MONITORING REPORT FORM (CDM-MR)
Version 01 - in effect as of: 28/09/2010

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* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

MONITORING REPORT
Version 1 (30/03/2011)

75MW WIND POWER PROJECT IN MAHARASHTRA BY ESSEL MINING INDUSTRIES LIMITED
REFERENCE NO**: UNFCCC 1115**

MONITORING PERIOD NO 2 : **03/02/2009 TO 31/12/2010**

SECTION A. General description of the project activity

A.1. Brief description of the project activity:

The project activity includes planning, installing and operating of a 75MW wind power project which has been set up in three stages at Dhule and Nandurbar districts of Maharashtra, India. The project activity involves generation of clean electrical energy by harnessing the kinetic energy of wind.

In the absence of the project activity, an equivalent amount of electricity would have been generated from the power plants connected to the grid, majority of whom are based on fossil fuels. The entire power generated is being exported to the state grid maintained by Maharashtra State Electricity Board (MSEB) grid which is a part of the Western Regional Grid.

The commissioning details are given below:

Stages	Capacity	Commissioning dates
Stage I	15MW	▪ 6 WTGs on 25th March 05 ▪ 6 WTGs on 31st March 05
Stage II	30MW	▪ 8 WTGs on 20th September 05 ▪ 15 WTGs on 29th September 05 ▪ 1 WTG on 30th September 05
Stage III	30MW	▪ 4 WTGs on 9th December 05 ▪ 7 WTGs on 5th January 06 ▪ 13 WTGs on 7th February 06

Table for detailed description of the turbine

Serial No	Location No	Generator No	Date of Commissioning
Stage I			
1	K14	478673	25-Mar-05
2	K17	479432	31-Mar-05
3	K21	479433	31-Mar-05
4	K24	479247	31-Mar-05

5	K33	479249	31-Mar-05
6	K34	478680	25-Mar-05
7	K35	479157	25-Mar-05
8	K36	478702	25-Mar-05
9	K37	478861	25-Mar-05
10	K38	478862	25-Mar-05
11	K39	479158	31-Mar-05
12	K40	478930	31-Mar-05
Stage II			
13	K219	64016841	29-Sep-05
14	K220	64017874	29-Sep-05
15	K221	64018485	29-Sep-05
16	K222	64015302	29-Sep-05
17	K216	64020221	29-Sep-05
18	K168	64019647	29-Sep-05
19	K227	64015942	29-Sep-05
20	K167	5134897	20-Sep-05
21	K209	5136457	20-Sep-05
22	K212	5136465	20-Sep-05
23	K215	64011924	20-Sep-05
24	K201	64015940	29-Sep-05
25	K203	64019648	29-Sep-05
26	K204	64018482	29-Sep-05
27	K205	470663	29-Sep-05
28	K218	64017529	30-Sep-05
29	K206	5136502	29-Sep-05
30	K46	5136502	20-Sep-05
31	K48	64017874	29-Sep-05
32	K50	64015302	29-Sep-05
33	K112	5136461	20-Sep-05
34	K176	64017129	29-Sep-05
35	K107	64014828	20-Sep-05
36	K79	480645	20-Sep-05
Stage III			
37	K356	64021776	9-Dec-05
38	K362	64021435	9-Dec-05
39	K364	64021773	9-Dec-05
40	K365	64021434	9-Dec-05
41	K352	64021431	5-Jan-06
42	K353	64022374	5-Jan-06
43	K354	64021775	5-Jan-06
44	K360	64021432	5-Jan-06
45	K363	64022375	5-Jan-06
46	K366	64021774	5-Jan-06
47	K368	64022239	5-Jan-06
48	K355	64026133	7-Feb-06

49	K370	64027704	7-Feb-06
50	K371	64022243	7-Feb-06
51	K372	64022244	7-Feb-06
52	K374	64022377	7-Feb-06
53	K377	64026127	7-Feb-06
54	K378	64022241	7-Feb-06
55	K379	64026703	7-Feb-06
56	K381	64020225	7-Feb-06
57	K382	64026704	7-Feb-06
58	K385	64025701	7-Feb-06
59	K386	64026128	7-Feb-06
60	K388	64021777	7-Feb-06

The total Emission reduction achieved in this Monitoring Period is 197866 tCO_2e
The first Monitoring Period was from 01.02.08 to 02.02.09.

A.2. Project Participants

Essel Mining Industries Limited

A.3. Location of the project activity:

The project is located in the Dhule and Nandurbar districts of Maharashtra, India.

Dhule is one of the good wind potential areas of the state. Wind farm site is about four hours drive from Diamond city – Surat (Gujarat), the nearest city from the site. The nearest railway station is Nandurbar (50 km) and Challisgaon (50 km). Nearest airports are Aurangabad/ Baroda (250 km).

The following are the GPS co-ordinates :

Sr no	Location No	Latitude (N)	Longitude (E)
1	K--14	21° 10'	74° 19'
2	K--17	21° 10'	74° 19'
3	K--21	21° 11'	74° 19'
4	K--24	21° 11'	74° 19'
5	K--33	21° 11'	74° 20'
6	K--34	21° 11'	74° 20'
7	K--35	21° 11'	74° 20'
8	K--36	21° 11'	74° 20'
9	K--37	21° 11'	74° 20'
10	K--38	21° 11'	74° 20'
11	K--39	21° 11'	74° 20'
12	K--40	21° 11'	74° 20'
13	K--46	21° 12'	74° 19'
14	K--48	21° 11'	74° 20'
15	K--50	21° 11'	74° 19'
16	K--79	21° 12'	74° 21'

17	K-107	21° 13'	' 74° 19'
18	K-112	21° 13'	' 74° 20'
19	K-167	21° 13'	' 74° 17'
20	K-168	21° 13'	' 74° 17'
21	K-176	21° 13'	' 74° 17'
22	K-201	21° 11'	74° 16'
23	K-203	21° 11'	74° 16'
24	K-204	21° 12'	74° 15'
25	K-205	21° 12'	74° 16'
26	K-206	21° 12'	74° 15'
27	K-209	21° 12'	74° 15'
28	K-212	21° 12'	74° 15'
29	K-215	21° 12'	74° 16'
30	K-216	21° 12'	74° 15'
31	K-218	21° 12'	74° 16'
32	K-219	21° 13'	74° 15'
33	K-220	21° 13'	74° 15'
34	K-221	21° 13'	74° 15'
35	K-222	21° 13'	74° 15'
36	K-227	21° 13'	74° 16'
37	K-352	21° 14'	74° 20'
38	K-353	21° 14'	74° 20'
39	K-354	21° 14'	74° 21'
40	K-355	21° 14'	74° 21'
41	K-356	21° 14'	74° 20'
42	K-360	21° 14'	74° 21'
43	K-362	21° 14'	74° 20'
44	K-363	21° 14'	74° 21'
45	K-364	21° 14'	74° 21'
46	K-365	21° 14'	74° 20'
47	K-366	21° 14'	74° 21'
48	K-368	21° 15'	74° 21'
49	K-370	21° 14'	74° 20'
50	K-371	21° 15'	74° 20'
51	K-372	21° 15'	74° 21'
52	K-374	21° 15'	74° 20'
53	K-377	21° 15'	74° 20'
54	K-378	21° 15'	74° 21'
55	K-379	21° 15'	74° 20'
56	K-381	21° 15'	74° 21'
57	K-382	21° 15'	74° 20'
58	K-385	21° 15'	74° 21'
59	K-386	21° 16'	74° 21'
60	K-388	21° 16'	74° 21'

A.4. Technical description of the project

Each wind turbo-generator essentially consists of - rotor system, gear box, coupling, generator, yaw system, brake system, control system and power evacuation system.

The Rotor system consists of 3 rotor blades, each of 69m diameters (blade length – 33.5) having swept area of 3740m2, mounted on a spherical cast iron hub capable of rotating at a speed of 13.5 to 20.3rpm. There are three independent electrical pitching mechanisms where the pitch angle (-2o to 88o) of each blade is accurately adjustable by AC motors. The three stage gear box – one stage planetary and other two helical, has a gear ratio 1:74.9 and capable of operating at 98% efficiency. The planetary part takes up the slow rotor speed/movement and distributes the high torque to the subsequent planetary gears and the Helical shape helps in noise dampening.

Suzlon's S70 model machines uses a synchronous pole switchable generator (6/4 poles) at rated output of 1250 kW and can provide harmonic-free power supply to grid.

The yaw system ensures that the turbine is positioned correctly in the wind at all times, thereby resultin in the optimal power production and minimum stress on the turbine drive train. The brake system consists of two independent braking systems. The primary system is the aerodynamic tip-brakes and the secondary system is the mechanical disk brake system which is located on the high speed shaft of the gearbox. During emergency brakes both the aerodynamic and mechanical brake systems are activated simultaneously thus ensuring more safety in the operations of the WTGs.

Power generated from the WTGs is fed to the respective sub-station of the WTG. This sub-station is placed near the WTG. Power is transmitted through step-up transformers 690 Volts / 33 KV, 1500 KVA. The sub-station is equipped with all electrical controls like – CT / PT / VCB etc.

The diagram of the project activity is presented in section C below.

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

Title: Consolidated baseline methodology for grid connected electricity generation from renewable sources

Reference: Approved consolidated baseline methodology ACM0002/ Version 06

Sectoral Scope: 01

Tools: Tool to calculate the emission factor for an electricity system version 1

A.6. Registration date of the project activity:

01/02/2008

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

The crediting period is from 01/02/2008 to 31/01/2018 (10 years)

Starting Date: 01/02/2008

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

Essel Mining Industries Limited is the project participant.

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

The commissioning details are given below:

Stages	Capacity	Commissioning dates
Stage I	15MW	▪ 6 WTGs on 25th March 05 ▪ 6 WTGs on 31st March 05
Stage II	30MW	▪ 8 WTGs on 20th September 05 ▪ 15 WTGs on 29th September 05 ▪ 1 WTG on 30th September 05
Stage III	30MW	▪ 4 WTGs on 9th December 05 ▪ 7 WTGs on 5th January 06 ▪ 13 WTGs on 7th February 06

Details of the Wind Turbine Generators:

Serial No	Location No	Generator No	Date of Commissioning
Stage I			
1	K14	478673	25-Mar-05
2	K17	479432	31-Mar-05
3	K21	479433	31-Mar-05
4	K24	479247	31-Mar-05
5	K33	479249	31-Mar-05
6	K34	478680	25-Mar-05
7	K35	479157	25-Mar-05
8	K36	478702	25-Mar-05
9	K37	478861	25-Mar-05
10	K38	478862	25-Mar-05
11	K39	479158	31-Mar-05
12	K40	478930	31-Mar-05
Stage II			
13	K219	64016841	29-Sep-05
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15	K221	64018485	29-Sep-05
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22	K212	5136465	20-Sep-05

23	K215	64011924	20-Sep-05
24	K201	64015940	29-Sep-05
25	K203	64019648	29-Sep-05
26	K204	64018482	29-Sep-05
27	K205	470663	29-Sep-05
28	K218	64017529	30-Sep-05
29	K206	5136502	29-Sep-05
30	K46	5136502	20-Sep-05
31	K48	64017874	29-Sep-05
32	K50	64015302	29-Sep-05
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34	K176	64017129	29-Sep-05
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Stage III			
37	K356	64021776	9-Dec-05
38	K362	64021435	9-Dec-05
39	K364	64021773	9-Dec-05
40	K365	64021434	9-Dec-05
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46	K366	64021774	5-Jan-06
47	K368	64022239	5-Jan-06
48	K355	64026133	7-Feb-06
49	K370	64027704	7-Feb-06
50	K371	64022243	7-Feb-06
51	K372	64022244	7-Feb-06
52	K374	64022377	7-Feb-06
53	K377	64026127	7-Feb-06
54	K378	64022241	7-Feb-06
55	K379	64026703	7-Feb-06
56	K381	64020225	7-Feb-06
57	K382	64026704	7-Feb-06
58	K385	64025701	7-Feb-06
59	K386	64026128	7-Feb-06
60	K388	64021777	7-Feb-06

The project activity was in operation continuously with regular maintenance and inspection. There were no replacements or exchange of any major equipment during the monitoring period which may impact the applicability of the methodology or the revised monitoring plan. Below is the calibration details of energy meters.

Table for detailed description of energy meters Table B.1. a :

Serial No	Main Meter No	Check Meter No	Feeder No	Accuracy Class	Frequency of calibration/testing[1]	Sub Station	Dates of Calibration/Testing			Change of meter	Date of Change of Meter	New Meter No
1	4890617	4890556	Sakri I	0.2	Annually	Sakri	27/05/2008	08/07/2009	20/08/2010	No	-	-
2	4890618	4890561	Sakri II	0.2	Annually	Sakri				No	-	-
3	4725791	4763795	Jamde 9	0.2	Annually	Jamde				No	-	-
4	4738077	4738074	Jamde 7	0.2	Annually	Jamde				No	-	-
5	4862465	4725796	Jamde 3	0.2	Annually	Jamde				No	-	-
6	4890567	4725804	Jamde 2	0.2	Annually	Jamde				Yes	25/05/2009	4890558
7	4725806	4725809	Jamde 12	0.2	Annually	Jamde				No	-	-
8	4725799	4725805	Jamde 11	0.2	Annually	Jamde				No	-	-
9	4890562	4863441	Jamde 10	0.2	Annually	Jamde				No	-	-
10	4738079	4738067	Jamde 8	0.2	Annually	Jamde				No	-	-
11	4725784	4738059	Jamde 15	0.2	Annually	Jamde				No	-	-
12	4725778	4725803	Jamde 6	0.2	Annually	Jamde				No	-	-
*New meter was installed on 25/05/2009.												

B.2. Revision of the monitoring plan

The monitoring plan of the registered PDD had been revised which was approved by UNFCCC on 09/05/2010.

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

Not Applicable

B.4. Notification or request of approval of changes

Not Applicable

SECTION C. Description of the monitoring system

As per the applied monitoring methodology to the project, the project participants need to monitor the following parameters on continuous basis to monitor the net electricity $\mathbf{EG_y}$ supplied from the project activity:

EGGENTOTAL,i = Total Electricity exported to MSEB (MSEDCL) facility by all WTGs (WTGs of project proponent as well as of other promoters) connected to the feeder i (kWh)

[1] Calibration frequency of 1 year has been mentioned in the Power Purchase Agreement signed between MSEDCL and project proponent

$EG_{AUXTOTAL,i}$ = Total Electricity imported by all WTGs (WTGs of project proponent as well as of other promoters) connected to the feeder i from MSEB (MSEDCL) (kWh)

$EG_{CONTROLLER,,i,j}$ = Electricity generation at the controller of individual WTG, j, of the project proponent connected to feeder i (kWh)

$EG_{CONTROLLERTOTAL,i}$ = Total electricity generation at the controller of all WTGs (WTGs of project proponent as well as of other promoters) connected to the feeder i (kWh)

$EG_{GEN,y,i}$ = Total electricity generation by the WTGs of the project proponent connected to the feeder, i (apportioned) (kWh).

$EG_{AUX,y,i}$ = Auxiliary consumption by the WTGs of the project proponent connected to the feeder, i (apportioned) (kWh).

$EG_{GEN,y}$ = Total electricity generation by all the wind turbines of project proponent (kWh)

$EG_{AUX,y}$ = Auxiliary consumption by all the wind turbines of the project proponent (kWh)

Now,

$EG_{GEN,y,i} = (\sum EG_{CONTROLLER,i,j} / EG_{CONTROLLERTOTAL,i}) * EG_{GENTOTAL,i}$

$EG_{AUX,y,i} = (\sum EG_{CONTROLLER,i,j} / EG_{CONTROLLERTOTAL,i}) * EG_{AUXTOTAL,i}$

Then,

$EG_{GEN,y} = \sum EG_{GEN,y,i}$

$EG_{AUX,y,} = \sum EG_{AUX,y,i}$

Where,

i - represents the feeders

j - represents the WTGs of the project proponent.

The net electricity supply is calculated as

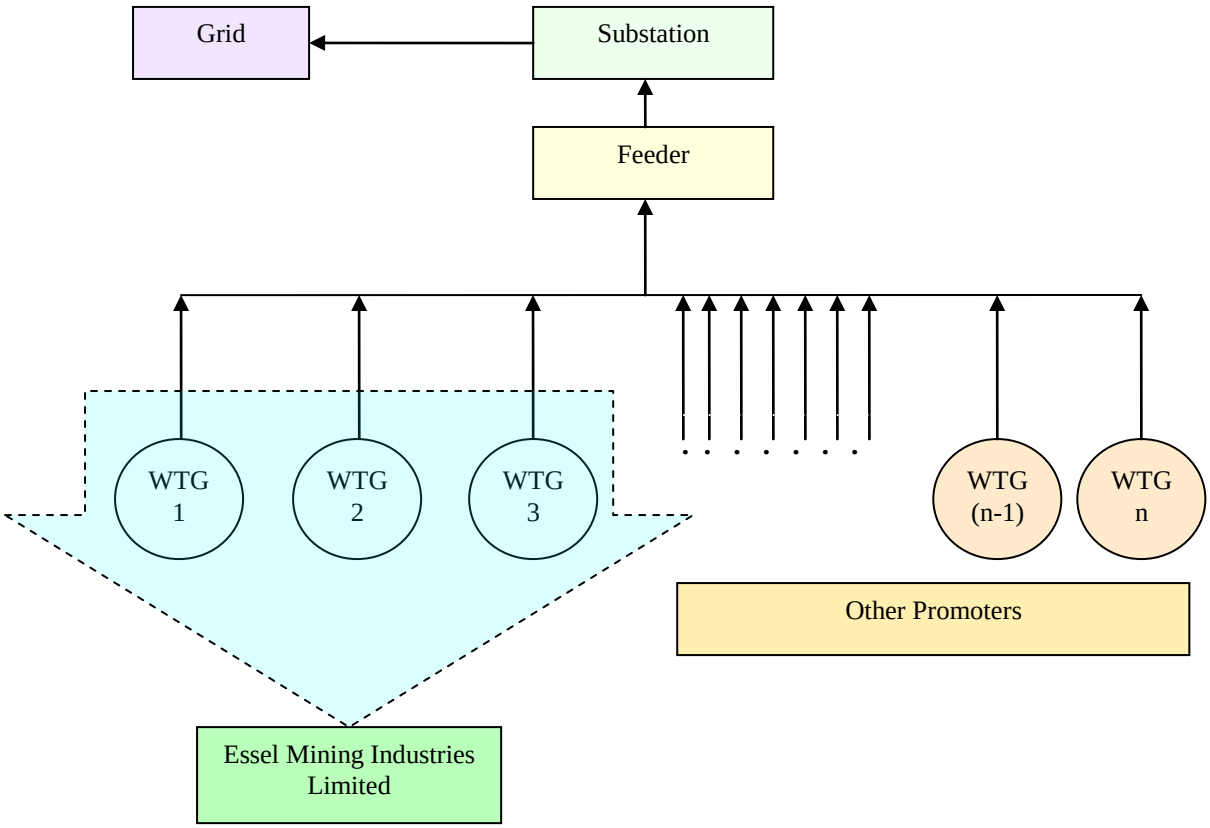
$$\mathbf{EG_y = EG_{GEN,y} - E_{AUX,y}}$$

The monitoring of $EG_{GEN,y}$ and $EG_{AUX,y}$ would be as per the details provided in the Article 11 of the Power Purchase Agreement signed between the MSEB and EMIL.

As per Article 11, section 11.05 of PPA, *"Wherever more than one Power Producer(s) are delivering energy produced by them using common evacuation system and through the common Metering equipment, then they shall identify a common agency responsible for joint meter reading with MSEB. The Joint Meter Reading taken at the common evacuation system shall be supported by meter readings of individual power producers using such common evacuation system. Based on this breakup, limited to energy delivered, the power generated from individual power plant shall be certified by MSEB".*

The apportioning of electricity generated by the entire wind farm is entirely under the jurisdiction of the electricity board. The project proponent has no role in computing and furnishing the apportioned electricity generated for themselves or any other promoter. The above calculation for deriving the apportioned electricity generated by the project proponent has been included only to bring clarity to the apportioning and overall monitoring procedure followed by the project proponent for the project activity.

Diagrammatic Representation:



Analytical representation:

$EG_{GEN,y}$

Let us assume there are 'n' WTGs,

The *power generated from individual power plant (meter readings of individual power producers hereafter referred to as* controller generation of each WTG) be X_i.

Therefore,

Controller generation for WTG 1 = X_1

Controller generation for WTG 2 = X_2

Controller generation for WTG n = X_n

Now, $X_1 + X_2 + X_3 + ….. + X_n = X$ (say)

Let the energy delivered (*Joint Meter Reading taken at the common evacuation system)* be Y

then as per article 11 of the PPA,

$Y_{i,}$ electricity generation of each WTG at (S/s feeder) is equal to the ratio of respective controller generation at that WTG and total controller generation of all WTGs connected to the feeder (*common evacuation system)* multiplied by the total net generation (S/s feeder) Therefore,

$Y_i = (X_i/X)*Y$

The operation and maintenance of the wind farm has been outsourced to Suzlon. All the WTGs at the site are monitored from the Central Monitoring Station (CMS) at the wind farm, where electricity generation from each WTG is continuously monitored. The CMS at the wind farm reports to the main CMS at Pune, where the daily generation report is prepared and sent to EMIL by the respective CRM (Customer Relationship Management) manager.

The electricity generation reports on joint meter reading are generated by MSEDCL and sent to EMIL through Suzlon (O&M service provider) on monthly basis. Upon receipt of reports, EMIL generates invoices on sale of electricity and sends to MSEDCL via Suzlon. Thereafter, MSEDCL makes payments against the invoices within 3 months directly to EMIL.

QA/QC procedures:

Essel Mining & Industries Ltd has established, documented and implemented Integrated Management Systems. The company maintains and continually improves the effectiveness of QMS, EMS and OHSMS in accordance with the requirements of ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007. The company has developed "Documentation structure" and it comprises of:

- Level1- Manual
- Level 2- Process approach and Procedures
- Level 3- Specifications, Process Flow Diagrams, Aspect and Hazard Register, Legal Register, Emergency Plan, Work Instructions and Management Programmes
- Level 4- Formats, Registers, Tags, Labels, Files and Records

Integrated Managemnet Systems Manual describes the organization structure with responsibilities; and measures for documentation, implementation & control of the system. Integrated Management Procedures provide information and instructions for achieving and maintaining functional controls, meeting the requirements of International Standard ISO9001: 2000,ISO 14001:2004 & OHSAS 18001:2007 and the organization's IMS Policy. Head of the departments (HODs) effectively implement these procedures into practice, involving all personnel concerned.

Roles and Responsibilities:

The entire operation and maintenance of the project activity has been outsourced to Suzlon, which is also the equipment supplier. The monitoring of export and import of electricity would be as per the details provided in the Article 11 of the Power Purchase Agreement signed between the MSEB and EMIL, which clearly identifies the following:

Metering and recording process of power generation and consumption data

Calibration of metering instruments

Validation of data

Recording and approving authority

EMIL has outsourced the operations and monitoring the performances of the WTGs to Suzlon Infrastructure Services Limited who sends daily and monthly performance records to EMIL. All the WTGs at the site are connected to a Central Monitoring Station of Suzlon being operated from Pune wherein data are directly captured through digital system. The captured data are then directly uploaded to the CRM (customer relationship management) system. From CRM the daily generation reports are directly sent to EMIL on a daily basis. A CRM manager deputed by Suzlon, is responsible for the monitoring of the WTGs. EMIL has daily communication CRM manager. The electricity generation reports on joint meter reading are generated by MSEDCL and send to EMIL through Suzlon (O&M service provider) on monthly basis.

SECTION D. Data and parameters

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

Data/Parameter:	**EFOM,y**
Data Unit	tCO2/MWh
Description	Operating Margin emission factor for western regional grid
Source of Data to be used	Computed from data sourced from Website of Central Electricity Authority of India
Value applied	0.99tCO2/MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated as per ACM0002 with 3years vintage (2002-2003, 2003-2004, 2004- 2005) data obtained from CEA database on CO2 baseline for Indian Power Sector. Computed once during PDD finalization (ex-ante).
Any comment:	Records to be archived for 12years from the start of the crediting period either on paper or in electronic media.

Data/Parameter:	**EFBM,y**
Data Unit	tCO2/MWh
Description	Build Margin emission factor for western regional grid
Source of Data to be used	Computed from data sourced from Website of Central Electricity Authority of India
Value applied	0.78tCO2/MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated as per ACM0002 with vintage (2004-2005) data obtained from CEA database on CO2 baseline for Indian Power Sector. Computed once during PDD finalization (ex-ante).
Any comment:	Records to be archived for 12years from the start of the crediting period either on paper or in electronic media.

Data/Parameter:	**EFy**
Data Unit	tCO2/MWh
Description	Combine Margin CO2 emission factor for western regional grid
Source of Data to be used	Estimated figure based on 75% of OM and 25% of BM values calculated using data obtained from CEA database on CO2 baseline emission factor for Indian Power Sector.
Value applied	0.940tCO2/MWh
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated as per ACM0002 with 3years vintage data and option of ex ante calculation based on "75% of OM and 25% of BM values approach". Computed once during PDD finalization. (ex-ante)
Any comment:	Records to be archived for 12years from the start of the crediting period either on paper or in electronic media.

D.2. Data and parameters monitored

Project Parameters used to determine the Emission Reductions:

Data/Parameter:	**EG_y**
Data Unit	MWh/yr
Description	Net Electricity supplied to MSEB facility
Measures / calculated / default	Calculated
Source of Data to be used	Project site and at EMIL Corporate Office
Value(s) of monitored parameter	210495 (Details as per table D-3)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	This is calculated parameter; hence no monitoring equipment is required.
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	As per Section C above and detail calculation is given in ER computation sheet.
QA/QC procedures to be applied:	Uncertainty level of data: Low; This data can be cross referred with the invoices raised to MSEB by EMIL and payment against the invoice.

Data/Parameter:	**EGGENTOTAL,i**
Data Unit	KWh
Description	Total Electricity exported to MSEB (MSEDCL) facility by all WTGs (WTGs of project proponent as well as of other promoters) connected to the feeder, i.
Measures / calculated / default	Measured
Source of Data to be used	Monthly Generation Report obtained from Suzlon Infrastructure Services Limited
Value(s) of monitored parameter	614707156 (Details as per table D-3)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number,	The measurement is done through the energy meters for each feeder at the grid sub-station. The meters are duly approved, tested and sealed by

calibration frequency, date of last calibration, validity)	the electricity board. Monthly readings are taken jointly by the electricity board and the authorized representative of the project proponent. These readings are furnished by the electricity board in the master JMR[2]. Details as per Table B.1.a above
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Not applicable
QA/QC procedures to be applied:	Uncertainty level of data: Low; As per the power purchase agreement, the electricity board carries out the calibration and maintenance of meters. Calibration is done annually.

Data/Parameter:	**EGAUXTOTAL,i**
Data Unit	KWh
Description	Total Electricity imported from MSEB (MSEDCL) by all WTGs (WTGs of project proponent as well as of other promoters) connected to the feeder, i.
Measures / calculated / default	Measured
Source of Data to be used	Monthly Generation Report obtained from Suzlon Infrastructure Services Limited
Value(s) of monitored parameter	3331964 (Details as per table D-3)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The measurement is done through the energy meters for each feeder at the grid sub-station. The meters are duly approved, tested and sealed by the electricity board. Monthly readings are taken jointly by the electricity board and the authorized representative of the project proponent. These readings are furnished by the electricity board in the master JMR[3]. Details as per Table B.1.a above
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Not applicable
QA/QC procedures to be applied:	Uncertainty level of data: Low; As per the power purchase agreement, the electricity board carries out the and maintenance of meters. is done annually.

Data/Parameter:	**EGCONTROLLER,i,j**
Data Unit	KWh
Description	Electricity generation at the controller of individual WTG, j, of the

[2] Master JMR is issued by MSEDCL to Suzlon Energy Limited for the entire windfarm, wherein, monthly energy generation details for all the promoters are mentioned. This report is not under the jurisdiction of the project proponent and available only at the plant site.

[3] Master JMR is issued by MSEDCL to Suzlon Energy Limited for the entire windfarm, wherein, monthly energy generation details for all the promoters are mentioned. This report is not under the jurisdiction of the project proponent and available only at the plant site.

	project proponent connected to feeder, i.
Measures / calculated / default	Measured
Source of Data to be used	Monthly Generation Report obtained from Suzlon Infrastructure Services Limited
Value(s) of monitored parameter	219215566 (Details as per table D-3)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The measurement is done through the controller at each WTG. Recording of the same is done at the Central Monitoring Station (CMS) in the windfarm. This data is provided to MSEDCL on a monthly basis for computation of electricity generation by individual promoters. All the WTGs in the windfarm are monitored from the CMS
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Not applicable
QA/QC procedures to be applied:	Uncertainty level of data: Low; This data can be cross referred with the JMR issued by MSEB (MSEDCL) to EMIL.

Data/Parameter:	**$EG_{CONTROLLERTOTAL,i}$**
Data Unit	KWh
Description	Total of electricity generation at the controller of all WTGs (WTGs of project proponent as well as of other promoters) connected to the feeder, i).
Measures / calculated / default	Measured
Source of Data to be used	Monthly Generation Report obtained from Suzlon Infrastructure Services Limited
Value(s) of monitored parameter	636745358 (Details as per table D-3)
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emission calculation
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The measurement is done through the controller at each WTG. Recording of the same is done at the Central Monitoring Station (CMS) in the windfarm. This data is provided to MSEDCL on a monthly basis for computation of electricity generation by individual promoters. All the WTGs in the windfarm are monitored from the CMS This data is the summation of electricity generation at the controller of all WTGs (WTGs of project proponent as well as of other promoters) connected to the feeder, i.
Measuring/ Reading/ Recording frequency:	Monthly
Calculation method (if applicable):	Not applicable
QA/QC procedures to be applied:	Uncertainty level of data: Low; This data can be verified with the master JMR for the entire windfarm issued by MSEB (MSEDCL) to Suzlon.

Monitored Results:

The details of the net electricity generated from the project activity for the monitoring period is as given in table below:

Table for details of Monitored Results – Table – D3

Months	$EG_{CONTROLLER,TOTAL,i}$ (kWh)	EGGEN,TOTAL,i (kWh)	EGAUX,TOTAL,i (kWh)	EGCONTROLLER,i,j (kWh)	Total Export (kWh)	Total Import (kWh)	EG_v, Net Export (kWh)	Net Export (Adjusted figure due to delay in calibration) (kWh)
Feb '09	10084950	9647020	216720	3605381	3447959	72500	3375459	3375459
Mar '09	15650121	15014720	163940	5809533	5576588	57579	5519009	5519009
Apr '09	33742543	32647300	114900	11400447	11008698	37905	10970793	10970793
May '09	73026935	70975874	10780	24105957	23351415	2574	23348841	23302143
Jun '09	48218513	46855480	84656	18399960	17878517	27470	17851047	17815345
Jul '09	53536493	51931360	58656	18064082	17520588	18829	17501759	17466755
Aug '09	46293035	44840700	45104	16201677	15693008	14881	15678127	15678127
Sep '09	34014831	32891514	29302	12522705	12113097	9870	12103227	12103227
Oct '09	12174593	11578120	315470	4252526	4057680	101384	3956296	3956296
Nov '09	6251208	5756020	245238	2006989	1851405	76870	1774535	1774535
Dec '09	4813056	4336894	264792	1620575	1464182	84849	1379333	1379333
Jan '10	6143141	5645160	242658	2027914	1872051	79499	1792552	1792552
Feb '10	7992877	7534014	235284	2675009	2532327	72536	2459791	2459791
Mar '10	21592693	20754420	129650	7131328	6877872	39674	6838198	6838198
April '10	38267902	37230140	53620	13002855	12647700	16361	12631339	12631339
May '10	62515079	60724940	6374	22001661	21398998	2145	21396853	21396853
June '10	44823760	43550120	72752	15546835	15121601	22078	15099523	15099523
July'10	42907960	41534800	89406	14053585	13602580	27475	13575105	13547955
Aug'10	30055860	28960400	62774	9954508	9596978	18194	9578784	9559626
Sept'10	20360004	19575220	111480	6809525	6558284	34826	6523458	6523458
Oct '10	10585123	10028260	285590	3638060	3476005	87389	3388616	3388616
Nov'10	6699532	6203540	292136	2126573	1971464	91327	1880137	1880137
Dec'10	6995149	6491140	200682	2257881	2096599	59837	2036762	2036762
Total	**636745358**	**614707156**	**3331964**	**219215566**	**211715596**	**1056052**	**210659544**	**210495833**

* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

$BE_y = EG_y \times EF_y$

where,

BE_y = Baseline Emissions due to displacement of electricity during the year y (in tons of CO2)

EG_y = Net units of electricity substituted in the grid during the year y (in MWh)

EF_y = Emission Factor of the grid (in tCO_2/ MWh) and

y is any year within the crediting period of the project activity

Carbon dioxide emission factor as per the baseline adopted, EF_y **= 0.940 tCO_2/MWh**

Net Electricity supplied to MSEB facility, EG_y **= 210659544 kWh**

Net Electricity supplied to MSEB facility adjusted due to delay in calibration of meters located at Jamde substation = **210495833 kWh**

Baseline emissions is

$BE_y = EG_y * EF_y$ = **197866 tCO_2e**

(Detailed calculation is given in ER computation sheet)

E.2. Project emissions calculation

Project Emissions, PE_y = NIL tCO_2e

E.3. Leakage calculation

Leakage Emissions, L_y = NIL tCO_2e

E.4. Emission reductions calculation / table

The emission reduction resulting from the project activity in the monitoring period under consideration is calculated based on the 'Net electricity export to grid during that period' and the 'CO_2 emission factor of the Western Regional Grid (computed ex-ante)'.

Emission Reduction $ER_y = BE_y - PE_y - L_y$

Where,

BE_y = Baseline emissions

PE_y = Project emissions; PE_y = 0 for project activity.

L_y = Emissions due to Leakage. L_y = 0 for project activity.

Emission Reduction = 197866 – 0 tCO_2e
= 197866 tCO_2e

* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

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

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This section shall include a comparison of actual values of the emission reductions achieved during the monitoring period with the estimations in the registered CDM-PDD.

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Values applied in ex-ante calculation of the registered CDM-PDD – pro-rata for monitoring period	Actual values reached during the monitoring period
Emission reductions (tCO_2e)	**118203 per annum**	**226556**	**197866**

E.6. Remarks on difference from estimated value in the PDD

Actual emission reduction claimed is lower than the estimated value in the PDD.

Emission reduction depends upon the net electricity generation which in case of wind power plants depends on the PLF. The PLF for current monitoring period is lower than the PLF assumed while computing emission reduction during project registration. Therefore, the net electricity supplied by the project activity is lower than as per the registered PDD resulting in lower emission reductions than that in the registered PDD.