



Monitoring report form
(Version 05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT

Title of the project activity	Wind Power Project at Jath, Maharashtra	
UNFCCC reference number of the project activity	9154	
Version number of the monitoring report	1	
Completion date of the monitoring report	06/10/2015	
Monitoring period number and duration of this monitoring period	Monitoring period: 2 nd , Duration of this monitoring period: 1/01/2014 to 31/08/2015	
Project participant(s)	M/s ReNew Wind Energy (Jath) Private Limited	
Host Party	India	
Sectoral scope(s)	Sectoral Scope 1: Energy Industries (renewable - / non-renewable sources)	
Selected methodology(ies)	Methodology : ACM0002 version 13.0.0, - Consolidated methodology for grid connected electricity generation from renewable sources	
Selected standardized baseline(s)	NA	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	270,856 tCO ₂ e	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	NA	269,344 tCO ₂ e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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 Gamesa 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 is 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 Gamesa 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 years¹. The project is environmentally safe as it uses renewable sources for electricity generation and also technologically sound as it uses latest advanced technology² 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 Scope³: 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

The commissioning details of 29 WTG's of G-58 make are given below:

Date of Commissioning	No. of Turbines Commissioned
30/09/2012	10
22/05/2013	7
30/05/2013	4
05/06/2013	1
30/06/2013	1
19/07/2013	6

¹ 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 1st paragraph of page 3 of 21 of the same.

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

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

The commissioning details of 30 WTG's of G-97 make are given below:

Date of Commissioning	No. of Turbines Commissioned
28/09/2012	4
30/09/2012	3
07/02/2013	5
26/02/2013	1
03/04/2013	2
26/06/2013	4
30/06/2013	4
19/07/2013	5
24/07/2013	1
06/08/2013	1

Turbines are continuously operating from the dates of their commissioning.

The current verification is the second verification for the project and it is from 01/01/2014 to 31/08/2015. The first verification period was from 01/01/2013 to 31/12/2013 for which CER's are already issued.

The net electricity exported to grid during this verification period is 282,657.23 MWh which results to a net emission reduction of 269,344 tCO₂e. Details of monthly electricity export to grid, import from grid and net electricity supplied to grid is provided in Annexure A.

A.2. Location of project activity

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 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	J58/2-134	E 52.5235; N 18.76882
2	GR2	GJ 31N	E 52.4292; N 18.77912	29	GR29	J58/2-71	E 52.2824; N 18.73019
3	GR3	GJ 25	E 52.5909; N 18.74517	30	GJ I-01	GJII 33N	E 52.7415; N 18.83430
4	GR4	GJ 26	E 52.5909; N 18.74691	31	GJ I-02	GJI 28	E 52.7210; N 18.84014
5	GR5	GJ 49	E 52.1739; N 18.75966	32	GJ I-03	GJI 47	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 28N	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	GJII 92N	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	GJB15	E 52.4056; N 18.78863	37	GJ I-08	GJI 16N	E 52.5657; N 18.86889
11	GR11	GJB13	E 52.1662; N 18.76122	38	GJ I-09	GJI 18N	E 52.5270; N 18.87592
12	GR12	GJB10	E 52.5797; N 18.75209	39	GJ I-10	GJI 19	E 52.5593; N

							18.88566
13	GR13	GJB16	E 52.5843; N 18.75036	40	GJ I-11	GJI 20N	E 52.5978; N 18.88198
14	GR14	GJB-11N	E 52.5117; N 18.77011	41	GJ I-12	GJI 87N	E 52.6517; N 18.87838
15	GR15	GJB20	E 52.1057; N 18.76705	42	GJ I-13	GJI 88N	E 52.8172; N 18.85523
16	GR16	GJB 02A	E 52.4410; N 18.77783	43	GJ I-14	GJI 90	E 52.8325; N 18.85068
17	GR17	GJB24	E 52.5703; N 18.75555	44	GJ I-15	GJI 17N	E 52.8535; N 18.84539
18	GR18	GJB27	E 52.4778; N 18.71218	45	GJ I-16	GJI 86	E 52.7175; N 18.88873
19	GR19	GJB28	E 52.1074; N 18.76879	46	GJ I-17	GJI 84	E 52.9491; N 18.87892
20	GR20	GJB25	E 52.4999; N 18.77140	47	GJ I-18	GJI 70	E 52.9486; N 18.85854
21	GR21	GJB36	E 52.4646; N 18.77526	48	GJ I-19	GJII 58	E 53.0453; N 18.84815
22	GR22	GJB01	E 52.2798; N 18.72842	49	GJ I-20	GJI 76	E 53.0716; N 18.88191
23	GR23	GJB02	E 52.1161; N 18.77745	50	GJ I-21	J97/1-144	E 53.0865; N 18.87590
24	GR24	GJB 09	E 52.4764; N 18.77397	51	GJ I-22	J97/1-145	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	GJB 35N	E 52.5656; N 18.75728	53	GJ I-24	GJII 07	E 53.1502; N 18.85389
27	GR27	GJB 26N	E 52.3938; N 18.78298	54	GJ I-25	J97/2-112	E 53.2157; N 18.86168
55	GJ I-26	GJII 76	E 52.7691; N 18.81145	56	GJ I-27	GJII 77	E 52.7514; N 18.8158
57	GJ I-28	GJII97	E 52.9457; N 18.8178	58	GJ I-29	GJI 23	E 52.6457; N 18.8159
59	GJ I-30	J97/2-113	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 whether the Party involved wishes to be considered as project participant (yes/no)
India (host)	ReNew Wind Energy (Jath) Private Limited (Private entity)	No

A.4. Reference of applied methodology and standardized baseline

a) Selected Approved Baseline Methodology:

Methodology No : ACM 0002⁴,
 Title : "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"
 Version : 13.0.0
 Approved in : EB 67

⁴ <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

1st January 2013 to 31st December 2019 (Renewable)

A.6. Contact information of responsible persons/entities

Rohit Joshi
Deputy Manager
ReNew Wind Energy (Jath) Pvt. Ltd.

The entity is also the project participant mentioned in Appendix 1

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

The project activity involves installation of Gamesa 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 is estimated to generate electricity @ 23% PLF (estimates of third party). The project activity is supplying electricity 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 specification⁵ of G58 & G 97 WTGs installed in the project activity are described below-

Technical Parameters	G58	G97
ROTOR		
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
BLADES		
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
TOWER		
Type	Modular	Modular
Height	65 Meter	90 Meter
GEAR BOX		
Type	1 planetary stage / 2 parallel axis stage	1 planetary stage / 2 parallel stage
Ratio	1:61.74 (50Hz)	1:106.8 (50Hz)
GENERATOR		
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

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

The life of the project equipment, i.e. wind turbines are 20 years. 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, applied methodology or applied standardized baseline

No such temporary deviations have taken place.

B.2.2. Corrections

No corrections are applicable.

B.2.3. Changes to start date of crediting period

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

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

Not Applicable

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

Not Applicable

B.2.6. Changes to project design of registered project activity

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 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 ₂ e/year	162,514 tCO ₂ e/year
Equity IRR	12.48%	12.39%

The changes are already approved on 16 January 2015

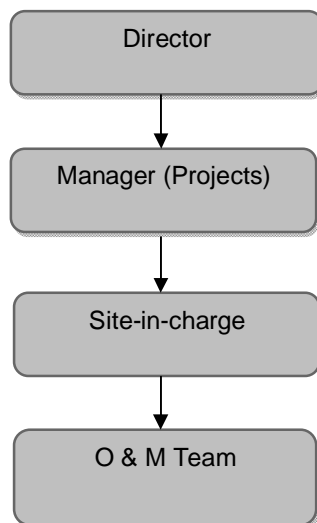
B.2.7. Types of changes specific to afforestation or reforestation project activity

Not Applicable

SECTION C. Description of monitoring system

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

Each party maintains 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 report electricity exported and imported from the grid. The net electricity supplied to the grid is reported as the difference between the export and import from the WTG. The electricity export and import data is monitored via main and check meters connected to feeders at the respective sub-stations. Multiple WTGs are connected to each feeder, some of which are part of the project activity (WTGs under this project activity) and some of which are not 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:

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

The above calculations are carried out solely by distribution licensee and only the final apportioned electricity export, import, and net export for each WTG are reported by distribution licensee in the Credit Notes.

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

The dates of the monitoring period for the project activity are not coincide with the dates of the Credit Note issued by distribution licensee. In such a scenario, the net electricity generation data have to be apportioned. For carrying out the apportioning procedures, WTG controller data (data recorded by the WTG controller software) is used. 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 is referred for determination of the apportioning ratio. The following steps will be applied to carry out the apportioning:

(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 =

The project activity is connected with three substations, connectivity of project activity in different substations and different feeders are provided in the table below:

		FY 2013-14	FY 2014-15	FY 2015-16
132-110/33 KV Valsang Substation	Feeder-7			
220/33 KV Jath Substation (Original 110/33 KV Jath substation)	Feeder-2			
170 MW (132-110/33 KV) Jath Substation	Feeder-1			
	Feeder-2			
	Feeder-3			
	Feeder-4			
	Feeder-6			
	Feeder-7			
	Feeder-8			
	Feeder-9			

The calibration details of feeder meters are provided in the table below:

Substation	Feeder		Meter Serial No.	FY 2013-14	FY 2014-15
132-110/33 KV Valsang Substation	Feeder-7	Main Meter	15687854	12-Nov-13	10-Jul-14
		Check Meter	14953662	12-Nov-13	10-Jul-14
220/33 KV Jath Substation (Original 110/33 KV Jath substation)	Feeder-2	Main Meter	13132626	9-Oct-13	1-Aug-14
		Check Meter	13132613	9-Oct-13	25-Jul-14
170 MW (132-110/33 KV) Jath Substation	Feeder-1	Main Meter	15687855	18-Dec-13	1-Aug-14
		Check Meter	15687856	18-Dec-13	1-Aug-14
	Feeder-2	Main Meter	15687858	18-Dec-13	1-Aug-14
		Check Meter	15687860	18-Dec-13	1-Aug-14
	Feeder-3	Main Meter	15687862	15-Jan-14	1-Aug-14
		Check Meter	12853657	15-Jan-14	1-Aug-14
	Feeder-4	Main Meter	13813553	18-Dec-13	1-Aug-14
		Check Meter	16351040	19-Dec-13	1-Aug-14
	Feeder-6	Main Meter	16636465	NA	10-Sep-14
		Check Meter	16636468	NA	10-Sep-14
	Feeder-7	Main Meter	15456640	NA	11-Sep-14
		Check Meter	16351020	NA	11-Sep-14
	Feeder-8	Main Meter	16636473	NA	NA
		Check Meter	16636474	NA	NA
	Feeder-9	Main Meter	16351021	NA	11-Sep-14
		Check Meter	16351022	NA	11-Sep-14

SECTION D. Data and parameters

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

Data / Parameter:	W_{BM}
Unit:	%
Description:	Weightage of build margin emission factor
Source of data:	Tool 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.

Data / Parameter:	W_{OM}
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.

Data / Parameter:	$EF_{grid,BM,y}$
Unit:	tCO₂/MWh
Description:	Build margin for NEWNE grid
Source of data:	CO ₂ 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

Data / Parameter:	$EF_{grid,OM,y}$
Unit:	tCO₂/MWh
Description:	Simple operating margin for NEWNE grid
Source of data:	CO ₂ 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

Data / Parameter:	$EF_{grid,CM,y}$
Unit:	tCO₂/MWh
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

Data / Parameter:	$EG_{facility,y}$
Unit:	MWh
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 is 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 is 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 is computed on the basis of $EG_{facility,y}$.</p> $EG_{facility,y} = E_{export,y} - E_{import,y}$
Value(s) of monitored parameter:	282,657.23 MWh
Monitoring equipment:	<p>Equipment: Main & Check Meters; Meter type: Static Accuracy class: 0.2s</p> <p>Meter calibration details of the monitoring period are provided in Section C of MR.</p>
Measuring/ Reading/ Recording frequency:	<p><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 is responsible for the regular recording of data. <u>Archiving</u>: Crediting Period + 2 years <u>Calibration Frequency</u>⁶: Once in 5 year.</p>
Calculation method (if applicable):	<p>The net electricity supplied to grid is a calculated value and is 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 is computed on the basis of $EG_{facility,y}$.</p> $EG_{facility,y} = E_{export,y} - E_{import,y}$

⁶ As per CEA publication in Gazette of India, dated, 17th 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) are 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:	The data will be used for calculation of emission reductions.
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.

Data / Parameter:	EG_{export,y}
Unit:	MWh
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 electricity exported 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 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 The meters have an accuracy class of 0.2S
Value(s) of monitored parameter:	283,443.28 MWh
Monitoring equipment:	Equipment: Main & Check Meters; Meter type: Static Accuracy class: 0.2s Meter calibration details of the monitoring period are provided in Section C of MR.
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 is responsible for the regular recording of data. <u>Archiving</u> : Crediting Period + 2 years <u>Calibration Frequency</u> ⁷ : 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) are 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:	The data will be used for calculation of emission reductions.
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.

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

Data / Parameter:	EG_{import,y}
Unit:	MWh
Description:	The quantity of electricity imported by the project plant/unit from the grid in year y
Measured/ Calculated / Default:	Distribution Licensee report on energy delivered to grid (Credit note / JMR) / Calculated
Source of data:	For measuring the electricity imported 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 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. The meters have an accuracy class of 0.2S
Value(s) of monitored parameter:	786.06 MWh
Monitoring equipment:	Equipment: Main & Check Meters; Meter type: Static Accuracy class: 0.2s Meter calibration details of the monitoring period are provided in Section C of MR.
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 is responsible for the regular recording of data. <u>Archiving:</u> Crediting Period + 2 years <u>Calibration Frequency</u> ⁸ : 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) are 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:	The data will be used for calculation of emission reductions.
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.

Data / Parameter:	EG_{wTG}
Unit:	MWh
Description:	Daily electricity generation at the WTG controller
Measured/ Calculated / Default:	Measured
Source of data:	As per the monitoring plan, this data will be reported only when monitoring period falls in between the billing cycle. Current monitoring period is consistent with the billing cycle.

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

Value(s) of monitored parameter:	0 (The monitoring plan describes that this parameter will be reported only when monitoring period falls in between the billing cycle. Current monitoring period is consistent with the billing cycle.)
Monitoring equipment:	NA
Measuring/Reading/Recording frequency:	NA
Calculation method (if applicable):	NA
QA/QC procedures:	NA
Purpose of data:	NA
Additional comment:	NA

D.3. Implementation of sampling plan

>>

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

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

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

According to equation (5) of PDD section B.6.1, Combined margin CO₂ emission factor for grid connected power generation ($EF_{grid,CM,y}$) is calculated as follows:

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

Thus for ex-ante emission reduction calculations, the baseline emission factor for the grid
= 0.9529 tCO₂e/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 ($EG_{PJ,y}$)

$$EG_{PJ,y} = EG_{facility,y} = 282,657.23 \text{ MWh}$$

Hence, substituting values in equation 1, we get:

$$\begin{aligned} BE_y &= 282,657.23 * 0.9529 \\ &= 269,344.07 \text{ tCO}_2\text{e} \\ &= 269,344 \text{ tCO}_2\text{e} \end{aligned}$$

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

The Project activity does not envisage any fossil fuel consumption. Therefore, the parameter $PE_{FF,y} = 0$ tCO₂e/ 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 $PE_{GP,y}$ and $PE_{HP,y}$ are also zero.

Therefore, $PE_y = 0$ tCO₂e/annum

E.3. Calculation of leakage

Leakage (LE_y) = 0

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

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	GHG emission reductions or net GHG removals by sinks (t CO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	269,344	0	0	0	269,344	269,344

E.5. Comparison of actual emission reductions or net 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 ₂ e)	270,856	269,344

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

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The difference of emission reduction as achieved during the monitoring period from estimated value is due to the lower wind availability in the project area during the monitoring period.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	ReNew Wind Energy (Jath) Pvt. Ltd.
Street/P.O. Box	MG Road
Building	601-604 6 th Floor DLF Corporate Park
City	Gurgaon
State/region	Haryana
Postcode	122001
Country	India
Telephone	+91-124- 4896670
Fax	+91-124-4896672
E-mail	parag@renewpower.in
Website	www.renewpower.in
Contact person	Parag Sharma
Title	Chief Operating Officer
Salutation	Mr.
Last name	Sharma
Middle name	
First name	Parag
Department	-
Mobile	-
Direct fax	+91-124-4896672
Direct tel.	-
Personal e-mail	parag@renewpower.in

Annexure 1

Monthly Electricity Generation Details**For 0.85 MW WTG's:**

Month	Energy Export (Kwh)	Energy Import (Kwh)	Net Export (Kwh)
Jan-14	1706049	7377.26	1698671.74
Feb-14	1266253.6	8495.5	1257758.1
Mar-14	1494191.6	8716.53	1485475.07
Apr-14	3896373.7	36263.1	3860110.6
May-14	2840150.7	7625.84	2832524.86
Jun-14	5960910	1270.56	5959639.44
Jul-14	7437335	51.47	7437283.53
Aug-14	4128775	5124.6	4123650.4
Sep-14	3440381	3016.14	3437364.86
Oct-14	1457713.38	13610.75	1444102.63
Nov-14	1476029.96	10057.98	1465971.98
Dec-14	1677888.2	11454.56	1666433.64
Jan-15	1502083.1	14232.1	1487851
Feb-15	1764767.38	10023.53	1754743.85
Mar-15	1937140.04	9206.75	1927933.29
Apr-15	1675699.7	13124.72	1662574.98
May-15	3500387.64	6788.18	3493599.46
Jun-15	6550907.75	2147.88	6548759.87
Jul-15	8056762.69	82.65	8056680.04
Aug-15	4819785.59	2236.13	4817549.46

For 2 MW WTG's:

Month	Energy Export (Kwh)	Energy Import (Kwh)	Net Export (Kwh)
Jan-14	6011696	33073.05	5978622.95
Feb-14	4686460.1	47022.15	4639437.95
Mar-14	6094418.5	48082.5	6046336
Apr-14	3490615.7	49048.35	3441567.35
May-14	8348581	26821.05	8321759.95
Jun-14	21221109	3092.85	21218016.15
Jul-14	26729276	959.4	26728316.6
Aug-14	15696244.5	21094.95	15675149.55
Sep-14	13220199.6	10542.15	13209657.45
Oct-14	5300480.1	57598.8	5242881.3
Nov-14	4680592.65	49670.4	4630922.25
Dec-14	4678234.65	47333.7	4630900.95

Jan-15	4590423	48588.45	4541834.55
Feb-15	5461645.65	38787	5422858.65
Mar-15	6245858.7	38951.85	6206906.85
Apr-15	5649771.38	49766.3	5600005.08
May-15	11020402.61	26038.09	10994364.52
Jun-15	20803926.68	9428.39	20794498.29
Jul-15	26199385.41	411.7	26198973.71
Aug-15	16724375.53	8838.24	16715537.29

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
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 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).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
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