

MONITORING REPORT FORM (VCS-MR) Version 01

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MONITORING REPORT
Version 3.0 and Date 07/12/2010

Title: 44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India limited.

Monitoring Period - FROM 01/06/2009 TO 30/09/2010 (including first and last day)

SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

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The Project activity is located across Satara, Sangli, Nasik, and Ahmednagar District in the state of Maharashtra in India. The machines are provided, operated and maintained by Enercon (India) Ltd. It involves the installation of 55 turbines of Enercon make (E-48), each of which has a rated output of 800kW, providing a total capacity of 44 MW. The net electricity supplied by the project activity during the monitoring period is 1, 09,175.43 MWh.

The purpose of the project activity is to generate electricity using wind power resources in the region and provide reliable, renewable power to the Maharashtra state electricity grid, which is part of the NEWNE grid. The total GHG emission reductions for the entire monitoring period are 98,873 tCO₂e. The project contributes to sustainability in the region by reducing pollution, creating employment opportunities, improving the livelihoods of the local people. At a larger scale, the project assists Maharashtra and ultimately India in stimulating and accelerating the commercialization of grid-connected renewable energy technologies and markets in India.

A.2. Project Participants

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Name of Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Government of India (Host)	Enercon (India) Limited (EIL)	No

A.3. Location of the project activity:

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The latitude & longitude, unique identification details of individual machines are given in the following table:

S.No.	Customers Name	Machine Capacity (MW)	Site	Taluka	District	Latitude	Longitude
1	G. B. Rubber Products	1.6	Kadvekhurd	Patan	Satara	17°33'15" to 17°33'56"	73°55'28" to 73°56'51"
2	Atlas Tours & Travels Pvt. Ltd	0.8	Kadvekhurd	Patan	Satara	17°33'15" to 17°33'56"	73°55'28" to 73°56'51"
3	Shah Lulla Estate Developers	0.8	Kadvekhurd	Patan	Satara	17°33'15" to 17°33'56"	73°55'28" to 73°56'51"
4	Liberty Oil Mills Ltd.	2.4	Kadvekhurd	Patan	Satara	17°33'15" to 17°33'56"	73°55'28" to 73°56'51"
4	Liberty Oil Mills Ltd.	1.6	Varekarwadi	Patan	Satara	17°11'47.6" to 17°11'51.2"	73°59'12.7" to 73°59'13.5"
5	Paceman Sales Promotion P. Ltd.	0.8	Bhambarwadi	Shirla	Sangli	17°8'36.5"	73°55'14.3"
6	Delta Enterprises	2.4	Bhambarwadi	Shirla	Sangli	17°7'11.3" to 17°8'35.6" to 17°8'28.5"	73°56'5.7" to 73°55'2.8" to 73°55'21.7"
7	Shreem Capacitors Pvt. Ltd.	3.2	Bhambarwadi	Shirla	Sangli	17°8'52.1" to 17°8'58.2" to 17°9'2.8" to 17°9'34.8"	73°55'10.1" to 73°55'6" to 73°55'5.4" to 73°55'6.1"
8	Kishor Food Products P. Ltd	0.8	Bhambarwadi	Shirla	Sangli	17°8'53.2"	73°54'57.7"
9	Mahanagar Developers	7.2	Bhambarwadi	Shirla	Sangli	17°9'7.6" to 17°9'14.7" to 17°9'19.1" to 17°9'24.6" to 17°9'28.2" to 17°9'14.5" to 17°9'10.8" to 17°9'10.9" to 17°8'10.9"	73°55'5.8" to 73°55'2.5" to 73°55'3.6" to 73°55'6" to 73°55'6.7" to 73°55'18.1" to 73°55'36.6" to 73°55'3.5" to 73°56'0.5"
9	Mahanagar Developers	0.8	Panchpatta	Sinnar	Nasik	19°39'12.8"	73°48'41.4"
10	Mr. J. P. Patel	0.8	Panchpatta	Sinnar	Nasik	19°45'53.4"	73°50'32.8"
11	Mr. C. P. Patel	0.8	Panchpatta	Sinnar	Nasik	19°45'17.1"	73°50'31.4"

12	Mr. V. V. Patel	0.8	Panchpatta	Sinnar	Nasik	19°44'58"	73°50'13.1"
13	Mr. J. V. Patel	0.8	Panchpatta	Sinnar	Nasik	19°45'12.7"	73°50'29.2"
14	Mr. S. V. Patel	0.8	Panchpatta	Sinnar	Nasik	19°45'46.9"	73°50'34.1"
15	Mr. V. L. Patel	0.8	Panchpatta	Sinnar	Nasik	19°44'33.5"	73°50'29.2"
16	Laxmi Narayan Best Chiwda	0.8	Panchpatta	Sinnar	Nasik	19°45'2.9"	73°50'12.6"
17	Om Shanti Wind Farms P. Ltd	0.8	Aundhewadi	Sinnar	Nasik	19°45'7.7"	73°50'12.8"
18	New Sahyadri Industries Ltd.	1.6	Panchpatta	Akole	Ahmed nagar	19°44'24.3" 19°44'28.2"	73°50'40.8" 73°50'35.7"
19	Mr. P. L. Patel	0.8	Panchpatta	Akole	Ahmed nagar	19°41'7.2"	73°48'48.2"
20	Elpro International	0.8	Panchpatta	Akole	Ahmed nagar	19°41'41.8"	73°48'53.3"
21	Prachar Energy	1.6	Panchpatta	Akole	Ahmed nagar	19°39'17.8" 19°39'22.7"	73°48'42.7" 73°48'47.5"
22	Panama Wind Energy Pvt. Ltd.	1.6	Panchpatta	Akole	Ahmed nagar	19°41'16.6" 19°41'20.6"	73°48'53" 73°48'55.6"
23	International Conveyors Ltd.	0.8	Panchpatta	Akole	Ahmed nagar	19°41'37"	73°48'54.3"
24	Metalfab Hightech Private Limited	0.8	Panchpatta	Akole	Ahmed nagar	19°41'11.9"	73°48'51.6"
25	Gargi Construction Co. Pvt. Ltd.	1.6	Panchpatta	Akole	Ahmed nagar	19°41'26.1" 19°41'31.1"	73°48'55.1" 73°48'54.5"
26	Mohite & Mohite	2.4	Panchpatta	Akole	Ahmed nagar	19°42'15.6" 19°42'20.5" 19°42'25.6"	73°49'6.4" 73°49'15.9" 73°49'15.3"
27	Indiana Engineering Works (Bombay) P. Ltd.	1.6	Panchpatta	Akole	Ahmed nagar	19°39'27.5" 19°39'32.4"	73°48'49" 73°48'49.8"
28	Welpack Industries Ltd.	0.8	Panchpatta	Akole	Ahmed nagar	19°39'7.9"	73°48'37"

29	Sunilkumar Ramanlal Shah	0.8	Panchpatta	Akole	Ahmed nagar	19°44'38.6"	73°50'22.5"
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A.4. Technical description of the project

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The Project involves 55-wind energy converters (WECs) of Enercon make (800 kW E-48) with internal electrical lines connecting the project with local evacuation facility. The WECs generates 3-phase power at 400V, which is stepped up to 22 KV. The Project can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V $\pm$ 12.5%. The other salient features of the state-of-art-technology are:

- Gearless Construction - rotor & generator mounted on same shaft eliminating the gearbox.
- Variable speed function – has the speed range of 18 to 33 rpm thereby ensuring optimum efficiency at all times.
- Variable Pitch functions ensuring maximum energy capture.
- Near Unity Power Factor at all times.
- Minimum drawl (less than 1% of kWh generated) of Reactive Power from the grid.
- No voltage peaks at any time.
- Operating range of the WEC with voltage fluctuation of -20 to +20%.
- Less Wear & Tear since the system eliminates mechanical brake, which are not required due to low speed generator that runs at maximum speed of 33 rpm and uses Air Brakes.
- Three Independent Braking Systems.
- Generator achieving rated output at only 33 rpm.
- Incorporates lightning protection system, which includes blades.
- Starts Generation of power at wind speed of 3 m/s.

Enercon (India) Ltd has secured and facilitated the technology transfer for wind based renewable energy generation from Enercon GmbH and has established a manufacturing plant at Daman in India, where along with other components the "Synchronous Generators" using "Vacuum Impregnation" technology are manufactured.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

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Title of the project	:	"44 MW Bundled Wind Power Project in Maharashtra managed by Enercon India Limited."
Project activity scale	:	Large
Sectoral scope	:	1, Energy Industries (renewable/- non renewable sources)
Type and Category	:	"Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
Approved baseline Methodology	:	ACM 0002 Version 10
Approved monitoring methodology	:	ACM 0002 Version 10 (http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L)

A.6. Registration date of the project activity:

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The project got registered under VCS Version 2007.1 on 13th November 2009.

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

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Crediting period of the project activity as per validated PD is from 1 April 2006 to 31 March 2016 (Fixed).

The first verification period of the project activity was from 1st April 2006 to 31st May 2009 for which VCU's have already been issued.

A.8. Name of responsible person(s)/entity(ies):

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Contact Information of Enercon (India) limited is given in the table below:

Organization:	Enercon (India) Limited
Street/P.O.Box:	A-9, Veera Industrial Estate, Veera Desai Road, Andheri West
Building:	Enercon Tower
City:	Mumbai
State/Region:	Maharashtra
Postfix/ZIP:	400 053
Country:	India
Telephone:	+91-22-66924848
FAX:	+91-22 - 67040473 / 66921175
E-Mail:	Yogesh.Mehra@enerconindia.net
URL:	www.enerconindia.net
Represented by:	
Title:	Managing Director
Salutation:	Mr.
Last Name:	Mehra
Middle Name:	
First Name:	Yogesh
Department:	Corporate
Mobile:	
Direct FAX:	+91-22-6692 1177
Direct tel:	+91-22-6702 2832
Personal E-Mail:	Yogesh.Mehra@enerconindia.net

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

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The first machine under the project activity was commissioned on 7th February 2006 and last machine under the project activity was commissioned on 10th December 2008. The project activity consists of 55 machines (800 kWh) of Enercon make E-48. The commissioning date for all the machines included in the project activity is given in the table below.

Serial No	Customer Name	Individual Capacity	Loc No.	Capacity	Date of Commissioning
1	G. B. Rubber Products	0.8	1	1.6	14-Feb-06
2	G. B. Rubber Products	0.8	2		14-Feb-06
3	Shah Lulla Estate Developers	0.8	4	0.8	14-Feb-06
4	Liberty Oil Mills Ltd.	0.8	6	2.4	7-Feb-06
5	Liberty Oil Mills Ltd.	0.8	7		7-Feb-06
6	Liberty Oil Mills Ltd.	0.8	8		7-Feb-06
7	Liberty Oil Mills Ltd.	0.8	1	1.6	8-Feb-06
8	Liberty Oil Mills Ltd.	0.8	2		8-Feb-06
9	Paceman Sales Promotion P. Ltd.	0.8	36	0.8	22-Mar-06
10	Delta Enterprises	0.8	37	1.6	15-Jun-06
11	Delta Enterprises	0.8	38		15-Jun-06
12	Delta Enterprises	0.8	19	0.8	22-Mar-06
13	Mahanagar Developers	0.8	53	4.8	5-Jan-07
14	Mahanagar Developers	0.8	54		5-Jan-07
15	Mahanagar Developers	0.8	55		5-Jan-07
16	Mahanagar Developers	0.8	56		5-Jan-07
17	Mahanagar Developers	0.8	57		5-Jan-07
18	Mahanagar Developers	0.8	61		5-Jan-07
19	Mahanagar Developers	0.8	62	2.4	6-Mar-07
20	Mahanagar Developers	0.8	63		6-Mar-07
21	Mahanagar Developers	0.8	60		6-Mar-07
22	Mahanagar Developers	0.8	30	0.8	28-Feb-07
23	Kishor Food Products P. Ltd.	0.8	47	0.8	10-Dec-08
24	Mr. J. P. Patel	0.8	95	0.8	29-Mar-07
25	Mr. C. P. Patel	0.8	84	0.8	31-Mar-07
26	Mr. V. V. Patel	0.8	80	0.8	31-Mar-07
27	Mr. J. V. Patel	0.8	83	0.8	29-Mar-07
28	Mr. S. V. Patel	0.8	94	0.8	29-Mar-07
29	Mr. V. L. Patel	0.8	76	0.8	29-Mar-07
30	Laxmi Narayan Best Chiwda	0.8	81	0.8	29-Mar-07
31	New Sahyadri Industries Ltd.	0.8	74	1.6	27-Jan-07
32	New Sahyadri Industries Ltd.	0.8	75		27-Jan-07

33	Mr. P. L. Patel	0.8	45	0.8	6-Feb-07
34	Elpro International	0.8	52	0.8	30-Dec-07
35	Prachar Energy	0.8	31	1.6	3-Mar-07
36	Prachar Energy	0.8	32		3-Mar-07
37	Panama Wind Energy Pvt. Ltd.	0.8	47	1.6	30-Dec-06
38	Panama Wind Energy Pvt. Ltd.	0.8	48		30-Dec-06
39	International Conveyors Ltd.	0.8	51	0.8	30-Dec-06
40	Shreem Capacitors Pvt. Ltd.	0.8	50	3.2	10-Dec-08
41	Shreem Capacitors Pvt. Ltd.	0.8	51		10-Dec-08
42	Shreem Capacitors Pvt. Ltd.	0.8	52		10-Dec-08
43	Shreem Capacitors Pvt. Ltd.	0.8	58		10-Dec-08
44	Metalfab Hightech Private Limited	0.8	46	0.8	6-Feb-07
45	Atlas Tours & Travels Pvt. Ltd.	0.8	5	0.8	7-Feb-06
46	Om Shanti Wind Farms P. Ltd.	0.8	82	0.8	31-Mar-07
47	Gargi Construction Co. Pvt. Ltd.	0.8	49	1.6	30-Dec-06
48	Gargi Construction Co. Pvt. Ltd.	0.8	50		30-Dec-06
49	Mohite & Mohite	0.8	59	2.4	30-Dec-06
50	Mohite & Mohite	0.8	60		30-Dec-06
51	Mohite & Mohite	0.8	61		30-Dec-06
52	Indiana Engineering Works (Bombay) P. Ltd.	0.8	33	1.6	3-Mar-07
53	Indiana Engineering Works (Bombay) P. Ltd.	0.8	34		3-Mar-07
54	Welpack Industries Ltd.	0.8	29	0.8	28-Feb-07
55	Sunilkumar Ramanlal Shah	0.8	77	0.8	30-Mar-08

The project activity does not involve any exchange of equipment or any special events during the said monitoring period; there has not been any change in the project activity after the commissioning. There are no issues during the monitoring period which may impact the applicability of the methodology.

There are no major break downs during the said monitoring period.

B.2. Revision of the monitoring plan

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Not Applicable

B.3. Request for deviation applied to this monitoring period

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Not Applicable

B.4. Notification or request of approval of changes

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Not Applicable

SECTION C. Description of the monitoring system

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Approved monitoring methodology ACM0002 / Version 10 Sectoral Scope: 1, “Consolidated methodology for grid-connected electricity generation from renewable sources”, by CDM - Meth Panel is proposed to be used to monitor the emission reductions.

The monitoring includes collection, monitoring, recording, reporting and archiving of data. The applied methodology requires monitoring of electricity exported from wind farm and electricity imported to the wind farm. The net electricity supplied to the grid is calculated based on these two values. The values of grid emission factors are fixed ex-ante and remain same throughout the crediting period.

a) Purpose of monitoring: The main purpose of the monitoring is to check the electricity exported to the NEWNE grid from the project under consideration.

b) Types of data and information to be reported, including units of measurement:

$EG_{\text{export}, y}$, $EG_{\text{import}, y}$, Eg_y

c) Origin of the data: Electricity supplied by the project activity to the grid as per energy generation certificates given by Maharashtra State Electricity Distribution Co. Ltd (MSEDCL)

d) Monitoring, modelling, measurement or calculation approaches:

- Measurement or Calculation Approaches:

- The generated electricity is measured through a two step procedure wherein the first metering is carried out at the controller of the machine with on-board meter. The monitoring of all these wind turbines is done from a common monitoring station as a part of central monitoring system. The system consists of a state-of-the-art controlling and monitoring and well trained staff personnel of O&M contractor, Enercon India Limited, are always present on site to monitor various parameters of power generation and deal with any problems related to generation, transmission or maintenance. $EG_{\text{gross}, y}$ is the electricity generated from an individual wind turbine measured through its panel meter. The summation of total Electricity exported and imported from wind turbine of the project proponent from individual meters (panel meter) in MWh is presented as

$$\sum_{0}^n EG_{\text{gross export}, y} \text{ and } EG_{\text{gross import}, y}$$

and the summation of total Electricity exported and imported (panel data) from the other wind turbines attached to the common MSEDCL meter at the sub-station in MWh is presented as

$$\sum_{0}^n EG_{\text{total import}} \text{ and } EG_{\text{total export}}$$

A ratio based on these two set of measured values would be used for apportioning the net electricity supplied to the NEWNE grid by the project activity. The second metering is carried out at grid interconnection point (sub station) wherein the Joint Meter Reading (JMR) is carried out on last day of every month in presence of the representatives of the project proponent & the state electricity utility (MSEDCL). This JMR is used for calculation of the amount of electricity supplied to the grid against which the utility makes the payment to the project proponent. The JMR gives both the “export” ($EG_{\text{JMR}, \text{export}}$) and “import” ($EG_{\text{JMR}, \text{import}}$) of the electricity to/ from the NEWNE grid. There is a single meter which gives both the export and import values, this metered reading would give value net of line losses and auxiliary consumption. Further, as there is a common MSEDCL joint meter for multiple project proponents, the joint meter reading (JMR) is taken every month by MSEDCL personnel reflects the cumulative monthly generation for all wind turbines connected to this MSEDCL meter. The

apportioning of electricity generated from the various wind turbines is done by EIL, based on the power generation from the individual wind turbines connected to this MSEDCL meter. O&M personnel from EIL prepare a monthly report on generation and consumption. This report contains details of power exported/imported to/from the grid by each of the wind turbines connected. This apportioned value is then used by the project proponent to raise invoice from MSEDCL.

EG_{export} the electricity exported to the grid by the project activity is calculated as follows:

$$EG_{\text{export}} = EG_{JMR, \text{export}} \times \frac{\sum_0^n EG_{\text{gross export, y}}}{\left(\sum_0^n EG_{\text{gross export, y}} + \sum_0^n EG_{\text{total export, y}} \right)}$$

EG_{import} the electricity drawn from the grid by the project activity is calculated as follows:

$$EG_{\text{import}} = EG_{JMR, \text{import}} \times \frac{\sum_0^n EG_{\text{gross import, y}}}{\left(\sum_0^n EG_{\text{gross import, y}} + \sum_0^n EG_{\text{total import, y}} \right)}$$

EG_y , the net electricity supplied to the grid by the project activity, is calculated as follows:

$$EG_y = EG_{\text{export}} - EG_{\text{import}}$$

The meters located at the grid sub-station are sealed, maintained and calibrated by the state electricity utility. The meters are tested and maintained as per the Metering Code for Maharashtra. Additionally, each wind turbine is equipped with an integrated electronic meter. The electricity generated is recorded 24 hours.

Net electricity supplied to the grid will be measured by the two-way export trivector meter. The Net electricity is recorded as following:

$$(Net\ Electricity = Total\ Export - Total\ Import)$$

The procedures for metering and meter reading will be as per the provisions of the power purchase agreement.

Example of apportioning for the month of September 10 for feeder 3 at Kadvekhurd for 8 machines is shown below :

						Total EB Readings Taken from monthly credit notes for the month September 2010	
S.No	Name of customers attached at Kadvekhu rd	Number of WEGs	DOC	Loc No	Panel Generation (Ai)	Export (B)	Import(C)
1	M/s Liberty Oil Mill	1	7-Feb-06	6	158865	1383896.48	587.93
2	M/s Liberty Oil Mill	1	7-Feb-06	7	207372	1383896.48	587.93
3	M/s Liberty Oil Mill	1	7-Feb-06	8	210836	1383896.48	587.93
4	M/s G.B.Rubber Products	1	14-Feb-06	1	172835	1383896.48	587.93
5	M/s G.B.Rubber Products	1	14-Feb-06	2	156372	1383896.48	587.93
6	M/s Atlas Tours & travels Pvt Ltd.	1	7-Feb-06	5	121041	1383896.48	587.93
7	M/s Shahlulla estate developer Ltd.	1	14-Feb-06	4	207806	1383896.48	587.93
8	M/s Fashion suiting	1	14-Feb-06	3	171994	1383896.48	587.93
1407121							

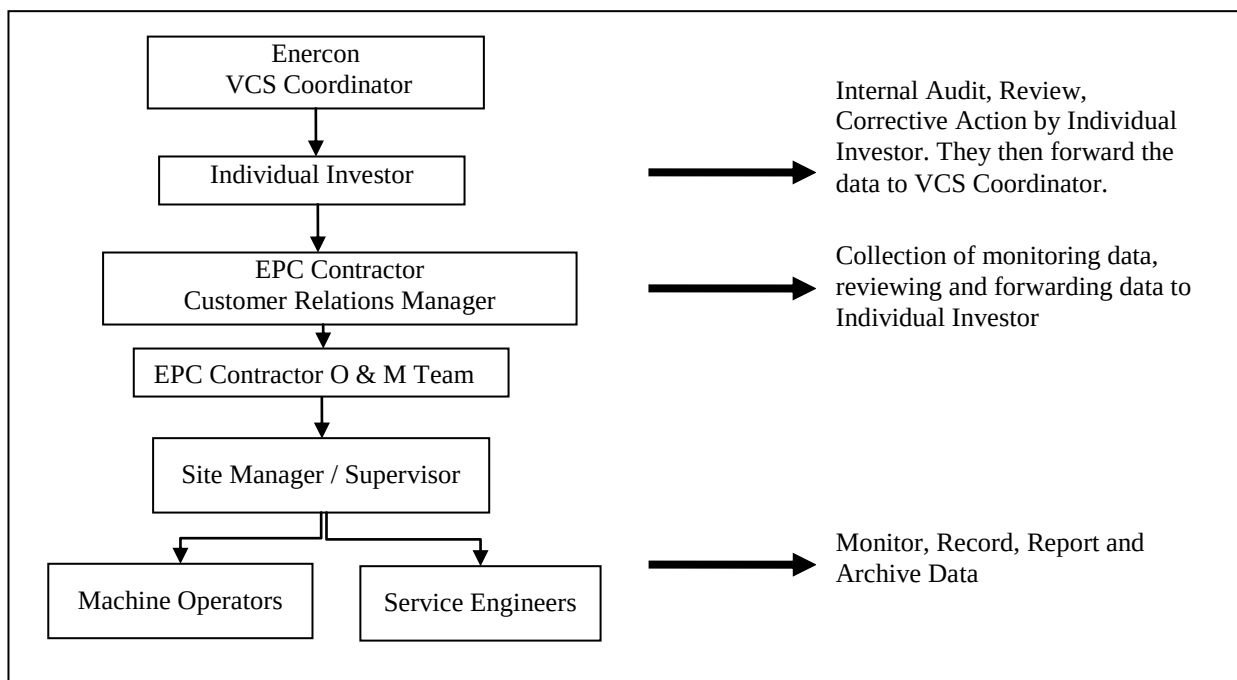
Individual customers break up after apportioning calculation:-

S. No	Name of customers attached at Kadvekhurd	Number of WE Gs	Loc No	DOC	Panel Generation	Individual customers break up after apportioning calculation		
						Export (Di)=Ai*B/ $\sum$ Ai	Import (Ei)=Ai*C/ $\sum$ Ai	Net Export (Fi)= (Di)-(Ei)
1	M/s Liberty Oil Mill	1	6	7-Feb-06	158865	156242.93	66.38	156176.56
2	M/s Liberty Oil Mill	1	7	7-Feb-06	207372	203949.33	86.64	203862.68
3	M/s Liberty Oil Mill	1	8	7-Feb-06	210836	207356.15	88.09	207268.06
4	M/s G.B.Rubber Products	1	1	14-Feb-06	172835	169982.36	72.21	169910.15
5	M/s G.B.Rubber Products	1	2	14-Feb-06	156372	153791.08	65.34	153725.75
6	M/s Atlas Tours & travels Pvt Ltd.	1	5	7-Feb-06	121041	119043.22	50.57	118992.65
7	M/s Shahlulla estate developer Ltd.	1	4	14-Feb-06	207806	204376.16	86.83	204289.34
8	M/s Fashion suiting	1	3	14-Feb-06	171994	169155.24	71.86	169083.38
					1407121			

The procedures for metering and meter reading will be as per the provisions of the power purchase agreement signed between PPs and MSEDCL.

e) Monitoring times and periods, considering the needs of intended users: The Net electricity supplied to the grid is recorded monthly by taking a Joint Meter Reading (JMR) in the presence of officials from off-taking Utility (MSEDCL) and Enercon as O&M contractor, on behalf of project sponsor. The Joint meter reading contains the value of energy imported and exported and the net export to the grid during the recording period. This Joint meter reading is certified by the Executive engineer of utility and by Enercon Officials.

f) Monitoring roles and responsibilities: The sole parameter for monitoring is the electricity supplied to the grid. The Project is operated and managed by Enercon (India) Ltd. The operational and management structure implemented by Enercon is as follows:



Enercon India limited is an ISO 9001:2000 certified Quality Management system from Germanischer Lloyd. Enercon India limited follows the documentation practices to ensure the reliability and availability of the data for all the activities as required from the identification of the site, wind resource assessment, logistics, finance, construction, commissioning and operation of the wind power project. Adhering to the calibration and testing procedure as described in Power Purchase Agreement ensures the accuracy of monitoring parameter. The project adheres to all the mandatory regulatory and statutory requirements at the state as well as national level.

g) Managing Data Quality:

Data management is as per the ISO certification standards.

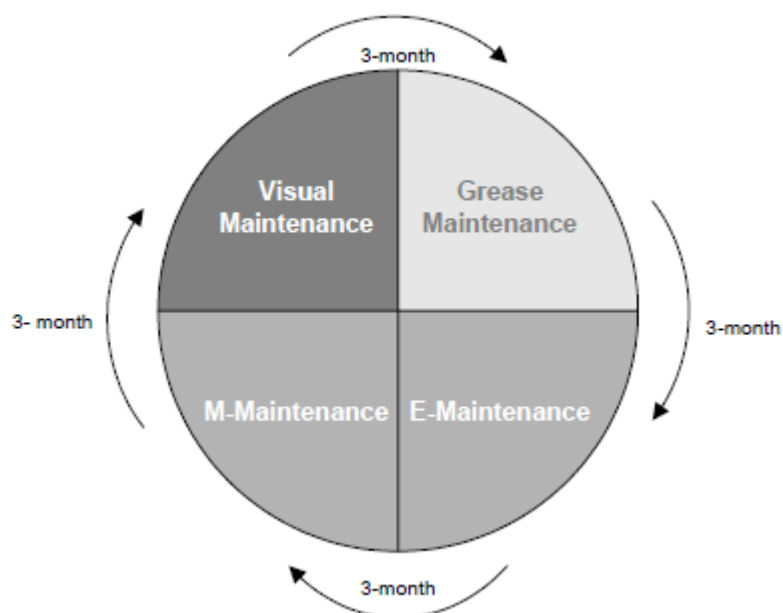
1. The data collection is ongoing process.
2. Two-way meter will be calibrated on regular basis (as per the requirement stipulated by SEB). Project Head would be responsible for regular calibration of the meter.
3. SCADA system connected to individual WECs for online monitoring.
4. The invoices are cross-checked with invoices raised to the MSSEDCL.

h) Annual maintenance and major breakdown detail:-

Description of maintenance intervals: On project site there is a schedule for annual maintenance for the entire machine. There are four types of maintenance and machine has to stop for defined time period for maintenance as follows:

- 1) Visual maintenance : average 3 to 4 hr stop of WEC
- 2) Grease maintenance : average 3 to 4 hr stop of WEC
- 3) Electrical maintenance: average 16 to 20 hr stop of WEC
- 4) Mechanical maintenance: average 16 to 20 hr stop of WEC

Cycle for annual maintenance is according to following picture:



Annual Maintenance cycle

Maintenance comprises not only activities to determine and assess a wind turbine's actual state but also those to keep the system's nominal state. Repair work necessary to reconstruct the nominal state are not, however, part of these maintenance instructions.

The details of substation and feeders are as follows:

Sr No.	Customer name	Site	Sub Project Capacity	EIL Sub Station	EB Sub Station	Feeder Details
1	G. B. Rubber Products	Kadvekhurd	1.6	NA	Satara MIDC S/S	NA
2	Shah Lulla Estate Developers	Kadvekhurd	0.8	NA	Satara MIDC S/S	NA
3	Liberty Oil Mills Ltd.	Varekarwadi	1.6	NA	Kale S/S	NA
3	Liberty Oil Mills Ltd.	Kadvekhurd	2.4	NA	Satara MIDC S/S	NA
4	Paceman Sales Promotion P. Ltd.	Bhambarwadi	0.8	Bhamberwadi	Bhamberwadi S/S	F-1
5	Delta Enterprises	Bhambarwadi	2.4	Bhamberwadi	Bhamberwadi S/S	F-1
6	Mahanagar Developers	Bhambarwadi and Panchpatta	7.2 and 0.8	Bhamberwadi	Bhamberwadi S/S	F-1, F-3 and F-4
7	Kishor Food Products P. Ltd.	Bhamberwadi	0.8	Bhamberwadi	Bhamberwadi S/S	F-3
8	Mr. J. P. Patel	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6
9	Mr. C. P. Patel	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6

10	Mr. V. V. Patel	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6
11	Mr. J. V. Patel	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6
12	Mr. S. V. Patel	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6
13	Mr. V. L. Patel	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6
14	Laxmi Narayan Best Chiwda	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6
15	New Sahyadri Industries Ltd. 01 02	Panchpatta	1.6	Bhandardarawadi	Panchpatta S/S	F-5
16	Mr. P. L. Patel	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-1
17	Elpro International	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-1
18	Prachar Energy	Panchpatta	1.6	Bhandardarawadi	Panchpatta S/S	F-4
19	Panama Wind Energy Pvt. Ltd.	Panchpatta	1.6	Bhandardarawadi	Panchpatta S/S	F-1
20	International Conveyors Ltd.	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-1
21	Shreem Capacitors Pvt. Ltd.	Bhambarwadi	3.2	Bhamberwadi	Bhamberwadi S/S	F-3
22	Metalfab Hightech Private Limited	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-1
23	Atlas Tours & Travels Pvt. Ltd.	Kadvekhurd	0.8	NA	Satara MIDC S/S	NA
24	Om Shanti Wind Farms P. Ltd.	Aundhewadi	0.8	Bhandardarawadi	Panchpatta S/S	F-6
25	Gargi Construction Co. Pvt. Ltd.	Panchpatta	1.6	Bhandardarawadi	Panchpatta S/S	F-1
26	Mohite & Mohite	Panchpatta	2.4	Bhandardarawadi	Panchpatta S/S	F-1
27	Indiana Engineering Works (Bombay) P. Ltd.	Panchpatta	1.6	Bhandardarawadi	Panchpatta S/S	F-4
28	Welpack Industries Ltd.	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-4
29	Sunilkumar Ramanlal Shah	Panchpatta	0.8	Bhandardarawadi	Panchpatta S/S	F-6
	Total		44			

The details of meter calibration for 4 different sites are as follows:

Wind Farm Site	Meter Serial Number (Main Meter)	Meter Serial Number (Check Meter)	Accuracy Class	Make	Calibration Dates			
Kadvekhurd	04760188	04760187	0.2	Elster	22-May-09	23-Sep-09	7-Nov-09	14-Jan-10
Varekarvadi	04760189	04760190	0.2	Elster	19-May-09	21-Sep-09	12-Dec-09	30-Mar-10
Bhambarwadi (Feeder 1)	04862746	04865569	0.2	Elster	19-Mar-09	14-Dec-09	25-Mar-10	21-Jun-10
Bhambarwadi (Feeder 3)	04862747	04865571	0.2	Elster	19-Mar-09	14-Dec-09	25-Mar-10	21-Jun-10
Panchpatta (Feeder 1)	04862978	04862981	0.2	Elster	1-Apr-09	28-Jul-10		
Panchpatta (Feeder 4)	04862984	05031636	0.2	Elster	1-Apr-09	28-Jul-10		
Panchpatta (Feeder 5)	04862989	04862980	0.2	Elster	1-Apr-09	28-Jul-10		
Panchpatta (Feeder 6)	04862987	04862982	0.2	Elster	1-Apr-09	28-Jul-10		

During the Monitoring period i.e. 1 Jun 2009 to 30 Sep 2010, calibration of the main and check meters at Panchpatta feeder was not conducted as per the stipulated frequency. The last calibration certificates pertaining to the main and check meters have been submitted to the DOE. These certificates clearly show that all the main meters and corresponding check meters are performing within their accuracy class.

We refer to the Guidelines for assessing compliance with the calibration frequency requirements – Annex 60 to EB 52, Paragraph 4(a). The guideline states that in cases where calibration is not carried out in line with the frequency mentioned in the monitoring plan, as a conservative approach, the energy export and import values (as mentioned in the JMR/Credit Note) can be considered after applying the maximum possible value of error of the instrument to the measured values. Since the latest calibration certificates show that all main meters and check meters are operating within their accuracy class, in accordance with Annex 60, EB 52 we have applied a correction factor of +0.2% for imports and -0.2% for exports for the entire monitoring period.

The WECs for which the error factor has been applied are as follows:

Sl. No	Loc No	Customer Name	Capacity (MW)	Total Capacity (MW)	COD	Error factor applied for the month
1	30	Mahanagar Developers	0.8	0.8	28-Feb-07	Apr-2010 to Jul-2010
2	95	Mr. J. P. Patel	0.8	0.8	29-Mar-07	Apr-2010 to Jul-2010
3	84	Mr. C. P. Patel	0.8	0.8	31-Mar-07	Apr-2010 to Jul-2010

4	80	Mr. V. V. Patel	0.8	0.8	31-Mar-07	Apr-2010 to Jul-2010
5	83	Mr. J. V. Patel	0.8	0.8	29-Mar-07	Apr-2010 to Jul-2010
6	94	Mr. S. V. Patel	0.8	0.8	29-Mar-07	Apr-2010 to Jul-2010
7	76	Mr. V. L. Patel	0.8	0.8	29-Mar-07	Apr-2010 to Jul-2010
8	81	Laxmi Narayan Best Chiwda	0.8	0.8	29-Mar-07	Apr-2010 to Jul-2010
9	74	New Sahyadri Industries Ltd.	0.8	1.6	27-Jan-07	Apr-2010 to Jul-2010
10	75	New Sahyadri Industries Ltd.	0.8		27-Jan-07	Apr-2010 to Jul-2010
11	45	Mr. P. L. Patel	0.8	0.8	6-Feb-07	Apr-2010 to Jul-2010
12	52	Elpro International	0.8	0.8	30-Dec-07	Apr-2010 to Jul-2010
13	31	Prachar Energy	0.8	1.6	3-Mar-07	Apr-2010 to Jul-2010
14	32	Prachar Energy	0.8		3-Mar-07	Apr-2010 to Jul-2010
15	47	Panama Wind Energy Pvt. Ltd.	0.8	1.6	30-Dec-06	Apr-2010 to Jul-2010
16	48	Panama Wind Energy Pvt. Ltd.	0.8		30-Dec-06	Apr-2010 to Jul-2010
17	51	International Conveyors Ltd.	0.8	0.8	30-Dec-06	Apr-2010 to Jul-2010
22	46	Metalfab Hightech Private Limited	0.8	0.8	6-Feb-07	Apr-2010 to Jul-2010
23	82	Om Shanti Wind Farms P. Ltd.	0.8	0.8	31-Mar-07	Apr-2010 to Jul-2010
24	49	Gargi Construction Co. Pvt. Ltd.	0.8	1.6	30-Dec-06	Apr-2010 to Jul-2010
25	50	Gargi Construction Co. Pvt. Ltd.	0.8		30-Dec-06	Apr-2010 to Jul-2010
26	59	Mohite & Mohite	0.8	2.4	30-Dec-06	Apr-2010 to Jul-2010
27	60	Mohite & Mohite	0.8		30-Dec-06	Apr-2010 to Jul-2010
28	61	Mohite & Mohite	0.8		30-Dec-06	Apr-2010 to Jul-2010
29	33	Indiana Engineering Works (Bombay) P. Ltd.	0.8	1.6	3-Mar-07	Apr-2010 to Jul-2010
30	34	Indiana Engineering Works (Bombay) P. Ltd.	0.8		3-Mar-07	Apr-2010 to Jul-2010
31	29	Welpack Industries Ltd.	0.8	0.8	28-Feb-07	Apr-2010 to Jul-2010
32	77	Sunilkumar Ramanlal Shah	0.8	0.8	30-Mar-08	Apr-2010 to Jul-2010

SECTION D. Data and parameters

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D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	$EF_{OM,y}$
Data unit:	tCO ₂ e/MWh
Description:	Operating Margin Emission Factor of NEWNE Grid
Source of data used:	CEA database Version 04 available at www.cea.nic.in
Value(s) :	1.00862621
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Additional comment:	None

Data / Parameter:	$EF_{BM,y}$
Data unit:	tCO ₂ e/MWh
Description:	Build Margin Emission Factor of NEWNE Grid
Source of data used:	CEA database Version 04 available at www.cea.nic.in
Value(s) :	0.597712
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Additional comment:	None

Data / Parameter:	$EF_{CM,y}$
Data unit:	tCO ₂ e/MWh
Description:	Combined Margin Emission Factor of NEWNE Grid
Source of data used:	Calculated
Value(s) :	0.9058975
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline Emissions
Additional comment:	None

D.2. Data and parameters monitored

Data / Parameter:	EG, Gross,y
Data unit:	MWh
Description:	Total electricity generation by the wind mills during the monitoring period
Source of data to be used:	Controller attached with each WEC.
Value of data applied for the purpose of calculating expected emission reductions	111523.14 MWh

Description of measurement methods and procedures to be applied:	This data is the controller data The values of actual generation from individual WEC's can be verified from the website of Enercon (India) Limited.
QA/QC procedures to be applied:	As per the procedures described in the technical manual of WEG panel meter. The meters used are auto calibrated to ensure accuracy of data.
Any comment:	The data (Total electricity generation by the wind mills) will be archived on electronic media as well as on paper. The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later -Not used for emission reduction calculation

Data / Parameter:	EG, Export
Data unit:	MWh (Mega-watt hour)
Description:	Electricity exported to the grid by the Project activity.
Source of data to be used:	Electricity exported to the grid as per the credits notes issued by MSEDCL.
Value of data	1 June 2009 to 31 December 2009 = 53647.43 MWh 1 January 2010 to 30 September 2010= 55625.35 MWh
Brief description of measurement methods and procedures to be applied:	Net electricity exported to the grid will be calculated based on the measured values of "export" and "import" on the MSEDCL meter, where joint reading is taken by EIL representative and MSEDCL officials. Since this meter is common to project activity and other wind turbines that are not under this project activity, the apportioning of net electricity would be done based on electricity generated from individual wind turbines. Apportioning is used to calculate EB export of individual customer as described in section C above. The procedures for metering and meter reading will be as per the provisions of the power purchase agreement made between the customers and MSEDCL. Refer Section- C for an illustration of the provisions for measurement methods.
QA/QC procedures applied:	QA/QC procedures will be as implemented by MSEDCL pursuant to the provisions of the power purchase agreement and the Metering Code of Maharashtra and there will be no additional QA/QC procedures. Refer Section- C for an illustration of the provisions for QA/QC procedures.
Any comment:	

Data / Parameter:	EG, Import
Data unit:	MWh (Mega-watt hour)
Description:	Electricity imported to the grid by the Project activity.
Source of data to be used:	Electricity imported to the grid as per the credits notes issued by MSEDCL.
Value of data	1 June 2009 to 31 December 2009 = 43.38 MWh 1 January 2010 to 30 September 2010= 53.97 MWh
Brief description of measurement methods and procedures to be applied:	Net electricity imported from the grid will be calculated based on the measured by the values of "export" and "import" on the MSEDCL meter, where joint reading is taken by EIL representative and MSEDCL officials. Since this meter is common to project activity and other wind turbines that are not under this project activity, the apportioning of net electricity would be done based on electricity generated from individual wind turbines. Apportioning is

	used to calculate EB import of individual customer as described in section E. The procedures for metering and meter reading will be as per the provisions of the power purchase agreement made between the investors and MSEDCL. Refer Section- C for an illustration of the provisions for measurement methods.
QA/QC procedures applied:	QA/QC procedures will be as implemented by MSEDCL pursuant to the provisions of the power purchase agreement and the Metering Code of Maharashtra and there will be no additional QA/QC procedures. Refer Section- C for an illustration of the provisions for QA/QC procedures.
Any comment:	

Data / Parameter:	EG_y. Net
Data unit:	MWh (Mega-watt hour)
Description:	Net electricity supplied to the grid by the Project.
Source of data to be used:	Calculated from EG _{export} and EG _{import} as =(EG _{export} – EG _{import})
Value of data	1 June 2009 to 31 December 2009= 53604.05 MWh 1 January 2010 to 30 September 2010= 55571.38 MWh
Brief description of measurement methods and procedures to be applied:	Net electricity supplied to the grid will be calculated by the two-way export Tri-vector meter. The Net electricity is recorded as following: (<i>Net Electricity = Net Export – Net Import</i>) The procedures for metering and meter reading will be as per the provisions of the power purchase agreement made between customers and state electricity board.
QA/QC procedures applied:	QA/QC procedures will be as implemented by MSEDCL pursuant to the provisions of the power purchase agreement and there will be no additional QA/QC procedures.
Any comment:	

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

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“The baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO₂e/kWh) calculated in a transparent and conservative manner as the weighted average emissions (in kg CO₂e/kWh) as described in registered PDD.

$$BE_y = EG_y * EF_y$$

Where,

BE_y is baseline emissions in year y, tCO₂e

EG_y is the net electricity supplied to the grid in year y and is applied directly from JMR (Form B) certified by state utility. This value can also be cross checked from the invoice.

EF_y is the CO₂ emission factor of the grid (905.8975 tCO₂e/GWh fixed ex-ante).

The baseline emissions for the monitoring period are summarized below:

S. No.	Name of Customers	Capacity (MW)	Total Net Energy Export (kWh)	Emission Factor NEWNE Grid (tCOe/MWh)	Baseline Emissions (tCO2e)
1	G. B. Rubber Products	1.6	3977579.75	0.9058975	3603
2	Shah Lulla Estate Developers	0.8	2070746.3	0.9058975	1875
3	Liberty Oil Mills Ltd.	4	12005887.08	0.9058975	10875
4	Paceman Sales Promotion P. Ltd.	0.8	2318366.00	0.9058975	2099
5	Delta Enterprises	2.4	6365592.00	0.9058975	5766
6	Mahanagar Developers	8	19048988.40	0.9058975	17256
7	Kishor Food Products P. Ltd.	0.8	2474708.00	0.9058975	2241
8	Mr. J. P. Patel	0.8	2314214.61	0.9058975	2096
9	Mr. C. P. Patel	0.8	2491909.30	0.9058975	2257
10	Mr. V. V. Patel	0.8	2589392.49	0.9058975	2344
11	Mr. J. V. Patel	0.8	2498182.45	0.9058975	2262
12	Mr. S. V. Patel	0.8	2413644.63	0.9058975	2185
13	Mr. V. L. Patel	0.8	2022115.26	0.9058975	1831
14	Laxmi Narayan Best Chiwda	0.8	2504558.68	0.9058975	2268
15	New Sahyadri Industries Ltd.	1.6	3860496.73	0.9058975	3496
16	Mr. P. L. Patel	0.8	1488760.88	0.9058975	1347
17	Elpro International	0.8	1632686.17	0.9058975	1478
18	Prachar Energy	1.6	3193533.17	0.9058975	2892
19	Panama Wind Energy Pvt. Ltd.	1.6	3218525.09	0.9058975	2915
20	International Conveyors Ltd.	0.8	1669807.62	0.9058975	1511
21	Shreem Capacitors Pvt. Ltd.	3.2	8696521.00	0.9058975	7877
22	Metalfab Hightech Private Limited	0.8	1416484.39	0.9058975	1282
23	Atlas Tours & Travels Pvt. Ltd.	0.8	1601988.60	0.9058975	1450
24	Om Shanti Wind Farms P. Ltd.	0.8	2370660.41	0.9058975	2146
25	Gargi Construction Co. Pvt. Ltd.	1.6	3403394.75	0.9058975	3082
26	Mohite & Mohite	2.4	4307520.25	0.9058975	3901
27	Indiana Engineering Works (Bombay) P. Ltd.	1.6	3370957.39	0.9058975	3053
28	Welpack Industries Ltd.	0.8	1531776.34	0.9058975	1387
29	Sunilkumar Ramanlal Shah	0.8	2316432.768	0.9058975	2098

E.2. Project emissions calculation

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Since the project activity is a renewable energy project which generates electricity using wind power and hence does not result in project emissions.

E.3. Leakage calculation

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No leakage is considered from the project activity as per approved methodology ACM0002.

E.4. Emission reductions calculation / table

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The total emission reductions achieved during the monitoring period is calculated as:

Total baseline emissions: 98,873 tCO₂

Total project emissions: Zero

Total leakage: Zero

$$\begin{aligned} \text{Emission reductions} \quad ER &= BE_y - PE_y - LE_y \\ &= 98,873 \text{ tCO}_2 \end{aligned}$$

The emission reductions from 1 June 2009 to 30 September 2010 are summarized below:

S. No.	Name of Customers	Capacity (MW)	Baseline Emissions (tCO ₂ e)	Project Emissions (tCO ₂ e)	Leakage Emissions (tCO ₂ e)	Emissions Reductions (tCO ₂ e)
1	G. B. Rubber Products	1.6	3603	0	0	3603
2	Shah Lulla Estate Developers	0.8	1875	0	0	1875
3	Liberty Oil Mills Ltd.	4	10875	0	0	10875
4	Paceman Sales Promotion P. Ltd.	0.8	2099	0	0	2099
5	Delta Enterprises	2.4	5766	0	0	5766
6	Mahanagar Developers	8	17256	0	0	17256
7	Kishor Food Products P. Ltd.	0.8	2241	0	0	2241
8	Mr. J. P. Patel	0.8	2096	0	0	2096
9	Mr. C. P. Patel	0.8	2257	0	0	2257
10	Mr. V. V. Patel	0.8	2344	0	0	2344
11	Mr. J. V. Patel	0.8	2262	0	0	2262
12	Mr. S. V. Patel	0.8	2185	0	0	2185
13	Mr. V. L. Patel	0.8	1831	0	0	1831
14	Laxmi Narayan Best Chiwda	0.8	2268	0	0	2268
15	New Sahyadri Industries Ltd.	1.6	3496	0	0	3496
16	Mr. P. L. Patel	0.8	1347	0	0	1347
17	Elpro International	0.8	1478	0	0	1478
18	Prachar Energy	1.6	2892	0	0	2892
19	Panama Wind Energy Pvt. Ltd.	1.6	2915	0	0	2915
20	International Conveyors	0.8	1511	0	0	1511

	Ltd.					
21	Shreem Capacitors Pvt. Ltd.	3.2	7877	0	0	7877
22	Metalfab Hightech Private Limited	0.8	1282	0	0	1282
23	Atlas Tours & Travels Pvt. Ltd.	0.8	1450	0	0	1450
24	Om Shanti Wind Farms P. Ltd.	0.8	2146	0	0	2146
25	Gargi Construction Co. Pvt. Ltd.	1.6	3082	0	0	3082
26	Mohite & Mohite	2.4	3901	0	0	3901
27	Indiana Engineering Works (Bombay) P. Ltd.	1.6	3053	0	0	3053
28	Welpack Industries Ltd.	0.8	1387	0	0	1387
29	Sunilkumar Ramanlal Shah	0.8	2098	0	0	2098

Total Emission Reductions for the monitoring period are **98,873 tCO₂e**.

VCU's are also calculated on the basis of apportioning based on the panel generation values available in the website of EPC contractor (Enercon) the comparison of net electricity supplied on the basis of credit note and apportioning are given in the table below, the table also compares the VCU's calculated on the basis of credit note and apportioning:

S.No.	Customer Name	Net Electricity Export (Based on Credit Note)	Net Electricity Export (Apportioned)	VCU's (Based on Credit Note)	VCU's (Based on Apportioned Value)
1	G. B. Rubber Products	3977579.75	3964721.90	3603	3591
2	Shah Lulla Estate Developers	2070746.3	2346380.86	1875	2125
3	Liberty Oil Mills Ltd.	12005887.08	12111371.93	10875	10971
4	Paceman Sales Promotion P. Ltd.	2318366.00	2325365.55	2099	2106
5	Delta Enterprises	6365592.00	6365594.14	5766	5766
6	Mahanagar Developers	19048988.40	19117352.94	17256	17318
7	Kishor Food Products P. Ltd.	2474708.00	2474708.77	2241	2241
8	Mr. J. P. Patel	2314214.61	2315602.09	2096	2097
9	Mr. C. P. Patel	2491909.30	2491261.37	2257	2256
10	Mr. V. V. Patel	2589392.49	2590182.35	2344	2346
11	Mr. J. V. Patel	2498182.45	2370307.54	2262	2147
12	Mr. S. V. Patel	2413644.63	2410002.57	2185	2183
13	Mr. V. L. Patel	2022115.26	2021280.33	1831	1831

14	Laxmi Narayan Best Chiwda	2504558.68	2508455.93	2268	2272
15	New Sahyadri Industries Ltd.	3860496.73	3855690.67	3496	3492
16	Mr. P. L. Patel	1488760.88	1491332.50	1347	1350
17	Elpro International	1632686.17	1637689.33	1478	1483
18	Prachar Energy	3193533.17	3316012.44	2892	3003
19	Panama Wind Energy Pvt. Ltd.	3218525.09	3299642.53	2915	2989
20	International Conveyors Ltd.	1669807.62	1673063.49	1511	1515
21	Shreem Capacitors Pvt. Ltd.	8696521.00	8696522.69	7877	7878
22	Metalfab Hightech Private Limited	1416484.39	1415635.23	1282	1282
23	Atlas Tours & Travels Pvt. Ltd.	1601988.60	1600628.97	1450	1450
24	Om Shanti Wind Farms P. Ltd.	2370660.41	2370307.54	2146	2147
25	Gargi Construction Co. Pvt. Ltd.	3403394.75	3398058.77	3082	3078
26	Mohite & Mohite	4307520.25	4303816.69	3901	3898
27	Indiana Engineering Works (Bombay) P. Ltd.	3370957.39	3501507.18	3053	3172
28	Welpack Industries Ltd.	1531776.34	1593386.25	1387	1443
29	Sunilkumar Ramanlal Shah	2316432.768	2366535.03	2098	2143
		Total VCU's		98,873	99573

VCU's based on credit notes are conservative in comparison to the value based on apportioning, hence the VCU's calculated based on the credit notes are the actual emission reductions for the said monitoring period.

The Vintage wise emission reductions are given as:

Vintage	Net Electricity Exported (kWh)	Emission Factor	VCUs
2009	53604053.75	0.9059	48,545.00
2010	55571376.76	0.9059	50,328.00
Total	109,175,430.504		98,873

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

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Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
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Emission reductions (tCO₂e)	The estimated emission reductions in the VCS PD were 69815 for each year, since the said verification period is of 16 months the estimated emission reductions on the basis of validated VCS PD are 93086	98,873
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E.6. Remarks on difference from estimated value in the PDD

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The value of emission reduction is 6.2% higher than the estimated value in the VCS PD which is marginal and has already been covered in the sensitivity range of 10% while demonstrating additionality for project activity. Further the variation in the PLF is due to the infirm nature of the wind. During the validation of the project activity under VCS 2007.1 a Forward Action Requested (FAR) has been raised. As per the FAR 'If the PLF of the project activity exceeds the range of sensitivity analysis (PLF 22% at 20% base PLF) the additionality of the project will be re-assessed during every crediting period, The VERs will be issued if the project is additional.' (Refer Annex 66, 67 of EB48)

The crediting period start date of the project activity is 1 April 2006, since the PLF value selected in the financial sheet represents the average PLF value for project lifetime of 20 years, hence the average PLF achieved by the customers of bundle project from 1 April 2006 to 30 September 2010 are summarized below

S.No.	Customer Name	PLF (1 April 2006 to 30 September 2010)
1	G. B. Rubber Products	19.79%
2	Shah Lulla Estate Developers	22.10%
3	Liberty Oil Mills Ltd.	23.12%
4	Paceman Sales Promotion	19.4%
5	Delta Enterprises	19.08%
6	Mahanagar Developers	16.82%
7	Kishor Food Products P. Ltd.	22.69%
8	Mr. J. P. Patel	17.38%
9	Mr. C. P. Patel	18.23%
10	Mr. V. V. Patel	17.83%
11	Mr. J. V. Patel	17.85%
12	Mr. S. V. Patel	17.88%
13	Mr. V. L. Patel	15.48%
14	Laxmi Narayan Best Chiwda	18.08%
15	New Sahyadri Industries Ltd.	15.96%

16	Mr. P. L. Patel	12.74%
17	Elpro International	18.17%
18	Prachar Energy	15.16%
19	Panama Wind Energy Pvt. Ltd.	13.43%
20	International Conveyors Ltd.	13.49%
21	Shreem Capacitors Pvt. Ltd.	19.46%
22	Metalfab Hightech	12.34%
23	Atlas Tours & Travels Pvt. Ltd.	16.48%
24	Om Shanti Wind Farms P. Ltd.	17.05%
25	Gargi Construction Co.	13.89%
26	Mohite & Mohite	12.56%
27	Indiana Engineering Works (Bombay) P. Ltd.	14.5%
28	Welpack Industries Ltd.	15%
29	Sunilkumar Ramanlal Shah	23.45%

It is evident from the above table that PLF for 25 customers is below the higher range of sensitivity analysis in additionality demonstration i.e. 22% (at 20% base PLF). It clearly shows that the project is additional for the 25 customers in the bundle.

For remaining 4 customers the PLF values are marginally high as and when compared with 22% of PLF. The region for higher PLF was good wind availability from the starting of crediting period however these higher PLF values were cross checked in the IRR sheet and IRR arrived were found to be below the benchmark value. Hence on these PLF figures the project was still found to be additional. The IRR & Benchmark sheet has been attached for the reference. The IRR and benchmark corresponding to the actual PLF is listed below:

Customer Name	PLF	Project IRR	Benchmark WACC
Liberty Oil Mills Ltd.	23.12%	13.33%	13.43%
Shah Lulla Estate developers	22.10%	13.08%	13.43%
Kishor Food Products Pvt Ltd	22.69%	13.12%	13.60%
Sunilkumar Ramanlal Shah	23.45%	13.54%	13.62%