

MONITORING REPORT FORM (CDM-MR) *
Version 01 - in effect as of: 28/09/2010

CONTENTS

- A. General description of the project activity
 - A.1. Brief description of the project activity
 - A.2. Project participants
 - A.3. Location of the project activity
 - A.4. Technical description of the project
 - A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity
 - A.6. Registration date of the project activity
 - A.7. Crediting period of the project activity and related information
 - A.8. Name of responsible person(s)/entity(ies)
- B. Implementation of the project activity
 - B.1. Implementation status of the project activity
 - B.2. Revision of the monitoring plan
 - B.3. Request for deviation applied to this monitoring period
 - B.4. Notification or request of approval of changes
- C. Description of the monitoring system
- D. Data and parameters monitored
 - D.1. Data and parameters used to calculate baseline emissions
 - D.2. Data and parameters used to calculate project emissions
 - D.3. Data and parameters used to calculate leakage emissions
 - D.4. Other relevant data and parameters
- E. Emission reductions calculation
 - E.1. Baseline emissions calculation
 - E.2. Project emissions calculation
 - E.3. Leakage calculation
 - E.4. Emission reductions calculation
 - E.5. Comparison of actual emission reductions with estimates in the registered CDM-PDD
 - E.6. Remarks on difference from estimated value

* as contained within the document entitled "Guidelines for completing the monitoring report form (CDM-MR)" (EB 54 meeting report, annex 34).

MONITORING REPORT

Version number: 01

Date: 05/04/2012

Title of project activity: "Wind Power Project by M/s Chhotabhai Jethabhai Patel & Co. (CJP) at Sinnar, Maharashtra"

Reference number: 3550

Monitoring period number: 01
16/09/2010 to 01/01/2012 (first and last days included)

SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

1. Purpose of the project activity and the measures taken to reduce greenhouse gas emissions:

M/s Chhotabhai Jethabhai Patel & Co. (CJP) has implemented grid connected wind power generation at Village: Adwadi, Taluka: Sinnar, District: Nashik, State: Maharashtra, India. The main purpose of the project activity is to generate electricity by using wind turbine generator (renewable technology) and to supply it to the NEWNE Grid of India. In absence of the project activity, the equivalent amount of electricity would have otherwise been generated from fossil fuel based power plants in the grid. This would have resulted in emission of GHG gases like CO₂e in atmosphere. Thus implementation of the project activity has resulted in the emission reductions of 3337 tCO₂e during the current monitoring period i.e. 16/09/2010 to 01/01/2012 (first and last days included).

2. Brief description of the installed technology and equipments:

The project activity involves implementation of 1.5 MW (1 No. × 1.5 MW) wind turbine generator (WTG). The project utilizes WTG of class S-82 supplied by Suzlon Energy Limited.

The project does not involve phase implementation.

3. Relevant dates for the project activity:

- Date of commissioning: 30/03/2009
- Date of registration & crediting period start date: 16/09/2010

4. Total emission reductions achieved in this monitoring period:

The document reports the certified emission reductions generated by the project activity during the monitoring period 16/09/2010 to 01/01/2012 (first and last days included). The project has supplied 3684 MWh of electricity to the NEWNE Grid during above monitoring period, which has resulted into total emission reductions of 3337 tCO₂e.

A.2. Project Participants

Name of Party involved ((host) indicates a host Party)	Private and/or public entity (ies) project participants (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host Party)	M/s Chhotabhai Jethabhai Patel & Co. (CJP)	No

A.3. Location of the project activity:

The project activity is located at Village: Adwadi, Taluka: Sinnar, District: Nashik, State: Maharashtra, India. The location details for the project activity are as follows:

Capacity	Location No.	Location	Gut No.	Latitude	Longitude
1 × 1.5 MW	AD- 24	Adwadi	389	N19 43 22.8	E73 55 22.2

The location of the project on map is given below:

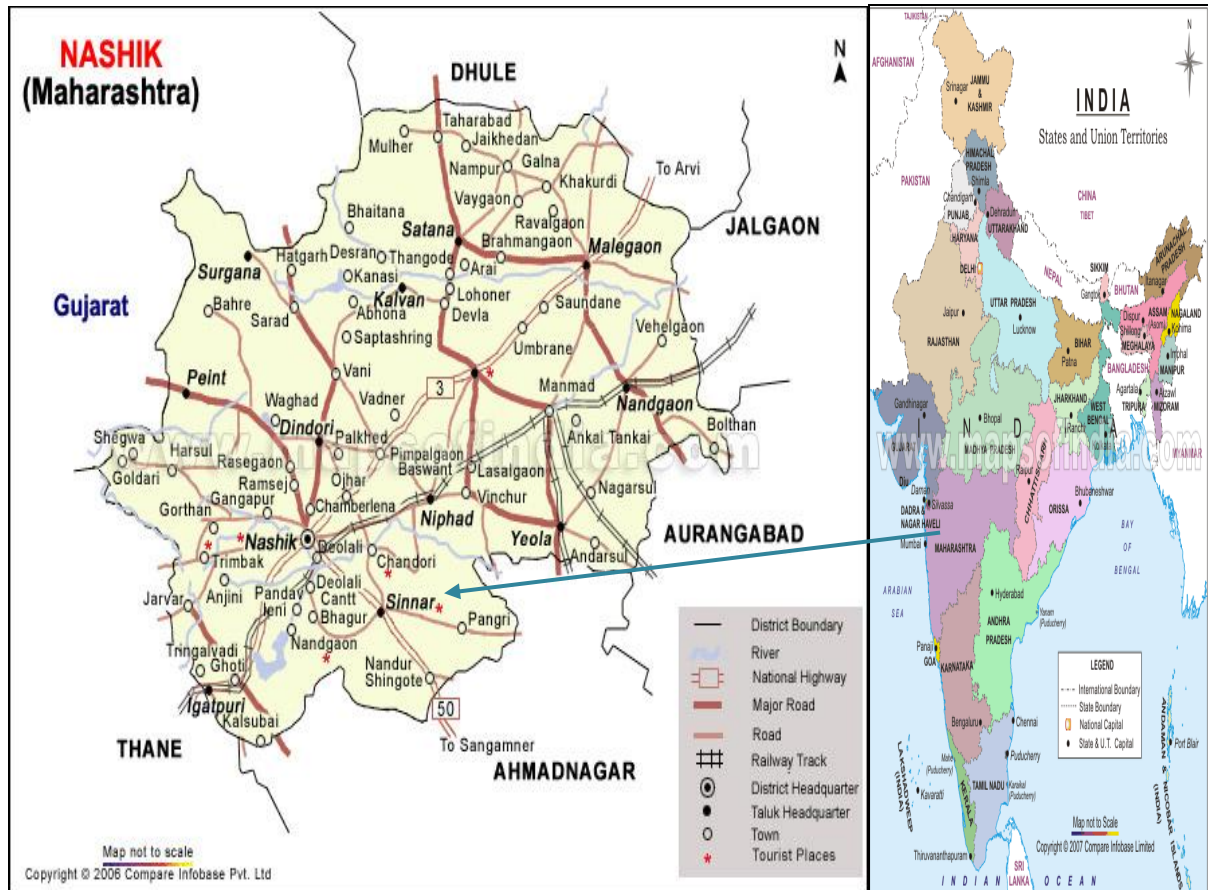


Figure 01: Project Location on Map

A.4. Technical description of the project

The project activity involves grid connected wind power generation. The project activity involves utilization of class S-82 wind turbine generator of capacity 1.5 MW (1 No. × 1.5 MW) supplied by Suzlon Energy Limited. The technological specifications of S-82 wind turbine are given below:

Technical specification for Class: S-82:

Rotor	
Diameter	82 m
No. of rotor blade	3
Orientation	Upward/Horizontal axis
Rotation direction	Clockwise
Rotor blade material	GRP
Swept area	5281 m ²
Hub height	78.5 m
Regulation	Pitch regulated

Operational data	
Cut in wind speed	4 m/s
Rated wind speed	14 m/s
Cut off wind speed	20 m/s

Gear box	
Type	Integrated 3 stage 1 planetary & 2 helical
Gear ratio	1:95.09
Manufacturer	Winergy/Hansen
Nominal load	1650 kW

Generator	
Type	Asynchronous 4 poles
Rotational speed	1511 RPM
Rated output	1500 kW
Rated voltage	690 V
Frequency	50 Hz
Insulation	Class 'H'
Cooling system	Air cooled

Yaw drive	
Method of operation	Active electrical yaw motors
Bearing type	Polyamide slide bearing

Safety systems	
Break system	Spring applied hydraulically released brakes

Tower	
Type	Free standing, lattice tower, hot dip galvanized.
Construction	Bolted
Erection	With crane
Design	GL class III A

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

Title of Methodology : Grid connected renewable electricity generation ---Version 13
Reference : AMS-I.D.

A.6. Registration date of the project activity:

UNFCCC Registration Date¹: 16/09/2010

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

Crediting Period²: From 16/09/2010 to 15/09/2020

Choice of crediting period³: Fixed crediting period for 10 years & 0 months

¹ <http://cdm.unfccc.int/Projects/DB/RINA1269594627.46/view>

² <http://cdm.unfccc.int/Projects/DB/RINA1269594627.46/view>

³ <http://cdm.unfccc.int/Projects/DB/RINA1269594627.46/view>

A.8. Name of responsible person(s)/entity(ies):

M/s Chhotabhai Jethabhai Patel & Co.⁴:

Mr. D. T. Shah

General Manager (Finance)

C. J. House, Motapore

Nadiad, Gujarat

387001, India

MITCON Consultancy & Engineering Services Ltd.⁵

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SECTION B. Implementation of the project activity**B.1. Implementation status of the project activity****Implementation status of the project activity:**

The project activity has been commissioned on 30/03/2009 - which is before the project registration i.e. 16/09/2010.

Operational details of the project:

The details of the special event during current monitoring period are given below:

Sr. No.	Particulars	Details
1.	Down time ⁶ , hours	78.1
2.	Exchange of equipment	No major equipment has been changed for the project activity during the current monitoring period.

Events or situations that occurred during the monitoring period, which may impact the applicability of the methodology:

The project is running successfully. There has been no major equipment change for the project activity during the current monitoring period. No events/situations have occurred during the monitoring period which has resulted in any impact on the applicability of the methodology.

How the issues resulting from these events or situations are being addressed:

No events/situations have occurred during the monitoring period which has resulted in any impact on the applicability of the methodology.

⁴ Project participant in the project activity

⁵ MITCON Consultancy & Engineering Services Ltd. is not the project participant in the project activity

⁶ As per daily generation reports by Suzlon

B.2. Revision of the monitoring plan

Not applicable — as no revision in monitoring plan involved.

B.3. Request for deviation applied to this monitoring period

Not applicable — as no deviation has been applied to this monitoring period.

B.4. Notification or request of approval of changes

Not applicable — as there are no notifications or request of approval of changes from the project activity.

SECTION C. Description of the monitoring system

Description of the monitoring system:

Data collection procedures (information flow including data generation, aggregation, recording, calculation and reporting):

- **Information Flow:** The information flow is depicted below:

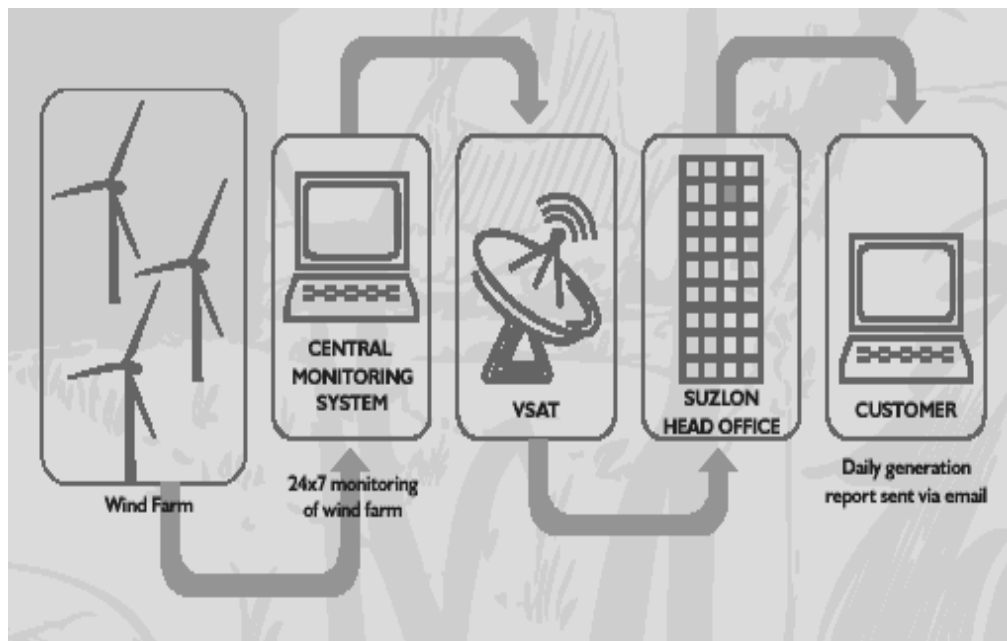


Figure 02: Project information flow

- **Data Generation:** The WTG is equipped with an integrated electronic controller, which is connected to the Central Monitoring Station (CMS) of Suzlon Energy Limited through SCADA. The generation data of individual machine can be monitored as a real-time parameter at CMS. The monthly joint meter reading taken at the common metering point is other source of data generation.
- **Aggregation:** The data is aggregated at CMS & Utility level on monthly basis.
- **Recording:** The recording of the data is done on monthly basis in the form of monthly JMR report & PP – wise monthly credit notes as per PPA.

- **Calculation:** The net electricity supplied to the Grid by the project activity in a given month is calculated by subtracting import from export. The value of EG_y is arrived by summing all these monthly net readings in a given year y.
- **Reporting:** The reporting is done to the project head on regular basis

Suzlon Energy Limited is providing O & M services to the project promoter.

Project Monitoring Team:

Sr. No.	Monitoring Team	Responsibility
1	Project Head (CJP)	<ul style="list-style-type: none"> • Overall performance monitoring • Project execution • Monthly review of project operations
2	Project Coordinator (CJP)	<ul style="list-style-type: none"> • Data Archival • Site visit for actual project monitoring Storage of data • Coordination with O & M Contractor for day to-day operations • Invoice preparation & follow ups • Coordination with Suzlon for regular calibration of meters • Reporting to Project Head • Online project monitoring • Feedback and corrective action wherever necessary • Follow up of project operation as per PPA.
3	O & M Contractor (Suzlon)	
3.1	Suzlon Mumbai Office	<ul style="list-style-type: none"> • Focal point between PP and O & M team at project site • Daily Generation Report to PP • Storage of data • Coordinating with PP/Consultant/Auditors during their site visit for validation/annual verification • Coordinating with MSEDCL for monthly JMR reports • Complying as per O & M Agreement with the PP • Requesting/coordinating MSEDCL for annual calibration behalf of PP
3.2	Sinnar Site Team	<ul style="list-style-type: none"> • Day-to-day operation and maintenance • Data monitoring & recording • Storage of data • Monthly Joint meter reading with MSEDCL • Maintenance of monitoring equipment and installations • Day-to-day records handling Monitoring, measurement and reporting, calibration of monitoring equipment • Handling of emergency situations, monitoring data adjustments & uncertainties, review of reports/data etc • Monitoring of project activity through facility at CMS, site visits

Organizational structure:

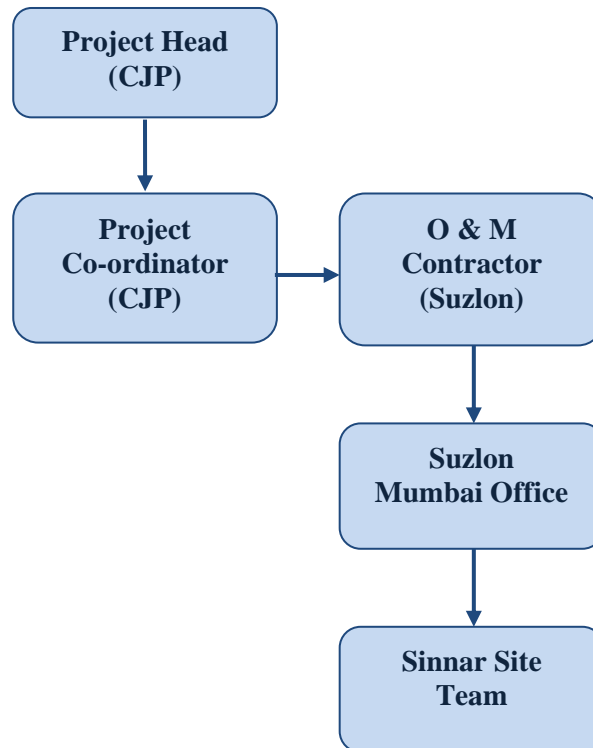


Figure 03: Organisation Structure

Emergency procedures for the monitoring system:

The fault in the metering system is determined by the State Utility/representative of PP (O & M contractor) during the regular inspection or during the periodic testing or monthly meter reading. The malfunctioning of the electrical and metering system is tackled by PP & the State Utility as per the Power Purchase Agreement.

Location of metering equipments:

The metering equipment location (*indicative*) for the project activity is given below:

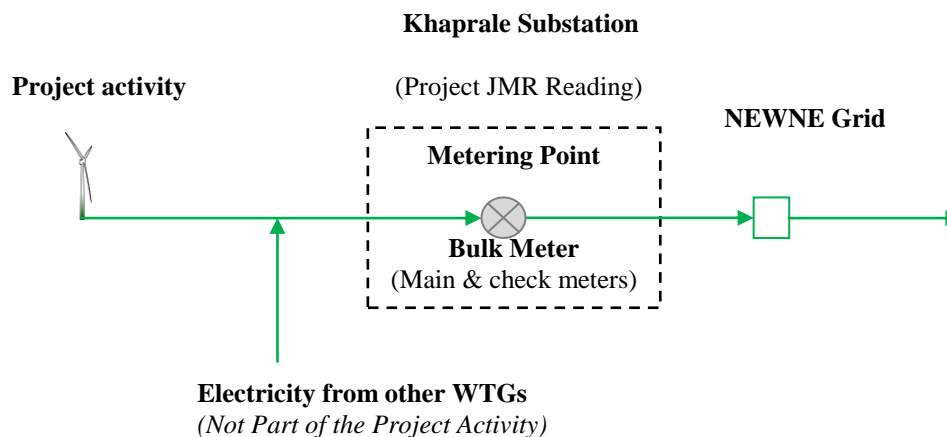


Figure 04: Indicative Line Diagram With Location Of Metering Equipment

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the

monitoring period, including default values and factors
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Data / Parameter:	EF _{grid,OM,y}
Data unit:	tCO ₂ / MWh
Description:	CO ₂ Operating Margin emission factor for the NEWNE Grid (Three years average-2005-2006, 2006-2007, 2007-2008)
Source of data used:	CO ₂ Baseline Database (Version: 4 , September 2008): http://www.cea.nic.in/planning/c%20and%20e/database_publishing_ver4.zip & CO ₂ Baseline Database, User Guide (Version- 4, September 2008) http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver4.pdf
Value(s) :	1.0090 tCO ₂ / MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data is used for Baseline emission calculations
Additional comment:	The value is calculated <i>ex-ante</i>

Data / Parameter:	EF _{grid, BM,y}
Data unit:	tCO ₂ / MWh
Description:	CO ₂ Build Margin emission factor for the NEWNE Grid 2007-2008
Source of data used:	CO ₂ Baseline Database (Version: 4 , September 2008): http://www.cea.nic.in/planning/c%20and%20e/database_publishing_ver4.zip & CO ₂ Baseline Database, User Guide (Version- 4, September 2008) http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver4.pdf
Value(s) :	0.59771 tCO ₂ / MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data is used for Baseline emission calculations
Additional comment:	The value is calculated <i>ex-ante</i>

Data / Parameter:	EF _{grid,CM,y}
Data unit:	tCO ₂ / MWh
Description:	EF _{grid,CM,y} is the grid emission coefficient calculated in a transparent and conservative manner as Combined Margin (CM) which is the combination of Operation Margin (OM) and Build Margin (BM) (OM & BM have been calculated <i>ex-ante</i>) Grid emission factor calculation: $EF_{grid,CM,y} = 0.75 \times EF_{grid,OM,y} + 0.25 \times EF_{grid, BM,y}$ $= 0.75 \times 1.0090 + 0.25 \times 0.59771$ $= 0.90618 \text{ tCO}_2/\text{MWh}$
Source of data used:	CO ₂ Baseline Database (Version: 4 , September 2008): http://www.cea.nic.in/planning/c%20and%20e/database_publishing_ver4.zip & CO ₂ Baseline Database, User Guide (Version- 4, September 2008) http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver4.pdf
Value(s) :	0.90618 tCO ₂ /MWh
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data is used for Baseline emission calculations

calculations)	
Additional comment:	The value is calculated <i>ex-ante</i>

D.2. Data and parameters monitored

Data / Parameter:	EG _y
Data unit:	MWh
Description:	<p>EG_y is Net electricity delivered to the Grid (EG_y, MWh) by the project activity per annum</p> <p>It is given by the following formula:</p> <p>Net electricity delivered to the Grid by the project activity in a given month = Export⁷ – Import⁸</p> <p>The sum of all these monthly net readings in a given year y will give EG_y.</p>
Measured /Calculated /Default:	Measured & calculated
Source of data:	Monthly Joint Meter Readings Reports /Monthly invoice of sell
Value(s) of monitored parameter:	3684
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	The data is used for calculation of baseline emissions
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	<p>Monitoring equipment:</p> <ul style="list-style-type: none"> • Type: Electronic Trivector meter • Accuracy Class: 0.2 • Main meter no.: 04932446 • Check meter no.: 04961749 • Calibration frequency: Annual • Date of last calibration: 05/06/2010⁹ & 15/07/2011¹⁰ • Validity: 04/06/2011 & 14/07/2012 <p>Note: The correction factor i.e. 0.2% as per EB 52, Annex 60 is applied conservatively for the entire months - June 2011 & July 2011.</p>
Measuring/ Reading/ Recording frequency:	<p>Measuring frequency: Continuous</p> <p>Recording frequency: Monthly</p>
Calculation method (if applicable):	<p>The project activity emission reductions are based on the Net electricity delivered to the Grid (EG_y, MWh) by the project activity per annum.</p> <p>The electricity from the project activity is evacuated to the sub-station through feeder. The electricity generated by the project activity is recorded by the Bulk meter at the sub-station. The 'Bulk meter', installed at the sub-station, contains a main meter and a check meter. These meters are sealed and are in the custody of MSEDCL.</p>

⁷ The Export is termed as *Import* by MSEDCL in JMR Reports and other documents like Power Purchase Agreement

⁸ The Import is termed as *Export* by MSEDCL in JMR Reports and other documents like Power Purchase Agreement

⁹ MSEDCL annual meter test report dated 18/06/2010

¹⁰ MSEDCL annual meter test report dated 29/08/2011

	<p>The state utility official's in the presence of representative/s of PP takes the Joint Meter Reading of these meters on a monthly basis as per PPA. The monthly JMRs for the project is prepared as per the PPA. The monthly JMRs have the parameters like import kWh, export kWh, Net export to the grid, reactive power etc.</p> <p>The monthly JMR Reports/ monthly invoices of sell is the basis for EG_y & consequently emission reduction by the project activity.</p> <p><u>Metering</u>: Trivector meter <u>Accuracy class</u>: 0.2% <u>Data Type</u>: Electricity <u>Frequency</u>: Hourly measured <u>Recording</u>: Monthly Invoices/JMR Reports <u>Archiving policy</u>: Paper & Electronic <u>Energy meter calibration frequency</u>: Annual or as per the UNFCCC guidelines (at least once in three year, paragraph 12.c., EB 41 Report, Annex 20) <u>Responsibility</u>: Project Head is responsible for regular calibration of the meters.</p>
QA/QC procedures applied:	<p>The meters shall be approved, tested & sealed by the MSEDCL. The meters are in the custody of MSEDCL. The calibration of the meters will be carried out by MSEDCL annually/or at least once in three years, as per UNFCCC guidelines. Other than periodic calibration of the meters, the reading of both meters will be matched every month. In case of failure of main meter during the monitoring the metering of the electricity will be done as per the Power Purchase Agreement.</p> <p>The emission reductions is based on the monthly JMR reports which will be further cross checked with monthly invoices of sell.</p>

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

Baseline emissions (BE_y):

$$\text{Baseline emission (tCO}_2\text{)} = \text{Grid emission coefficient (EF}_{\text{grid, CM, y, tCO}_2\text{/MWh)} \times \text{Net electricity delivered to the Grid (EG}_y\text{, MWh) by the project activity per annum}$$

Grid emission coefficient ($EF_{\text{grid, CM, y, tCO}_2\text{/MWh)}$):

The Grid emission coefficient for the project activity has been determined *ex-ante* in the registered PDD (version 03 dated 06/02/2010) as 0.90618 tCO₂/MWh.

Net electricity delivered to the Grid (EG_y , MWh):

The net electricity delivered to the Grid by the project activity during the monitoring period 16/09/2010 to 01/01/2012 is 3684 MWh.

Thus,

$$\begin{aligned} \text{Baseline emission (tCO}_2\text{):} &= 0.90618 \times 3684 \\ &= 3337 \text{ tCO}_2 \end{aligned}$$

Please refer 'Emission Reductions' worksheet in ER workbook for calculations.

E.2. Project emissions calculation

Project emissions (PE_y):

As wind power generation is a renewable project activity, the project emissions for project activity are taken as zero tonnes of CO₂ (ACM0002, Version- 09, EB- 45). Moreover, during the construction work, the project activity has caused project emission due to vehicular movement. But this can be neglected as the emissions are very less & were temporary.

Thus, $PE_y = 0$

Please refer 'Emission Reductions' worksheet in ER workbook for calculations.

E.3. Leakage calculation

Leakages emissions (LE_y):

According to paragraph 12 of AMS-I.D. (Version-13, EB-36) 'If the energy generating equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered.'

The leakages are taken as zero tonnes of CO₂, as there is no transfer of energy generating equipments from another activity nor the existing equipments are transferred to another activity.

Thus, $LE_y = 0$

Please refer 'Emission Reductions' worksheet in ER workbook for calculations.

E.4. Emission reductions calculation / table

Emission reduction (ER_y):

The emission reductions (ER_y) are calculated as per following formula:

$$ER_y = BE_y - PE_y - LE_y$$

Where

ER_y	=	Emission reductions in year y (tCO ₂ /y)
BE_y	=	Baseline Emission in year y (tCO ₂ /y)
PE_y	=	Project Emission in year y (tCO ₂ /y)
LE_y	=	Leakage Emission in year y (tCO ₂ /y)

As for wind power project activity the leakages & project emissions are considered as zero, the emission reductions of the project activity are equal to the baseline emissions. Thus,

$$ER_y = BE_y = 3337 \text{ tCO}_2$$

Thus, emission reductions by the project activity during the monitoring period 16/09/2010 to 01/01/2012 (first and last days included) are 3337 tCO₂e.

Please refer 'Emission Reductions' worksheet in ER workbook for calculations.

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions (tCO ₂ e)	3857 ¹¹	3337

The actual emission reductions for the monitoring period under consideration are *less* by 13.48% than the value estimated in the registered CDM-PDD (version 03 dated 06/02/2010).

Please refer 'Comparison of ERs' work sheet in ER workbook.

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

Not applicable since the actual emission reductions achieved during the monitoring period 16/09/2010 to 01/01/2012 (first and last days included) are less as compared to the registered CDM-PDD (version 03 dated 06/02/2010).

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History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory Document Type: Guideline, Form Business Function: Issuance		

¹¹ Calculated on pro rata basis w. r. t. to emission reductions of 2976 tCO₂/annum as per registered PDD (version 03 dated 06/02/2010) & 473 monitoring days in the current monitoring period