



**Monitoring report form for CDM project activity  
(Version 09.0)**

**MONITORING REPORT**

<b>Title of the project activity</b>	Wind Power Project at Jath, Maharashtra		
<b>UNFCCC reference number of the project activity</b>	9154		
<b>Version number of the PDD applicable to this monitoring report</b>	08		
<b>Version number of this monitoring report</b>	01		
<b>Completion date of this monitoring report</b>	12/10/2021		
<b>Monitoring period number</b>	04		
<b>Duration of this monitoring period</b>	01/01/2020-31/12/2020 (both days included)		
<b>Monitoring report number for this monitoring period</b>	Not applicable		
<b>Project participants</b>	ReNew Wind Energy (Jath) Private Limited		
<b>Host Party</b>	India		
<b>Applied methodologies and standardized baselines</b>	ACM0002: Consolidated baseline methodology for Grid-connected electricity generation from renewable sources-Version 19.0.0  Standardized baseline: Not applicable		
<b>Sectoral scopes</b>	Sectoral Scope 1: Energy Industries (renewable - / non-renewable sources)		
<b>Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period</b>	<b>Amount achieved before 1 January 2013</b>	<b>Amount achieved from 1 January 2013 until 31 December 2020</b>	<b>Amount achieved from 1 January 2021</b>
		120,411 tCO <sub>2</sub> e	-
<b>Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD</b>	160,211 tCO <sub>2</sub> e		

## SECTION A. Description of project activity

### A.1. 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. The projects has started commissioning on 28/09/2012 and successfully commissioned all the turbines on 06/08/2013.

The net electricity exported to grid during this verification period is **128,534.55** MWh which results to a net emission reduction of **120,411** tCO<sub>2</sub>e.

### A.2. Location of project activity

Project activity is located in Sangli district in the state of Maharashtra, India. Wind turbine-wise detailed coordinates have been listed below:

Wind turbine-wise detailed locations are tabulated below.

Sl. No.	Turbine ID	Turbine Location	Coordinates	Sl. No.	Turbine ID	Turbine Location	Coordinates
1	GR1	GJ30N	E 52.1109; N 18.77225	31	GJ I-02	GJI 28	E 52.7210; N18.84014
2	GR2	GJ 31N	E 52.4292; N 18.77912	32	GJ I-03	GJI 47	E 52.6911; N18.84480
3	GR3	GJ 25	E 52.5909; N 18.74517	33	GJ I-04	J97/1-124	E 52.6574; N18.85011
4	GR4	GJ 26	E 52.5909; N 18.74691	34	GJ I-05	J97/1-122	E 52.6354; N18.85479
5	GR5	GJ 49	E 52.1739; N 18.75966	35	GJ I-06	GJII 92N	E 52.5992; N18.85923
6	GR6	GJ 01-A	E 52.5750; N 18.75382	36	GJ I-07	GJI 21N1	E 52.5898; N18.86392
7	GR7	GJ 28N	E 52.1092; N 18.77052	37	GJ I-08	GJI 16N	E 52.5657; N18.86889
8	GR8	GJ 45N	E 52.4906; N 18.71092	38	GJ I-09	GJI 18N	E 52.5270; N18.87592
9	GR9	GJ 44N	E 52.5890; N 18.74863	39	GJ I-10	GJI 19	E 52.5593; N 8.88566
10	GR10	GJB15	E 52.4056; N 18.78863	40	GJ I-11	GJI 20N	E 52.5978; N 18.88198
11	GR11	GJB13	E 52.1662; N 18.76122	41	GJ I-12	GJI 87N	E 52.6517; N18.87838
12	GR12	GJB10	E 52.5797; N 18.75209	42	GJ I-13	GJI 88N	E 52.8172; N18.85523
13	GR13	GJB16	E 52.5843; N 18.75036	43	GJ I-14	GJI 90	E 52.8325; N18.85068
14	GR14	GJB-11	E 52.5117; N 18.77011	44	GJ I-15	GJI 17N	E 52.8535; N18.84539
15	GR15	GJB20	E 52.1057; N 18.76705	45	GJ I-16	GJI 86	E 52.7175; N18.88873
16	GR16	GJB 02A	E 52.4410; N 18.77783	46	GJ I-17	GJI 84	E 52.9491; N18.87892
17	GR17	GJB24	E 52.5703; N 18.75555	47	GJ I-18	GJI 70	E 52.9486; N18.85854
18	GR18	GJB27	E 52.4778; N 18.71218	48	GJ I-19	GJII 58	E 53.0453; N18.84815
19	GR19	GJB28	E 52.1074; N 18.76879	49	GJ I-20	GJI 76	E 53.0716; N18.88191
20	GR20	GJB25	E 52.4999; N 18.77140	50	GJ I-21	J97/1-144	E 53.0865; N18.87590
21	GR21	GJB36	E 52.4646; N 18.77526	51	GJ I-22	J97/1-145	E 53.0953; N18.87100
22	GR22	GJB01	E 52.2798; N 18.72842	52	GJ I-23	GJI -15N	E 53.1165; N18.86535
23	GR23	GJB02	E 52.1161; N18.77745	53	GJ I-24	GJII 07	E 53.1502; N18.85389
24	GR24	GJB 09	E 52.4764; N18.77397	54	GJ I-25	J97/2-112	E 53.2157; N18.86168
25	GR25	J58/2-100	E 52.4882; N 18.77269	55	GJ I-26	GJII 76	E 52.7691; N18.81145
26	GR26	GJB 35N	E 52.5656; N 18.75728	56	GJ I-27	GJII 77	E 52.7514; N18.8158
27	GR27	GJB 26N	E 52.3938; N18.78298	57	GJI-28	GJ II97	E 52.9457; N18.8178
28	GR28	58/2-134	E 52.5235; N18.76882	58	GJ I-29	GJI 23	E 52.6457; N18.8159
29	GR29	J58/2-71	E 52.2824; N18.73019	59	GJ I-30	J97/2-113	E 52.6484; N18.80996
30	GJ I-01	GJII 33N	E 52.7415; N18.83430				

**A.3. Parties and project participants**

Parties involved	Project participants	Indicate if 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. References to applied methodologies and standardized baselines**

ACM0002: Grid-connected electricity generation from renewable sources; Version 19.0.0<sup>1</sup>

Reference: ACM0002 (Version 19.0) draws upon the following tools:

- TOOL 7: Tool to calculate the emission factor for an electricity system; Version 07<sup>2</sup>
- TOOL1: Tool for the demonstration and assessment of additionality; Version 07.0<sup>3</sup>

Standardized baseline: Not applicable

**A.5. Crediting period type and duration**

01/01/2020-31/12/2026 (Renewable)

**SECTION B. Implementation of project activity****B.1. Description of implemented 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 commissioning details of 29 WTGs 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

The commissioning details of 30 WTGs 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

<sup>1</sup> <https://cdm.unfccc.int/UserManagement/FileStorage/58IAGB7SZUDEO2VN6LYM30K41HFPRQ>

<sup>2</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

<sup>3</sup> <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

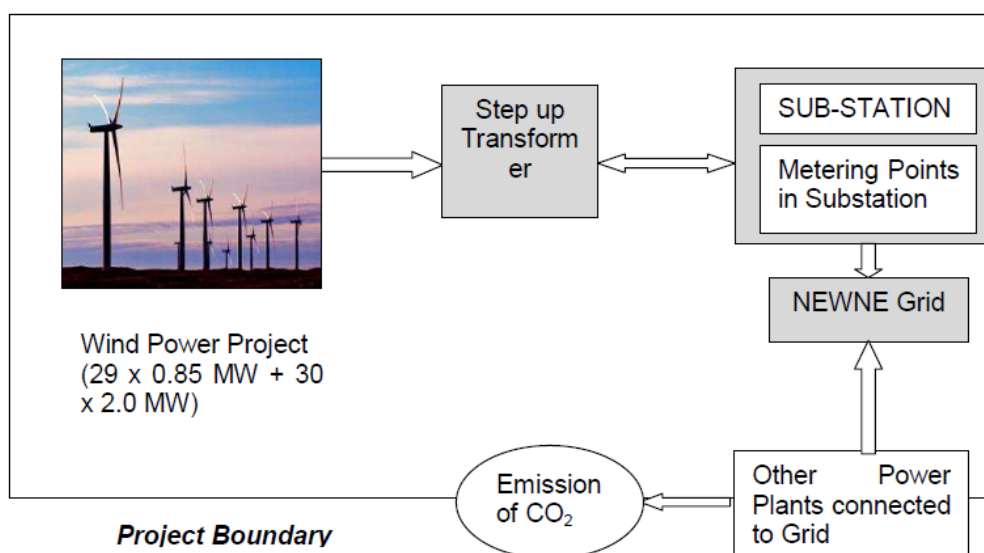
Date of Commissioning	No. of Turbines commissioned
19/07/2013	5
24/07/2013	1
06/08/2013	1

The technical specification of G58 & G 97 WTGs installed in the project activity are described below-

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	1 planetary stage / 2 parallel axis
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
Protection Class	IP 54	IP 54
Power 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. 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.

Diagrammatic representation of project activity is provided below:



## B.2. Post-registration changes

### B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

No temporary deviations have taken place in the current monitoring period.

### B.2.2. Corrections

Not applicable in the current monitoring period.

### B.2.3. Changes to the start date of the crediting period

No changes to start date of crediting period taken place in the current monitoring period.

### B.2.4. Inclusion of monitoring plan

Not applicable in the current monitoring period.

### B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

Not applicable in the current monitoring period.

### B.2.6. Changes to project design

In a previous verification it was found that the project installed capacity had been augmented from initial planned 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 had 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	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

Parameter	Parameter As per registered PDD	As per commissioned project
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%
Parameter	As per registered PDD	As per commissioned project
No. of wind turbines G97	25	30

The changes were approved on 16 January 2015 with PRC reference number PRC-9154-001.

However in the current monitoring period there are no changes in the project design.

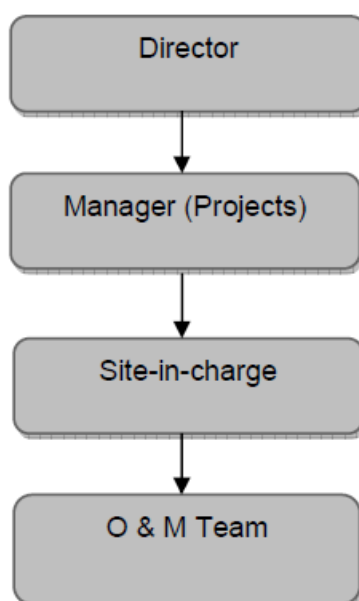
#### **B.2.7. Changes specific to afforestation or reforestation project activity**

Not applicable in the current monitoring period.

### **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 are as per the Power Purchase Agreement.

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 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.

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:

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

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

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

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.

### Monitoring Frequency:

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).

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

If the dates of the monitoring period for the project activity do 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:

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

(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*

The meters installed for the monitoring purpose are provided in table below. The project activity is connected with three substations, connectivity of project activity in different feeders are provided in the table below:

Connectivity of WTG's during current verification period is provided below:

SI	Substation	Main Meter Serial No	Connected WTGs
1	170 MW Jath SS F-1	02814124	8
2	170 MW Jath SS F-2	15687858	4
3	170 MW Jath SS F-3	15687862	2
4	170 MW Jath SS F-4	13813553	5
5	170 MW Jath SS F-6	16636465	6
6	170 MW Jath SS F-7	15456640	1
7	170 MW Jath SS F-8	16636473	2
8	170 MW Jath SS F-9	16351021	2

The calibration details of feeder meters are provided in the Annexure.

## SECTION D. Data and parameters

### D.1. Data and parameters fixed ex ante

Data/Parameter	EF <sub>grid,BM,y</sub>
Unit	tCO <sub>2</sub> e/ MWh
Description	Build Margin CO <sub>2</sub> emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018 <sup>4</sup>
Value(s) applied	0.8644
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most recent year 2017-18. The data is obtained from "CO <sub>2</sub> Baseline Database for Indian Power Sector" version 14, published by the Central Electricity Authority, Ministry of Power, and Government of India.
Purpose of data/parameter	For the calculation of the Baseline Emission
Additional comments	Fixed ex-ante for entire crediting period

Data/Parameter	EF <sub>grid,OM,y</sub>
Unit	tCO <sub>2</sub> e/ MWh
Description	Operating Margin CO <sub>2</sub> emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018 <sup>5</sup>
Value(s) applied	0.9610

<sup>4</sup> [http://www.cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver14.pdf](http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf)

<sup>5</sup> [http://www.cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver14.pdf](http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf)



Choice of data or measurement methods and procedures	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07” as 3-year generation weighted average using data for the years 2015-16, 2016-17 & 2017-18. The data are obtained from “CO2 Baseline Database for Indian Power Sector” version 14, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data/parameter	For the calculation of baseline emission
Additional comments	Fixed ex-ante for entire crediting period

<b>Data/Parameter</b>	$EF_{grid,CM,y}$
Unit	tCO <sub>2</sub> e/ MWh
Description	Combined Margin CO <sub>2</sub> emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018 <sup>6</sup>
Value(s) applied	0.9368
Choice of data or measurement methods and procedures	<p>The combined margin emissions factor is calculated as follows:</p> $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ <p>Where:</p> <p><math>EF_{grid,BM,y}</math> = Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)</p> <p><math>EF_{grid,OM,y}</math> = Operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)</p> <p>W<sub>OM</sub> = Weighting of operating margin emissions factor (%) = 75%</p> <p>W<sub>BM</sub> = Weighting of build margin emissions factor (%) = 25%</p>
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	Fixed ex-ante for entire crediting period

## D.2. Data and parameters monitored

<b>Data/Parameter</b>	$EG_{facility,y}$
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Measured/calculated/default	Calculated
Source of data	Distribution Licensee report on energy delivered to grid (Credit Note/JMR)
Value(s) of monitored parameter	128,534.55 MWh

<sup>6</sup> [http://www.cea.nic.in/reports/others/thermal/tpece/cdm\\_co2/user\\_guide\\_ver14.pdf](http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver14.pdf)

Monitoring equipment	<p>Equipment: Main &amp; Check Meters; Meter details provided in Table below. Details on calibration dates are provided in the Annexure 1.</p> <table border="1" data-bbox="619 241 1347 689"> <thead> <tr> <th>Feeder number</th><th>Main meter</th><th>Check meter</th></tr> </thead> <tbody> <tr> <td>Feeder 1</td><td>02814124</td><td>15687856</td></tr> <tr> <td>Feeder 2</td><td>15687858</td><td>15687860</td></tr> <tr> <td>Feeder 3</td><td>15687862</td><td>12853657</td></tr> <tr> <td>Feeder 4</td><td>13813553</td><td>16351040</td></tr> <tr> <td>Feeder 6</td><td>16636465</td><td>16636468</td></tr> <tr> <td>Feeder 7</td><td>15456640</td><td>16351020</td></tr> <tr> <td>Feeder 8</td><td>16636473</td><td>02814125</td></tr> <tr> <td>Feeder 9</td><td>16351021</td><td>16351022</td></tr> </tbody> </table> <p>Also for all meters:</p> <ul style="list-style-type: none"> <li>• Meter make: Elster A1800</li> <li>• Accuracy class: 0.2 s</li> <li>• Meter calibration frequency: once in 5 (five) years</li> </ul>	Feeder number	Main meter	Check meter	Feeder 1	02814124	15687856	Feeder 2	15687858	15687860	Feeder 3	15687862	12853657	Feeder 4	13813553	16351040	Feeder 6	16636465	16636468	Feeder 7	15456640	16351020	Feeder 8	16636473	02814125	Feeder 9	16351021	16351022
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Measuring/reading/recording frequency	<p>Monitoring: Continuous measurement and monthly recording. Recording: Electronic/ Paper Recording Frequency: Continuous monitoring and monthly recording Archiving: Crediting Period + 2 years</p>																											
Calculation method ( if applicable)	<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.</p> <p>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 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 <math>EG_{\text{facility},y}</math>.</p> <p><math>EG_{\text{facility},y} = E_{\text{export},y} - E_{\text{import},y}</math></p>																											
QA/QC procedures	<p>The meter readings can be cross checked with the invoices for sale of power to ensure correctness.</p> <p>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.</p>																											
Purpose of data/parameter	Calculation of baseline emissions																											
Additional comments	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	$EG_{\text{export}, y}$
Unit	MWh

Description	The quantity of electricity supplied by the project plant/unit to the grid in year y																													
Measured/calculated/default	Measured																													
Source of data	Distribution Licensee report on energy delivered to grid (Credit note / JMR)																													
Value(s) of monitored parameter	129,264.77 MWh																													
Monitoring equipment	Equipment: Main & Check Meters; Meter details provided in Table below. Details on calibration dates are provided in the Annexure 1.																													
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	Feeder 2	15687858	15687860																											
	Feeder 3	15687862	12853657																											
	Feeder 4	13813553	16351040																											
	Feeder 6	16636465	16636468																											
	Feeder 7	15456640	16351020																											
	Feeder 8	16636473	02814125																											
Feeder 9	16351021	16351022																												
Also for all meters:																														
<ul style="list-style-type: none"><li>• Meter make: Elster A1800</li><li>• Accuracy class: 0.2 s</li><li>• Meter calibration frequency: once in 5 (five) years</li></ul>																														
Measuring/reading/recording frequency	Monitoring: Continuous measurement and monthly recording. Recording: Electronic/ Paper Recording Frequency: Continuous monitoring and monthly recording Archiving: Crediting Period + 2 years																													
Calculation method ( if applicable)	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																													
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/parameter	Calculation of baseline emissions																													
Additional comments	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>	EG <sub>import,i,y</sub>
Unit	MWh
Description	The quantity of electricity imported by the project plant/unit from the grid in year y
Measured/calculated/default	Measured

Source of data	Distribution Licensee report on energy delivered to grid (Credit note / JMR))		
Value(s) of monitored parameter	730.22 MWh		
Monitoring equipment	Equipment: Main & Check Meters; Meter details provided in Table below. Details on calibration dates are provided in the Annexure 1.		
	Also for all meters: <ul style="list-style-type: none"><li>• Meter make: Elster A1800</li><li>• Accuracy class: 0.2 s</li><li>• Meter calibration frequency: once in 5 (five) years</li></ul>		
Measuring/reading/recording frequency	Monitoring: Continuous measurement and monthly recording. Recording: Electronic/ Paper Recording Frequency: Continuous monitoring and monthly recording Archiving: Crediting Period + 2 years		
Calculation method ( if applicable)	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.		
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/parameter	Calculation of baseline emissions		
Additional comments	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>WTG</sub></b>
Unit	MWh
Description	Daily electricity generation at the WTG controller
Measured/ calculated/ default	Measured
Source of data	Power Generation Reports from O&M Contractor
Value(s) of monitored parameter	NA
Monitoring equipment	Not applicable

Measuring/reading/recording frequency	Monitoring: Continuous measurement. Recording: Electronic/ Paper Recording Frequency: Continuous monitoring and monthly recording Responsibility: The plant management shall be responsible for the regular recording of data. Archiving: Crediting Period + 2 years
Calculation method ( if applicable)	The data will be monitored via project activity WTG Controllers and will be recorded daily in Power Generation Reports by the O&M Contractors. This data will be used only for determination of apportioning ratio, and will be applied only in cases where the monitoring period does not coincide with the initial/final meter reading dates in the Credit Notes.
QA/QC procedures	In case of any fault with the WTG Controller, the same would be immediately identified through an interlocking mechanism. In such a scenario the WTG Controller would be automatically shut down. The WTG Controller would then be replaced.
Purpose of data/parameter	The data will be used for calculation of emission reductions.
Additional comments	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.

### D.3. Implementation of sampling plan

&gt;&gt;

Not applicable

## SECTION E. Calculation of emission reductions or net anthropogenic removals

&gt;&gt;

### E.1. Calculation of baseline emissions or baseline net removals

The baseline emissions are calculated as follows:

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

Combined margin CO<sub>2</sub> emission factor for grid connected power generation ( $EF_{grid,CM,y}$ ) is calculated as follows:

$$\begin{aligned} EF_{grid, CM, y} &= W_{OM} * EF_{grid, OM, y} + w_{BM} * EF_{grid, BM, y} \\ &= 0.75 * 0.961 + 0.25 * 0.8644 = 0.9368 \text{ tCO}_2\text{e/MWh} \end{aligned}$$

Thus for ex-ante emission reduction calculations, the baseline emission factor for the grid = 0.9368 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 ( $EG_{PJ,y}$ )

$$EG_{PJ,y} = EG_{facility,y} = 128,534.55 \text{ MWh}$$

Hence, substituting values in equation 1, we get:

$$\begin{aligned} BE_y &= 128,534.55 * 0.9368 \\ &= 120,411.17 \text{ tCO}_2\text{e} \\ &= 120,411 \text{ tCO}_2\text{e (Conservative round-down)} \end{aligned}$$

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

&gt;&gt;

The Project activity does not envisage any fossil fuel consumption.

Therefore, the parameter  $PE_{FF,y} = 0 \text{ tCO}_2\text{e/ annum}$ .

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  $PE_{GP,y}$  and  $PE_{HP,y}$  are also zero.

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

### E.3. Calculation of leakage emissions

>>

Not applicable as per ACM 0002 version 19.0.0

### E.4. Calculation of emission reductions or net anthropogenic removals

	Baseline GHG emissions or baseline net GHG removals (t CO <sub>2</sub> e)	Project GHG emissions or actual net GHG removals (t CO <sub>2</sub> e)	Leakage GHG emissions (t CO <sub>2</sub> e)	GHG emission reductions or net anthropogenic GHG removals (t CO <sub>2</sub> e)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/2021	Total amount
<b>Total</b>	<b>120,411</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>120,411</b>	<b>0</b>	<b>120,411</b>

### E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period (t CO <sub>2</sub> e)	Amount estimated ex ante for this monitoring period in the PDD (t CO <sub>2</sub> e)
<b>120,411</b>	<b>160,211</b>

#### E.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the PDD”

>>

The ex-ante estimation of GHG emission reduction in the registered PDD is 159,773 for 365 days in a year. The number of days in the current monitoring period is 366 and hence ex-ante estimate of emission reduction for the monitoring period is 160,211.

### E.6. Remarks on increase in achieved emission reductions

>>

Actual emission reduction is 28.4% less than the one estimated in registered PDD.

### E.7. Remarks on scale of small-scale project activity

>>

The project activity is a large scale project of 84.7 MW and is not a small scale project.

**Annexure 1: Meter calibration details****Table 1A: Calibration details for meters on Feeder 1, Feeder 2, Feeder 3 and Feeder 4**

Feeder number	Feeder 1		Feeder 2		Feeder 3		Feeder 4	
Meter type	Main meter	Check meter	Main meter	Check meter	Main meter	Check meter	Main meter	Check meter
Meter Serial No	02814124	15687856	15687858	15687860	15687862	12853657	13813553	16351040
Previous calibration	19/11/2019	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018
Validity	18/11/2024	26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Current calibration	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020
Validity	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025

**Table 1B: Calibration details for meters on Feeder 6, Feeder 7, Feeder 8 and Feeder 9**

Feeder number	Feeder 6		Feeder 7		Feeder 8		Feeder 9	
Meter type	Main meter	Check meter	Main meter	Check meter	Main meter	Check meter	Main meter	Check meter
Meter Serial No	16636465	16636468	15456640	16351020	16636473	02814125	16351021	16351022
Previous calibration	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018	27/06/2018
Validity	26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023	26/06/2023
Current calibration	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020	20/08/2020
Validity	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025	19/08/2025

## Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
09.0	8 October 2021	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 03.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN).</li> </ul>
08.0	6 April 2021	Revision to: <ul style="list-style-type: none"> <li>• Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).</li> </ul>
07.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period;</li> <li>• Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes;</li> <li>• Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods;</li> <li>• Make editorial improvements.</li> </ul>
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN);</li> <li>• Make editorial improvements.</li> </ul>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
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.



<i>Version</i>	<i>Date</i>	<i>Description</i>
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 (EB 70, 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).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		