



Monitoring report form for CDM project activity
(Version 09.0)

MONITORING REPORT

Title of the project activity	Wind Power Project at Vaspet, Maharashtra		
UNFCCC reference number of the project activity	8606		
Version number of the PDD applicable to this monitoring report	06		
Version number of this monitoring report	1.0		
Completion date of this monitoring report	12/10/2021		
Monitoring period number	04		
Duration of this monitoring period	15/12/2019-31/12/2020 (both days included)		
Monitoring report number for this monitoring period	Not applicable.		
Project participants	<ul style="list-style-type: none"> • ReNew Wind Energy Delhi Private Limited • ReNew Wind Energy (Rajkot) Private Limited 		
Host Party	India		
Applied methodologies and standardized baselines	ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources; Version 19.0 Standardized baseline: Not applicable		
Sectoral scopes	Sectoral Scope 1: Energy Industries (renewable - / non-renewable sources)		
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013 until 31 December 2020	Amount achieved from 1 January 2021
	-	73,389	-
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	99,082		

SECTION A. Description of project activity

A.1. General description of project activity

ReNew Wind Energy Delhi Private Limited and ReNew Wind Energy (Rajkot) Private Limited set up wind power project of 45 MW in Sangli District of the state of Maharashtra. The project consists of installation of 30 wind turbines (WTGs) of 1.5 MW each.

The project activity is a clean source of energy and replaces electricity from the power plants of the connected electricity grid which is emission intensive and therefore effects net GHG emission reductions. During the current monitoring period, the project activity has supplied **78,340.04** MWh of energy to the connected electricity grid, which results to emission reduction of **73,389** tCO₂e.

A.2. Location of project activity

The project is located in the Kolgiri and Karajangi villages situated in the Jat taluka of the Sangli District in the Maharashtra State of India.

WTG location wise details are tabulated below.

WTG Location Label	UTM E	UTM N	LATITUDE	LONGITUDE
RVP01	534487	1889615	17° 05' 6.3775" N	75° 19' 25.7525" E
RVP02	534370	1890106	17° 05' 42.0625" N	75° 19' 25.7796" E
RVP03	534256	1890596	17° 05' 58.5413" N	75° 19' 17.8222" E
RVP04	534152	1891085	17° 06' 14.2948" N	75° 19' 15.6835" E
RVP05	535347	1889050	17° 04' 55.1391" N	75° 20' 4.8796" E
RVP06	535233	1889530	17° 05' 24.8716" N	75° 19' 51.4995" E
RVP07	535119	1890024	17° 05' 39.7157" N	75° 19' 48.3450" E
RVP08	535001	1890514	17° 05' 55.7664" N	75° 19' 43.6021" E
RVP09	534898	1890998	17° 06' 11.4869" N	75° 19' 41.8024" E
RVP10	536091	1888968	17° 05' 7.4976" N	75° 20' 9.3003" E
RVP11	535982	1889448	17° 05' 20.7277" N	75° 20' 17.9184" E
RVP12	535868	1889947	17° 05' 37.1683" N	75° 20' 13.6846" E
RVP13	535754	1890431	17° 05' 52.9248" N	75° 20' 9.8554" E
RVP14	535644	1890916	17° 06' 8.5841" N	75° 20' 5.7552" E
RVP15	535184	1892869	17° 07' 3.3670" N	75° 19' 36.3433" E
RVP16	535937	1892782	17° 07' 9.4194" N	75° 20' 16.1858" E
RVP17	536047	1892297	17° 06' 53.6306" N	75° 20' 19.8798" E
RVP18	536840	1888882	17° 05' 3.1396" N	75° 20' 46.4439" E
RVP19	536717	1889368	17° 05' 18.2784" N	75° 20' 42.3776" E
RVP20	536612	1889856	17° 05' 34.1647" N	75° 20' 38.8540" E
RVP21	536279	1891323	17° 06' 21.9221" N	75° 20' 27.6732" E
RVP22	537593	1888800	17° 05' 0.8190" N	75° 21' 11.2071" E
RVP23	538332	1888718	17° 04' 56.4780" N	75° 21' 37.0827" E
RVP24	538226	1889360	17° 05' 17.9294" N	75° 21' 33.4358" E
RVP25	537561	1889864	17° 05' 34.3698" N	75° 21' 10.9657" E
RVP26	537256	1890267	17° 05' 47.5019" N	75° 21' 0.6699" E
RVP27	537142	1890757	17° 06' 3.4539" N	75° 20' 56.8422" E
RVP28	536909	1891731	17° 06' 35.1628" N	75° 20' 49.0165" E
RVP29	536800	1892206	17° 06' 48.9986" N	75° 20' 45.7258" E
RVP30	536682	1892704	17° 07' 5.5371" N	75° 20' 41.3569" E



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)	<ul style="list-style-type: none"> ReNew Wind Energy Delhi Private Limited and ReNew Wind Energy (Rajkot) Private Limited 	No

A.4. References to applied methodologies and standardized baselines

Title: ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 19.0)¹

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

- TOOL7: Tool to calculate the emission factor for an electricity system (Version 07)²
- TOOL1: Tool for demonstration and assessment of additionality (Version 07.0)³

Standardized baseline: Not applicable

A.5. Crediting period type and duration

15/12/2019-14/12/2026 (renewable)

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

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

³ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.1.0.pdf>

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The project activity involves installations of 30 wind turbines of Vensys make V-82 model having a capacity of 1.5 MW each. The wind turbines are supplied by ReGen Powertech.

Brief technical details of the project are as follows:

Description	Specifications
Wind speed at rated output	10.3 m/s
Cut out speed	22 m/s
Hub height	85 m
Power regulation	Pitch
Rotor diameter	82 m
Swept area	5258 sq. m.
Generator rated power output	1500 kW
Life period	20 years

The project started commissioned first WTGs on 26/09/2012 and completed commissioning of all WTGs on 06/08/2013. The details of the commissioning of WTGs are provided below:

SN	Date of Commissioning	Number of WTGs	Turbine Locations	Capacity
1	26/09/2012	6	RVP 239, RVP 213, RVP 290, RVP 188, RVP 241, RVP 405,	6 x 1.5 MW
2	28/09/2012	3	RVP 554, RVP 57, RVP 284	3 x 1.5 MW
3	30/09/2012	4	RVP 664, RVP 247, RVP 292, RVP 530	4 x 1.5 MW
4	26/02/2013	3	RVP 626, RVP 678, RVP 236	3 x 1.5 MW
5	21/03/2013	1	RVP 76A	1 x 1.5 MW
6	03/04/2013	10	RVP 78, RVP 79, RVP 168, RVP 347, RVP 395, RVP 298, RVP 555, RVP 583, RVP 420, RVP 433	10 x 1.5 MW
7	22/05/2013	1	RVP 404	1 x 1.5 MW
8	03/07/2013	1	RVP 274	1 x 1.5 MW
9	06/08/2013	1	RVP 76KO	1 x 1.5 MW

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 such temporary deviations have taken place in the current monitoring period.

B.2.2. Corrections

No corrections are applicable in the current monitoring period.

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

No such 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

Not applicable in the current monitoring period.

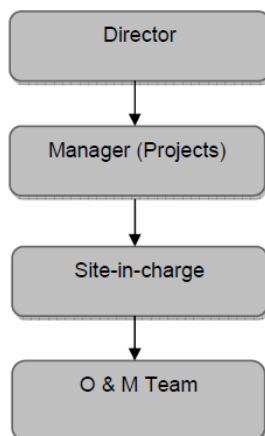
B.2.7. Changes specific to afforestation or reforestation project activity

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 with the state utility.

The project proponent has following arrangements for metering and O&M activities for all wind turbines:



Meter readings are taken jointly at the appointed date by PP's representative and Discom official. The same are reported to the site-in-charge and the complied 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.

The metering equipment at the sub-station (consisting of Main Meter and the Check Meter) is of 0.2S accuracy class. The metering equipment is duly approved, tested and sealed by MSEDCL and is in complete control of the Discom only. The meter readings are jointly certified by the representatives of the State Grid / Discom and PP's representatives. However, it is the reading of the Main Meter that is considered for billing and emission reduction purpose. After the main meter readings are checked and cleared by the Discom authority, the JMR readings (credit notes) are forwarded to the Circle Office of the Discom.

Each party maintains complete and accurate records and all other data required by the each of them for the purpose of proper administrative and operation of the project.

Procedure for apportioning of electricity:

1. In case the start/ end dates of monitoring period do not match with the start/end dates of Joint Meter Reading Sheets/ Generation reports issued by MSEDCL, following apportioning procedure will be applied for the first and the last monitoring period within a particular crediting period:

Apportioning is carried out based on ratio of generation data recorded using LCS installed at each WTG. The emission reductions of that particular period (between the start/end date of monitoring period and the end/start of the billing period) is calculated based on percentage generation of that particular period at WTG using LCS data multiplied with the total units generated in the month as per the Joint Meter Reading Sheets / Generation report issued by MSEDCL. The calculation formula has been furnished below:

Generation from all project WTGs for the period $y_1 = EG_{WTGcontroller,i,y_1}$

Generation from all project WTGs for the period $y_2 = EG_{WTGcontroller,i,y_2}$

Net energy supplied used for calculation of emission reduction for the monitoring period y_1
i.e. $EG_{facility,y_1} =$

$$N \sum_{i=1} ((EG_{export,i,y_2} - EG_{import,i,y_2}) * (EG_{WTGcontroller,i,y_1} / EG_{WTGcontroller,i,y_2}))$$

Where:

y_1 = No. of days within a billing period up to which generation is considered for emission reduction calculation

y_2 = No. of days in the billing period

N = No. of feeders to which project WTGs are connected to.

2. In case if there are project and non-project WTGs connected to a particular feeder i, the quantity of net electricity supplied by project WTGs to the grid connected to that particular feeder is calculated based on the formula specified below:

Total generation from all project WTG(s) connected to the feeder i in period y = $EG_{WTG_controller,i,y}$

Total generation from all project and non-project WTGs connected to the feeder i in period y = $EG_{All_controller,i,y}$

Quantity of net electricity exported by all (project and non-project) WTGs connected to feeder i to the grid in period y = $EG_{export,i,y}$

Quantity of net electricity imported by all (project and non-project) WTGs connected to feeder i to the grid in period y = $EG_{import,i,y}$

Net electricity supplied by the project WTGs connected to feeder i to the grid in period y =

$$EG_{facility,y} = \sum_{i=1}^N ((EG_{export,i,y} - EG_{import,i,y}) * (EG_{WTGcontroller,i,y} / EG_{All_controller,i,y}))$$

Where: N = No. of feeders to which project WTGs are connected to.

3. In cases where both scenarios mentioned above exist at the same time (i.e. both project and non- project WTGs connected to the same feeder(s) and the start/end date of the monitoring periods do not match with those of the JMR readings), firstly the apportioning as per point # 2 above will be applied for the billing period y_2 to estimate the Net electricity supplied by the project WTGs connected to feeder Z to the grid in period y_2 . Then this value would replace $(EG_{export,y_2} - EG_{import,y_2})$ in the formula specified under point # 1

above to arrive at the Net energy export used for calculation of emission reduction for the monitoring period y1.

Emergency Preparedness:

In case the failure of the main meter, it would be replaced immediately and the meter would be sent for testing and generation reading would be sourced from the check meter. If both main and check meters fails, they would be sent for testing and during testing of the meters, one of the following two scenario would occur and the generation values would be taken as per the scenarios:

Scenario 1

Failure of meters such that the generation values are not affected and can be retrieved using alternative methods (e.g. failure of the display of the meter) – if such scenario is observed during the testing of the meters, the generation values would be taken as recorded and no correction would be applied.

Scenario 2

Failure of the meters which affects the generation values and the readings recorded by the meters are deemed to be faulty – if such a scenario is observed during testing of the meters and the exact date of the failure can be determined, then the emission reductions would be calculated by applying an error factor (as per EB 52, Annex 60) to generation values from the determined date of failure of the meters till the date of meter replacement.

If the exact date of the failure cannot be determined, then the emission reductions would be calculated by applying an error factor (as per EB 52, Annex 60) to the generation values from the date of last calibration of the meter till the date of meter replacement.

The O&M service provider is responsible for maintenance of the necessary spare parts for the maintenance of wind turbines such as anemometers, wind vanes and sensors, oil filters, batteries, auxiliary motors and pumps, controllers, slip rings, limit switches, sensors, detergents & solvents etc. The service provider is also responsible for supply of necessary main components of the WTG such as main gearbox, blades, generators, towers, hubs, main shafts & bearings, ground and top controller and hydraulic system. The service provide also ensure that the occupational health and safety procedures to be followed during the operation and maintenance activities.

Calibration Details:

The project WTGs are connected to Valsang substation where two set of main and check meters are installed for metering and billing purpose, the meter details and calibration details are provided in the annexure.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data/Parameter	$EF_{grid,BM,y}$
Unit	tCO ₂ e/ MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018 ⁴
Value(s) applied	0.8644

⁴ https://cea.nic.in/wp-content/uploads/baseline/2020/07/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 per the latest data available for the most recent year 2017-18. The data is obtained from "CO2 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	Calculation of baseline emissions
Additional comments	Fixed ex-ante for entire crediting period

Data/Parameter	$EF_{grid,OM,y}$
Unit	tCO ₂ e/ MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018
Value(s) applied	0.9610
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 "CO ₂ Baseline Database for Indian Power Sector" version 14, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	Fixed ex-ante for entire crediting period

Data/Parameter	$EF_{grid,CM,y}$
Unit	tCO ₂ e/ MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018
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: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = 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

Data/Parameter	$EG_{facility,y}$
Unit	MWh/ year
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	Calculated
Value(s) of monitored parameter	78,340.04 MWh

Monitoring equipment	Equipment: Main & Check Meters; Meter details provided in Table below. Details on calibration provided in the Annexure 1.																														
	<table><tr><td>Location No.</td><td colspan="2">FEEDER 1</td><td colspan="2">FEEDER 2</td></tr><tr><td>Meter Type (main/check)</td><td>Main</td><td>Check</td><td>Main</td><td>Check</td></tr><tr><td>Meter Serial No</td><td>02814124</td><td>15687856</td><td>15687858</td><td>15687860</td></tr><tr><td>Meter Make</td><td>Elster A1800</td><td>Elster A1800</td><td>Elster A1800</td><td>Elster A1800</td></tr><tr><td>Accuracy class</td><td>0.2s</td><td>0.2s</td><td>0.2s</td><td>0.2s</td></tr><tr><td>Testing frequency</td><td colspan="4">Once in 3 years</td></tr></table>	Location No.	FEEDER 1		FEEDER 2		Meter Type (main/check)	Main	Check	Main	Check	Meter Serial No	02814124	15687856	15687858	15687860	Meter Make	Elster A1800	Elster A1800	Elster A1800	Elster A1800	Accuracy class	0.2s	0.2s	0.2s	0.2s	Testing frequency	Once in 3 years			
	Location No.	FEEDER 1		FEEDER 2																											
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	Meter Make	Elster A1800	Elster A1800	Elster A1800	Elster A1800																										
	Accuracy class	0.2s	0.2s	0.2s	0.2s																										
Testing frequency	Once in 3 years																														
Measuring/reading/recording frequency	Continuous measurement and at least monthly recording.																														
Calculation method (if applicable)	<p>Net electricity supplied will be calculated as the difference of electricity</p> <p>Net electricity supplied will be calculated as the difference of electricity exported to and imported from the grid measured using the readings taken at the main /check meter installed at the respective feeders. The formula which will be used is as below:</p> $EG_{\text{facility, y}} = \sum_{i=1}^N ((EG_{\text{export, i, y}} - EG_{\text{import, i, y}}))$ <p>Note:</p> <p>In cases where there are other (non-project) WTGs connected to the same feeder, appropriate apportioning mechanism specified in PDD section B.7.2 shall be applied. Also for cases when the start/end dates of monitoring period do not match with the start/end dates of Joint Meter Reading Sheets / Generation reports issued by MSEDCL, appropriate apportioning mechanism specified in PDD section B.7.2 shall be applied.</p>																														
QA/QC procedures	<p>Results can be cross checked with records for sold/purchased electricity (e.g., invoices raised by the PP to the electricity board/receipts received by the PP against the payments made by the electricity board).</p> <p>As this is a calculated parameter, no other QA/QC procedures would be required.</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	$EG_{\text{export, i, y}}$
Unit	MWh
Description	Quantity of electricity exported by the Project WTGs connected to feeder i to the grid in period y
Measured/calculated/default	Measured
Source of data	<p>Joint Meter Reading Sheets and generation report issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL) In cases where there are other (non-project) WTGs connected to the same feeder, appropriate apportioning mechanism specified in PDD section B.7.3 shall be applied.</p> <p>Also for cases when the start/end dates of monitoring period do not match with the start/end dates of Joint Meter Reading Sheets / Generation reports issued by MSEDCL, appropriate apportioning mechanism specified in PDD section B.7.3 shall be applied.</p>

Value(s) of monitored parameter	78,401.15				
Monitoring equipment	Equipment: Main & Check Meters; Meter details provided in Table below. Details on calibration provided in the Annexure 1.				
	Location No.	FEEDER 1		FEEDER 2	
	Meter Type (main/check)	Main	Check	Main	Check
	Meter Serial No	02814124	15687856	15687858	15687860
	Meter Make	Elster A1800	Elster A1800	Elster A1800	Elster A1800
	Accuracy class	0.2s	0.2s	0.2s	0.2s
	Testing frequency	Once in 3 years			
Measuring/reading/recording frequency	Continuous measurement and daily recording				
Calculation method (if applicable)	<p>In case where there are other (non-project) WTGs connected to the same feeder, appropriate apportioning mechanism specified in section C shall be applied.</p> <p>Also for cases when the start / end dates of monitoring period do not match with the start / end dates of Joint meter reading sheets / Generation reports issued by MSEDCL, appropriate apportioning mechanism specified in section C are applied.</p>				
QA/QC procedures	The main meter readings can be cross checked with the check meter readings to ensure correctness. The main and check meters shall be calibrated and maintained by the state utility as per their own schedule but at least once in 3 years. The frequency of testing and calibration is not within the direct 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.				

Data/Parameter	EG _{import,i,y}
Unit	MWh
Description	Quantity of electricity imported by the project WTGs connected to the feeder i from the grid in the period y
Measured/calculated/default	Measured
Source of data	<p>Joint Meter Reading Sheets and generation report issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL). In cases where there are other (non-project) WTGs connected to the same feeder, appropriate apportioning mechanism specified in PDD section B.7.3 shall be applied.</p> <p>Also for cases when the start/end dates of monitoring period do not match with the start/end dates of Joint Meter Reading Sheets / Generation reports issued by MSEDCL, appropriate apportioning mechanism specified in PDD section B.7.3 shall be applied.</p>
Value(s) of monitored parameter	61.11

Monitoring equipment	<p>The electricity imported from the grid shall be monitored using energy meters (Main & Check meters).</p> <ul style="list-style-type: none"> • Meter Type: Static • Recording: Electronic/ Paper • Recording Frequency: Continuous monitoring and monthly recording Responsibility: The plant management shall be responsible for the regular recording of data. • Testing Frequency: Once in three year • Accuracy Class: 0.2S
Measuring/reading/recording frequency	Continuous measurement and at least monthly recording
Calculation method (if applicable)	<p>In case where there are other (non-project) WTGs connected to the same feeder, appropriate apportioning mechanism specified in section C shall be applied.</p> <p>Also for cases when the start / end dates of monitoring period do not match with the start / end dates of Joint meter reading sheets / Generation reports issued by MSEDCL, appropriate apportioning mechanism specified in section C are applied.</p>
QA/QC procedures	The main meter readings can be cross checked with the check meter readings to ensure correctness. The main and check meters shall be calibrated and maintained by the state utility as per their own schedule but at least once in 3 years. The frequency of testing and calibration is not within the direct 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.

Data/Parameter	EG _{All_controller,i,y}
Unit	MWh
Description	Sum of Electricity generation measured by controllers of all the project WTGs that are connected to feeder i during period y
Measured/calculated/default	Measured
Source of data	Controller meter readings of individual WTGs monitored at the Central Monitoring Station (CMS)
Value(s) of monitored parameter	-
Monitoring equipment	Not applicable
Measuring/reading/recording frequency	Continuous measurement and at least monthly recording
Calculation method (if applicable)	<p>This parameter would be used for calculation of EG_{facility,y} in cases where there are other (non-project) WTGs connected to the same feeder and also in cases when the start/end dates of monitoring period do not match with the start/end dates of Joint Meter Reading Sheets / Generation reports issued by MSEDCL.</p> <p>This parameter is the sum of electricity generated by project WTGs connected to a particular feeder and will be measured by the inbuilt controller meters (also called LCS meters) located in each WTGs on a continuous basis. The readings will be recorded at the Central Monitoring Station (CMS) on a daily basis. O&M contactor will have the responsibility of monitoring this parameter.</p> <p>This value will be used in an appropriate apportioning formula specified in PDD section B.7.3</p>

QA/QC procedures	<p>The LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WTGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report.</p> <p>The project proponent does not have any control over the LCS meter readings of other project developers and therefore the values certified by the MSEDCL will be directly used for the purpose of calculating the electricity exports to the grid.</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 WTG_controller,i,y
Unit	MWh
Description	Sum of Electricity generation measured by controllers of all the project WTGs that are connected to feeder i during period y
Measured/calculated/default	Measured
Source of data	Controller meter readings of individual WTGs monitored at the Central Monitoring Station (CMS)
Value(s) of monitored parameter	-
Monitoring equipment	Not applicable
Measuring/reading/recording frequency	Continuous measurement and at least monthly recording
Calculation method (if applicable)	<p>This parameter would be used for calculation of EGfacility,y in cases where there are other (non-project) WTGs connected to the same feeder and also in cases when the start/end dates of monitoring period do not match with the start/end dates of Joint Meter Reading Sheets / Generation reports issued by MSEDCL.</p> <p>This parameter is the sum of electricity generated by project WTGs connected to a particular feeder i and will be measured by the inbuilt controller meters (also called LCS meters) located in each WTGs on a continuous basis. The readings will be recorded at the Central Monitoring Station (CMS) on a daily basis. O&M contactor will have the responsibility of monitoring this parameter.</p> <p>This value will be used in an appropriate apportioning formula specified in PDD section B.7.3</p>
QA/QC procedures	<p>The LCS meters do not require calibration as the energy readings of electricity generated at the LCS meter is cross verified by the energy calculated by inverting system installed in the WTGs. In case there is any mismatch in the energy values recorded by the LCS meter and the energy values calculated by the inverting system; the machine will stop working and generate the error report.</p> <p>The project proponent does not have any control over the LCS meter readings of other project developers and therefore the values certified by the MSEDCL will be directly used for the purpose of calculating the electricity exports to the grid.</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.

D.3. Implementation of sampling plan

Not applicable in the current monitoring period.

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

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

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

The Combined margin CO₂ emission factor for grid connected power generation ($EF_{grid,CM,y}$) is calculated as follows:

$$\begin{aligned} EF_{grid,CM,y} &= w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y} \\ &= 0.75 * 0.9610 + 0.25 * 0.8644 = 0.9368 \text{ tCO}_2\text{e/MWh} \end{aligned}$$

Thus for ex-ante emission reduction calculations, the baseline emission factor for the grid = 0.9528 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 ($EG_{PJ,y}$)

$$EG_{PJ,y} = EG_{facility,y} = 78,340.04 \text{ MWh}$$

Hence, substituting values in equation 1, we get:

$$\begin{aligned} BE_y &= 78,340.04 * 0.9368 \\ &= 73,389 \text{ tCO}_2\text{e} \end{aligned}$$

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

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

Leakage (LE_y) = 0

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

	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)			
				Before 01/01/ 2013	From 01/01/ 2013 until 31/12/ 2020	From 01/01/ 2021	Total amount
Total	73,389	0	0	0	73,389	0	73,389

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 ₂ e)	Amount estimated ex ante for this monitoring period in the PDD (t CO ₂ e)
73,389	99,082

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

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The ex-ante estimation of GHG emission reduction in the registered PDD is 94,425 for 365 days in a year. The number of days in the current monitoring period is 383 and hence ex-ante estimate of emission reduction for the monitoring period is 98,822.

E.6. Remarks on increase in achieved emission reductions

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Actual emission reduction is 35% less than the one estimated in registered PDD.

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

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The project activity is a large scale project of 45 MW and is not a small scale project.

Annexure 1: Meter calibration details

Location No.	Feeder 1		Feeder 2	
Meter Type (main/check)	Main	Check	Main	Check
Meter Serial No	02814124	15687856	15687858	15687860
Meter make	Elster A1800	Elster A1800	Elster A1800	Elster A1800
Previous calibration I		27/06/2018	27/06/2018	27/06/2018
Validity		26/06/2021	26/06/2021	26/06/2021
Previous calibration II	10/02/2020	10/02/2020	10/02/2020	10/02/2020
Validity	09/02/2023	09/02/2023	09/02/2023	09/02/2023
Current calibration	20/08/2020	20/08/2020	20/08/2020	20/08/2020
Validity	19/08/2023	19/08/2023	19/08/2023	19/08/2023

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
09.0	8 October 2021	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 03.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN).
08.0	6 April 2021	Revision to: <ul style="list-style-type: none"> • Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
07.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period; • Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods; • Make editorial improvements.
06.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
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.

<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.
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