



## Monitoring report form (Version 03.2)

### Monitoring report

<b>Title of the project activity</b>	Wind Power Project at Jath, Maharashtra
<b>Reference number of the project activity</b>	9154
<b>Version number of the monitoring report</b>	1
<b>Completion date of the monitoring report</b>	25/02/2014
<b>Registration date of the project activity</b>	26/12/2012
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring period: 1 <sup>st</sup> , Duration of this monitoring period: 01/01/2013 to 31/12/2013
<b>Project participant(s)</b>	ReNew Wind Energy (Jath) Private Limited
<b>Host Party(ies)</b>	India
<b>Sectoral scope(s) and applied methodology(ies)</b>	Sectoral Scope 1: Energy Industries (renewable - / non-renewable sources)  Methodology : ACM0002 version 13.0.0, - Consolidated methodology for grid connected electricity generation from renewable sources
<b>Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD</b>	143,315 tCO <sub>2</sub> e
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	73,591 tCO <sub>2</sub> e
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)</b>	0 tCO <sub>2</sub> e
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).</b>	73,591 tCO <sub>2</sub> e

**SECTION A. Description of project activity****A.1. Purpose and general description of project activity**

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The project activity involves setting up of 29 numbers of G58/0.85 MW and 30 numbers of G 97/2.0 MW Wind Turbine Generators (WTGs) by ReNew Wind Energy (Jath) Private Limited (RNWEJPL) at Jath Mandal of Sangli district in Maharashtra, India. The total installed capacity of the project activity is 84.65 MW and Gamesha Wind Turbines Private Limited is the supplier of WTGs for this project activity. The project activity is expected to generate electricity at 23% PLF. The net electricity generated from this project activity will be supplied to NEWNE grid.

The purpose of the project activity is to generate electricity using wind energy and to supply the net electricity generated to the NEWNE grid. This would reduce the dependency on fossil fuels for electricity generation and reduce the Green House Gas (GHG) emissions that would have happened in a baseline scenario.

The baseline scenario for the project activity as per the applied methodology ACM0002 version 13.0.0 is "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system." The same has been described in detail in PDD section B.4.

As the project activity is a greenfield project, there was no power plant existing at the project site prior to the installation of the project activity (i.e. in the pre-project scenario).

The Gamesha Wind Turbines Private Limited make G58/0.85 MW & G 97/2.0 MW WTGs are based its technology on speed control and variable pitch, while incorporating the latest technologies to extract the maximum amount of energy from the wind and to do it as efficiently as possible. The hub heights of WTGs are 65 meter and 90 meter respectively and the rotor diameter is 58 meters and 97 meter respectively.

The design lifetime of the project activity is of 20 years<sup>1</sup>. The project is environmentally safe as it uses renewable sources for electricity generation and also technologically sound as it uses latest advanced technology<sup>2</sup> with variable pitch and speed technology maximize energy production.

The project activity is a grid connected renewable energy project that supplies electricity to the NEWNE grid, thus it comes under the sectoral scope Sectoral Scope<sup>3</sup>: 1 Energy industries (renewable / non renewable sources)

The projects has started commissioning on 28.09.2012 and successfully commissioned all the turbines on 06/08/2013.

**A.2. Location of project activity**

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Project activity is located in Sangli district in the state of Maharashtra, India. The project site is well connected with major cities in Maharashtra. Nearest Airport from project activity is Sholapur at a distance of 112 Km and nearest railway head is Jath Road Railway Station at 23 Km distance. Wind turbine-wise detailed co-ordinates have been listed below:

**Wind Turbine wise geo-coordinates of the Project**

Sr No.	Turbine ID	Turbine Location	Coordinates	Sr No.	Turbine ID	Turbine Location	Coordinates
1	GR1	GJ 30N	E 52.1109; N 18.77225	28	GR28	J58/2-135	E 52.5235; N 18.76882
2	GR2	GJ 31N	E 52.4292; N	29	GR29	J58/2-	E 52.2824; N

<sup>1</sup> The General Characteristic Manual as supplied by the technology supplier has been submitted to DoE, as an evidence of operational life time. Please refer to 1<sup>st</sup> paragraph of page 3 of 21 of the same..

<sup>2</sup> <http://www.gamesacorp.com/en/products-and-services/wind-turbines/g9x-20-mw-en.html>

<sup>3</sup> <http://cdm.unfccc.int/DOE/scopelst.pdf>

			18.77912			133	18.73019
3	GR3	GJ 25	E 52.5909; N 18.74517	30	GJ I-01	GJI 123	E 52.7415; N 18.83430
4	GR4	GJ 26	E 52.5909; N 18.74691	31	GJ I-02	GJI 128	E 52.7210; N 18.84014
5	GR5	GJ 49	E 52.1739; N 18.75966	32	GJ I-03	GJI 147	E 52.6911; N 18.84480
6	GR6	GJ 01-A	E 52.5750; N 18.75382	33	GJ I-04	J97/1- 124	E 52.6574; N 18.85011
7	GR7	GJ 28A	E 52.1092; N 18.77052	34	GJ I-05	J97/1- 122	E 52.6354; N 18.85479
8	GR8	GJ 45N	E 52.4906; N 18.71092	35	GJ I-06	J97/1- 116	E 52.5992; N 18.85923
9	GR9	GJ 44N	E 52.5890; N 18.74863	36	GJ I-07	GJI 21N1	E 52.5898; N 18.86392
10	GR10	GJ B15N	E 52.4056; N 18.78863	37	GJ I-08	GJI 16N	E 52.5657; N 18.86889
11	GR11	GJ B13	E 52.1662; N 18.76122	38	GJ I-09	GJI 18N	E 52.5270; N 18.87592
12	GR12	GJ B10	E 52.5797; N 18.75209	39	GJ I-10	GJI 19N	E 52.5593; N 18.88566
13	GR13	GJ B16	E 52.5843; N 18.75036	40	GJ I-11	GJI 20N	E 52.5978; N 18.88198
14	GR14	GJ B-11N	E 52.5117; N 18.77011	41	GJ I-12	GJI 187	E 52.6517; N 18.87838
15	GR15	GJ B20	E 52.1057; N 18.76705	42	GJ I-13	GJI 88N	E 52.8172; N 18.85523
16	GR16	GJ B11N	E 52.4410; N 18.77783	43	GJ I-14	GJI 90N	E 52.8325; N 18.85068
17	GR17	GJ B24	E 52.5703; N 18.75555	44	GJ I-15	GJI 17N	E 52.8535; N 18.84539
18	GR18	GJ B27	E 52.4778; N 18.71218	45	GJ I-16	GJI 86	E 52.7175; N 18.88873
19	GR19	GJ B28	E 52.1074; N 18.76879	46	GJ I-17	GJI 84	E 52.9491; N 18.87892
20	GR20	GJ B25	E 52.4999; N 18.77140	47	GJ I-18	GJI 70	E 52.9486; N 18.85854
21	GR21	GJ B36	E 52.4646; N 18.77526	48	GJ I-19	GJI 58	E 53.0453; N 18.84815
22	GR22	GJ B01	E 52.2798; N 18.72842	49	GJ I-20	GJI 76	E 53.0716; N 18.88191
23	GR23	GJ B02	E 52.1161; N 18.77745	50	GJ I-21	J97/1-11	E 53.0865; N 18.87590
24	GR24	GJ B09N	E 52.4764; N 18.77397	51	GJ I-22	J97/1- 114	E 53.0953; N 18.87100
25	GR25	J58/2-100	E 52.4882; N 18.77269	52	GJ I-23	GJI 15N	E 53.1165; N 18.86535
26	GR26	GJ B35N	E 52.5656; N 18.75728	53	GJ I-24	GJI 07	E 53.1502; N 18.85389

27	GR27	GJ B26N	E 52.3938; N 18.78298	54	GJ I-25	J97/2-91	E 53.2157; N 18.86168
55	GJ I-26	GJI 176	E 52.7691; N 18.81145	56	GJ I-27	GJI 177	E 52.7514; N 18.8158
57	GJ I-28	GJI 197	E 52.9457; N 18.8178	58	GJ I-29	J97/2-25	E 52.6457; N 18.8159
59	GJ I-30	J97/2-26	E 52.6484; N 18.80996				

### A.3. Parties and project participant(s)

Party involved (host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host)	ReNew Wind Energy (Jath) Private Limited	No

### A.4. Reference of applied methodology

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#### a) Selected Approved Baseline Methodology:

Methodology No : ACM 0002<sup>4</sup>,  
 Title : "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"  
 Version : 13.0.0  
 Approved in : EB 67

#### Reference:

<https://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT>

#### b) ACM 0002, Version 13.0.0, draws upon the following tools which have been used in the PDD:

1. Tool to calculate the emission factor for an electricity system (Version 02.2.1)
2. Tool for demonstration and assessment of additionality (Version 06.1.0)

### A.5. Crediting period of project activity

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1<sup>st</sup> January 2013 to 31st December 2019 (Renewable)

## SECTION B. Implementation of project activity

### B.1. Description of implemented registered project activity

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The project activity involves installation of Gamesha Wind Turbines Private Limited make 29 number G58/0.85 MW and 30 Number G97/2.0 MW WTGs. The total installed capacity of the project activity is 84.65 MW. The project activity will generate electricity @ 23% PLF and will be supplied to NEWNE grid. The technology is clean as there are no GHG emissions associated with the generation of electricity from renewable source such as wind.

The technical specification<sup>5</sup> of G58 & G 97 WTGs installed in the project activity are described below-

<sup>4</sup> <https://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT>

Technical Parameters	G58	G97
<b>ROTOR</b>		
Diameter	58 Meter	97 Meter
Swept Area	2,642 Sq. Meter	7,390 Sq. Meter
Rotational Speed	19.44 – 30.8 rpm	9.6 – 17.8 rpm
<b>BLADES</b>		
Number of Blades	3	3
Length	28.3 Meter	47.5 Meter
Airfoils	NACA 63.XXX + FFA-W3	Gamesha
Material	Fiberglass pre-impregnated with epoxy resin	Pre-impregnated with epoxy glass fiber + carbon fiber
<b>TOWER</b>		
Type	Modular	Modular
Height	65 Meter	90 Meter
<b>GEAR BOX</b>		
Type	1 planetary stage / 2 parallel axis stage	1 planetary stage / 2 parallel stage
Ratio	1:61.74 (50Hz)	1:106.8 (50Hz)
<b>GENERATOR</b>		
Type	Dual power fed	Dual power fed
Rated Power	850 kW	2.0 MW
Voltage	690 V AC	690 V AC
Frequency	50 Hz	50 Hz
Potection Class	IP 54	IP 54
Poer Factor	0.95 CAP – 0.95 IND at partial loads and 1 at nominal power	0.95 CAP – 0.95 IND throughout the power range

The life of the project equipment, i.e. wind turbines are 20 years<sup>6</sup>. Apart from the WTGs, the project activity also involves the installation of transformers, transmission lines/ cables and other equipment required for the generation and transfer of electricity to the grid.

## B.2. Post registration changes

### B.2.1. Temporary deviations from registered monitoring plan or applied methodology

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No such temporary deviations have taken place.

### B.2.2. Corrections

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No corrections are applicable.

### B.2.3. Permanent changes from registered monitoring plan or applied methodology

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No such changes from registered monitoring plan or applied methodology applicable.

### B.2.4. Changes to project design of registered project activity

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The project installed capacity has been augmented from initial planning of 74.65 MW (29 numbers of G58/0.85 MW and 25 numbers of G 97/2.0 MW wind turbines) to 84.65 MW (29 numbers of G58/0.85 MW and 30 numbers of G 97/2.0 MW wind turbines).

The relevant change in capacity and related change in total generation potential has been incorporated in the revised PDD and IRR\_ER Sheet. The following are the snapshot of the parameters that got changed in the

<sup>5</sup> <http://www.gamesacorp.com/en/products-and-services/wind-turbines/catalogue/>

<sup>6</sup> General Characteristics Manual of Gamesha; as provided to the DoE.

project design:

Parameter	As per registered PDD	As per commissioned project
No. of wind turbines G97	25	30
Capacity of the project	74.65 MW	84.65 MW
Net Generation	150.405 MU	170.56 MU
Project Cost	4883.00 INR Million	5558.00 INR Million
Debt Contribution	3418.10 INR Million	3890.60 INR Million
Operation and Maintenance Cost (first year)	57.33 INR Million	65.01 INR Million
Emission Reductions	143,315 tCO <sub>2</sub> e/year	162,514 tCO <sub>2</sub> e/year
Equity IRR	12.48%	12.39%

**B.2.5. Changes to start date of crediting period**

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No such changes to start date of crediting period taken place.

**B.2.6. Types of changes specific to afforestation or reforestation project activity**

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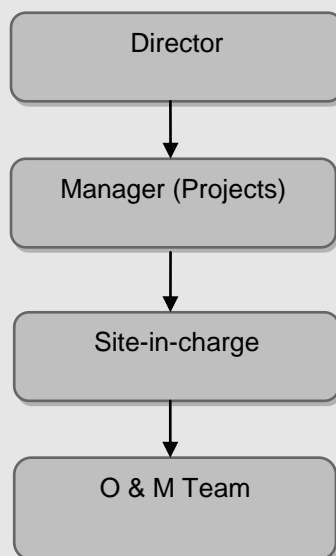
Not Applicable.

### SECTION C. Description of monitoring system

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In Monitoring & Verification protocol, the objective is to have clear, credible and accurate monitoring, evaluation and verification procedures. This involves recording, data collection of all wind turbines, metering of electricity generated at substation, on daily basis as well as on monthly basis. The general conditions for metering, recording, meter readings, meter inspections, Test & Checking and communication shall be as per the Power Purchase Agreements.

The project proponent proposes following arrangements in order to carry out metering and O & M activities for all wind turbines.



Meter readings will be taken jointly at the appointed date by PP's representative, Gamesha official and Discom officials. The same will be reported to the site-in-charge and the compiled reports will be sent to the Manager (Projects) and Director. The Manager will monitor overall activity of the project and report to the Director. As per O & M schedule, the operation and maintenance activities will be carried out by trained and qualified technical staff of Gamesha.

Each party shall maintain complete and accurate records and all other data required by each of them for the purposes of proper administration and the operation of the project.

For each WTG in the project activity, the distribution licensee would report electricity exported and imported from the grid. The net electricity supplied to the grid would be reported as the difference between the export and import from the WTG. The electricity export and import data will be monitored via main and check meters connected to feeders at the respective sub-stations. Multiple WTGs would be connected to each feeder, some of which would be part of the project activity (WTGs under this project activity) and some of which would not be part of the project activity (WTGs owned by other entities). Distribution licensee follows an apportioning procedure to account for electricity generation from individual WTGs based on data from individual WTG controllers.

The electricity exported and imported from the grid is recorded on a monthly basis, jointly in the presence of representatives of project proponent (O&M Contractors) and distribution licensee personnel. Following the joint meter readings, the O&M Contractors provide the readings of the WTG controller to Distribution licensee. Based on the monthly export and import data as per main/check meters and the WTG controller readings, distribution licensee provides a break-up of the electricity exported and imported for each WTG.

The net electricity generation from each WTG is determined by distribution licensee as follows:

Controller Generation at WTG  
**Export from WTG** =  $\frac{\text{Controller Generation at WTG}}{\text{Total generation at all WTG controllers for the feeder}} \times \text{Export from distribution licensee main/check meter}$

Controller Generation at WTG  
**Import from WTG** =  $\frac{\text{Controller Generation at WTG}}{\text{Total generation at all WTG controllers for the feeder}} \times \text{Import from distribution licensee main/check meter}$

Net electricity export from WTG = Export from WTG - Import from WTG

The above calculations would be carried out solely by distribution licensee and only the final apportioned electricity export, import, and net export for each WTG would be reported by distribution licensee in the Credit Notes. The details of the joint meter readings are not reported in the credit notes issued by distribution licensee.

#### Monitoring Frequency:

A monthly joint meter reading of the energy meters would be carried out by distribution licensee officials and O&M contractors (representatives of the project promoter).

#### Apportioning Procedures in case the dates of monitoring period do not match with billing cycle dates:

The dates of the monitoring period for the project activity may not coincide with the dates of the Credit Note issued by distribution licensee. In such a scenario, the net electricity generation data would have to be apportioned. For carrying out the apportioning procedures, WTG controller data (data recorded by the WTG controller software) would be utilized. The electricity generation from WTG controllers is recorded on a daily basis in the Power Generation Reports maintained by the O&M contractors. The data from Power Generation Reports would be referred for determination of the apportioning ratio. The following steps will be applied to carry out the apportioning:

(i) Apportioning Ratio =  $\frac{\text{Generation at WTG controller for apportioning}}{\text{Generation at WTG controller for period covered under Credit Note period}}$

- (ii) Apportioned Electricity Export = Apportioning Ratio x Electricity Export as per Credit Note  
 (iii) Apportioned Electricity Import = Apportioning Ratio x Electricity Import as per Credit Note  
 (iv) Apportioned Net Electricity Supplied to Grid =

*Apportioned Electricity Export – Apportioned Electricity Import*

## SECTION D. Data and parameters

### D.1. Data and parameters fixed ex ante or at renewal of crediting period

(Copy this table for each piece of data and parameter.)



<b>Data / Parameter:</b>	<b><math>W_{BM}</math></b>
Unit:	%
Description:	Weightage of build margin emission factor
Source of data:	Too to calculate the emission factor for an electricity system (Version 02.2.1)
Value(s) applied:	0.25
Purpose of data:	Calculation of combined margin emission factor of NEWNE grid
Additional comment:	The value is ex-ante and will remain same throughout the crediting period of the project activity.

<b>Data / Parameter:</b>	<b><math>W_{OM}</math></b>
Unit:	%
Description:	Weightage of operating margin emission factor
Source of data:	Too to calculate the emission factor for an electricity system (Version 02.2.1)
Value(s) applied:	0.75
Purpose of data:	Calculation of combined margin emission factor of NEWNE grid
Additional comment:	The value is ex-ante and will remain same throughout the crediting period of the project activity.

<b>Data / Parameter:</b>	<b><math>EF_{grid,BM,y}</math></b>
Unit:	<b>tCO<sub>2</sub>/MWh</b>
Description:	Build margin for NEWNE grid
Source of data:	CO <sub>2</sub> baseline database (Version 7.0) published by CEA in January 2012
Value(s) applied:	0.8588
Purpose of data:	Calculation of combined margin emission factor of NEWNE grid
Additional comment:	Fixed ex-ante for entire crediting period

<b>Data / Parameter:</b>	<b><math>EF_{grid,OM,y}</math></b>
Unit:	<b>tCO<sub>2</sub>/MWh</b>
Description:	Simple operating margin for NEWNE grid
Source of data:	CO <sub>2</sub> baseline database (Version 7.0) published by CEA in January 2012
Value(s) applied:	0.9842
Purpose of data:	Calculation of combined margin emission factor of NEWNE grid
Additional comment:	Fixed ex-ante for entire crediting period

<b>Data / Parameter:</b>	<b><math>EF_{grid,CM,y}</math></b>
Unit:	<b>tCO<sub>2</sub>/MWh</b>
Description:	Combined margin emission factor for NEWNE grid

Source of data:	Calculated as per the procedure described in PDD section B.6.1
Value(s) applied):	0.9529
Purpose of data:	Calculation of baseline emissions
Additional comment:	Fixed ex-ante for entire crediting period

## D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter.)

<b>Data / Parameter:</b>	<b>EG<sub>facility,y</sub></b>
Unit:	<b>MWh</b>
Description:	Quantity of net electricity generation supplied by the project plant / unit to the grid in the year y
Measured/ Calculated / Default:	Distribution Licensee report on energy delivered to grid (Credit note / JMR) / Calculated
Source of data:	<p>The electricity generated and fed into the grid shall be continuously monitored using energy meters. For measuring the net electricity supplied by the project activity, the state electricity board has installed a set of energy meters (main and check) at the substation of the project activity. Monthly readings are taken jointly by the representative of Maharashtra State Electricity Transmission Co. Ltd. and site in charge of Project Proponent and a statement is prepared and signed by the representatives of both parties for total electricity exported to grid, total electricity imported from the grid and the net electricity supplied. The net electricity supplied is calculated as the difference of the total electricity exported to grid and total electricity imported from the grid by the project activity.</p> <p>The meters have an accuracy class of 0.2S</p> <p>The net electricity supplied to grid is a calculated value and would be determined as the difference between the electricity exported to the grid and the electricity imported from the grid by the project activity. The emission reduction would be computed on the basis of <math>EG_{facility,y}</math>.</p> $EG_{facility,y} = E_{export,y} - E_{import,y}$
Value(s) of monitored parameter:	77,228.651 MWh
Monitoring equipment:	<p>Equipment: Main &amp; Check Meters;</p> <p>Meter type: Static</p> <p>Accuracy class: 0.2s</p>
Measuring/ Reading/ Recording frequency:	<p><u>Monitoring</u>: Continuous measurement and monthly recording.</p> <p><u>Recording</u>: Electronic/ Paper</p> <p><u>Recording Frequency</u>: Continuous monitoring and monthly recording</p> <p><u>Responsibility</u>: The plant management shall be responsible for the regular recording of data.</p> <p><u>Archiving</u>: Crediting Period + 2 years</p> <p><u>Calibration Frequency</u><sup>7</sup>: Once in 5 year.</p>

<sup>7</sup> As per CEA publication in Gazette of India, dated, 17<sup>th</sup> March 2006; a copy of the same is submitted to the DOE

Calculation method (if applicable):	The net electricity supplied to grid is a calculated value and would be determined as the difference between the electricity exported to the grid and the electricity imported from the grid by the project activity. The emission reduction would be computed on the basis of $EG_{facility,y} = E_{export,y} - E_{import,y}$ .
QA/QC procedures:	The meter readings can be cross checked with the invoices for sale of power to ensure correctness. The meter(s) shall be calibrated and maintained by the state utility as per their own schedule, and this frequency of meter calibration is not within the control of the Project Proponent
Purpose of data:	Calculation of baseline emissions
Additional comment:	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.

<b>Data / Parameter:</b>	<b>EG<sub>export,y</sub></b>
Unit:	<b>MWh</b>
Description:	Quantity of electricity generation supplied by the project plant/unit to the grid in the year y
Measured/ Calculated / Default:	Distribution Licensee report on energy delivered to grid (Credit note / JMR) / Calculated
Source of data:	The electricity generated and fed into the grid shall be continuously monitored using energy meters. For measuring the net electricity supplied by the project activity, the state electricity board has installed a set of energy meters (main and check) at the substation of the project activity. Monthly readings are taken jointly by the representative of Maharashtra State Electricity Transmission Co. Ltd. and site in charge of Project Proponent and a statement is prepared and signed by the representatives of both parties for total electricity exported to grid, total electricity imported from the grid and the net electricity supplied. The net electricity supplied is calculated as the difference of the total electricity exported to grid and total electricity imported from the grid by the project activity.  The meters have an accuracy class of 0.2S
Value(s) of monitored parameter:	77,479.265 MWh
Monitoring equipment:	Equipment: Main & Check Meters; Meter type: Static Accuracy class: 0.2s
Measuring/ Reading/ Recording frequency:	<u>Monitoring</u> : Continuous measurement and monthly recording. <u>Recording</u> : Electronic/ Paper <u>Recording Frequency</u> : Continuous monitoring and monthly recording <u>Responsibility</u> : The plant management shall be responsible for the regular recording of data. <u>Archiving</u> : Crediting Period + 2 years <u>Calibration Frequency</u> <sup>8</sup> : Once in 5 year.
Calculation method (if applicable):	NA

<sup>8</sup> As per CEA publication in Gazette of India, dated, 17<sup>th</sup> March 2006; a copy of the same is submitted to the DOE

QA/QC procedures:	The meter readings can be cross checked with the invoices for sale of power to ensure correctness. The meter(s) shall be calibrated and maintained by the state utility as per their own schedule, and this frequency of meter calibration is not within the control of the Project Proponent
Purpose of data:	Calculation of baseline emissions
Additional comment:	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.

<b>Data / Parameter:</b>	<b>EG<sub>import,y</sub></b>
Unit:	<b>MWh</b>
Description:	Quantity of electricity generation supplied by the project plant/unit to the grid in the year y
Measured/ Calculated / Default:	Distribution Licensee report on energy delivered to grid (Credit note / JMR) / Calculated
Source of data:	The electricity generated and fed into the grid shall be continuously monitored using energy meters. For measuring the net electricity supplied by the project activity, the state electricity board has installed a set of energy meters (main and check) at the substation of the project activity. Monthly readings are taken jointly by the representative of Maharashtra State Electricity Transmission Co. Ltd. and site in charge of Project Proponent and a statement is prepared and signed by the representatives of both parties for total electricity exported to grid, total electricity imported from the grid and the net electricity supplied. The net electricity supplied is calculated as the difference of the total electricity exported to grid and total electricity imported from the grid by the project activity.  The meters have an accuracy class of 0.2S
Value(s) of monitored parameter:	250.414 MWh
Monitoring equipment:	Equipment: Main & Check Meters; Meter type: Static Accuracy class: 0.2s
Measuring/ Reading/ Recording frequency:	<u>Monitoring</u> : Continuous measurement and monthly recording. <u>Recording</u> : Electronic/ Paper <u>Recording Frequency</u> : Continuous monitoring and monthly recording <u>Responsibility</u> : The plant management shall be responsible for the regular recording of data. <u>Archiving</u> : Crediting Period + 2 years <u>Calibration Frequency</u> <sup>9</sup> : Once in 5 year.
Calculation method (if applicable):	NA
QA/QC procedures:	The meter readings can be cross checked with the invoices for sale of power to ensure correctness. The meter(s) shall be calibrated and maintained by the state utility as per their own schedule, and this frequency of meter calibration is not within the control of the Project Proponent
Purpose of data:	Calculation of baseline emissions

<sup>9</sup> As per CEA publication in Gazette of India, dated, 17<sup>th</sup> March 2006; a copy of the same is submitted to the DOE

Additional comment:	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.
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### D.3. Implementation of sampling plan

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Not applicable.

## SECTION E. Calculation of emission reductions or GHG removals by sinks

### E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

&gt;&gt;

According to equation (1) of PDD section B.6.1, the baseline emissions are to be calculated as follows:

$$BE_v = EG_{PJ,v} * EF_{grid,CM,v}$$

According to equation (5) of PDD section B.6.1, Combined margin CO<sub>2</sub> emission factor for grid connected power generation ( $EF_{grid,CM,v}$ ) is calculated as follows:

$$\begin{aligned} EF_{grid,CM,v} &= W_{OM} * EF_{grid,OM,v} + W_{BM} * EF_{grid,BM,v} \\ &= 0.75 * 0.9842 + 0.25 * 0.8588 \\ &= 0.9529 \text{ tCO}_2\text{e/MWh} \end{aligned}$$

Thus for ex-ante emission reduction calculations, the baseline emission factor for the grid  
= 0.9529 tCO<sub>2</sub>e/MWh

Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity ( $EG_{PJ,v}$ )

$$EG_{PJ,v} = EG_{facility,v} = 77,228.651 \text{ MWh}$$

Hence, substituting values in equation 1, we get:

$$\begin{aligned} BE_v &= 77,228.651 * 0.9529 \\ &= 73,591.182 \text{ tCO}_2\text{e} \\ &= 73,591 \text{ tCO}_2\text{e} \end{aligned}$$

### E.2. Calculation of project emissions or actual net GHG removals by sinks

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The Project activity does not envisage any fossil fuel consumption. Therefore, the parameter  $PE_{FF,v} = 0 \text{ tCO}_2\text{e/annum}$ . Also, as the proposed CDM Project activity is not a geothermal project activity or a hydro project activity, hence, the Project emissions as per parameters  $PE_{GP,v}$  and  $PE_{HP,v}$  are also zero.

Therefore,  $PE_y = 0 \text{ tCO}_2\text{e/annum}$

### E.3. Calculation of leakage

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Leakage ( $LE_v$ ) = 0

### E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO <sub>2</sub> e)
Total	73,591	0	0	73,591

**E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD**

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	143,315	73,591

**E.6. Remarks on difference from estimated value in registered PDD**

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The difference of emission reduction as achieved during the crediting period from estimated value, occurs due to phased commissioning of the wind turbines and variation of wind flow availability in the project area.

**E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards**

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	0	73,591

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## Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
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