



**Monitoring report form
(Version 04.0)**

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

MONITORING REPORT

Title of the project activity	Grid Connected Wind Power Project by M/s. Giriraj Enterprises in Madhya Pradesh ¹
Reference number of the project activity	5938
Version number of the monitoring report	01
Completion date of the monitoring report	28/07/2014
Registration date of the project activity	20/08/2012
Monitoring period number and duration of this monitoring period	Monitoring period number: 01 Duration of this monitoring period: 20/08/2012 - 31/03/2014 (including both days)
Project participant(s)	M/s Giriraj Enterprises
Host Party(ies)	INDIA
Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s)	Sectoral scope : 01 Energy Industries (renewable - /non-renewable sources) Selected methodology(ies): AMS-ID Version 17
Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	39,077 tCO ₂ e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	37,306 tCO ₂ e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable)	4,140 tCO ₂ e
Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable).	33,166 tCO ₂ e

¹ Project title as per registered PDD version 02.5 dated 23/03/2012

SECTION A. Description of project activity**A.1. Purpose and general description of project activity****Purpose of the project activity and the measures taken for GHG emission reductions or net anthropogenic GHG removals by sinks:**

The project activity is grid-connected wind power generation located at Villages: Barada Barkheda, Taluka: Barod, District: Shajapur, State: Madhya Pradesh in India. M/s Giriraj Enterprises is the owner and developer of the project activity.

The project activity is supplying the generated electricity to NEWNE Grid of India.

The purpose of the project activity is generation of clean electricity by utilizing kinetic energy of wind. The project activity is estimated to generate 25,529 MWh of electricity annually; with estimated emission reductions of 24,216 tCO₂e / annum for the entire crediting period of 7 years.

Brief description of the installed technology and equipment;

The total capacity of the project activity is 15 MW (10 WTGs × 1.50 MW). The project activity employs Wind Turbine Generators (WTGs) of Class S-82 manufactured by M/s. Suzlon Energy Limited.

Technical specifications for Class S-82²:

1. Main Data	
Turbine type	Horizontal axis turbine
Rated Power	1500 kW
Rotor Diameter	82 m
Hub height (including foundation)	Approximately 78.5 m
Rotational Speed	15.6 to 18.4 rpm
2. Rotor	
Number of rotor blades	3
Rotor Orientation	Upwind
Material	Epoxy bonded fibre glass
3. Gear Box	
Type of Gear Box housing	One planetary stage / Two helical stages
Ratio	1: 95.09
Power	1650 kW
Type of cooling	Forced oil cooling lubrication system
4. Generator System	
Generator type	Single speed induction generator with slip rings, variable rotor resistance via Suzlon Flexi slip system
Rated power	1500 kW
Speed at rated power	1511 rpm
Rated voltage	690 V AC (phase to phase)
Frequency	50 Hz
Insulation Class	Class H
5. Tower	
Tower type	Tubular tower (corrosion proof painting on inner and outer surface) with welded steel plates
Tower Height	76 m
6. Operational Parameters	
Cut-in wind speed	4 m/s

² <http://www.suzlon.com/products/l2.aspx?l1=2&l2=8>

	Rated wind speed	14 m/s
	Cut-off wind speed	20 m/s
	Survival wind speed	52.5 m/s

The project technology is indigenous & no technology transfer is involved.

Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.):

The project activity has been commissioned & running successfully. The details are given below:

Sr. No.	Loc. No.	Capacity, MW	Village	Commissioning date
1.	M-12	1.5	Barda Barkheda	31/03/2011
2.	M-34	1.5	Barda Barkheda	28/03/2011
3.	M-35	1.5	Barda Barkheda	28/03/2011
4.	M-36	1.5	Barda Barkheda	28/03/2011
5.	M-45	1.5	Barda Barkheda	30/03/2011
6.	M-55	1.5	Barda Barkheda	19/06/2011
7.	M-90	1.5	Barda Barkheda	07/06/2011
8.	M-91	1.5	Barda Barkheda	19/06/2011
9.	M-92	1.5	Barda Barkheda	19/06/2011
10.	M-93	1.5	Barda Barkheda	19/06/2011

Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period:

The project activity has exported 39,329 MWh of electricity to the NEWNE Grid during the monitoring period under consideration i.e. 20/08/2012 to 31/03/2014 (including both days). This has helped in mitigating 37,306 tCO₂e during the same period.

A.2. Location of project activity

Host Party(ies): India

Region/ State/ Province, etc.: Madhya Pradesh

City/ Town/ Community, etc.: Villages: Barada Barkheda, Taluka: Barod, District: Shajapur

Physical/ Geographical location:

The project activity is located at Villages: Barada Barkheda, Taluka: Barod, District: Shajapur, State: Madhya Pradesh in India. The details of project location are given below:

Sr. No.	Location No.	Village	Latitude	Longitude
1.	M-12	Barda Barkheda	N 23° 51' 55.2"	E 76° 03' 47.5"
2.	M-34	Barda Barkheda	N 23° 51' 05.2"	E 76° 03' 39.7"
3.	M-35	Barda Barkheda	N 23° 50' 53.8"	E 76° 03' 42.0"
4.	M-36	Barda Barkheda	N 23° 50' 45.1"	E 76° 03' 54.6"
5.	M-45	Barda Barkheda	N 23° 50' 25.2"	E 76° 04' 09.6"
6.	M-55	Barda Barkheda	N 23° 48' 39.7"	E 76° 05' 11.9"
7.	M-90	Barda Barkheda	N 23° 50' 05.0"	E 76° 05' 26.5"
8.	M-91	Barda Barkheda	N 23° 49' 56.9"	E 76° 05' 33.9"
9.	M-92	Barda Barkheda	N 23° 49' 44.7"	E 76° 05' 38.5"
10.	M-93	Barda Barkheda	N 23° 49' 34.6"	E 76° 05' 25.5"

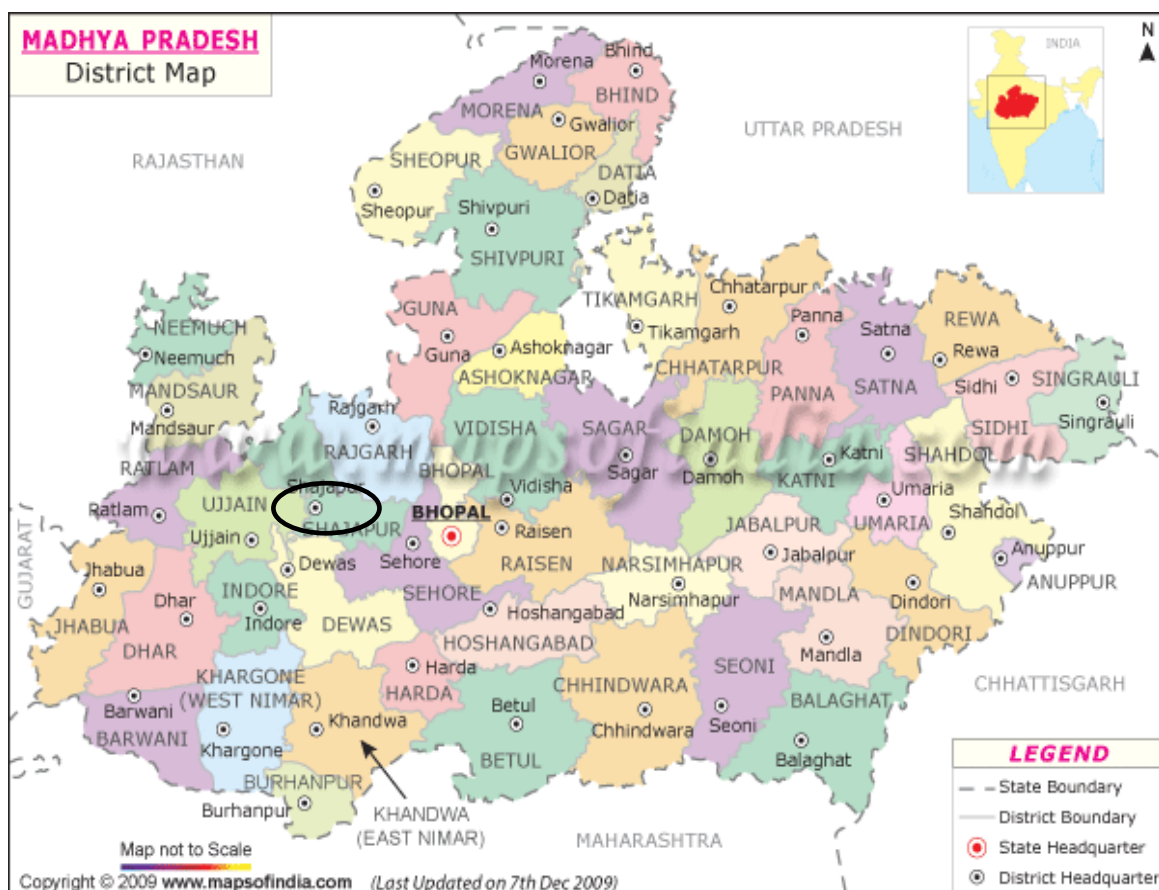


Figure: 01 Project activity on Map

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India	M/s Giriraj Enterprises (Private entity)	No

A.4. Reference of applied methodology and standardized baseline

Title of methodology : Grid connected renewable electricity generation
Reference : AMS- I.D.
Version number : 17³

Additionally the project has referred:

- Tool to calculate the emission factor for an electricity system (Version- 02.2.1 , EB- 63, Annex-19)⁴

A.5. Crediting period of project activity

Type of crediting period: Renewable
Start date of crediting period: 20/08/2012
Length of crediting period: 07 years

A.6. Contact information of responsible persons/ entities**Contact Information of responsible persons / entities:**

Kishor Deshmukh
 Chief Consultant I Energy & Carbon Services
 MITCON Consultancy & Engineering Services Ltd.
 Agriculture College Campus I Next to DIC Office I Shivajinagar I Pune - 411 005 I Maharashtra I INDIA I Mobile : +91-98234 98582 I Skype : kishor.deshmukh
 Email : kishor.deshmukh@mitconindia.com I homepage : www.mitconindia.com

Note: MITCON Consultancy & Engineering Services Ltd. is not the project participant in appendix 1 below.

SECTION B. Implementation of project activity**B.1. Description of implemented registered project activity****Information on the implementation and actual operation of the project activity:**

The project activity has been commissioned & running successfully. The details are given below:

Sr. No.	Loc. No.	Capacity, MW	Village	Commissioning date
1.	M-12	1.5	Barda Barkheda	31/03/2011
2.	M-34	1.5	Barda Barkheda	28/03/2011
3.	M-35	1.5	Barda Barkheda	28/03/2011
4.	M-36	1.5	Barda Barkheda	28/03/2011
5.	M-45	1.5	Barda Barkheda	30/03/2011

³ <http://cdm.unfccc.int/methodologies/DB/RSCTZ8SKT4F7N1CFDXCSA7BDQ7FU1X>

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

6.	M-55	1.5	Barda Barkheda	19/06/2011
7.	M-90	1.5	Barda Barkheda	07/06/2011
8.	M-91	1.5	Barda Barkheda	19/06/2011
9.	M-92	1.5	Barda Barkheda	19/06/2011
10.	M-93	1.5	Barda Barkheda	19/06/2011

No phased implementation involved.

Brief description of the installed technology and equipment;

The total capacity of the project activity is 15 MW (10 WTGs × 1.50 MW). The project activity employs Wind Turbine Generators (WTGs) of Class S-82 manufactured by M/s. Suzlon Energy Limited.

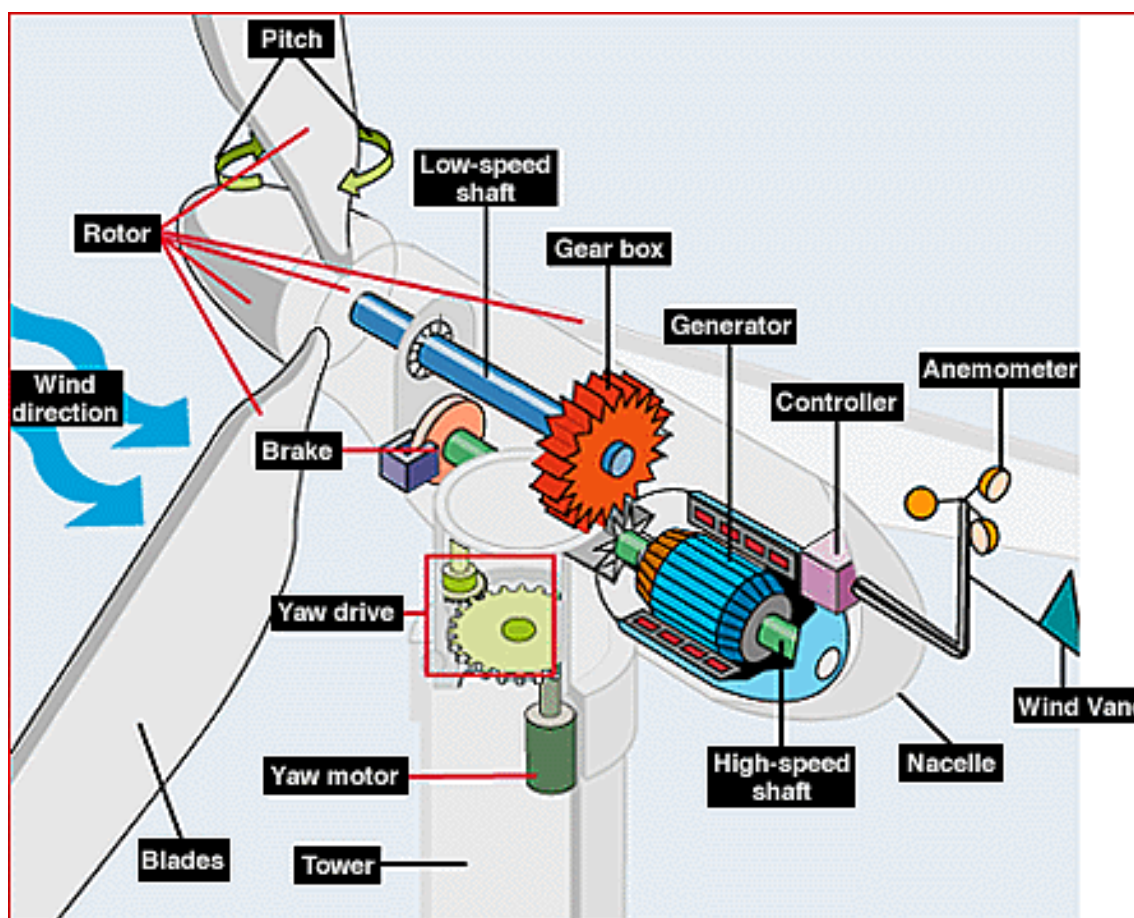


Figure 02: Major Mechanical Parts of a Wind Turbine (indicative)

Technical specifications for Class S-82:

1.	Main Data	
	Turbine type	Horizontal axis turbine
	Rated Power	1500 kW
	Rotor Diameter	82 m
	Hub height (including foundation)	Approximately 78.5 m
	Rotational Speed	15.6 to 18.4 rpm
2.	Rotor	
	Number of rotor blades	3
	Rotor Orientation	Upwind

	Material	Epoxy bonded fibre glass
3.	Gear Box	
	Type of Gear Box housing	One planetary stage / Two helical stages
	Ratio	1: 95.09
	Power	1650 kW
	Type of cooling	Forced oil cooling lubrication system
4.	Generator System	
	Generator type	Single speed induction generator with slip rings, variable rotor resistance via Suzlon Flexi slip system
	Rated power	1500 kW
	Speed at rated power	1511 rpm
	Rated voltage	690 V AC (phase to phase)
	Frequency	50 Hz
	Insulation Class	Class H
5.	Tower	
	Tower type	Tubular tower (corrosion proof painting on inner and outer surface) with welded steel plates
	Tower Height	76 m
6.	Operational Parameters	
	Cut-in wind speed	4 m/s
	Rated wind speed	14 m/s
	Cut-off wind speed	20 m/s
	Survival wind speed	52.5 m/s

The project technology is indigenous & no technology transfer is involved.

Description of the events or situations that occurred during the monitoring period that may impact the applicability of the applied methodology and, where applicable, the applied standardized baseline

There are no events or situations that occurred during the monitoring period that impacted the applicability of the applied methodology.

How the issues resulting from these events or situations have been addressed.

There are no events or situations that occurred during the monitoring period that impacted the applicability of the applied methodology.

PP confirms that there are no changes to the registered CDM project activity.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

No temporary deviations have been applied during this monitoring period.

B.2.2. Corrections

No corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report

B.2.3. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

No permanent changes from the registered monitoring plan, applied methodologies have been approved during this monitoring period or submitted with this monitoring report.

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

No changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.

B.2.5. Changes to start date of crediting period

No changes to the start date of the crediting period have been approved during this monitoring period or submitted with this monitoring report.

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

This section left intentionally blank.

SECTION C. Description of monitoring system

The monitoring of the project activity is given as below:

Metering at site metering point:

- The electricity generated by the project activity WTGs along with non-project WTGs is metered at feeder-wise site metering point/s. The metering point consists of a main meter, having accuracy of 0.2s. The respective check meter is installed at substation. These check meter is having accuracy class of 0.2s.
- The main meter at a given site metering point measures parameters like export & import for all the connected WTGs. The export reading for a given metering point for a given billing month is obtained by subtracting initial reading (taken in previous month) from the final reading (taken in billing month). The difference is multiplied by the applicable meter constant. Similar procedure is followed to arrive the import reading.
- The monitoring & measurement of electricity at project metering point/s is being done on continuous basis; while recording is being done on monthly basis as *Joint Meter Reading* by the representatives of State Utility & PP.

Calculation of Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y:

- The export & import by the project activity WTG/s connected at a given metering point is calculated by apportioning of the electricity at feeder level by the state utility. The apportioning of the electricity is based on the monthly generation ratio (ratio of controller reading of project activity WTG/s to the controller reading for all WTGs connected to the applicable metering point) at the given metering point and the electricity reading (export, import etc) recorded by the main meter at the given metering point on monthly basis. It gives monthly values of export & import for project activity WTG/s. The net export for any given month by the project activity WTG/s to the grid is then obtained by subtracting import from export. Thus,

Net export for any given month by the project activity WTG/s to the grid = Export kWh – Import kWh

- The values of the monthly net electricity supplied to the Grid by the project activity WTGs are aggregated annually to get quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y *i.e.* $EG_{BL,y}$.
- The value of $EG_{BL,y}$ is converted to MWh before the calculation of emission reductions.

Metering at substation:

- The project metering point/s further evacuates the electricity to the substation. The substation provides respective feeder-wise back- up metering (check meters) facility. These check meters are having accuracy class of 0.2s. The monthly JMR is taken by the representative of PP & State Utility.
- The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is annual. The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence of the meter calibration— *Guidelines For Assessing Compliance With The Calibration Frequency Requirements* will be applied appropriately to confirm the conservativeness of metering.
- Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of CERs for this project activity, whichever occurs later.

Sample Apportioning Procedure:

The apportioning of the electricity is the responsibility of the State Utility. The sample apportioning procedure adopted for any given WTG for any given month is given below:

Generation Ratio at site metering point:

The generation ratio is the ratio of controller reading of project activity WTG/s to the controller reading for all WTGs connected to the applicable metering point.

$$G_{R, \text{ metering point}} = \frac{EG_{\text{ Controller, WTG}}}{EG_{\text{ Controller, metering point}}} \quad (a)$$

Where:

$G_{R, \text{ metering point}}$:	Generation Ratio at metering point
$EG_{\text{ Controller, WTG}}$:	Electricity generated by installed WTG of PP connected to the applicable metering point
$EG_{\text{ Controller, metering point}}$:	Total generation by all the connected WTGs to the applicable metering point

Calculation of net electricity export by project activity WTG/s to the grid:

The main meter at the applicable metering point measures number of parameters including export and import for all the connected WTGs.

The import, kWh by the project WTG at the metering point is calculated in the following manner:

$$\text{Import, kWh} = G_{R, \text{ metering point}} \times EG_{\text{ Total Import, metering point}} \quad (b)$$

Where:

$G_{R, \text{ metering point}}$:	Generation Ratio at metering point
$EG_{\text{ Total Import, metering point}}$:	Total Import, kWh by all the WTGs at the metering point

The export, kWh by the project WTG at the metering point is calculated in the following manner:

$$\text{Export, kWh} = G_{R, \text{ metering point}} \times EG_{\text{ Total Export, metering point}} \quad (c)$$

Where:

$G_{R, \text{ metering point}}$:	Generation Ratio at metering point
$EG_{\text{ Total Export, metering point}}$:	Total Export, kWh by all the WTGs at the metering point

The net electricity supplied/exported by the by project activity WTG/s to the grid is calculated by subtracting equation (b) from (c). Thus:

$$= \text{Export, kWh} - \text{Import, kWh} \quad (d)$$

These apportioned values viz import, export and net export kWh can be referred from the *Monthly Report on Generation & Compensation*.

Operation & Maintenance of the Project:

Suzlon is providing O & M services to the project promoter. Following services are provided by Suzlon:

Routine Maintenance Services:

Routine maintenance labour work involves making available suitable manpower for operation and maintenance of the equipment and covers periodic preventive maintenance, cleaning and upkeep of the equipment including –

- Tower torquing
- Blade cleaning
- Nacelle torquing and cleaning
- Transformer oil filtration
- Control panel & LT panel maintenance
- Site and transformer yard maintenance

Security Services:

This service includes watch and ward and security of the wind turbines and the equipment.

Management Services:

- Data logging for power generation, grid availability, machine availability.
- Preparation and submission of monthly performance report in agreed format.
- Taking monthly meter reading jointly with utility of power generated at promoter's wind turbines and supplied to grid from the meter/s maintained by utility for the purpose and co-ordinate to obtain necessary power credit report/ certificate.

Technical Services:

- Visual inspection of the WTGs and all parts thereof.
- Technical assistance including checking of various technical, safety and operational parameters of the equipment, trouble shooting and relevant technical services

Indicative line diagram displaying the GHG collection and management system:

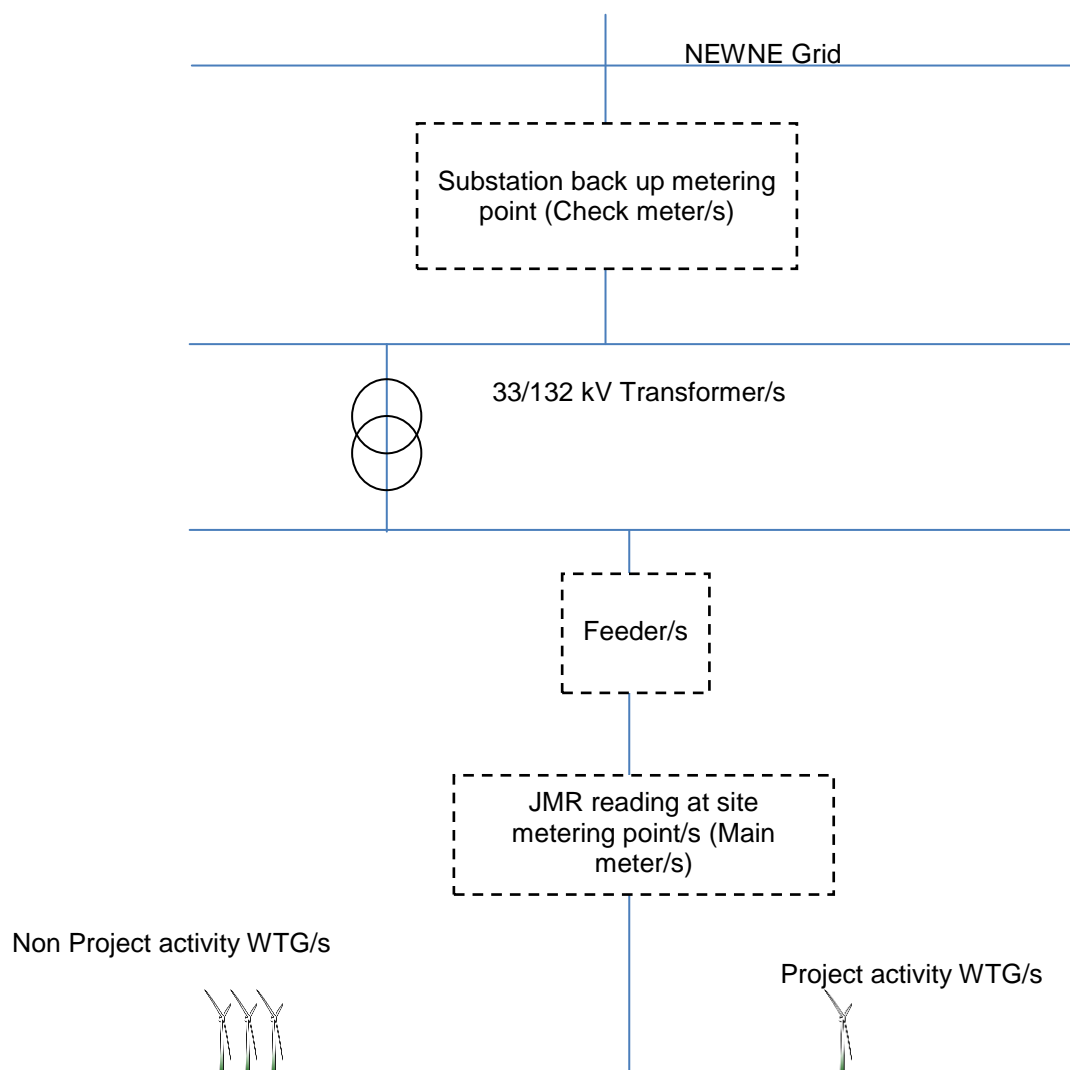


Figure 03: Indicative line diagram with location of metering equipment

SECTION D. Data and parameters

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

Data / Parameter:	$EF_{grid, CO_2, y}$
Unit:	tCO ₂ / MWh
Description:	CO ₂ Emission Factor of the grid in year y
Source of data:	CEA CO ₂ Baseline Database (Version- 6.0, Date- March 2011). The value is calculated for year 2007-08, 2008-09 & 2009-10.
Value(s) applied):	0.9486
Purpose of data:	<i>Baseline emission calculations</i>
Additional comment:	The calculation is done as <i>ex ante</i> .

Data / Parameter:	$EF_{grid, OM, y}$
Unit:	tCO ₂ / MWh
Description:	Operating margin CO ₂ emission factor for the project electricity system.
Source of data:	CEA CO ₂ Baseline Database, (Version- 6.0, Date- March 2011). The value is calculated for year 2007-08, 2008-09 & 2009-10.
Value(s) applied):	0.9941

Purpose of data:	<i>Baseline emission calculations</i>
Additional comment:	The calculation is done as <i>ex ante</i> .

Data / Parameter:	EF _{grid, BM, y}
Unit:	tCO ₂ / MWh
Description:	Build margin CO ₂ emission factor for the project electricity system.
Source of data:	CEA CO ₂ Baseline Database, (Version- 6.0, Date- March 2011). The value is calculated for year 2009-10.
Value(s) applied):	0.8123
Purpose of data:	<i>Baseline emission calculations</i>
Additional comment:	The calculation is done as <i>ex ante</i> .

D.2. Data and parameters monitored

Data / Parameter:	EG _{BL,y}
Unit:	kWh/y
Description:	<i>Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y</i>
Measured/ Calculated / Default:	<p>Metering at 33 kV/220 kV level:</p> <p>The electricity generated by the project activity WTG/s is evacuated to the pooling station at 33 kV/220 kV level. The project activity WTG/s along with other WTGs, are connected to the feeder-wise metering point/s, where each metering point consists of both main & check meters. These tri vector energy meters are having accuracy class of 0.2s. The meters are capable of measuring the electricity parameters (export, import etc.) on real time basis⁵.</p> <p>The joint meter reading is taken on monthly basis at these metering point/s by the representatives of PP & State Utility, which records parameters like export, import.</p> <p>The electricity (export and import) by the connected WTG/s is apportioned on monthly basis by the State Utility at 33 kV/220 kV level on the basis of generation ratio at the applicable metering point (ratio of controller reading of connected WTG to the controller reading for all WTGs connected to the applicable metering point) and the electricity (export, import etc) recorded by the energy meters at 33 kV/220 kV GSS on monthly basis. It gives export kWh & import kWh for connected WTG. The net export obtained at 33 kV/220 kV level for any given month for the connected WTG is then obtained by:</p> <p>Net Export = Export kWh – Import kWh</p> <p>All these metering points are further connected to the common delivery point at the 220 kV level.</p> <p>Metering at 220 kV level:</p> <p>The common metering point at 220 kV GSS <i>concurrently</i> records total electricity (total export and total import) receiving from all connected metering points. The common metering point consists of both main & check meters. These energy meters are having accuracy class of 0.2s. The meters are capable of measuring the electricity parameters (export, import etc.) on real time basis⁶. The monthly JMR is taken by the representative of PP & State Utility.</p>

⁵ It complies the hourly measurement requirement as per the monitoring methodology.

⁶ It complies the hourly measurement requirement as per the monitoring methodology.

	<p>Billing of the energy is done based on the energy break up available at the metering at 220 kV level.</p> <p>The common delivery point receives the electricity in two separate lines (Line 1 & Line 2). Both lines are equipped with set of main & check meters. The total export & import is arrived by summation of the respective values from both the meters (Line 1 & 2). The billing is done on the basis of main meter reading.</p> <p>Transmission loss:</p> <p>The total transmission loss occurred during export of the electricity between the 33/220 kV level pooling station & 220 kV level common delivery point is calculated as the difference between total aggregated reading of exports for all metering points at 33/220 kV level and the total reading of exports for same metering points recorded at the 220 kV level. Similarly, transmission loss occurred during import of the electricity is also calculated.</p> <p>The PP/WTG wise transmission loss during export & import is calculated by multiplying the values of arrived transmission loss for export & import for wind farm with the <i>Generation Ratio at common delivery point</i> (ratio of electricity generated by installed WTG to the total generation by all the connected WTGs/ or connected metering points under common delivery point).</p> <p>The values of transmission loss during export & import for the given WTG are subtracting from $EG_{\text{Export, metering point}}$ & $EG_{\text{Import, metering point}}$ respectively to get the values of export and import respectively for the given month.</p> <p>Calculation of Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y:</p> <p>The net electricity delivered to the Grid by the given WTG for the given month (net export kWh) is then obtained by subtracting import from export.</p> <p>The values of the net electricity delivered to the Grid are aggregated annually to get $EG_{BL,y}$.</p> <p>The value of net electricity delivered to the Grid ($EG_{BL,y}$) by the project activity per annum is converted to MWh before the calculation of emission reductions.</p>
Source of data:	<i>Monthly Report on Generation & Compensation</i>
Value(s) of monitored parameter:	39,329 MWh ⁷

⁷ Please refer excel spreadsheet

Monitoring equipment:	<p>The details of the respective metering equipments are given below:</p> <p>WTG/s: M-12</p> <p>Year: 2011</p> <p>Type: Trivector meters Accuracy Class: 0.2s Main meter no.: 3475843 Date of last calibration: 31/03/2011⁸ Validity: 30/03/2012</p> <p>Year: 2012</p> <p>Type: Trivector meters Accuracy Class: 0.2s Main meter no.: 3475843 Date of last calibration: 22/10/2012⁹ Validity: 21/10/2013</p> <p>WTG/s: M-34, M-35, M-36, M-45 & M-90</p> <p>Year: 2011</p> <p>Type: Trivector meters Accuracy Class: 0.2s Main meter no.: 3475741 Date of last calibration: 28/03/2011¹⁰ Validity: 27/03/2012</p> <p>Year: 2012</p> <p>Type: Trivector meters Accuracy Class: 0.2s Main meter no.: 3475741 Date of last calibration: 22/10/2012¹¹ Validity: 21/10/2013</p> <p>WTG/s: M-55, M-91, M-92 & M-93</p> <p>Year: 2011</p> <p>Type: Trivector meters Accuracy Class: 0.2s Main meter no.: MPC12449 Date of last calibration: 07/06/2011¹² Validity: 06/06/2012</p> <p>Year: 2012</p> <p>Type: Trivector meters Accuracy Class: 0.2s Main meter no.: MPC12449 Date of last calibration: 22/05/2012¹³</p>
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⁸Calibration certificate by M.PPKVVC Ltd. Division, Ujjain dated 31/03/2011

⁹Calibration certificate by M.PPKVVC Ltd. Division, Ujjain dated 22/10/2012

¹⁰Calibration certificate by M.PPKVVC Ltd. Division, Ujjain dated 28/03/2011

¹¹Calibration certificate by M.PPKVVC Ltd. Division, Ujjain dated 22/10/2012

¹²Calibration certificate by M.PPKVVC Ltd. Division, Ujjain dated 07/06/2011

¹³Calibration certificate by M.PPKVVC Ltd. Division, Ujjain dated 22/05/2012

	Validity: 21/05/2013
Measuring/ Reading/ Recording frequency:	Monitoring Frequency: Continuous Recording frequency: Monthly
Calculation method (if applicable):	As per section C above.
QA/QC procedures:	The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is annual. The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence of the meter calibration— <i>Guidelines For Assessing Compliance With The Calibration Frequency Requirements</i> will be applied appropriately to confirm the conservativeness of metering.
Purpose of data:	Calculation of the Baseline emissions
Additional comment:	Data will be archived in electronic form for two years after the end of crediting period or of the last issuance of CERs for this project activity, whichever occurs later.

D.3. Implementation of sampling plan

Not applicable.

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

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

Calculation of Baseline Emissions (BE_y):

The baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

Thus,

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

Grid emission factor:

The grid emission factor for the project activity has been calculated *ex ante* as 0.9486 tCO₂/MWh.

Thus the baseline emissions for the project activity are given below:

Sr. No.	Monitoring Year	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y , MWh	Grid emission factor (tCO ₂ /MWh)	Baseline Emissions, tCO ₂
1.	20/08/2012 to 31/12/2012	4,365	0.9486	4,140
2.	01/01/2013 to 31/12/2013	27,385	0.9486	25,977
3.	01/01/2014 to 31/03/2014	7,579	0.9486	7,189
Total		39,329	-	37,306

Thus, the baseline emissions by the project activity are 37,306 tCO₂ during the monitoring period 20/08/2012 - 31/03/2014 (including both days).

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

Calculation of Project Emissions (PE_y):

As per paragraph 20 of approved methodology AMS- I.D. (Version- 17, EB- 61), *for most renewable energy project activities, $PE_y = 0$.*

As project activity is wind power generation. The project emissions are thus considered as zero tCO₂. Thus, $PE_y = 0$.

E.3. Calculation of leakage**Calculation of Leakage Emissions (LE_y):**

As per paragraph 22 of the approved methodology AMS- I.D. (Version- 17, EB- 61), *If the energy generating equipment is transferred from another activity, leakage is to be considered.*

The leakage emissions are considered as zero tCO₂ as no such equipment shall be transferred from another project activity. Thus, $LE_y = 0$.

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

Item	Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO ₂ e)
Total	37,306	0	0	37,306

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

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO ₂ e)	39,077	37,306

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

The comparison of actual emission reductions with the estimated emission reductions in the registered PDD during the monitoring period i.e. 20/08/2012 - 31/03/2014 (including both days) is tabulated as below:

Comparison of emission reductions with the estimated emission reductions in the approved PDD

Parameters	Values
Estimated Emission Reductions during 20/08/2012 - 31/03/2014, tCO ₂ e as per registered CDM PDD, tCO ₂ e	39,077
Actual Emission Reductions, tCO ₂ e	37,306
Difference in tCO ₂ e	1,771
Difference in tCO₂e, %	(-) 4.53

The actual emission reductions for the monitoring period under consideration are less by 4.53% than the value estimated in the registered CDM-PDD.

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

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO ₂ e)	4,140	33,166

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

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM
Organization name	M/s Giriraj Enterprises
Street/P.O. Box	I G Road
Building	Malpani House
City	Sangamner
State/Region	Maharashtra
Postcode	422 605
Country	India
Telephone	+91-2425-225 011
Fax	+91-2425-225 003
E-mail	prafulla@malpani.com
Website	www.malpani.com
Contact person	
Title	Head - Wind Power Projects
Salutation	Mr.
Last name	Khinvasara
Middle name	-
First name	Prafulla
Department	-
Mobile	+91-98223 22145
Direct fax	-
Direct tel.	-
Personal e-mail	-

Project participant and/or responsible person/ entity	<input type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for application of the selected methodology (ies) and, where applicable, the selected standardized baselines to the project activity
Organization name	MITCON Consultancy & Engineering Services Ltd.
Street/P.O. Box	Shivajinagar
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