of course the transformer can be placed outside the WEC.

The converter, which feeds the whole power output of the WEC into the grid, was especially designed for the operation with a synchronous generator. It makes it possible to separate the generator-side from the grid-side completely, thus enabling variable speed operation between 9 U/min and 19 U/min (VENSYS 70) or 17,3 U/min (VENSYS 77 and 82). This feature guarantees a better energy yield at partial load and a relief for the WEC's structure at full load.

Bremssystem

Das Blattverstellsystem der VENSYS 1,5 MW ermöglicht ein Drehen der Rotorblätter um ihre Längsachse (pitchen) und dient sowohl der Leistungsregelung als auch zum Bremsen der Anlage. Bei Windgeschwindigkeiten oberhalb der Nennwindgeschwindigkeit wird die Leistungsaufnahme des Rotors durch Verstellen der Rotorblätter begrenzt, um so eine Überlastung des Generators zu vermeiden.

Brake system

The blade pitch system of the VENSYS 1.5 MW turns the rotor blades around their longitudinal axis (= pitching) and is used to control the power output of the machine and to brake it down. If the wind speed exceeds the rated wind speed of the WEC, the input power is reduced by pitching the blades and an overload of the generator is avoided.

Gondel

Die Gondel hat die Aufgabe, alle statischen und dynamischen Kräfte, die auf den Rotor bzw. den Generator wirken, auf den Turm zu übertragen. Sie dient ebenfalls zur Unterbringung von Schaltschränken, Hebekran und Windrichtungsnachführung (Azimutsystem) sowie als Träger der Windmesseinrichtung und optional einer eventuell erforderlichen Flugbefeuerung. Sie besteht im Wesentlichen aus drei Teilen, einem Gussteil zur Kraftübertragung, einer begehbaren Plattform und einer Verkleidung aus GFK.

Nacelle

The nacelle transfers all static and dynamic forces, which affect the rotor or the generator, to the tower. Furthermore it houses the control cabinets, the auxiliary winch as well as the yaw system and is the basis for the wind speed measurement equipment and optionally the aviation lights if required. The nacelle is made of three parts: a casted part for the transfer of the forces, a walkable platform and a casing made of GRP.

Windnachführung

Die Windnachführung stellt den Rotor jederzeit optimal zur Windrichtung, dabei wird die komplette Gondel bei der Änderung der Windrichtung mitgeführt. Mit einer über der Gondel montieren Windfahne wird kontinuierlich die Windrichtung gemessen. Aus den so erfassten Daten berechnet der Leitrechner die notwendige Richtungskorrektur der Gondel. Sie wird über elektrisch betriebene Azimutmotoren, die in die Außenverzahnung des zwischen Turm und Gussteil angebrachten Drehkranzlagers eingreifen, realisiert. Das Feststellen der Gondel erfolgt über hydraulisch betätigte Bremszangen, die auf eine mit dem Turm verschraubte Bremsscheibe wirken. Bei hohen Windgeschwindigkeiten wird die Gondel der Windrichtung auch im abgeschalteten Zustand der Anlage nachgeführt um die auftretenden Lasten zu reduzieren

Yaw system

The yaw system adjusts the rotor to the wind, turning the whole nacelle according to the changes in the wind direction, which is measured constantly with a vane mounted on top of the nacelle. Based on the data received by the vane, the main computer calculates the necessary movement of the nacelle, which is then carried out by electrical yaw drives mounted to the outer toothing of the pitch bearing between tower and casted part. The nacelle is fixed with hydraulic brake callipers, which mesh with the brake disc screwed with the tower. In case of high wind speeds, the nacelle is turned to the wind in order to reduce the occurring loads, even if the machine switched off.

Steuerung

Die VENSYS 1,5 MW ist eine mikroprozessorgesteuerte Anlage, die sich selbständig an alle Umgebungsbedingungen anpasst, so dass keine Überwachung bzw. Steuerung von außen erforderlich ist. Diese Aufgabe übernimmt eine Steuerungseinheit mit einer entsprechenden Betriebsführungslogik. Diese Steuereinheit erhält über eine Vielzahl von Sensoren alle Informationen über die externen Bedingungen (Windgeschwindigkeit, Windrichtung) und die Anlagenparameter (Leistung, Rotordrehzahl, Blattwinkel). Auf der Basis dieser Informationen steuert die Betriebsführung die Anlage so, dass sich diese immer in einem optimalen und sicheren Zustand befindet. Dies geschieht über die Drehmomentregelung des Generators und die Optimierung des Blattwinkels. Um die Energieausbeute zu maximieren richtet die Windrichtungsnachführung den Rotor dabei immer senkrecht zur Windrichtung aus.

Control system

The WEC VENSYS 1.5 MW is controlled with microprocessors and adjusts automatically to all ambient conditions, thus external monitoring or controlling is not necessary. From a lot of sensors, the control unit, which manages the WEC with a special software system, receives all information concerning the ambient conditions (wind speed and direction) and the machine's parameters (power output, rotor speed, blade angle). Based on this data, the control unit operates the WEC and ensures that the machine is always in a safe and good condition by means of controlling the speed of the generator and the optimisation of the blade angle. To maximise the energy yield, the yaw system ensures that the rotor blades are always perpendicular to the wind.

Turm

Der Stahlrohrturm trägt die Gondel und den Rotor und dient dazu die Kräfte und Momente, die auf die Anlage wirken, in das Fundament zu übertragen. Die Türme der einzelnen Anlagen setzen sich je nach Höhe bei der VENSYS 70 aus drei bzw. vier Segmenten, bei der VENSYS 77 aus zwei, vier oder fünf Segmenten und bei der VENSYS 82 aus vier oder fünf Segmenten, die über Schraubflanschverbindungen miteinander verbunden werden. Sie sind über die Fundamentsektion mit dem Fundament verbunden. Das Lager der Windrichtungsnachführung wird direkt auf den obersten Turmflansch aufgeschraubt. Im Turmfuß ist sowohl der Schaltschrank mit Steuerung als auch der Umrichter sowie der Trafo und die Mittelspannungsschaltanlage untergebracht

Tower

The steel tubular tower bears the nacelle and the rotor and transfers the loads and torques, which influence the WEC, into the foundation. The tower of the VENSYS 70 is made of three or four segments, depending on the desired hub height; the VENSYS 77's tower is made of three, four or five segments, the VENSYS 82 of four or five. The single segments are connected with screwing flanges and the first segment is connected to the foundation by the embedded steel can. The bearing of the yaw system is screwed directly to the highest tower flange. The control cabinet, housing the control unit, the converter, the transformer as well as the medium voltage switch gear are located in the tower base.

Fundament

Mit dem Fundament wird die Standsicherheit der Windkraftanlage hergestellt. Es ist als Flachfundament ausgeführt, wobei die lokale Lasteinleitung der Turmkräfte in den Fundamentkörper über eine Fundamentsektion (Stahlrohr) mit angeschweißtem Ringflansch auf ein Stahlbetonfundament erfolgt.

Foundation

The foundation guarantees the stability of the WEC. It is built as flat foundation; the transfer of the tower loads into the foundation is done by the embedded steel can (steel tube) with a ring flange welded onto a foundation made of reinforced steel.

Blitzschutz

Die Rotorblätter der VENSYS 1,5 MW sind mit einem inneren und äußeren Blitzschutzsystem ausgestattet. Dieses System besteht im Wesentlichen aus zwei Komponenten: dem Blitzaufnehmer an der Blattspitze sowie einem leitfähigem Kabelsystem, das durch das Rotorblatt verläuft. Die Blitzaufnehmer fangen den Blitzschlag ab, worauf das Kabelsystem die elektrische Ladung durch das Rotorblatt in den Turm und von dort aus weiter in die Erde leitet.

Lightning protection

The rotor blades of the VENSYS 1.5 MW are equipped with an internal and an external lightning protection system, which is made of two parts: the lightning conductor at the blade tip and the conducting cable system running through the blade. The conductors catch the lightning stroke and the cable system transfers the electric charge through the blade into the tower, and from there to the earth.

Technische Daten der VENSYS 70 / 77 / 82

Leistung	Einschaltwindgeschwindigkeit	3 m/s
	Nennwindgeschwindigkeit	13,5 m/s 13,0 m/s 13 m/s
	Abschaltwindgeschwindigkeit	25 m/s 22 m/s 22 m/s
	Überlebenswindgeschwindigkeit	59,5 m/s 52,5 m/s 52,5 m/s
	Schallemissionswerte	vorhanden für VENSYS 77, 85 m
	Leistungskennlinien	verfügbar
Rotor	Durchmesser	ca. 70 m ca. 77 m ca. 82 m
	Überstrichene Rotorkreisfläche	3.886 m² 4.637 m^2 5.026 m²
	Drehzahlbereich	9 - 19 U/min 9 -17,3 U/min 9 -17,3 U/min
	Drehzahlbegrenzung	variabel, mikroprozessorgesteuert
	Anzahl Rotorblätter	drei
	Typ Rotorblätter	LM34 LM37.3 oder vergleichbar LM40.3
	Leistungsregelung	Pitch
	Bremsen	Einzelblattverstellung dreifach redundant
	Haltebremse	Bolzenverriegelung
Turm	Typ	Stahlrohr
	Nabenhöhen	VENSYS 70: 65 m, 85 m VENSYS 77: 61,5 m, 85 m, 100 m VENSYS 82: 85 m, 100 m
Fundament	Fundamenttyp	Flachfundament
Generator	Typ	Vielpol - Synchrongenerator, permanentmagneterregt
	Bauart	Direktantrieb
	Nennleistung	1.500 kW
	Nennspannung	Y 700 V
	Isolierstoffklasse	F
Umrichter	Typ	Frequenzumrichter
Windrichtungsnach-führung	Bauprinzip	elektrische Getriebemotoren
Transformator	Typ	Gießharztrafo 1.670 kVA
	Eingangsspannung	620 V
	Ausgangsspannung	20 kV (andere möglich)
Anlagensteuerung	Funktionsweise	mikroprozessgesteuert, DFÜ

Technical data VENSYS 70 / 77 / 82

Power	Cut-in wind speed	3 m/s
	Rated wind speed	13.5 m/s 13.0 m/s 13.0 m/s
	Cut-out wind speed	25 m/s 22 m/s 22 m/s
	Survival wind speed	59.5 m/s 52.5 m/s 52.5 m/s
	Noise emission	available for VENSYS 77, 85 m
	Power curves	available
Rotor	Diameter	ca. 70m ca. 77 m ca. 82 m
	Swept area	3.886 m² 4.637 m^2 5.026 m²
	Speed range	9 - 19 rpm 9 -17.3 rpm 9 -17.3 rpm
	Speed control	variabel, microprocessor-controlled
	Number of blades	three
	Type	LM34 LM37.3 or similar LM40.3
	Control of output	pitch
	Brake system	single blade pitch system for each blade, triple redundant
	Maintenance brake	locking bolt
Tower	Type	steel tubular tower
	Hub heights	VENSYS 70: 65 m, 85 m VENSYS 77: 61.5 m, 85 m, 100 m VENSYS 82: 85 m, 100 m
Foundation	Type	flat foundation
Generator	Type	multipole synchronous generator with permanent magnet excitation
	Design	direct driven
	Rated power	1.500 kW
	Rated voltage	Y 700 V
	Insulating category	F
Converter	Type	Frequency converter
Yaw system	Design	electrical gear motor
Transformer	Type	casted resin 1.670 kVA
	Input voltage	620 V
	Output voltage	20 kV (others are possible)
Control system	Operating mode	microprocessor-controlled, DFÜ

TECHNICAL DETAILS

VENSYS 70/77

VENSYS wind turbines are based on simplicity and quality: a few high-quality, proven components are all one needs to build wind turbines at the highest standard of technology.
VENSYS Energy AG offers with the VENSYS 70 and VENSYS 77 high sophisticated modern wind turbines in the range of 1.5 MW.

VENSYS

TECHNICAL DETAILS

VENSYS 70/77

POWER	VENSYS 70	VENSYS 77
Rated power:	1500 kW	1500 kW
Cut-in wind speed:	3 m/s	3 m/s
Rated wind speed:	13,5 m/s *	13,0 m/s *
Cut-out wind speed:	25 m/s	22 m/s
ROTOR		
Diameter:	approx. 70 m	approx. 77 m
Swept area:	3886 m^2	4637 m^2
Speed range:	9 – 19 rpm	9 – 17,3 rpm
Speed control:	variable, microprocessor controlled remote monitoring	
Number of blades:	three	
Blade type:	LM 34 or similar	LM 37.3 or similar
Power control:	Pitch	
Brakes:	Blade pitch triple-redundant	
Holding brake:	Anchor locking	
TOWER	Tubular steel	
Hub height:	65 m, 85 m	61,5 m, 85 m, 100 m
FOUNDATION	Flat foundation (other types possible)	
GENERATOR	VENSYS-synchronous generator with permanent magnet excitation	
Rated voltage:	Y 690 V	
Insulation category:	F	
GRID CONNECTION	Frequenzy converter	
YAWING SYSTEM	Electrical drive motor	
CONTROL SYSTEM	Microprocessor controlled remote monitoring	
CERTIFICATION	IEC IIa	IEC IIIa
		IEC IIa (submitted)

* 10 % turbulence

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VENSYS

SCHALLLEISTUNGSPEGEL DER VENSYS 77 NACH IEC - RICHTLINIE
SOUND POWER LEVEL OF THE VENSYS 77 ACC. TO THE IEC-GUIDELINE

Garantierte Werte des Schallleistungspegels bei der VENSYS 77 mit 1.500 kW Nennleistung nach IEC - Norm ***Guaranteed values of the sound power level of the VENSYS 77 with a rated power of 1.500 kW acc. to IEC-guideline***			
Nabenhöhe ***Hub height*** / **V_{wind} in 10 m Höhe*height***	**61.5 m**	**85 m**	**100 m**
4,5 – 5,5 m/s	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*	97,6 dB	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*
5,5 – 6,5 m/s	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*	101.6 dB	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*
6,5 – 7,5 m/s	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*	103,3 dB	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*
7,9 m/s	104,0 dB(A)	103,0 dB	104,0 dB(A)
7,5 – 8,5 m/s	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*	102,9 dB	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*
> 8,5 m/s	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*	≤ 103,9 dB	Noch keine Garantie-Werte vorhanden *No guaranteed values available yet*
Geschätzter Wert bei 95%-Nennleistung *Estimated value at 95%-rated power*	104,0 dB(A)	---	104,0 dB(A)
Vermessener Wert bei 95%-Nennleistung *Measured value at 95%- rated power*	Noch nicht vermessen *not available yet*	103,0 dB	Noch nicht vermessen *not available yet*

1. Alle VENSYS - Windenergieanlagen können schallreduziert betrieben werden. Die Schallreduzierung erfolgt über eine in der WEA-Steuerung frei programmierbare Absenkung der Rotordrehzahl. Diese Be-

All VENSYS wind energy converters can be operated at a reduced sound level. The reduction is done by limiting the rotor speed, which can be programmed freely in the WECs control system. This operating mode is normally used

triebsweise erfolgt im Anwendungsfall in der Regel während der Nachtzeit von 22:00 bis 06:00 Uhr.	*during the night between 22:00 o'clock (10 pm) and 6:00 o'clock (6 am).*
2. Es wird eine Tonhaltigkeit K_{TN} von max. 2 dB für den gesamten Leistungsbereich garantiert. Dies gilt im Nahbereich entsprechend aktueller IEC - Richtlinie sowie DIN 45681.	*A tone incorporation K_{TN} of max. 2 dB is guaranteed for the whole power range. This is valid in the close-up range acc. to the current IEC-guideline and the DIN 45681.*
3. Es wird eine Impulshaltigkeit K_{IN} von 0 dB für den gesamten Leistungsbereich garantiert. Dies gilt im Nahbereich entsprechend aktueller IEC - Richtlinie sowie DIN 45645-1.	*An impulse incorporation K_{IN} of 0 dB is guaranteed for the whole power range. This is valid in the close-up range acc. to the current IEC-guideline and the DIN 45645-1.*
4. Der oben genannte garantierte Wert beruht auf Messungen bei vergleichbaren Windenergieanlagen mit gleichen Rotorblättern sowie vergleichbaren Rotordrehzahlen und Rotordurchmessern.	*The value guaranteed above is based on measurements of similar wind energy converters with the same rotor blades and equivalent rotor speed and rotor diameters.*
5. Eine Vermessung der VENSYS 77 der fehlenden Nabenhöhen erfolgt nach Errichtung der ersten Windenergieanlagen, sofern es die klimatischen Bedingungen zulassen.	*The VENSYS 77 on 61.5 m and 100 m will be measured directly after the erection of the first turbines, if the climatic conditions allow an undisturbed measurement.*

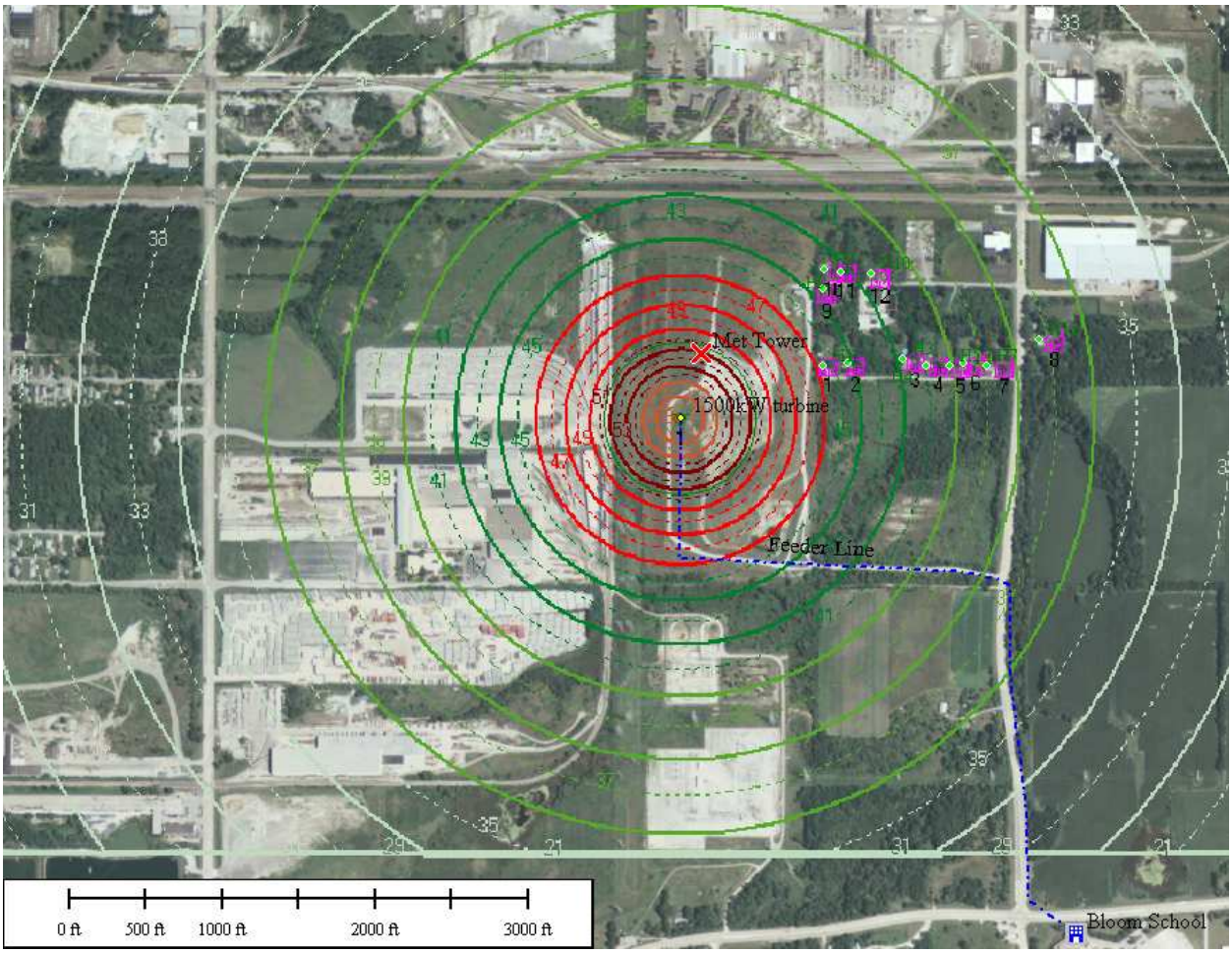
Attachment D-3: Noise and Shadow Flicker Analyses

GH WindFarmer Report
Chicago View flicker 25m
01 September 2010

1 Project: Chicago View - Dwellings noise

Dwelling ID	Noise prediction (dB(A))	Noise limit type	Absolute noise limit (dB(A))	Relative to background noise limit (dB(A))	Background noise reference ID
1	45.29	Absolute	50.00	Not applicable	Not applicable
2	43.93	Absolute	50.00	Not applicable	Not applicable
3	41.33	Absolute	50.00	Not applicable	Not applicable
4	40.46	Absolute	50.00	Not applicable	Not applicable
5	39.73	Absolute	50.00	Not applicable	Not applicable
6	39.21	Absolute	50.00	Not applicable	Not applicable
7	38.38	Absolute	50.00	Not applicable	Not applicable
8	36.80	Absolute	50.00	Not applicable	Not applicable
9	43.43	Absolute	50.00	Not applicable	Not applicable
10	42.48	Absolute	50.00	Not applicable	Not applicable
11	42.11	Absolute	50.00	Not applicable	Not applicable
12	41.19	Absolute	50.00	Not applicable	Not applicable

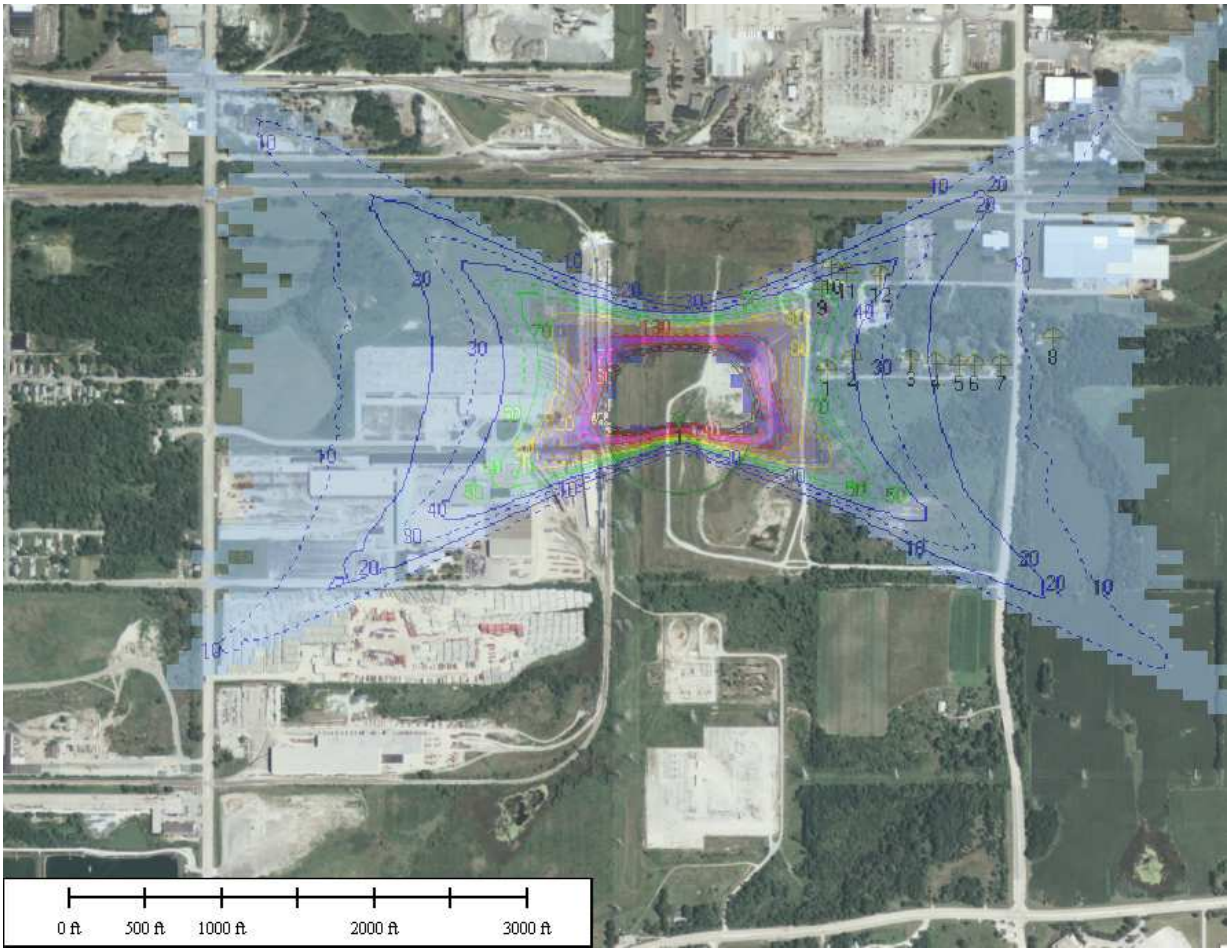
Table 1 - Project: Chicago View - Dwellings noise



2 Shadow Flicker Data

WindFarmer Site Shadow Flicker Report 4.1.1.0
File name:Chicago hts flicker 25m C:\Documents and Settings\WES\My Documents\WES Engineering\Projects\Chicago\Chicago Heights\GIS\Chicago hts flicker 25m.wow
Date: September 01, 2010

Latitude	41 deg 29 min	North
Longitude	87 deg 35 min	East
Calculation time interval	10	Min
Maximum distance from turbine	1500	m
Minimum sun elevation	3	deg
Year of calculation	2010	
Model the sun as a disc	No	
Consider distance between rotor and tower	Yes	
Turbine orientation	Rotor plane facing azimuth +180	
Terrain and visibility	Not considered	
Visibility line of sight algorithm checks every	10.0	m



3 Project: Chicago View

Number of shadow receptors: 12

Receptor ID:1

Height: 2m
Easting: 449801m
Northing: 4593946m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**54**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 276	60	16:10	17:10
16/02 47	20	17:00	17:20
17/02 48	20	17:00	17:20
18/02 49	30	16:50	17:20
19/02 50	30	16:50	17:20
20/02 51	40	16:50	17:30
21/02 52	40	16:50	17:30
22/02 53	50	16:40	17:30
23/02 54	50	16:40	17:30
24/02 55	50	16:40	17:30
25/02 56	50	16:40	17:30
26/02 57	50	16:40	17:30
27/02 58	50	16:40	17:30
28/02 59	50	16:40	17:30
01/03 60	50	16:40	17:30
02/03 61	50	16:40	17:30
03/03 62	50	16:40	17:30
04/03 63	50	16:40	17:30
05/03 64	50	16:40	17:30
06/03 65	50	16:40	17:30
07/03 66	50	16:40	17:30
08/03 67	50	16:40	17:30
09/03 68	50	16:40	17:30
10/03 69	50	16:40	17:30
11/03 70	50	16:40	17:30
12/03 71	50	16:40	17:30
13/03 72	50	16:40	17:30
14/03 73	50	16:40	17:30
15/03 74	50	16:40	17:30
16/03 75	50	16:40	17:30
17/03 76	40	16:40	17:20
18/03 77	40	16:40	17:20
19/03 78	40	16:40	17:20
20/03 79	40	16:40	17:20
21/03 80	30	16:50	17:20
22/03 81	20	16:50	17:10
23/03 82	20	16:50	17:10
20/09 263	20	16:40	17:00
21/09 264	30	16:30	17:00
22/09 265	30	16:30	17:00
23/09 266	30	16:30	17:00
24/09 267	30	16:30	17:00
25/09 268	40	16:30	17:10
26/09 269	50	16:20	17:10
27/09 270	50	16:20	17:10
28/09 271	50	16:20	17:10
29/09 272	50	16:20	17:10

30/09 273	50	16:20	17:10
01/10 274	50	16:20	17:10
02/10 275	50	16:20	17:10
03/10 276	60	16:10	17:10
04/10 277	60	16:10	17:10
05/10 278	60	16:10	17:10
06/10 279	60	16:10	17:10
07/10 280	60	16:10	17:10
08/10 281	60	16:10	17:10
09/10 282	60	16:10	17:10
10/10 283	60	16:10	17:10
11/10 284	60	16:10	17:10
12/10 285	60	16:10	17:10
13/10 286	60	16:10	17:10
14/10 287	60	16:10	17:10
15/10 288	50	16:10	17:00
16/10 289	50	16:10	17:00
17/10 290	50	16:10	17:00
18/10 291	50	16:10	17:00
19/10 292	40	16:20	17:00
20/10 293	40	16:20	17:00
21/10 294	40	16:20	17:00
22/10 295	40	16:20	17:00
23/10 296	30	16:20	16:50
24/10 297	30	16:20	16:50
25/10 298	20	16:30	16:50
26/10 299	10	16:30	16:40

Table 2 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:2

Height: 2m
Easting: 449853m
Northing: 4593966m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**40**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 59	50	16:40	17:30
15/02 46	20	17:00	17:20
16/02 47	20	17:00	17:20
17/02 48	30	17:00	17:30
18/02 49	30	17:00	17:30
19/02 50	40	16:50	17:30
20/02 51	40	16:50	17:30
21/02 52	40	16:50	17:30
22/02 53	40	16:50	17:30
23/02 54	40	16:50	17:30
24/02 55	40	16:50	17:30
25/02 56	40	16:50	17:30
26/02 57	40	16:50	17:30
27/02 58	40	16:50	17:30
28/02 59	50	16:40	17:30
01/03 60	50	16:40	17:30
02/03 61	50	16:40	17:30
03/03 62	50	16:40	17:30
04/03 63	50	16:40	17:30
05/03 64	50	16:40	17:30
06/03 65	50	16:40	17:30
07/03 66	50	16:40	17:30
08/03 67	40	16:50	17:30
09/03 68	40	16:50	17:30

10/03 69	40	16:50	17:30
11/03 70	40	16:50	17:30
12/03 71	40	16:50	17:30
13/03 72	30	16:50	17:20
14/03 73	30	16:50	17:20
15/03 74	30	16:50	17:20
16/03 75	20	17:00	17:20
17/03 76	10	17:00	17:10
26/09 269	20	16:40	17:00
27/09 270	20	16:40	17:00
28/09 271	30	16:30	17:00
29/09 272	30	16:30	17:00
30/09 273	30	16:30	17:00
01/10 274	30	16:30	17:00
02/10 275	40	16:30	17:10
03/10 276	40	16:30	17:10
04/10 277	50	16:20	17:10
05/10 278	50	16:20	17:10
06/10 279	50	16:20	17:10
07/10 280	50	16:20	17:10
08/10 281	50	16:20	17:10
09/10 282	50	16:20	17:10
10/10 283	50	16:20	17:10
11/10 284	50	16:20	17:10
12/10 285	50	16:20	17:10
13/10 286	50	16:20	17:10
14/10 287	50	16:20	17:10
15/10 288	50	16:20	17:10
16/10 289	40	16:20	17:00
17/10 290	40	16:20	17:00
18/10 291	40	16:20	17:00
19/10 292	40	16:20	17:00
20/10 293	40	16:20	17:00
21/10 294	40	16:20	17:00
22/10 295	40	16:20	17:00
23/10 296	40	16:20	17:00
24/10 297	30	16:30	17:00
25/10 298	20	16:30	16:50
26/10 299	20	16:30	16:50
27/10 300	20	16:30	16:50

Table 3 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:3

Height: 2m
Easting: 449968m
Northing: 4593969m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**22**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 277	40	16:40	17:20
23/02 54	10	17:20	17:30
24/02 55	20	17:20	17:40
25/02 56	30	17:10	17:40
26/02 57	30	17:10	17:40
27/02 58	30	17:10	17:40
28/02 59	30	17:10	17:40
01/03 60	30	17:10	17:40
02/03 61	30	17:10	17:40
03/03 62	30	17:10	17:40
04/03 63	30	17:10	17:40

05/03 64	30	17:10	17:40
06/03 65	30	17:10	17:40
07/03 66	30	17:10	17:40
08/03 67	30	17:10	17:40
09/03 68	30	17:10	17:40
10/03 69	30	17:10	17:40
11/03 70	30	17:10	17:40
12/03 71	30	17:10	17:40
13/03 72	30	17:10	17:40
14/03 73	30	17:10	17:40
15/03 74	20	17:10	17:30
16/03 75	20	17:10	17:30
17/03 76	20	17:10	17:30
26/09 269	10	17:00	17:10
27/09 270	10	17:00	17:10
28/09 271	30	16:50	17:20
29/09 272	30	16:50	17:20
30/09 273	30	16:50	17:20
01/10 274	30	16:50	17:20
02/10 275	30	16:50	17:20
03/10 276	30	16:50	17:20
04/10 277	40	16:40	17:20
05/10 278	40	16:40	17:20
06/10 279	40	16:40	17:20
07/10 280	40	16:40	17:20
08/10 281	40	16:40	17:20
09/10 282	40	16:40	17:20
10/10 283	40	16:40	17:20
11/10 284	40	16:40	17:20
12/10 285	40	16:40	17:20
13/10 286	40	16:40	17:20
14/10 287	30	16:40	17:10
15/10 288	20	16:50	17:10
16/10 289	20	16:50	17:10
17/10 290	20	16:50	17:10
18/10 291	20	16:50	17:10
19/10 292	10	16:50	17:00

Table 4 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:4

Height: 2m
Easting: 450021m
Northing: 4593960m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**18**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 277	40	16:50	17:30
27/02 58	10	17:30	17:40
28/02 59	10	17:30	17:40
01/03 60	20	17:20	17:40
02/03 61	30	17:20	17:50
03/03 62	30	17:20	17:50
04/03 63	30	17:20	17:50
05/03 64	30	17:20	17:50
06/03 65	30	17:20	17:50
07/03 66	30	17:20	17:50
08/03 67	30	17:20	17:50
09/03 68	30	17:20	17:50
10/03 69	30	17:20	17:50
11/03 70	30	17:20	17:50

12/03 71	30	17:20	17:50
13/03 72	30	17:20	17:50
14/03 73	30	17:20	17:50
15/03 74	20	17:20	17:40
16/03 75	20	17:20	17:40
17/03 76	20	17:20	17:40
18/03 77	20	17:20	17:40
19/03 78	20	17:20	17:40
23/09 266	10	17:10	17:20
24/09 267	10	17:10	17:20
25/09 268	20	17:00	17:20
26/09 269	30	17:00	17:30
27/09 270	30	17:00	17:30
28/09 271	30	17:00	17:30
29/09 272	30	17:00	17:30
30/09 273	30	17:00	17:30
01/10 274	30	17:00	17:30
02/10 275	30	17:00	17:30
03/10 276	30	17:00	17:30
04/10 277	40	16:50	17:30
05/10 278	40	16:50	17:30
06/10 279	40	16:50	17:30
07/10 280	40	16:50	17:30
08/10 281	40	16:50	17:30
09/10 282	20	17:00	17:20
10/10 283	20	17:00	17:20
11/10 284	20	17:00	17:20
12/10 285	20	17:00	17:20
13/10 286	20	17:00	17:20
14/10 287	10	17:00	17:10

Table 5 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:5

Height: 2m
Easting: 450067m
Northing: 4593956m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**16**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 66	30	17:20	17:50
02/03 61	10	17:30	17:40
03/03 62	20	17:30	17:50
04/03 63	20	17:30	17:50
05/03 64	20	17:30	17:50
06/03 65	20	17:30	17:50
07/03 66	30	17:20	17:50
08/03 67	30	17:20	17:50
09/03 68	30	17:20	17:50
10/03 69	30	17:20	17:50
11/03 70	30	17:20	17:50
12/03 71	30	17:20	17:50
13/03 72	30	17:20	17:50
14/03 73	30	17:20	17:50
15/03 74	30	17:20	17:50
16/03 75	30	17:20	17:50
17/03 76	30	17:20	17:50
18/03 77	30	17:20	17:50
19/03 78	10	17:30	17:40
20/03 79	10	17:30	17:40
23/09 266	20	17:10	17:30

24/09 267	20	17:10	17:30
25/09 268	20	17:10	17:30
26/09 269	20	17:10	17:30
27/09 270	30	17:00	17:30
28/09 271	30	17:00	17:30
29/09 272	30	17:00	17:30
30/09 273	30	17:00	17:30
01/10 274	30	17:00	17:30
02/10 275	30	17:00	17:30
03/10 276	30	17:00	17:30
04/10 277	30	17:00	17:30
05/10 278	30	17:00	17:30
06/10 279	30	17:00	17:30
07/10 280	30	17:00	17:30
08/10 281	30	17:00	17:30
09/10 282	20	17:00	17:20
10/10 283	20	17:00	17:20
11/10 284	10	17:10	17:20

Table 6 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:6

Height: 2m
Easting: 450097m
Northing: 4593956m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**12**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 273	30	17:00	17:30
03/03 62	10	17:40	17:50
04/03 63	20	17:30	17:50
05/03 64	20	17:30	17:50
06/03 65	20	17:30	17:50
07/03 66	20	17:30	17:50
08/03 67	20	17:30	17:50
09/03 68	20	17:30	17:50
10/03 69	20	17:30	17:50
11/03 70	20	17:30	17:50
12/03 71	20	17:30	17:50
13/03 72	20	17:30	17:50
14/03 73	20	17:30	17:50
15/03 74	20	17:30	17:50
16/03 75	20	17:30	17:50
17/03 76	20	17:30	17:50
18/03 77	20	17:30	17:50
19/03 78	20	17:30	17:50
20/03 79	10	17:30	17:40
23/09 266	20	17:10	17:30
24/09 267	20	17:10	17:30
25/09 268	20	17:10	17:30
26/09 269	20	17:10	17:30
27/09 270	20	17:10	17:30
28/09 271	20	17:10	17:30
29/09 272	20	17:10	17:30
30/09 273	30	17:00	17:30
01/10 274	30	17:00	17:30
02/10 275	30	17:00	17:30
03/10 276	30	17:00	17:30
04/10 277	30	17:00	17:30
05/10 278	30	17:00	17:30
06/10 279	30	17:00	17:30

07/10 280	20	17:10	17:30
08/10 281	20	17:10	17:30
09/10 282	10	17:10	17:20
10/10 283	10	17:10	17:20

Table 7 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:7

Height: 2m
Easting: 450149m
Northing: 4593956m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**12**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 69	30	17:30	18:00
04/03 63	10	17:40	17:50
05/03 64	10	17:40	17:50
06/03 65	20	17:30	17:50
07/03 66	20	17:30	17:50
08/03 67	20	17:30	17:50
09/03 68	20	17:30	17:50
10/03 69	30	17:30	18:00
11/03 70	30	17:30	18:00
12/03 71	30	17:30	18:00
13/03 72	30	17:30	18:00
14/03 73	30	17:30	18:00
15/03 74	30	17:30	18:00
16/03 75	20	17:30	17:50
17/03 76	20	17:30	17:50
18/03 77	20	17:30	17:50
19/03 78	20	17:30	17:50
20/03 79	20	17:30	17:50
22/09 265	10	17:20	17:30
23/09 266	10	17:20	17:30
24/09 267	10	17:20	17:30
25/09 268	20	17:10	17:30
26/09 269	30	17:10	17:40
27/09 270	30	17:10	17:40
28/09 271	30	17:10	17:40
29/09 272	30	17:10	17:40
30/09 273	30	17:10	17:40
01/10 274	30	17:10	17:40
02/10 275	30	17:10	17:40
03/10 276	20	17:10	17:30
04/10 277	20	17:10	17:30
05/10 278	20	17:10	17:30
06/10 279	20	17:10	17:30
07/10 280	20	17:10	17:30
08/10 281	20	17:10	17:30

Table 8 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:8

Height: 2m
Easting: 450254m
Northing: 4594012m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	<label>	Hours per year	9
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 278	30	17:00	17:30
27/02 58	10	17:30	17:40
28/02 59	10	17:30	17:40
01/03 60	10	17:30	17:40
02/03 61	20	17:30	17:50
03/03 62	20	17:30	17:50
04/03 63	20	17:30	17:50
05/03 64	20	17:30	17:50
06/03 65	20	17:30	17:50
07/03 66	20	17:30	17:50
08/03 67	20	17:30	17:50
09/03 68	20	17:30	17:50
10/03 69	20	17:30	17:50
11/03 70	20	17:30	17:50
12/03 71	10	17:30	17:40
13/03 72	10	17:30	17:40
30/09 273	10	17:10	17:20
01/10 274	10	17:10	17:20
02/10 275	20	17:10	17:30
03/10 276	20	17:10	17:30
04/10 277	20	17:10	17:30
05/10 278	30	17:00	17:30
06/10 279	30	17:00	17:30
07/10 280	30	17:00	17:30
08/10 281	30	17:00	17:30
09/10 282	20	17:00	17:20
10/10 283	20	17:00	17:20
11/10 284	20	17:00	17:20
12/10 285	20	17:00	17:20
13/10 286	10	17:10	17:20
14/10 287	10	17:10	17:20

Table 9 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:9

Height: 2m
Easting: 449794m
Northing: 4594107m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	<label>	Hours per year	59
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 3	50	15:30	16:20
01/01 1	40	15:30	16:10
02/01 2	40	15:30	16:10
03/01 3	50	15:30	16:20
04/01 4	50	15:30	16:20
05/01 5	50	15:30	16:20
06/01 6	50	15:30	16:20
07/01 7	50	15:30	16:20
08/01 8	50	15:30	16:20
09/01 9	50	15:30	16:20
10/01 10	50	15:30	16:20
11/01 11	50	15:30	16:20
12/01 12	50	15:30	16:20
13/01 13	50	15:30	16:20
14/01 14	50	15:30	16:20
15/01 15	50	15:30	16:20
16/01 16	50	15:30	16:20

17/01 17	50	15:30	16:20
18/01 18	50	15:30	16:20
19/01 19	40	15:40	16:20
20/01 20	40	15:40	16:20
21/01 21	40	15:40	16:20
22/01 22	40	15:40	16:20
23/01 23	40	15:40	16:20
24/01 24	40	15:40	16:20
25/01 25	40	15:40	16:20
26/01 26	40	15:40	16:20
27/01 27	20	15:50	16:10
28/01 28	20	15:50	16:10
29/01 29	20	15:50	16:10
30/01 30	20	15:50	16:10
11/11 315	10	15:30	15:40
12/11 316	20	15:20	15:40
13/11 317	20	15:20	15:40
14/11 318	30	15:20	15:50
15/11 319	30	15:20	15:50
16/11 320	30	15:20	15:50
17/11 321	30	15:20	15:50
18/11 322	40	15:10	15:50
19/11 323	40	15:10	15:50
20/11 324	40	15:10	15:50
21/11 325	40	15:10	15:50
22/11 326	40	15:10	15:50
23/11 327	40	15:10	15:50
24/11 328	50	15:10	16:00
25/11 329	50	15:10	16:00
26/11 330	50	15:10	16:00
27/11 331	50	15:10	16:00
28/11 332	50	15:10	16:00
29/11 333	50	15:10	16:00
30/11 334	50	15:10	16:00
01/12 335	50	15:10	16:00
02/12 336	50	15:10	16:00
03/12 337	50	15:10	16:00
04/12 338	50	15:10	16:00
05/12 339	50	15:10	16:00
06/12 340	50	15:10	16:00
07/12 341	50	15:10	16:00
08/12 342	50	15:10	16:00
09/12 343	50	15:10	16:00
10/12 344	40	15:20	16:00
11/12 345	40	15:20	16:00
12/12 346	40	15:20	16:00
13/12 347	50	15:20	16:10
14/12 348	50	15:20	16:10
15/12 349	50	15:20	16:10
16/12 350	50	15:20	16:10
17/12 351	50	15:20	16:10
18/12 352	50	15:20	16:10
19/12 353	50	15:20	16:10
20/12 354	50	15:20	16:10
21/12 355	50	15:20	16:10
22/12 356	50	15:20	16:10
23/12 357	50	15:20	16:10
24/12 358	50	15:20	16:10
25/12 359	50	15:20	16:10
26/12 360	50	15:20	16:10
27/12 361	50	15:20	16:10
28/12 362	50	15:20	16:10
29/12 363	50	15:20	16:10
30/12 364	50	15:20	16:10
31/12 365	50	15:20	16:10

Table 10 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:10

Height: 2m
Easting: 449811m
Northing: 4594150m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	<label>	Hours per year	33
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 350	50	15:10	16:00
01/01 1	40	15:20	16:00
02/01 2	40	15:20	16:00
03/01 3	40	15:20	16:00
04/01 4	40	15:20	16:00
05/01 5	30	15:30	16:00
06/01 6	30	15:30	16:00
07/01 7	30	15:30	16:00
08/01 8	30	15:30	16:00
09/01 9	30	15:30	16:00
10/01 10	30	15:30	16:00
11/01 11	30	15:30	16:00
12/01 12	30	15:30	16:00
13/01 13	30	15:30	16:00
14/01 14	30	15:30	16:00
15/01 15	20	15:40	16:00
16/01 16	20	15:40	16:00
17/01 17	20	15:40	16:00
18/01 18	20	15:40	16:00
19/01 19	10	15:50	16:00
23/11 327	10	15:20	15:30
24/11 328	10	15:20	15:30
25/11 329	20	15:20	15:40
26/11 330	20	15:20	15:40
27/11 331	30	15:10	15:40
28/11 332	30	15:10	15:40
29/11 333	30	15:10	15:40
30/11 334	30	15:10	15:40
01/12 335	40	15:10	15:50
02/12 336	40	15:10	15:50
03/12 337	40	15:10	15:50
04/12 338	40	15:10	15:50
05/12 339	40	15:10	15:50
06/12 340	40	15:10	15:50
07/12 341	40	15:10	15:50
08/12 342	40	15:10	15:50
09/12 343	40	15:10	15:50
10/12 344	40	15:10	15:50
11/12 345	40	15:10	15:50
12/12 346	40	15:10	15:50
13/12 347	40	15:10	15:50
14/12 348	40	15:10	15:50
15/12 349	40	15:10	15:50
16/12 350	50	15:10	16:00
17/12 351	40	15:20	16:00
18/12 352	40	15:20	16:00
19/12 353	40	15:20	16:00
20/12 354	40	15:20	16:00
21/12 355	40	15:20	16:00
22/12 356	40	15:20	16:00
23/12 357	40	15:20	16:00
24/12 358	40	15:20	16:00

25/12 359	40	15:20	16:00
26/12 360	40	15:20	16:00
27/12 361	40	15:20	16:00
28/12 362	40	15:20	16:00
29/12 363	40	15:20	16:00
30/12 364	40	15:20	16:00
31/12 365	40	15:20	16:00

Table 11 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:11

Height: 2m
Easting: 449844m
Northing: 4594140m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**47**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 340	50	15:20	16:10
01/01 1	40	15:40	16:20
02/01 2	40	15:40	16:20
03/01 3	40	15:40	16:20
04/01 4	40	15:40	16:20
05/01 5	40	15:40	16:20
06/01 6	40	15:40	16:20
07/01 7	40	15:40	16:20
08/01 8	40	15:40	16:20
09/01 9	40	15:40	16:20
10/01 10	40	15:40	16:20
11/01 11	40	15:40	16:20
12/01 12	40	15:40	16:20
13/01 13	40	15:40	16:20
14/01 14	40	15:40	16:20
15/01 15	40	15:40	16:20
16/01 16	40	15:40	16:20
17/01 17	30	15:50	16:20
18/01 18	30	15:50	16:20
19/01 19	30	15:50	16:20
20/01 20	30	15:50	16:20
21/01 21	30	15:50	16:20
22/01 22	30	15:50	16:20
23/01 23	30	15:50	16:20
24/01 24	30	15:50	16:20
25/01 25	30	15:50	16:20
26/01 26	20	16:00	16:20
27/01 27	10	16:00	16:10
15/11 319	20	15:30	15:50
16/11 320	20	15:30	15:50
17/11 321	20	15:30	15:50
18/11 322	20	15:30	15:50
19/11 323	30	15:20	15:50
20/11 324	30	15:20	15:50
21/11 325	40	15:20	16:00
22/11 326	40	15:20	16:00
23/11 327	40	15:20	16:00
24/11 328	40	15:20	16:00
25/11 329	40	15:20	16:00
26/11 330	40	15:20	16:00
27/11 331	40	15:20	16:00
28/11 332	40	15:20	16:00
29/11 333	40	15:20	16:00
30/11 334	40	15:20	16:00

01/12 335	40	15:20	16:00
02/12 336	40	15:20	16:00
03/12 337	40	15:20	16:00
04/12 338	40	15:20	16:00
05/12 339	40	15:20	16:00
06/12 340	50	15:20	16:10
07/12 341	50	15:20	16:10
08/12 342	50	15:20	16:10
09/12 343	50	15:20	16:10
10/12 344	50	15:20	16:10
11/12 345	50	15:20	16:10
12/12 346	40	15:30	16:10
13/12 347	40	15:30	16:10
14/12 348	40	15:30	16:10
15/12 349	40	15:30	16:10
16/12 350	40	15:30	16:10
17/12 351	40	15:30	16:10
18/12 352	40	15:30	16:10
19/12 353	40	15:30	16:10
20/12 354	40	15:30	16:10
21/12 355	40	15:30	16:10
22/12 356	40	15:30	16:10
23/12 357	40	15:30	16:10
24/12 358	40	15:30	16:10
25/12 359	40	15:30	16:10
26/12 360	50	15:30	16:20
27/12 361	50	15:30	16:20
28/12 362	50	15:30	16:20
29/12 363	50	15:30	16:20
30/12 364	50	15:30	16:20
31/12 365	50	15:30	16:20

Table 12 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Receptor ID:12

Height: 2m
Easting: 449909m
Northing: 4594134m
Bearing: 180deg
Tilt: 0deg

Turbine ID:1	**<label>**	**Hours per year**	**48**
Day: dd/mm index	Maximum minutes	Start time hh:mm	Stop time hh:mm
Worst Day !: 6	40	16:00	16:40
01/01 1	30	16:00	16:30
02/01 2	30	16:00	16:30
03/01 3	30	16:00	16:30
04/01 4	30	16:00	16:30
05/01 5	30	16:00	16:30
06/01 6	40	16:00	16:40
07/01 7	40	16:00	16:40
08/01 8	40	16:00	16:40
09/01 9	40	16:00	16:40
10/01 10	40	16:00	16:40
11/01 11	40	16:00	16:40
12/01 12	40	16:00	16:40
13/01 13	40	16:00	16:40
14/01 14	40	16:00	16:40
15/01 15	40	16:00	16:40
16/01 16	40	16:00	16:40
17/01 17	40	16:00	16:40
18/01 18	40	16:00	16:40
19/01 19	40	16:00	16:40

20/01 20	30	16:10	16:40
21/01 21	30	16:10	16:40
22/01 22	30	16:10	16:40
23/01 23	30	16:10	16:40
24/01 24	30	16:10	16:40
25/01 25	30	16:10	16:40
26/01 26	30	16:10	16:40
27/01 27	30	16:10	16:40
28/01 28	30	16:10	16:40
29/01 29	30	16:10	16:40
30/01 30	30	16:10	16:40
31/01 31	30	16:10	16:40
01/02 32	30	16:10	16:40
02/02 33	30	16:10	16:40
03/02 34	20	16:20	16:40
04/02 35	20	16:20	16:40
05/02 36	10	16:20	16:30
06/11 310	10	15:50	16:00
07/11 311	20	15:50	16:10
08/11 312	20	15:50	16:10
09/11 313	20	15:50	16:10
10/11 314	30	15:40	16:10
11/11 315	30	15:40	16:10
12/11 316	30	15:40	16:10
13/11 317	30	15:40	16:10
14/11 318	30	15:40	16:10
15/11 319	40	15:40	16:20
16/11 320	40	15:40	16:20
17/11 321	40	15:40	16:20
18/11 322	40	15:40	16:20
19/11 323	40	15:40	16:20
20/11 324	40	15:40	16:20
21/11 325	40	15:40	16:20
22/11 326	40	15:40	16:20
23/11 327	40	15:40	16:20
24/11 328	40	15:40	16:20
25/11 329	40	15:40	16:20
26/11 330	40	15:40	16:20
27/11 331	40	15:40	16:20
28/11 332	40	15:40	16:20
29/11 333	40	15:40	16:20
30/11 334	40	15:40	16:20
01/12 335	30	15:50	16:20
02/12 336	30	15:50	16:20
03/12 337	30	15:50	16:20
04/12 338	30	15:50	16:20
05/12 339	30	15:50	16:20
06/12 340	30	15:50	16:20
07/12 341	30	15:50	16:20
08/12 342	30	15:50	16:20
09/12 343	30	15:50	16:20
10/12 344	30	15:50	16:20
11/12 345	30	15:50	16:20
12/12 346	30	15:50	16:20
13/12 347	30	15:50	16:20
14/12 348	30	15:50	16:20
15/12 349	30	15:50	16:20
16/12 350	30	15:50	16:20
17/12 351	20	16:00	16:20
18/12 352	20	16:00	16:20
19/12 353	20	16:00	16:20
20/12 354	20	16:00	16:20
21/12 355	20	16:00	16:20
22/12 356	20	16:00	16:20
23/12 357	30	16:00	16:30
24/12 358	30	16:00	16:30

25/12 359	30	16:00	16:30
26/12 360	30	16:00	16:30
27/12 361	30	16:00	16:30
28/12 362	30	16:00	16:30
29/12 363	30	16:00	16:30
30/12 364	30	16:00	16:30
31/12 365	30	16:00	16:30

Table 13 - Project: Chicago View - Shadow Flicker Data - Turbine ID:1 <label>

Example Sound Calculation

Lp = Lw - 10*log(2πr^2) – ar, where ar=0

At 100 feet for Octave Band 31.5 Hz:

r= 100 ft converted into meters (1 meter = 0.3048 feet)

Lw= 85 dB

Therefore:

Lp= 85-10*log(2π(100*.3048)^2) = 47.34 dB

Octave Band Center Frequency (Hz)	31.5	63	125	250	500	1,000	2,000	4,000	8,000	
IPCB Nightime standards (dB)	69	67	62	54	47	41	36	32	32	
Vensys 77 sound pressure at nacelle (dB)	85	87.46	94.35	97.68	96.55	96.23	94.01	89.72	78.15	
Distance r (ft)	Sound Pressure (dB) of the Turbine at a Distance r									
100	47.34	49.80	56.69	60.02	58.89	58.57	56.35	52.06	40.49	
200	41.32	43.78	50.67	54.00	52.87	52.55	50.33	46.04	34.47	
300	37.80	40.26	47.15	50.48	49.35	49.03	46.81	42.52	30.95	
400	35.30	37.76	44.65	47.98	46.85	46.53	44.31	40.02	28.45	
500	33.36	35.82	42.71	46.04	44.91	44.59	42.37	38.08	26.51	
600	31.78	34.24	41.13	44.46	43.33	43.01	40.79	36.50	24.93	
700	30.44	32.90	39.79	43.12	41.99	41.67	39.45	35.16	23.59	
800	29.28	31.74	38.63	41.96	40.83	40.51	38.29	34.00	22.43	
900	28.26	30.72	37.61	40.94	39.81	39.49	37.27	32.98	21.41	
1000	27.34	29.80	36.69	40.02	38.89	38.57	36.35	32.06	20.49	Dwelling ID 1
1100	26.51	28.97	35.86	39.19	38.06	37.74	35.52	31.23	19.66	
1200	25.76	28.22	35.11	38.44	37.31	36.99	34.77	30.48	18.91	
1300	25.06	27.52	34.41	37.74	36.61	36.29	34.07	29.78	18.21	
1400	24.42	26.88	33.77	37.10	35.97	35.65	33.43	29.14	17.57	
1500	23.82	26.28	33.17	36.50	35.37	35.05	32.83	28.54	16.97	
1600	23.26	25.72	32.61	35.94	34.81	34.49	32.27	27.98	16.41	
1800	22.23	24.69	31.58	34.91	33.78	33.46	31.24	26.95	15.38	
2000	21.32	23.78	30.67	34.00	32.87	32.55	30.33	26.04	14.47	
2200	20.49	22.95	29.84	33.17	32.04	31.72	29.50	25.21	13.64	
2400	19.74	22.20	29.09	32.42	31.29	30.97	28.75	24.46	12.89	
2600	19.04	21.50	28.39	31.72	30.59	30.27	28.05	23.76	12.19	
2800	18.40	20.86	27.75	31.08	29.95	29.63	27.41	23.12	11.55	
3000	17.80	20.26	27.15	30.48	29.35	29.03	26.81	22.52	10.95	
4000	15.30	17.76	24.65	27.98	26.85	26.53	24.31	20.02	8.45	
5000	13.36	15.82	22.71	26.04	24.91	24.59	22.37	18.08	6.51	

Attachment D-4: Distribution List for Draft EA

Distribution List for Draft EA

Organization	Name	Title	Address	City and State	Zip	Phone	E-Mail
Biologist National Audubon Society	Kim Van Fleet	Important Bird Area Coordinator and Staff	225 Varick Street, 7th floor	New York, NY	10014		
Chicago Audubon Society	Skipper Joy Wolters		5801-C N. Pulaski	Chicago, IL	60646		
Citizen Potawatomi Nation	Jeremy Finch	Tribal Historic Preservation Officer	1601 Gordon Copper Drive	Shawnee, OK	74801		
Citizens for Clean Energy, Inc			3417 Fourth Avenue, South	Great Falls, MT	59405	406-453-0725	cce-mt@bresnan.net
City of Chicago Heights	Cleto Bonanotte	Department of Planning and Zoning	City Hall 1601 Chicago Road	Chicago Heights, IL	60411		
City of Chicago Heights	Joe Kudra	Department of Economic Development	City Hall 1601 Chicago Road	Chicago Heights, IL	60411		
Cook County Bureau of Administration	Mark Kilgallon	Chief Administrative Officer	118 N. Clark Room 820	Chicago, IL	60602		
Federal Aviation Administration	Thomas Cuddy		Office of Environment and Energy 800 Independence Avenue, SW, Room 900	Washington, DC	20591	202-493-4018	thomas.cuddy@faa.gov
Federal Aviation Administration	Sam Lakhani	Airspace (OE/AAA) Program Management	Central Service Area Engineering Services, Operations Support-Chicago 2300 E Devon Avenue	Des Plaines, IL	60018	847-294-8451	Sam.Lakhani@faa.gov
Federal Aviation Administration	Mike Blaich	OE Airspace Specialist - Wind Turbines East (WTE)				404-305-7081	mike.blaich@faa.gov
Forest County Potawatomi Community	Philip Shopodock	Chairman	P.O. Box 340	Crandon, WI	54520		

Organization	Name	Title	Address	City and State	Zip	Phone	E-Mail
Hannahville Indian Community	Earl Meshiguad		N14911 Hannahville Boulevard Rd.	Wilson, MI	49896		
Illinois Commerce Commission	Manuel Florez	Chairman	527 East Capitol Avenue	Springfield, IL	62701		
Illinois Department of Agriculture	Thomas E. Jennings	Director	State Fairgrounds P.O. Box 19281	Springfield, IL	62794-9281		
Illinois Department of Commerce and Economic Opportunity	Jonathan Feipel	Deputy Director	Illinois Energy Office 500 East Monroe	Springfield, IL	62701-1643		
Illinois Department of Natural Resources	Marc Miller	Director	One Natural Resources Way	Springfield, IL	62702-1271		
Illinois Department of Natural Resources	William Boyd	Water Resources Engineer	Office of Water Resources - Division of Resource Management 2050 West Stearns Road	Bartlett, IL	60103	847-608-3100 ext 2025	William.Boyd@Illinois.gov
Illinois Department of Natural Resources	Michael Branham		Office of Realty and Evironmental Planning - Division of Ecosystems and Environment One Natural Resources Way	Springfield, IL	62702-1271		
Illinois Department of Transportation	Gary Hannig	Secretary	Attn: Barbra Stevens, Environment Section 2300 S. Dirkesn Parkway	Springfield, IL	62764		
Illinois Environmental Protection Agency	Doug Scott	Director	1021 North Grand Ave. East P.O. Box 19276	Springfield, IL	62794-9276		
Illinois Historic Preservation	Janet Grimes	Director	#1 Old State Capitol Plaza	Springfield, IL	62701-1507		

Organization	Name	Title	Address	City and State	Zip	Phone	E-Mail
Agency							
Illinois Historic Preservation Agency	Anne Haaker	Deputy State Historic Perservation Officer	#1 Old State Capitol Plaza	Springfield, IL	62701-1507		
Illinois Power Agency	Mark Pruitt	Executive Director	James R. Thompson Center 100 W. Randolph	Chicago, IL	60601		
Meyer Glitzenstein & Crystal	Eric Glitzenstein		1601 Connecticut Ave., N.W. Suite 700	Washington, D.C.	20009-1056		
Meyer Glitzenstein & Crystal	William Eubanks		1601 Connecticut Ave., N.W. Suite 700	Washington, D.C.	20009-1056		
National Audubon Society	Mr. Greer Goldman	Assistant General Counsel	Audubon Public Policy Office 1150 Connecticut Avenue, NW	Washington, DC	20036	202-861-2242 (ext. 3039)	ggoldman@audubon.org CC: mdaulton@audubon.org
National Audubon Society	Kim Van Fleet	Important Bird Area Coordinator and Staff	225 Varick Street, 7th floor	New York, NY	10014		
National Audubon Society	Phil Wallis	Vice President	225 Varick Street, 7th floor	New York, NY	10014		
National Audubon Society	Michelle P. Scott	General Counsel	225 Varick Street, 7th floor	New York, NY	10014		
Office of the Governor	Sarah Sheehan		James R. Thompson Center 100 W. Randolph, 16-100	Chicago, IL	60601		
Potawatomi-PrairieBand	Steve Ortiz						stevo@bpnation.org
Sac & Fox Nation of Missouri	Kirby Rubidoux	NAGPRA Rep	305 N. Main Street	Reserve, KS	66465		
Sac & Fox Tribe of Mississippi	Jonathan Buffalo	NAGPRA Rep	349 Meskwaki Road	Tama, IA	523339		
Sac and Fox	Sandra	NAGPRA Rep	Route 2, Box 246	Stroud, OK	74079		

Organization	Name	Title	Address	City and State	Zip	Phone	E-Mail
Nation of OK	Massaey						
The Ho-Chunk Nation	Bill Quackenbush	Tribal Historic Preservation Officer	W9815 Airport Road	Black River Fall, WI	54615		
U.S. Army Corps of Engineers	Kate Bliss	Project Manager	Chicago District 111 N. Canal Street, Suite 600	Chicago, IL	60606	312-846-5542	Kate.M.Bliss@usace.army.mil
U.S. Environmental Protection Agency	Ken Westlake	NEPA Implementation Office of Enforcement and Compliance Assurance	77 West Jackson Boulevard, Mail Code E-19J	Chicago, IL	60604-3590		westlake.kenneth@epa.gov
U.S. Fish and Wildlife Service	Janice Engle	Chicago Illinois Field Office	1250 South Grove, Suite 103	Barrington, IL	60010		
United States Department of the Army	Cathy O'Connell	Army Region 5 Regional Environmental Coordinator	Horne Engineering Services, LLC Office of Regional Environmental and Government Affairs-Northern APG-EA	Northern APG-EA, MD	21010-5401		cathy.oconnell@us.army.mil
United States Department of the Army	Dr. James Hartman (Attn: SAIE_ESOH)	Assistant Secretary of Army (Installations & Environment)	OH, WI Office of Regional Environmental and Government Affairs – North 5179 Hoadley Rd Aberdeen	Aberdeen Proving Ground, MD	21010-5401		james.hartman1@us.army.mil
Winnebago Tribe of Nebraska	David Smith		P.O. Box 687	Winnebago, NE	68071		
	Resident		541 219th Street	Chicago Heights, IL	60411		
	Resident		611 219th Street	Chicago Heights, IL	60411		
	Resident		655 219th Street	Chicago Heights, IL	60411		
	Resident		671 219th Street	Chicago Heights, IL	60411		

Organization	Name	Title	Address	City and State	Zip	Phone	E-Mail
	Resident		641 219th Street	Chicago Heights, IL	60411		
	Resident		711 219th Street	Chicago Heights, IL	60411		
	Resident		559 217th Street	Chicago Heights, IL	60411		
	Resident		561 217th Street	Chicago Heights, IL	60411		
	Resident		799 217th Street	Chicago Heights, IL	60411		
	Resident		550 217th Street	Chicago Heights, IL	60411		
	Resident		558 217th Street	Chicago Heights, IL	60411		
	Resident		560 217th Street	Chicago Heights, IL	60411		
	Resident		798 217th Street	Chicago Heights, IL	60411		
	Resident		21540 Cottage Grove Avenue	Chicago Heights, IL	60411		

Attachment D-5: NOA Posting in Local Newspaper

SUN-TIMES MEDIA

Certificates of Publication

State of Illinois – County of ☑ Cook ☐ Kane ☐ Lake ☐ McHenry
☐ Du Page ☐ Will ☐ DeKalb ☐ Kendall ☐ Grundy

Sun-Times Media does hereby certify it has published the attached advertisements in the following secular newspapers. All newspapers meet Illinois Compiled Statue requirements for publication of Notices per Chapter 715 ILCS 5/0.01 et seq. R.S. 1874, P728 Sec 1, EFF. July 1, 1874. Amended By Laws 1959, P1494, and EFF.July 17, 1959. Formerly Ill. Rev. Stat. 1991, CH100, P1...
Note: Legal Notice appeared in the following checked positions.

PUBLICATION DATE(S): 10-1-10

.....rnday 5pm

NOTICE OF AVAILABILITY
The U.S. Department of Energy (DOE) is proposing to provide American Reinvestment and Recovery Act federal funding to the Illinois Department of Commerce and Economic Opportunity (DCEO) for Chicago View Wind Energy Project.
DOE's Proposed Financial Assistance to Illinois DCEO Chicago View Wind Energy Project Chicago Heights, IL - Cook County DOE/EA 1802
Chicago View Wind LLC is proposing to install a single 1.5 megawatt (MW) wind turbine in Chicago Heights in Cook County, Illinois. DOE's Golden Field Office is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA).
Comments on any potential issues and/or associated environmental impacts of implementing the proposed project will be accepted until October 13, 2010. DOE encourages your participation in this process. You can submit comments by either mail or email to DOE Headquarters, c/o David J. Boron, 1617 Cole Blvd, Golden, CO 80401 or e-mail David.Boron@hq.doe.gov.
The Draft Environmental Assessment, with appendices is available for your review on the DOE Golden Field Office website:
http://www.eere.energy.gov/golden/reading_room.aspx
1061093 10/1/2010

☐ The Beacon News
☐ The Courier News
☐ The Herald News
☐ The Lake County News-Sun
☐ The Naperville Sun
☑ The SouthTownStar
☐ The Chicago Sun-Times
☐ Pioneer Press/The Doings

Weekly Papers

☐ Batavia Sun
☐ Bolingbrook Sun
☐ Downers Grove Sun
☐ Fox Valley Villages Sun
☐ Geneva Sun
☐ Glen Ellyn Sun
☐ Homer Township/Lockport/Lemont Sun
☐ Lincoln Way Sun
☐ Lisle Sun
☐ Plainfield Sun
☐ St. Charles Sun
☐ Wheaton Sun

IN WITNESS WHEREOF, the undersigned, being duly authorized, has caused this Certificate to be signed and its official seal affixed at Tinley Park, Illinois

By Martha Suarez

Martha Suarez
Legal Advertising Account Executive (Official Title)

Subscribed and sworn to before me this 1 Day of October A. D. 2010

OFFICIAL SEAL
LAILA F ZEGAR
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:10/08/13

By: _____ Notary Public

NOTICE OF AVAILABILITY
The U.S. Department of Energy (DOE) is proposing to provide American Reinvestment and Recovery Act federal funding to the Illinois Department of Commerce and Economic Opportunity (DCEO) for Chicago View Wind Energy Project.
DOE's Proposed Financial Assistance to Illinois DCEO
Chicago View Wind Energy Project
Chicago Heights, IL-Cook County
DOE/EA 1802
Chicago View Wind LLC is proposing to install a single 1.5 megawatt (MW) wind turbine in Chicago Heights in Cook County, IL. DOE's Golden Field Office is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA).
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The Draft Environmental Assessment, with appendices is available for your review on the **DOE Golden Field Office** website:
http://www.eere.energy.gov/golden/reading_room.aspx
9/29 - 20340690

Board of Accounts

General Form No. 99P (Rev. 2009A)

(2) West Technologies (Governmental Unit) To: The Times Media Company

Indiana

601-45th Avenue, Munster, IN 46321

PUBLISHER'S CLAIM

ster (Must not exceed two actual lines, neither of which shall
nore than four solid lines of the type in which the body of the
tisement is set) -- number of equivalent lines ----- .....
mber of lines ----- .....
mber of lines ----- .....
ber of lines ----- .....
number of lines in notice ----- .....

N OF CHARGES
...3... lines, ...1..... columns wide equals 37 equivalent lines at 400 cents per line ----- $ 148.00
Online Charge $10.00
Additional charges for notices containing rule or tabular work (50 per cent of above amount) -----
Charge for extra proofs of publication ($1.00 for each proof in excess of two) ----- .....
TOTAL AMOUNT OF CLAIM ----- $ 158.00
#20340690

DATA FOR COMPUTING COST
Width of single column in picas 9p4
Size of type 7.0 point.
Number of insertions ..1..

Pursuant to the provisions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is just and correct, that the amount claimed is legally due, after allowing all just credits, and that no part of the same has been paid.

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper ....1.... times. The dates of publication being as follows:

.....September 29, 2010.....

.....

Additionally, the statement checked below is true and correct:

..... Newspaper does not have a Web site.
..X.. Newspaper has a Web site and this public notice was posted on the same day as it was published in the newspaper.
..... Newspaper has a Web site, but due to technical problem or error, public notice was posted on .....
..... Newspaper has a Web site but refuses to post the public notice.

Kate Stephens .....

Date September 29, 2010

Title: Legal Clerk

Attachment D-6: Vensys 77 Octave Spectra

OCTAVE SPECTRA OF THE VENSYS 77

The measurement of the sound power level of the wind turbine was based on the following regulation "IEC 61400-11, Wind energy turbine generator systems - Part 11: Acoustic noise measurement techniques, 2002-12" and "IEC 61400-11:2002, Amendment 1: Wind turbine generator systems - Part 11: Acoustic noise measurement technique, June 2006". The octave sound power level is extracted from the test report "Acoustic report for a wind turbine type VENSYS 77 at the testing field for wind turbines near Grevenbroich", report no. SE07015B2, 23rd of January 2008.

Technical data:

manufacturer	VENSYS Energy AG
WEC type	VENSYS 77
serial no.	V001
rated power	1500 kW
hub height	85 m
tower	tubular steel tower
rotor diameter	77 m
blade type	LM 37.3P2
speed range	9 - 17,3 rpm
generator	synchronous generator with permanent magnet excitation
gear	gearless

Octave sound power level:

middle frequency [Hz]	sound power level [dB] at 6 m/s	sound power level [dB] at 7 m/s	sound power level [dB] at 8 m/s
63	83,63	87,46	86,48
125	91,31	94,35	93,75
250	95,90	97,68	96,75
500	95,47	96,55	96,13
1000	95,14	96,23	96,25
2000	92,00	94,01	94,14
4000	87,50	89,72	89,83
8000	76,86	78,15	78,89
SUM	**101,6**	**103,3**	**102,9**

VENSYS Energy AG
Im Langental 6 - 66539 Neunkirchen
T +49 6821 9517-0 • F +49 6821 9517-111

Example Sound Calculation

Lp = Lw - 10*log(2πr^2) – ar, where ar is atmospheric considerations per ANSI Standard 9613-2

At 100 feet for Octave Band 31.5 Hz:

r= 100 ft converted into meters (1 meter = 0.3048 feet)

Lw= 85 dB

Therefore:

Lp= 85-10*log(2π(100*.3048)^2) = 47.34 dB

Octave Band Center Frequency (Hz)	31.5	63	125	250	500	1,000	2,000	4,000	8,000
IPCB Nightime standards (dB)	69	67	62	54	47	41	36	32	32
Vensys 77 sound power level (dB)	85	87.46	94.35	97.68	96.55	96.23	94.01	89.72	78.15
Distance r (ft)	Sound Pressure (dB) of the Turbine at a Distance r								
100	47.34	49.80	56.69	60.02	58.89	58.57	53.06	50.96	40.49
200	41.32	43.78	50.67	54.00	52.87	52.55	47.04	43.84	34.47
300	37.80	40.26	47.15	50.48	49.35	49.03	43.52	39.22	30.95
400	35.30	37.76	44.65	47.98	46.85	46.53	41.02	35.62	28.45
500	33.36	35.82	42.71	46.04	44.91	44.59	39.08	32.58	26.51
600	31.78	34.24	41.13	44.46	43.33	43.01	37.50	29.90	24.93
700	30.44	32.90	39.79	43.12	41.99	41.67	36.16	27.46	23.59
800	29.28	31.74	38.63	41.96	40.83	40.51	35.00	25.20	22.43
900	28.26	30.72	37.61	40.94	39.81	39.49	33.98	23.08	21.41
1000	27.34	29.76	36.54	39.65	38.21	37.30	33.06	21.06	20.49