MONITORING REPORT FORM (CDM-MR)
Version 01 - in effect as of: 09/06/2010

CONTENTS

MONITORING REPORT
Version: 2
Date: 10/06/2010
8.75MW Bundle Wind Power Project in Maharashtra
Reference number: 1145
Monitoring period number: 02
29/07/2007 - 31/03/2010

SECTION A. General description of the project activity

A.1. Brief description of the project activity:

This is the first Monitoring Report of project titled '8.75 MW Bundle Wind Power Project in Maharashtra' by M/s Shahi Exports Pvt. Ltd. The document reports the Emission Reduction (ERs) generated by this CDM project, for producing renewable energy, covering the monitoring period from 2007-08-01 to 2010-03-31[1].

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy.

Wind has considerable amount of kinetic energy when blowing at high speeds. This kinetic energy when it passes through the blades of the wind turbines it is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity.

The project operation has been monitored in accordance with the requirements of the applicable Monitoring Methodology as described in its:

- Project Design Document Version: 03(CDM-SSC-PDD)
- The Guideline For Completing The Monitoring Report Form (CDM-MR), EB 54, Annex 34, Version 1 and
- The Project Monitoring Plan (MP), including social benefit indicators (UN Reference No. 1145).

The electricity generation from the project activity will contribute to GHG reductions estimated at 35879.96 tCO2e over the Monitoring Period 2007-08-01 to 2010-03-31.

The implemented project activity, sells electricity to the regional grids, avoiding the dispatch of same amount of energy produced by fossil fuelled thermal plants to the grid. By that, the project avoids CO_2 emissions, and contributes to the regional sustainable development.

The different units of the project were commissioned on the dates as given below and are running successfully since then.

Table -1: Commissioning Date

[1] As the Date of Registration is 29 July, 2007 the crediting period starts from 29 July, 2007 to 28 July, 2017 (Fixed) but for the sake of simplicity in CER calculation PP has decided not to include 29 July, 2007 to 31 July, 2007 period (Three Days) in Monitoring Report. Hence Monitoring Period starts from 1 August, 2007

SITE	COMMISSIONING DATE
Dhule	
K 257 (1.25MW)	06/03/2006
K 259 (1.25MW)	06/03/2006
K 260 (1.25MW)	06/03/2006
Nandurbar	
K 391 (1.25MW)	26/03/2006
K 392 (1.25MW)	26/03/2006
K 393 (1.25MW)	27/03/2006
K 394 (1.25MW)	27/03/2006

SITE	COMMISSIONING DATE
Dhule	
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Nandurbar	
K 391 (1.25MW)	26/03/2006
K 392 (1.25MW)	26/03/2006
K 393 (1.25MW)	27/03/2006
K 394 (1.25MW)	27/03/2006

A.2. Project Participants

M/s Shahi Exports Pvt. Ltd., Industrial Plot No. -1, Sector-28, Faridabad, Haryana, 121 008

A.3. Location of the project activity:

The proposed project is a bundled project activity which involves the establishment of 8.75 MW Wind Power Project. Project will enable generation of electricity by state-of-art seven 1.25 MW Wind Turbine Generators (WTGs) (One of the latest available technologies in the country developed by M/s Suzlon Energy Limited), in the State of Maharashtra. Project participant is M/s Shahi Exports Pvt. Ltd (hereafter SEPL or project participant).

The bundled project activity consists of 2 sub-bundles:

- Sub bundle I: At Dhule (3 Nos. x 1.25 MW).
- Sub bundle II: At Nandurbar (4 Nos. x 1.25 MW)

The sum of the output capacity of project activities within the sub-bundle does not exceed the maximum output capacity limit for its type (i.e. Renewable energy project activity with a

capacity < 15 MW), hence this particular project activity qualifies as a Small Scale as per CDM Guidelines.

Project Location

Location of each Project is shown in the following table

Table -2: Location of each Project

Unique Identification of Project Activity		
	Sub bundle I	**Sub bundle II**
Site	Amkhel (3 Nos. x 1.25 MW)	Gangapur (4 Nos. x 1.25 MW)
Taluka	Sakri	Nandurbar
District	Dhulia	Nandurbar
Latitude	20°58'0 N	20° 01' 60 N
Longitude	74°19'0 E	73° 43' 0 E
Gut No.	100, 119, 164	125, 8, 64, 8
Unique Identification Number	K 257, K-259, K -260	K391, K393, K392, K394

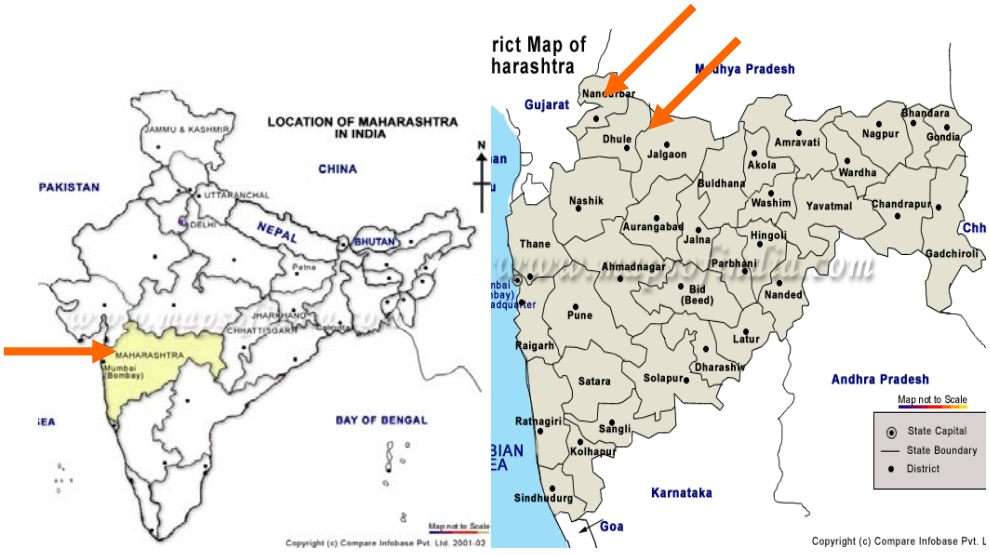


Figure 1, Location of Wind Turbines

A.4. Technical description of the project

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy.

Wind has considerable amount of kinetic energy when blowing at high speeds. This kinetic energy when it passes through the blades of the wind turbines it is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity.

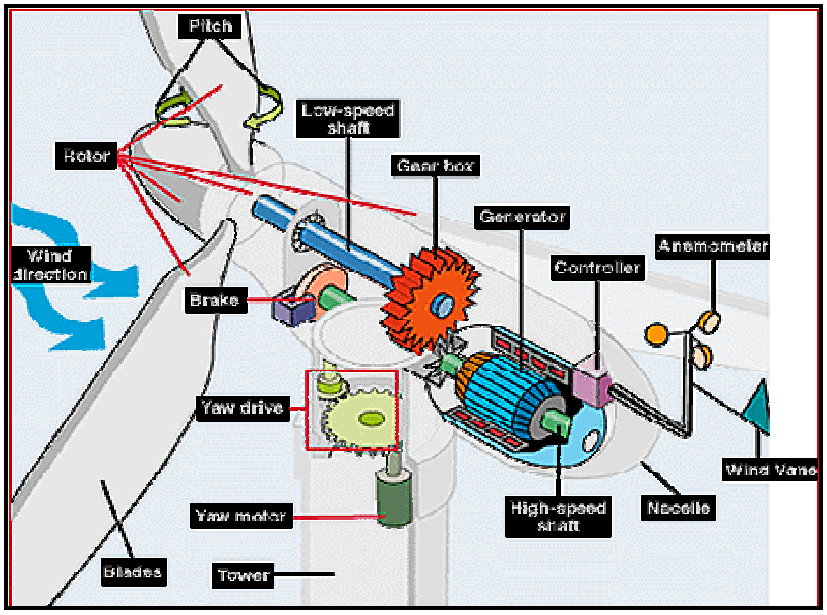


Figure 03, Major Mechanical Parts of a Wind Turbine.

The technology is a clean technology since there are no GHG emissions associated with the electricity generation. The project installs 7 nos. (S70 – 4 nos. & S66 – 3 nos.) Suzlon make WEGs of individual 1.25 MW capacity. Salient features of S70 & S66 WEGs are -

Salient Features of 1.25 MW (S 70) WEG

Sr. No.	Particulars	Specifications
1.	Rotor diameter	69.1 m
2.	Hub height	74 m
3.	Installed electrical output	1250 kW
4.	Cut-in wind speed	3 m/s
5.	Rated wind speed	12 m/s
6.	Cut-out wind speed	20 m/s
7.	Rotor swept area	3750 m^2
8.	Rotational speed	13.2/19.8
9.	Rotor material	GRP
10.	Regulation	Pitch
11.	Generator	Asynchronous Generator, 4/6 poles
12.	Rated output	250/1250 kW
13.	Rotational speed	1010/1515 rpm
14.	Operating voltage	690 V
15.	Frequency	50 Hz
16.	Protection	IP 56
17.	Insulation class	H
18.	Cooling system	Air cooled

Sr. No.	Particulars	Specifications
19.	Gear box	3-stage gearbox, 1 planetary & 2 helical.
20.	Manufacturer	Suzlon
21.	Gear ratio	77.848
22.	Nominal load	1390 kW
23.	Type of cooling	Oil cooling system
24.	Yaw drive system	4 active electrical yaw motors
25.	Yaw bearing	Polyamide slide bearing
26.	Safety system	
26.1.	Aerodynamic brake	3 times independent pitch regulation
26.2	Mechanical brake	Spring power disc brake, hydraulically released, fail safe. Microprocessor controlled, indicating.
27.	Control unit	Actual operating conditions, UPS back-up system
28.	Tower	Tubular
29.	Design standards	GL/IEC

Salient Features of 1.25 MW (S 66) WEG

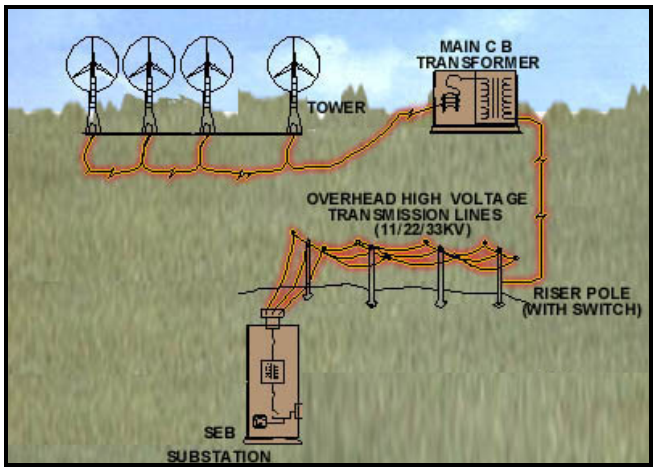
Sr. No.	Particulars	Specifications
1.	Rotor diameter	66 m
2.	Hub height	74 m
3.	Installed electrical output	1250 kW
4.	Cut-in wind speed	3 m/s
5.	Rated wind speed	14 m/s
6.	Cut-out wind speed	22 m/s
7.	Rotor swept area	3421 m^2
8.	Rotational speed	1006 / 1506 rpm (50 Hz) 1208 / 1810 rpm (60 Hz)
9.	Rotor material	GRP
10.	Regulation	Pitch
11.	Generator	Asynchronous Generator, 4/6 pole
12.	Rated output	250/1250 kW
13.	Rotational speed	1010/1515 rpm
14.	Operating voltage	690 V
15.	Frequency	50 / 60Hz
16.	Protection	IP 56
17.	Insulation class	H
18.	Cooling system	Air cooled
19.	Gear box	3-stage gearbox, 1 planetary & 2 helical.
20.	Manufacturer	Suzlon
21.	Gear ratio	74.917:1
22.	Nominal load	1390 kW
23.	Type of cooling	Oil cooling system
24.	Yaw drive system	4 active electrical yaw motors
25.	Yaw bearing	Polyamide slide bearing
26.	Safety system	
26.1	Aerodynamic brake	3 times independent pitch regulation
26.2	Mechanical brake	Spring power disc brake, hydraulically released, fail safe. Microprocessor controlled, indicating.

Sr. No.	Particulars	Specifications
27.	Control unit	Actual operating conditions, UPS back-up system
28.	Tower	Tubular
29.	Design standards	GL/IEC

Project Boundary

Project boundary encompasses the physical, geographical site of the renewable generation source. This includes the wind turbine installation, pooling and sub-stations. The proposed project activity evacuates the power to the NEWNE Region Grid. Therefore, all the power plants contributing electricity to the NEWNE Grid are taken in the connected (project) electricity system for the purpose of baseline estimation.

Figure 2- Project Boundary



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

Monitoring Methodology:

As defined under Appendix B of the simplified modalities and procedures for small-scale CDM project activities, the project activity falls under following project types and categories:

- Type : I – Renewable Energy Projects
- Project Category : I.D. – Grid connected renewable electricity generation - Version 16
- Reference : Appendix B of the simplified M&P for small-scale project activities (UNFCCC, 2003b)
  The Guideline for Completing the Monitoring Report Form (CDM-MR), EB 54, Annex 34, Version 1

A.6. Registration date of the project activity:

29/07/2007

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

Crediting Period: 01/08/2007 to 31/03/2010

As the Date of Registration is 29 July, 2007 the crediting period starts from 29 July, 2007 to 28 July, 2017 (Fixed) but for the sake of simplicity in CER calculation PP has decided not to include 29 July, 2007 to 31 July, 2007 period (Three Days) in Monitoring Report. Hence Monitoring Period starts from 1 August, 2007

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

Mr. Deepak Zade, Exec. Vice President
M/s MITCON Consultancy Services Ltd.
Kubera Chambers, Shivajinagar, Pune – 411 005,
Maharashtra, INDIA

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

Three Wind Mills of (1.25 MW X 3 No.) in Sub-Bundle I at Dhule are commissioned at 6 March, 2006, whereas Four Wind Mills of (1.25 MW X 4 No.) in Sub-Bundle II at Nandurbar machine K 391 & K 392, are commissioned at 26/03/2006 & machine K 393 & K 394 are commissioned on 27/03/2006. Since date of commissioning to till date seven wind mills are in operation continuously. *(Please Refer Annexure I: Monthly Operation data for the Monitoring Period from 1 August, 2007 to 31 March, 2010)*

SITE	COMMISSIONING DATE
Dhule	
K 257 (1.25MW)	06/03/2006
K 259 (1.25MW)	06/03/2006
K 260 (1.25MW)	06/03/2006
Nandurbar	
K 391 (1.25MW)	26/03/2006
K 392 (1.25MW)	26/03/2006
K 393 (1.25MW)	27/03/2006
K 394 (1.25MW)	27/03/2006

B.2. Revision of the monitoring plan

Not Applicable

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

The methodology AMS-I.D, Version 16 titled "Grid connected renewable energy generation" requires monitoring of the following parameters:

For the project activity, to establish creditable emission reduction, it has to record the actual electricity supplied to the grid (i.e. EG_y), which would displace equivalent units of electricity at the grid.

The starting date of Monitoring period is from 01 August, 2007 to 31 March, 2010, at the time of MR submission i.e. June, 2010 the latest available data of Baseline Emission is Central Electricity Authority (CEA) Baseline Carbon Dioxide Emission Database Version 5.0 [2] which is published in 11 November, 2009.

As per the Registered CDM-PDD the Baseline emission reductions have been estimated using the weighted average emission (in tCO2 equ/MWh) of the current generation mix, using the most recent statistics available at the time of Monitoring Report (MR) submission. Hence as per "Tool to calculate the emission factor for an electricity system, Version 2, EB 50" PP has chosen Ex-post option for calculation of weighted average emission the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring. If the data required to calculate the emission factor for year y is usually only available later than six months after the end of year y, alternatively the emission factor of the previous year (y-1) may be used.

As the data (CEA, Version 5) required to calculate the Grid emission factor for year y (2008-09) is available later than six months (11 November, 2009) after the end of year y (2008-09), *Ref: CEA, Version 5, Published date: 11 November, 2009 (i.e. year 2009-10)*. Hence PP has chosen the Grid Emission Factor, $EF_{Grid, y}$ (tCO_2/ MWh) of the previous year (y-1).

Thus, under the monitoring protocol for the said project, it is required to monitor and record the net electricity supplied to the grid i.e. EG_y (MWh) and Grid emission factor i.e. $EF_{Grid, y}$ (tCO_2/ MWh).

- The proposed project activity requires evacuation facilities for sale to grid and the evacuation facility is essentially maintained by the state power utility (MSEDCL)
- The electricity generation measurements are required by the utility and the investors to assess electricity sales revenue
- The project activity has therefore envisaged two independent measurements of generated electricity from the wind turbines
- The first metering is carried out continuously at the controller of the machine with on-board meter which provide a backup (fail-safe measure) in case the primary monitoring is not carried out, Each WEG is equipped with an integrated electronic meter. These meters are connected to the Central Monitoring Station (CMS) of the entire wind farm through a wireless Radio Frequency (RF) network (SCADA). The generation data of individual machine can be monitored as a real-time entity at CMS
- The second metering of the electricity fed to the state utility grid will be carried out jointly at the main meter & check meter of the state power utility (MSEDCL). Turbines for sale to utility will be connected to the feeder

[2] http://www.cea.nic.in/planning/c%20and%20e/government%20of%20india%20website.htm.

- The joint measurement will be carried out once in a month in presence of both parties (the developer's representative and officials of the state power utility). Both parties will sign the recorded reading
- **Metering equipment** - Metering is carried out through electronic trivector meters of accuracy class 0.2% required for the project. The main meter and check meter shall be installed and owned by MSEDCL. The metering equipments are maintained in accordance with electricity standards
- **Meter readings** - The monthly meter readings (both main and check meters) at the project site and the receiving station shall be taken simultaneously and jointly by the parties on the particular day of the following month. At the conclusion of each meter reading an appointed representative of the MSEDCL and the company signs a document indicating the number of kWh exported to the grid
- The calibration of the meters will be done annually by state utility. Other than periodic calibration of the meters the reading of both meters, will be matched every month

All the relevant data & reports for maintaining accuracy in future monitoring and reporting of GHGs emission reductions will be with the SUZLON on behalf of project participant, which follows Quality Management System (QMS) procedure as per ISO 9001 and is ISO certified organization. The ISO certificate is available for verification by DoE.

The project participant signed an operation and maintenance agreement with the supplier of the wind turbines i.e. SUZLON. The agreement is for a period of 4 years. The performance of the turbines, safety in operation and scheduled /breakdown maintenances is responsibility of SUZLON and are organized and monitored by them. Operation and Maintenance responsibility lies with SUZLON.

ISO 9001:2000 standard has been adopted by SUZLON, who is responsible for monitoring, calibration and O & M of the project. Training is an essential part of the ISO system. To comply with the ISO standard the training has to be provided to personnel according to their responsibility with in organization.

Operation and maintenance of wind farms:

1. Operation and maintenance service team
   - Round the clock 365 days a year – operations management
   - Preventive maintenance of installed base of WEGs across India
   - Breakdown maintenance of installed base of WEGs across India
   - Execution of major & minor design changes in WEGs
2. Special task service team provide various services to sites
   - Relocations
   - Blade replacement at site
   - Major breakdown
3. HT operation & maintenance service team
   - Substation
   - HT lines – internal external
4. Facility service team
   - SCADA service

- E-repair (Electronic components such as PCB)

5. Other service team

- Customer support services – generation reporting
- Liasioning with State Electricity Boards & Nodal agencies

The organizational hierarchy of SUZLON for O& M management is as follows –

Designation	Responsibilities[3]
Project Head	▪ Overall performance monitoring ▪ Project execution
Project Executer and Controller	▪ Operation ▪ Verification of data ▪ Site visit to check authenticity of data and take corrective action, wherever necessary ▪ Storage of data
Site Main Controller	▪ Operation, monitoring and verification of data ▪ Data recording ▪ Storage of data
Operation and Maintenance Contractor	▪ Operation and maintenance ▪ Data recording ▪ Storage of data

Note: As SUZLON is an ISO 9001:2000 certified company, Suzlon provide training to their employees on regular basis and handling and maintenance is an integral part of their Quality Management System procedure.

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

As PP has chosen Ex-post option for calculation of weighted average emission (Ref: "Tool to calculate the emission factor for an electricity system", Version 2, EB 50) the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring. Hence all the Variables & Parameters needs to be monitored.

D.2. Data and parameters monitored

Data / Parameter:	EG_y				
Data unit:	MWh				
Description:	Net Electricity supplied by project activity to the grid				
Measured /Calculated /Default:	Calculated				
Source of data:	Monthly credit report/ Share of electricity generation by state electricity utility				
Value(s) of monitored parameter:	Year	2007	2008	2009	2010
	EG_y (MWh)	3575.50	14697.94	15946.00	1660.31
Indicate what the data are	EG_y is the Net Electricity supplied by project activity to the grid.				

[3] The responsibilities are shared between HGE & Suzlon

used for (Baseline/ Project/ Leakage emission calculations)	EG_y is used for calculation of $EG_{(Net\ Export\ by\ Project\ Activity)}$ i.e. the net generation from all wind turbines of the Project Proponent at particular site
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	The meters (tri vector meter) of high accuracy class (0.2s) is used to measure mentioned variable on continuous basis. Meters are calibrated annually by the authority in the presence of Suzlon and MSEDCL officials.

Machine No.	Meter Serial No.	Accuracy Class	Date last of calibration	Validity
K-391	4738079	0.2s	28/07/2009	1 Year
K-392	4738079	0.2s	28/07/2009	1 Year
K-393	4738079	0.2s	28/07/2009	1 Year
K -394	4738079	0.2s	28/07/2009	1 Year
K-257	4725793	0.2s	28/07/2009	1 Year
K-259	4725793	0.2s	28/07/2009	1 Year
K-260	4725793	0.2s	28/07/2009	1 Year

Measuring/ Reading/ Recording frequency:	Please Refer Section C, Technical Service
Calculation method (if applicable):	Please Refer Section C,
QA/QC procedures applied:	The Main meters of high accuracy class (0.2s). The Main meters are monitored continuously by Suzlon personnel. Main meter belongs to MSEDCL. These are sealed by MSEDCL officials to avoid malfunctioning with meter readings. The officials frequently check the meters for tempering and malfunctioning with the meters. Check meter is placed to verify Main meter readings, Check Meter belongs to Suzlon. The meters are checked as per IEC 60687 standards. It can be used as a source of reading in case of main meter failure. Meters are calibrated annually by the authority in the presence of Suzlon and MSEDCL officials.

Data / Parameter:	$EF_{Grid, y}$			
Data unit:	t CO_2/MWh			
Description:	Grid Emission Factor			
Measured /Calculated /Default:	Calculated			
Source of data:	Central Electricity Authority (CEA) – CDM - Carbon Dioxide baseline database Version - 5			
Value(s) of monitored parameter:		2006-07	20007-08	2008-09
	NEWNE	0.824	0.812	0.835
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Grid Emission Factor is used for calculation of Emission reductions ER_y (tCO2e)			
Monitoring equipment	--			

(type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency:	This will be updated by CEA annually
Calculation method (if applicable):	This will be updated & calculated by CEA annually
QA/QC procedures applied:	--

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

Assumptions for Calculation of Net Electricity Generation			
Parameter	Unit	Per WTG	Entire Project (1.25 No. X 7 WTG's = 8.75 MW)
Wind Turbine Capacity	MW	1.25	8.75
Generation as per PLF Assessment Report	MWh	5125.70	35879.96
Plant Load Factor as per PLF Assessment Report	Percent	17.56 %	17.56 %
Days of Operation i.e. Monitoring Period (01/08/2007 to 31/03/2010)	Day	973	973

Net Electricity supplied to the grid (MWh) = Generation at 17.56 % PLF
= (8.75*973*24*0.1756) = 35879.56 MWh

Net Electricity supplied to the grid (MWh) = 35879.56

E.2. Project emissions calculation

As per AMS ID Version 16 ,Wind Energy Project i.e. Renewable energy source hence no emissions from project activity.

E.3. Leakage calculation

As per AMS ID Version 16 If the energy generating equipment is transferred from another activity, leakage is to be considered. In this project no equipment transfer is involved and hence, no leakage is considered for this project.

E.4. Emission reductions calculation / table

Baseline calculation

For the proposed activity, Weighted Average Emission of the current generation mix has been considered for the calculation of grid emission coefficient of the NEWNE grid system. Formulae used for calculation of baseline are presented below:

- Step 1

Grid Emission Factor Calculation ($EF_{Grid, y}$)

This value of Grid emission coefficient (Weighted Average Emission of current generation Mix) has been obtained from CO_2 Baseline Database for the Indian Power Sector, User Guide (Version 5.0, Date 19h November, 2010).

	2006-07	20007-08	2008-09
NEWNE	0.824 tCO_2/MWh	0.812 tCO_2/MWh	0.835 tCO_2/MWh

- Step 2

Estimation of baseline emissions:

Baseline emissions or CERs generated by the project are estimated as under:

Baseline emissions = Grid Emission Factor x Net power exported
(tCO_2/annum) (tCO_2/MWh) (MWh)

Baseline emissions or CERs generated by the project are estimated as follows:

Sub - bundle 1: Dhulia

Installed Capacity of Machine = 1.25 MW
Total No. of Machines = 3
Total installed capacity = 3.75 MW
Net Electricity Generated = 12717.23 MWh
(As per actual generation)

Sub - bundle 2: Nandurbar

Installed Capacity of Machine = 1.25 MW
Total No. of Machines = 4
Total installed capacity = 5.0 MW
Net Electricity Generated = 23162.62 MWh
(As per actual generation)

Total Generation (MWh) = 35879.96 MWh

Total Baseline Emission Reductions in tCO_2/MWh

Baseline emissions = Emission coefficient x Power generated from the project
(tCO_2/annum) (tCO_2/MWh) (MWh)

Baseline emissions by Sub - bundle I: Dhule

No.	Crediting Period	Generation (MWh)	Emission Factor (tCO_2/MWh)	Baseline Emissions (tCO_2/annum)
1	2007-08	1336.93	0.824	1101.63
2	2008-09	5344.68	0.812	4339.88
3	2009-10	5539.49	0.835	4623.72
4	2010	496.23	0.835	414.20

Total Baseline Emissions of Sub - bundle I = 10479.42 (tCO_2/annum)

Baseline emissions by Sub – bundle II: Nandurbar

No.	Crediting Period	Generation (MWh)	Emission Factor (tCO_2/MWh)	Baseline Emissions (tCO_2/annum)

1	2007-08	2238.77	0.824	1844.75
2	2008-09	9353.26	0.812	7594.85
3	2009-10	10406.51	0.835	8686.14
4	2010	1106.40	0.835	971.63

Total Baseline Emissions of Sub - bundle II = 19097.37(tCO2 /annum)

Total Emission reduction (Sub bundle I + II)

= 10479.42 tCO2 /annum + 19097.37 tCO2 /annum

= 29576.79 tCO2 /annum

***Note":** According to the CO_2 Baseline Database[4] (Version –5, Dec. 2009) published by CEA the Weighted Average Emission (tCO_2/GWh) for NEWNE Regional Grid for the crediting Period of 01/08/2007 to 31/03/2010.is given below.*

	2006-07	*20007-08*	*2008-09*
NEWNE	*0.824 tCO_2/MWh*	*0.812 tCO_2/MWh*	*0.835 tCO_2/MWh*

As per Project Design Documents (PDD) and Grid connected renewable electricity generation --- Version 16, Project Proponent has chosen the weighted average emissions ".

As per Tool to calculate the emission factor for an electricity system" Version 02, (EB 50, Annex 14)

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

The estimated emission reduction (tCO2e) in Registered CDM-PDD is 17063 tCO_2/yr. The actual emission reductions during the Monitoring Period (1 August, 2007 to 31 March, 2010 i.e. 973 Days) is 29576.79 tCO2 /annum. The emission reduction per year (tCO_2e) is given below.

Item	Year	Values applied in ex-post calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions ER_y (tCO_2e)	2007 (01/08/2007 to 31/12/2007)	7152.43	2946.38
	2008 (01/01/2008 to 31/12/2008)	17063	11934.73
	2009 (01/01/2009 to 31/12/2009)	17063	13309.86
	2010 (01/01/2010 to 31/03/2010)	4207.31	1385.83

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

Not Applicable

[4] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

Annexure I

Monthly Operating Data (01/08/2007 to 31/03/2010)

Note: The values in the table have been taken from Electricity sell invoices to State Electricity Board.

Sub Bundle I- K-257, K-259 and K-260. 1.25 MW X 3 No. = 3.75 MW			
	Import	Export	Net Export
Aug-07	483	839094	838611
7-Sep	1639	241249	239610
Oct-07	2846	127340	124494
Nov-07	4823	48413	43590
Dec-07	2598	93222	90624
Jan-08	2862	144845	141983
Feb-08	2428	168402	165974
Mar-08	2466	196434	193968
Apr-08	814	452782	451968
May-08	304	1173038	1172734
Jun-08	473	904676	904203
Jul-08	87	976606	976519
Aug-08	270	731111	730841
Sep-08	1893	297020	295127
Oct-08	4267	90301	86034
Nov-08	3277	129113	125836
Dec-08	3199	102692	99493
Jan-09	2953	93762	90809
Feb-09	2715	145028	142313
Mar-09	1721	217867	216146
Apr-09	1002	408685	407683
May-09	179	974269	974090
Jun-09	463	927807	927344
Jul-09	481	1123782	1123301
Aug-09	271	835498	835227
Sep-09	481	446062	445581
Oct-09	3633	191884	188251
Nov-09	2951	120110	117159
Dec-09	2707	74294	71587
Jan-10	2187	91258	89071
Feb-10	2288	111350	109062
Mar-10	1030	299130	298100
Total	59791	12777124	**12717333**
Net Export (Export - Import)			**12717.33 (MWh)**

Sub Bundle II - K-391, K-392, K-393 and K-394. 1.25 MW X 4 No. = 5 MW			
	Import	Export	Net Export
Aug-07	929	1141416	1140487
Sep-07	1852	574059	572207
Oct-07	6613	272085	265472
Nov-07	9621	82310	72689
Dec-07	5249	193169	187920
Jan-08	5029	273501	268472
Feb-08	4733	356803	352070
Mar-08	4624	495626	491002
Apr-08	1861	1046693	1044832
May-08	0	2214369	2214369
Jun-08	958	1197231	1196273
Jul-08	967	1266207	1265240
Aug-08	0	1316291	1316291
Sep-08	3907	703338	699431
Oct-08	7322	190401	183079
Nov-08	6698	160780	154082
Dec-08	5758	173878	168120
Jan-09	5948	197463	191515
Feb-09	4911	286756	281845
Mar-09	2912	464069	461157
Apr-09	1934	922392	920458
May-09	848	2249658	2248810
Jun-09	833	1879899	1879066
Jul-09	932	1245473	1244541
Aug-09	550	1264718	1264168
Sep-09	596	1225078	1224482
Oct-09	6956	346298	339342
Nov-09	4504	190702	186198
Dec-09	4849	169780	164931
Jan-10	4195	205393	201198
Feb-10	4012	246587	242575
Mar-10	2069	722369	720300
Total	**112170**	**23274792**	**23162622**
Net Export (Export - Import)			**23162.62 (MWh)**

Annexture-2

Data used for arriving at the $\mathbf{EF_{Grid, y}}$

Table 9 : Values for all regional grids for FY 2000-2001 until FY 2006-2007 including inter-regional and cross-border electricity transfers. (CEA, User Guide: Version 5.0)

Weighted Average Emission Rate (tCO2/MWh) (incl. Imports) (2)

	2005-06	2006-07	2007-08	2008-09
NEWNE	0.84	0.82	0.81	0.83
South	0.73	0.72	0.72	0.76
India	0.81	0.80	0.79	0.82

Simple Operating Margin (tCO2/MWh) (incl. Imports) (1) (2)

	2005-06	2006-07	2007-08	2008-09
NEWNE	1.02	1.01	1.00	1.01
South	1.01	1.00	0.99	0.97
India	1.02	1.01	1.00	1.01

Build Margin (tCO2/MWh) (not adjusted for imports)

	2005-06	2006-07	2007-08	2008-09
NEWNE	0.67	0.63	0.60	0.68
South	0.71	0.70	0.71	0.82
India	0.68	0.65	0.63	0.71

Combined Margin in tCO2/MWh (incl. Imports) (1) (2)

	2005-06	2006-07	2007-08	2008-09
NEWNE	0.85	0.82	0.80	0.84
South	0.86	0.85	0.85	0.90
India	0.85	0.83	0.81	0.86

History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
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