



**Monitoring report form for CDM project activity**  
(Version 06.0)

**MONITORING REPORT**

<b>Title of the project activity</b>	14.70 MW Wind Power Project at Jath, Maharashtra	
<b>UNFCCC reference number of the project activity</b>	7433 <sup>1</sup>	
<b>Version number of the PDD applicable to this monitoring report</b>	06	
<b>Version number of this monitoring report</b>	01	
<b>Completion date of this monitoring report</b>	03/05/2019	
<b>Monitoring period number</b>	03	
<b>Duration of this monitoring period</b>	02/01/2017 to 31/12/2018 (First and Last date included)	
<b>Monitoring report number for this monitoring report</b>	NA	
<b>Project participants</b>	M/s Agrawal Renewable Energy Private Limited Belektron d.o.o.	
<b>Host Party</b>	India	
<b>Sectoral scopes</b>	Sectoral Scope 1: Energy Industries (renewable - / non renewable sources)	
<b>Applied methodologies and standardized baselines</b>	Methodology: - AMS I.D – Grid connected renewable electricity generation – version 17	
<b>Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period</b>	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0 tCO <sub>2</sub> e	41,551 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>	46,758 tCO <sub>2</sub> e	

<sup>1</sup> [https://cdm.unfccc.int/Projects/DB/KBS\\_Cert1348556989.76/view](https://cdm.unfccc.int/Projects/DB/KBS_Cert1348556989.76/view)

## SECTION A. Description of project activity

### A.1. General description of project activity

The project proponent, Agrawal Renewable Energy Private Limited (AREPL), has developed a 14.70 MW wind power project at site- Jath, Taluka- Jath, District- Sangli, State- Maharashtra in India. The project activity generates electricity utilising wind energy and supply the generated electricity to the regional NEWNE grid (now Indian Grid). In absence of the project activity equivalent amount of electricity would have otherwise been generated by existing and new power plants connected to the emission intensive NEWNE electricity grid. Thus, the project activity result in avoidance of Green House Gases (GHGs) emission and contribute to mitigate global warming.

#### Total emission reductions achieved in this monitoring period:

During the reported monitoring period 02/01/2017 to 31/12/2018 (First and last date included) the project activity has supplied 43,619.80 MWh of electricity, and thus contributing to the GHG reductions of 41,551 tCO<sub>2</sub>e.

The commissioning details and the technical specifications of the WTGs of the project activity has been mentioned in the Section B.1.

### A.2. Location of project activity

**Village:** Bilur, Basrgi, Umrani  
**Taluka:** Jath  
**District:** Sangli  
**State:** Maharashtra

The Geo Co-ordinate details of the WTGs of the project activity has been mentioned in the table below.

WTG Owner	WTG ID	Latitude (Northing)	Longitude (Easting)
M/s. Agrawal Renewable Energy Private Limited	JTH081	16° 55' 38.2"	75° 12' 42.5"
	JTH082	16° 55' 23.8"	75° 12' 35.5"
	JTH083	16° 55' 8.00"	75° 12' 30.8"
	JTH084	16° 54' 58.7"	75° 12' 42.7"
	JTH086	16° 54' 30.5"	75° 12' 23.1"
	JTH089	16° 53' 47.1"	75° 12' 31.4"
	JTH106	16° 55' 17.7"	75° 14' 16.6"

### 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	M/s. Agrawal Renewable Energy Private Limited	No
United Kingdom of Great Britain and Northern Ireland	Belektron d.o.o.	No

**A.4. Reference to applied methodologies and standardized baselines**

According to APPENDIX B<sup>2</sup> of “Simplified modalities and procedures for small-scale clean development mechanism project activities” the type and category of project activity are given below:

**Title:** Grid connected renewable electricity generation<sup>3</sup>  
**Reference:** AMS - I.D – Grid connected renewable electricity generation<sup>4</sup>  
**Version:** 17  
**Tool:** Tool to calculate the emission factor for an electricity system- Version 02.2.1 EB 63 Annex-19<sup>5</sup>

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

Type of crediting period	Fixed
Crediting period from	01/01/2013 - 31/12/2022
Length of the Crediting Period	10 Years
Length of the Monitoring Period	729 days

**SECTION B. Implementation of project activity****B.1. Description of implemented project activity**

The total installed capacity of the project is 14.7 MW, which comprises in total 7 no. Wind Turbine Generator (WTG) at Maharashtra. The technology used for the project activity is of Suzlon Energy Limited. The commissioning date of all the WTGs of the project activity is given below:

WTG Owner	WTG No.	Capacity (MW)	Site	District	Commissioning Date	Registration of project activity under CDM
M/s. Agrawal Renewable Energy Private Limited	JTH081	2.1	Jath	Sangli	15/06/2012	17/12/2012
	JTH082	2.1			08/06/2012	
	JTH083	2.1			08/06/2012	
	JTH084	2.1			21/08/2012	
	JTH086	2.1			21/08/2012	
	JTH089	2.1			15/06/2012	
	JTH106	2.1			14/08/2012	

All the WTGs have run successfully during the reported monitoring period. All the physical and technical features as stated in the registered PDD are in place and project has been operated as described in the registered PDD.

No events or situations happened during the reported monitoring period which can alter the applicability of the applied methodology.

**Brief description of the installed technology and equipment:**

<sup>2</sup> <http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=43>

<sup>3</sup> <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

<sup>4</sup> <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>

<sup>5</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.2.1.pdf>

The project activity involves WTG made by Suzlon Energy Limited model S88; rated capacity 2100 kW. The technical details of the WTGs as below:

### **SUZLON MEGAWATT SERIES (S88: 2.1 MW):**

S88-2.1 MW is designed for a medium wind speed regime. Its wind turbine concept is based on a robust design with pitch regulated blade operation, a 3-stage gearbox with 2200 kW rating and flexible coupling to the asynchronous induction generator. The Suzlon flexi-slip system provides efficient control of the load and power control and the turbine operation is efficiently controlled by the Suzlon controller. The wind turbines have an average lifetime of 20 years as specified by the WTGs supplier.

<b>Technical Specifications:</b>	
<b>Parameters</b>	<b>Specification</b>
<b>Operational Data</b>	
Rated Power	2.1 MW
Cut in wind speed	4 m/s
Rated wind speed	14 m/s
Cut-out wind speed	25 m/s
Hub Height	79 m
Wind Class	IEC-IIA
Rotational speed	15 to 17.6 rpm
<b>Rotor:</b>	
Pitch system	Pitch regulated, electrical
Diameter	88 m
Swept Area	6082 m <sup>2</sup>
Blade material type	Epoxy bundled fibre glass
<b>Generator:</b>	
Type	Asynchronous slip ring type induction generator
Rated Power	2100 kW
Rated Voltage	690 / 600 V
Frequency	50/60 Hz
Protection	IP 54, IP 23 for slip ring unit
Cooling system	Air cooled
Insulation	Class H
Slip control	Unique Flexi-Slip providing slip up to 16.67%
<b>Braking System:</b>	
Aerodynamic brake	3 Independent systems with blade pitching mechanism
Mechanical brake	Hydraulic fail-safe disc brake system
<b>Gear box:</b>	
Type	3 stage (1 planetary and 2 helical)
Ratio	1:98.8/1:118.1
Nominal load	2200 kW
<b>Yaw system:</b>	
Type	Driven by 3 electrical driven planetary drives
Bearings	Polyamide slide
<b>Certifications:</b>	
Design standards	GL 2003
Quality	ISO 9001:2000, ISO 9001:2008, ISO 14001:2004 & OHSAS 18001:2007
<b>Tower:</b>	
Type	Tubular Tower (4 sections)
Corrosion Protection	Epoxy/PU coated

**B.2. Post-registration changes****B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies or standardized baselines**

There is no request for deviation applied during this monitoring period.

**B.2.2. Corrections**

There have not been any corrections to project information or parameters fixed at validation during the current monitoring period.

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

The project activity involves change in start date of crediting period. The start date of crediting period is already changed from 17 Dec 12 - 16 Dec 22 to 01 Jan 13 - 31 Dec 22 and same can be seen from project UN web page.<sup>6</sup>

**B.2.4. Inclusion of monitoring plan**

Not Applicable.

**B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other applied standards or tools**

There has not been any change in the monitoring plan during the current monitoring period.

**B.2.6. Changes to project design**

There has not been any change in the PDD during the current monitoring period.

**SECTION C. Description of monitoring system**

Monitoring of emission reductions is carried out as per the baseline and monitoring methodology for the project activity i.e. AMS-I.D. version 17, which requires monitoring of the following:

- Quantity of net electricity supplied to the grid from the project activity; and
- CO<sub>2</sub> emission factor of the grid electricity

The project proponent selected ex-ante determination of the baseline hence the monitoring of operating margin emission factor and build margin emission factor are not required. Further, wind energy based electricity generation is not associated with any kind of leakages. Hence, the sole parameter for monitoring is the net electricity supplied to the grid by the project activity.

The general conditions set out for metering, recording, meter readings, meter inspections, test & checking and communication are as per the Power Purchase Agreement signed by the project proponent with the state electricity utility, MSEDCL.

The project proponent has undertaken maintenance and services agreement with Suzlon Infrastructure Services Limited (SISL), the contractor. The performance of the WTGs, safety in

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<sup>6</sup> [https://cdm.unfccc.int/Projects/DB/KBS\\_Cert1348556989.76/view](https://cdm.unfccc.int/Projects/DB/KBS_Cert1348556989.76/view)

operation and scheduled / breakdown maintenances are organized and monitored by the contractor. Hence the authority and responsibility of project management lies with the contractor.

### **Monitoring Plan:**

**Metering arrangement:** Measuring and metering arrangement has been done as per Wind Energy Purchase Agreement (WEPA) signed by the project proponent with MSEDCL. The main meter and check meter installed at the feeder are connected with several WTGs at the site. The main meter's readings are taken monthly by the representatives of MSEDCL and the Contractor (SISL). The project activity has the following metering systems:

The WTGs of the project activity are connected to two feeders along with WTGs of other project activities as detailed below:

**Main and Check meters:** The main and check meters are installed at each feeder to record electricity data for all the WTGs connected including project WTGs.

**Controller:** The controller installed on each WTG records gross generation of the electricity by that WTG. The controller is a microprocessor based intelligent device which has been specifically designed to control the wind turbines, where control functions, data collection and storage, real time monitoring, storage and other functions are integrated. The controller has three current inputs from CT and three voltage inputs from PT. The analogue values of the current/ voltage are converted into digital signal internally using A/D converters at very high sampling rate. A software program reads these values and displays instantaneous values of parameters such as voltage, current, frequency, power factor, kVA, kVAr and kWh. The instantaneous values are then time integrated displayed and stored. Woodward relay does not have a display and needs special protocol to view energy readings as this relay communicate digital signal through special communication protocol, hence it is not possible to calibrate. In case of any problem related to the controller, the WTG automatically get shut down and the controller is replaced by a new controller immediately.

**Monitoring of electricity generation at the WTGs:** Power generated by the WTGs is monitored continuously and measured hourly at the Central Monitoring Station (CMS) of the technology supplier- Suzlon. The controller/CMS records the electricity generation daily at end of the day 00.00 hrs. This generation is then uploaded on the portal of the project proponent, which remains there for three years. All WTGs are connected to the CMS located at the project site from where every connected WTG is accessible. In case of any connectivity issue, manual reading at the controller of the WTG is done. Monthly data are compiled and stored electronically.

**Monitoring of electricity supplied to the grid by the WTGs:** The electricity supplied to the grid by the WTGs connected to each main / check meter is recorded monthly. The main/ check meter reading is taken and certified jointly by the representatives of MSEDCL and the contractor (SISL). The main meter readings are noted by the authorities of the state utility and sent to its office. Individual statements are generated by the office after apportioning and sent to the project proponent in form of Joint Meter Reading Report (JMR). The project proponent generates the invoice as per JMR for the electricity sold. The main meter readings as mentioned in the joint meter reading report shall form the basis of estimation of emission reductions in the project activity.

The main meter readings can be cross-checked with the invoices raised.

### **Apportioning Procedure:**

#### ***Procedure to calculate export of electricity by the WTGs of the project activity:***

The main meter records electricity export/ import data of the project WTGs and other project WTGs. Let us assume that the main meter is connected with 'n' number of project WTGs and 'm' number of other project WTGs. Let us assume further,

$EG_{\text{export}, n}$  = Electricity exported to the grid from 'n' number of project WTGs (share of main meter reading)

$EG_{\text{export}}$  = Electricity exported to the grid from all 'n+m' number of WTGs connected and recorded at the main meter.

$EG_{\text{export, controller}, n}$  = Gross Electricity generated by 'n' number of project WTGs as recorded at the controllers

(Note: Electricity generated by WTG at the controller is monitored at the Central Monitoring Station (CMS)).

$EG_{\text{export, controller, sum}}$  = Sum of the gross electricity generated by all 'n+m' WTGs as recorded at their controllers

$EG_{\text{import}, n}$  = Electricity imported by the project WTGs (n) (share of main meter reading)

$EG_{\text{import}}$  = Electricity imported (consumed) by all 'n+m' WTGs from the grid as recorded at the main meter

**Calculation for export of electricity to the grid by 'n' number of project WTGs:**

Electricity exported to the grid by the project WTGs (n) is calculated as:

$$EG_{\text{export}, n} = EG_{\text{export}} \times (EG_{\text{export, controller}, n} / EG_{\text{export, controller, sum}})$$

**Calculation of import of electricity by 'n' number of WTGs:**

Electricity imported from the grid by the project WTGs (n) is evaluated as:

$$EG_{\text{import}, n} = EG_{\text{import}} \times (EG_{\text{export, controller}, n} / EG_{\text{export, controller, sum}})$$

$$\text{Net electricity exported to grid by the project WTGs (n) } (EG_n) = EG_{\text{export}, n} - EG_{\text{import}, n}$$

**Procedure for apportioning of electricity supplied to the grid where dates of monitoring period are not matching with dates of joint meter reading reports:**

For the instances when the claim of emission reductions is in middle of any month or the crediting period date of the project activity falls in between the meter reading cycles, in such cases apportioning is required to be done to arrive at electricity supplied, reading for this certain period is apportioned in the following manner.

The apportioning is done as per the ratio of net electricity generated at controllers by the WTGs of the project activity to all WTGs connected with the main meter. The daily net electricity generated at controller / CMS is measured by the contractor and sent to the project participant. In case of any problem related to the controller, the WTG automatically get shut down and the controller is replaced by a new controller immediately. Any change happening in controller is reported in the concerned monitoring report during verification. Data is used for deriving a ratio for apportioning.

**Example:** Let us assume,

X = Sum of the net electricity generation at controller of the WTG(s) of the project activity during the partial period of the corresponding period of main meter reading (kWh)

Y = Sum of the net electricity generation at controller of the WTG(s) of the project activity during the corresponding full period of main meter reading (kWh)

Therefore, ratio of the net electricity generation during the partial period (Z) = X/Y

If  $G$  = Net electricity supplied by the WTG(s) of the project activity to the grid during the corresponding full period of main meter reading as per credit notes (kWh).

Then net electricity supplied by the WTG(s) of the project activity to the grid during the partial period (for calculating emission reduction for partial period) =  $G \times Z$ .

However referring to the current monitoring period, the crediting period cycle and the meter reading cycle do not coincide for the month of January 2017 and hence apportioning is done for one day.

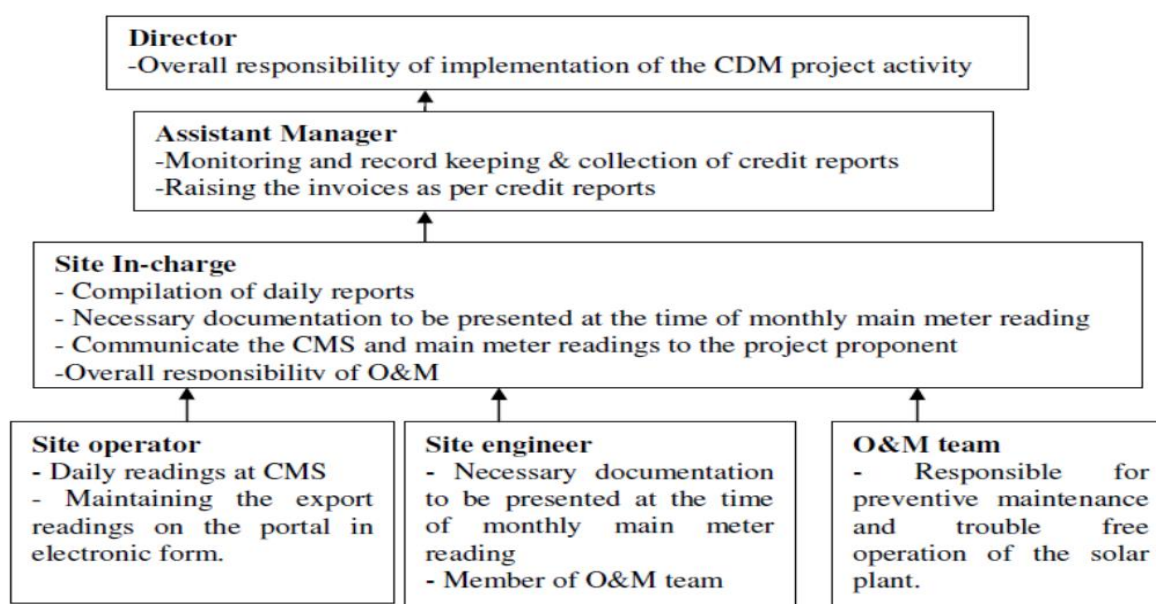
**Troubleshooting Contingency Plan:** If electricity readings at the main meter in any month differs from the readings of the check meter by more than  $\pm 0.5\%$  both the meters shall be re-tested and calibrated. If during the testing the main meter error is found to exceed the permissible limit but check meter reading error is found within the permissible limit, the check meter reading is used in calculating the electricity supplied. Furthermore, if errors in both main and check meters are found beyond permissible limits, the main and the check meters shall be immediately repaired and recalibrated and correction is applied, as agreed between the parties, to compute the energy as per the main meter readings. As per result of the testing, the correction factor will be applied to the generation and consumption of the energy for the period from the last meter reading to the time of such check. The correction factor means the percentage of error between standard check meter and main meter. Energy for the period thereafter is in accordance with the calibrated main meters. There is no any such instance occurred during current monitoring period.

**QA/QC procedures:** The energy main/ check meter installed at the project site is having the accuracy class of 0.2 s. The main/ check meter shall be jointly inspected and sealed by the utility and shall not be interfered by either utility or project proponent except in the presence of the accredited representatives of both utility and SISL. The meters are to be calibrated by the state electricity utility once in a year. For current monitoring period, delay in calibration occurred and error factor is applied accordingly.

**Data archiving:** Monthly data shall be archived and stored for the entire crediting period plus two years.

**Training:** The monitoring personnel is trained for performing daily operation and maintenance aspects of the wind farm. The training and maintenance ensures preventive maintenance and operation control of the wind farm.

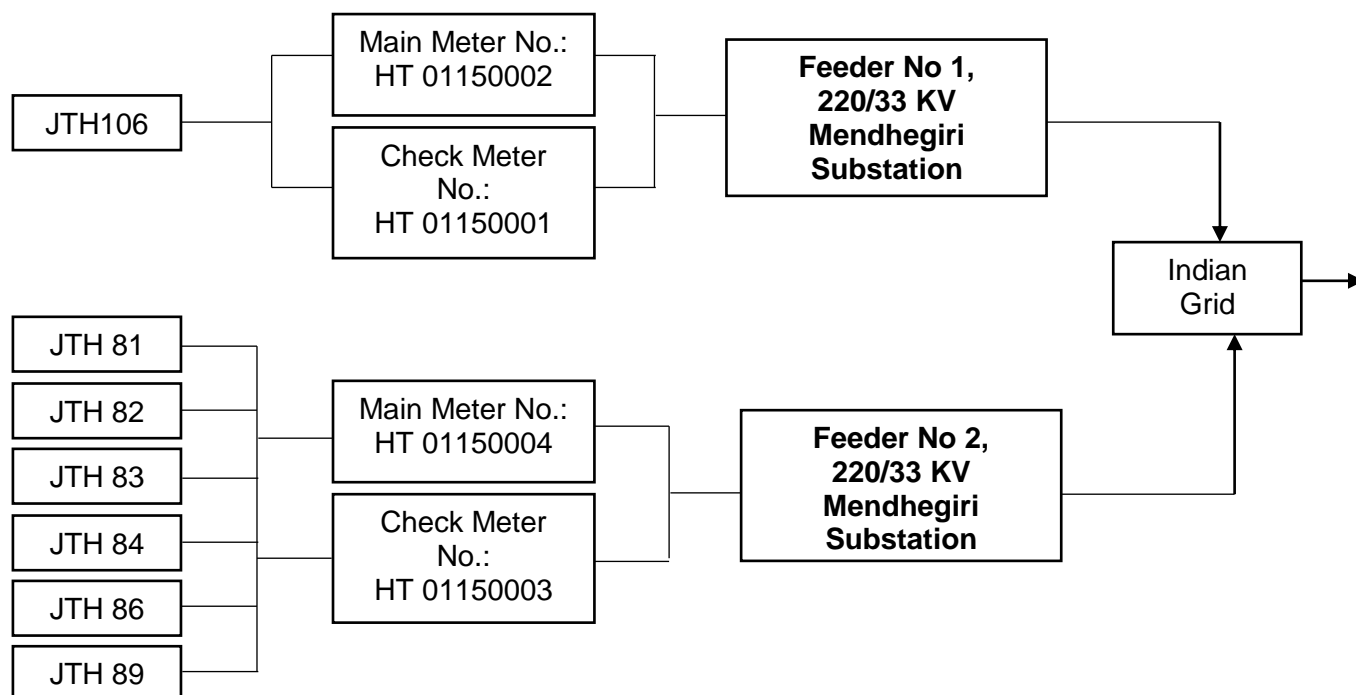
#### Operational and organizational chart for monitoring:





**Diagrammatic representation and metering details of the project WTGs:-**

The schematic diagram of metering arrangement of 7 WTGs of the project activity is as follows: -



Out of the 7 WTGs, JTH 106 is connected to Feeder no.1 of 220/33 kV Mendhegiri Substation and the rest 6 WTGs are connected to Feeder no. 2 of 220/33 kV Mendhegiri Substation.

As per the previous Monitoring Report<sup>7</sup>, the connectivity of all 7 WTGs was changed in October 2015. Previously, JTH 106, JTH 84 and JTH 86 were connected at common metering point at feeder no. 1 Jath substation and rest of the four WTGs (JTH 81, JTH 89, JTH 82, and JTH 83) were connected at a common metering point at Billur S/Stn.

**SECTION D. Data and parameters****D.1. Data and parameters fixed ex ante**

Data/Parameter	EF <sub>grid,OM,y</sub>
Unit	tCO <sub>2</sub> /MWh
Description	Operating margin CO <sub>2</sub> emission factor for NEWNE grid in the year y
Source of data	Baseline Carbon Dioxide Emission Database Version 7.0" published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	0.9842 tCO <sub>2</sub> /MWh
Choice of data or measurement methods and procedures	-
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Computed once during PDD finalization (ex-ante).

<sup>7</sup> [https://cdm.unfccc.int/Projects/DB/KBS\\_Cert1348556989.76/iProcess/Applus1492601733.84/view](https://cdm.unfccc.int/Projects/DB/KBS_Cert1348556989.76/iProcess/Applus1492601733.84/view)

<b>Data/Parameter</b>	<b>EF<sub>grid,BM,y</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Build margin CO <sub>2</sub> emission factor for NEWNE grid in the year y
Source of data	"Baseline Carbon Dioxide Emission Database Version 7.0" published by the Central Electricity Authority, Ministry of Power, Government of India.
Value(s) applied	0.8588 tCO <sub>2</sub> /MWh
Choice of data or measurement methods and procedures	-
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Computed once during PDD finalization (ex-ante).

<b>Data/Parameter</b>	<b>EF<sub>grid,CM,y</sub></b>
Unit	tCO <sub>2</sub> /MWh
Description	Combined margin CO <sub>2</sub> emission factor for NEWNE grid in the year y
Source of data	Calculated weighted average combined margin using equation – $EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$ <p>The default values for <math>W_{OM}</math> and <math>W_{BM}</math> are taken as applicable to wind power generation project activities as <math>W_{OM} = 0.75</math> and <math>W_{BM} = 0.25</math>.  Reference: Page 18 of "Tool to calculate the emission factor for an electricity system", Version 02.2.1.</p>
Value(s) applied	0.95285 tCO <sub>2</sub> /MWh
Choice of data or measurement methods and procedures	-
Purpose of data/parameter	Calculation of baseline emissions or baseline net GHG removals by sinks
Additional comments	Computed once during PDD finalization (ex-ante) and remain same throughout the crediting period.

## D.2. Data and parameters monitored

<b>Data/parameter:</b>	<b>EG<sub>export, y</sub></b>
Unit	MWh (Mega-watt hour)
Description	Electricity exported to the grid by the project activity in year y (MWh)
Measured/calculated/default	Measured
Source of data	Joint Meter Reading Report (JMR)
Value(s) of monitored parameter	43,779.17
Monitoring equipment	Energy Meter (accuracy class 0.2s)
Measuring/reading/recording frequency:	<b>Frequency:</b> Measured continuously, recorded Monthly. <b>Archiving Policy:</b> Paper & Electronic <b>Responsibility:</b> MSEDCL is responsible for regular calibration of the meter once in a year.
Calculation method (if applicable):	Not Applicable
QA/QC procedures:	Yes, Quality Management System is used and the same procedures are available at the project site. The net electricity exported data appearing in the credit note is cross-checked with the invoices against sale of power raised by PP.
Purpose of data/parameter:	Calculation of baseline emissions

Additional comments:	Data archived: Crediting period + 2 yrs
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<b>Data/parameter:</b>	<b>EG<sub>import, y</sub></b>
Unit	MWh (Mega-watt hour)
Description	Electricity imported by the project activity from the grid in year y (MWh)
Measured/calculated/default	Measured
Source of data	Joint Meter Reading Report (JMR)
Value(s) of monitored parameter	159.37
Monitoring equipment	Energy Meter (accuracy class 0.2s)
Measuring/reading/recording frequency:	<b>Frequency:</b> Measured continuously, recorded Monthly. <b>Archiving Policy:</b> Paper & Electronic <b>Responsibility:</b> MSEDCL is responsible for regular calibration of the meter once in a year.
Calculation method (if applicable):	Not Applicable
QA/QC procedures:	Yes, Quality Management System is used and the same procedures are available at the project site. The net electricity exported data appearing in the credit note is cross-checked with the invoices against sale of power raised by PP.
Purpose of data:	Calculation of baseline emissions
Additional comments:	Data archived: Crediting period + 2 yrs

<b>Data/parameter:</b>	<b>EG<sub>BL, y</sub></b>
Unit	MWh (Mega-watt hour)
Description	Net electricity supplied to the grid by the project activity in year y
Measured/calculated/default	Calculated
Source of data	Joint Meter Reading Report (JMR)
Value(s) of monitored parameter	43,619.80
Monitoring equipment	Energy Meters (accuracy class 0.2s)
Measuring/reading/recording frequency:	<b>Frequency:</b> Monthly and calculate parameter. <b>Archiving Policy:</b> Paper & Electronic <b>Responsibility:</b> MSEDCL is responsible for regular calibration of the meter once in a year.
Calculation method (if applicable):	Net electricity supplied to the grid is calculated as $EG_{BL, y} = EG_{export, y} - EG_{import, y}$ <p>Joint Meter Reading Report (JMR) is developed by MSEDCL for all connected WTGs after calculating net electricity supplied to the grid as per above mentioned formula. JMR contains data on export, import and net electricity supplied.</p>
QA/QC procedures:	The data may be cross-checked with the invoices raised for sale of the electricity.
Purpose of data/parameter:	Calculation of baseline emissions
Additional comments:	Data archived: Crediting period + 2 yrs

### D.3. Implementation of sampling plan

Not Applicable.

**SECTION E. Calculation of emission reductions or net anthropogenic removals****E.1. Calculation of baseline emissions or baseline net removals**

As per the approved methodology AMS I.D version 17 baseline emissions for the project activity are calculated by multiplying the net quantity of electricity supplied by this project activity ( $EG_{BL,y}$ ) with the CO<sub>2</sub> baseline emission factor for the electricity displaced due to the project ( $EF_{CO_2}$ ) as follows:

$$BE_y = EG_{BL,y} \times EF_{CO_2,grid,y}$$

Where,

$EF_{CO_2,grid,y}$	=	Baseline emission factor
	=	0.95285 tCO <sub>2e</sub> /MWh
$EG_{BL,y}$	=	Net electricity supplied to the NEWNE regional grid (MWh)
	=	43,619.80 MWh
$BE_y$	=	43,619.80 * 0.95285
	=	41,551 tCO <sub>2e</sub> (Rounddown value)

Please refer the ER excel sheet for the calculation of net electricity export to grid. The billing cycle starts from 01/01/2017 to 01/02/2017 and current monitoring period starts from 02/01/2017, hence the total export from 01/01/2017 to 01/02/2017 is apportioned by controller data generation ratio to calculate export from 02/01/2017 to 01/02/2017 to match the start date of the crediting period and billing cycle. The complete month import (i.e from 01/01/2017 to 01/02/2017) are considered conservatively though current monitoring period starts from 02/01/2017.

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

Since the project activity is a renewable energy project which generates electricity using wind power therefore there are no resulting project emissions.

**E.3. Calculation of leakage emissions**

No leakage is considered from the project activity as per approved methodology AMS-I.D. - Version 17

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

	Baseline GHG emissions or baseline net GHG removals (t CO <sub>2e</sub> )	Project GHG emissions or actual net GHG removals (t CO <sub>2e</sub> )	Leakage GHG emissions (t CO <sub>2e</sub> )	GHG emission reductions or net anthropogenic GHG removals (t CO <sub>2e</sub> )		
				Before 01/01/2013	From 01/01/2013	Total amount
<b>Total</b>	41,551	0	0	0	41,551	41,551

**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>2e</sub> )	Amount estimated ex ante (t CO <sub>2e</sub> )
46,758	41,551

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

The estimated annual emission reductions in the registered PDD for the monitoring period is 46,758 tCO<sub>2</sub>e. The actual emission reductions are 41,551 tCO<sub>2</sub>e which is 11.14 % less than the estimated emission reduction. The reason for this is low wind season during the monitoring period which is beyond the control of the Project Proponent.

## Annexure #1: Meter Calibration Details

For Feeder No 1, 220/33 kV Mendhegiri EHV Substation			
Connected WTGs: JTH106			
Details of Main Meter		Details of Check Meter	
Serial No	HT 01150002	Serial No	HT 01150001
Make	Wallaby	Make	Wallaby
Type	MK6E	Type	MK6E
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration frequency	Annual	Calibration frequency	Annual
Date of Calibration	Calibration Validity	Date of Calibration	Calibration Validity
21/09/2016*	20/09/2017*	21/09/2016*	20/09/2017*
20/09/2017	19/09/2018	20/09/2017	19/09/2018
27/06/2018	26/06/2019	27/06/2018	26/06/2019

\* Taken from previous Monitoring Report:

[https://cdm.unfccc.int/Projects/DB/KBS\\_Cert1348556989.76/iProcess/Applus1492601733.84/view](https://cdm.unfccc.int/Projects/DB/KBS_Cert1348556989.76/iProcess/Applus1492601733.84/view)

For Feeder No 2, 220/33 KV Mendhegiri Substation			
Connected WTGs: JTH081, JTH082, JTH 083, JTH089, JTH084, JTH086			
Details of Main Meter		Details of Check Meter	
Serial No	HT 01150004	Serial No	HT 01150003
Make	Wallaby	Make	Wallaby
Type	MK6E	Type	MK6E
Accuracy Class	0.2 s	Accuracy Class	0.2 s
Calibration frequency	Annual	Calibration frequency	Annual
Date of Calibration	Calibration Validity	Date of Calibration	Calibration Validity
21/09/2016*	20/09/2017*	21/09/2016*	20/09/2017*
20/09/2017	19/09/2018	20/09/2017	19/09/2018
27/06/2018	26/06/2019	27/06/2018	26/06/2019

\* Taken from previous Monitoring Report:

[https://cdm.unfccc.int/Projects/DB/KBS\\_Cert1348556989.76/iProcess/Applus1492601733.84/view](https://cdm.unfccc.int/Projects/DB/KBS_Cert1348556989.76/iProcess/Applus1492601733.84/view)

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## Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
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.
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		