

MONITORING REPORT TITLE

22.5 MW Wind Power Project by Ruchi Soya Industries Limited at Palsodi, District-Ratlam, Madhya Pradesh



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Project Title	22.5 MW Wind Power Project by Ruchi Soya Industries Limited at Palsodi, District-Ratlam, Madhya Pradesh
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1 PROJECT DETAILS

1.1 Summary Description of Project

The project activity is promoted by Ruchi Soya Industries Limited (RSIL) involving supply, erection, commissioning and operation of 15 x 1.5 MW rated Wind Turbine Generators (WTGs), Make – Suzlon, Model S-82. The total installed capacity is 22.5MW. The generated electricity from the project activity is being sold to Madhya Pradesh State PashchimKshetraVidyutVitaran Company Limited (MPPKVVCL), a company of Madhya Pradesh State Electricity Board (MPSEB). The electricity is being supplied to the NEWNE grid at 132 kVA substation at Sailana (Ratlam) for selling to MPPKVVCL. All WTGs are located on the site - “hills of Palsodi village of District Ratlam, Madhya Pradesh, India” where no renewable power plant was operated prior to the implementation of the project activity.

The following table shows the details of the installed Wind Turbine Generators (WTGs) of the project activity:

Project Participant	Make/ Model	Rated Capacity (MW)	Date of Commissioning	No. of WTGs	Total Capacity (MW)
Ruchi Soya Industries Limited	Suzlon/ S-82	1.5	29-02-2008	5	7.50
			29-03-2008	7	10.50
			30-05-2008	3	4.50
Total					22.5

Purpose of the project activity:

- To utilize renewable wind energy for generation of the electricity.
- To sell the generated electricity to Madhya Pradesh State PashchimKshetraVidyutVitaran Company Limited connected with the NEWNE grid comprising mainly fossil fuel based power plants.
- To contribute in mitigating the climate change.

The project activity involves the use of wind energy which is a renewable resource of electricity generation and would supply electricity to the NEWNE grid. The electricity generation from wind energy does not cause emissions of greenhouse gases whereas grid electricity is mostly generated from fossil fuels (i.e. coal) that are highly carbon intensive and cause GHG emissions.

Therefore, the project activity replaces anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere by supplying the equivalent amount of electricity generated through the operation of existing fuel mix in the NEWNE grid comprising mainly fossil fuel based power plants and future capacity expansion connected to the grid.

1.2 Sectoral Scope and Project Type

Sectoral Scope	01
Project Type	Energy industries (renewable- /non-renewable sources)
Project Category	Grid-connected renewable power generation

Whether the project is a grouped project?	No
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1.3 Project Proponent:

Ruchi Soya Industries Limited

Roles and Responsibilities of the Project Proponents:

- Overall responsibility of implementation of the VCS project
- Daily monitoring and record keeping
- Collection of credit reports
- Generating the invoices as per credit reports

Contact Information:

Organization:	Ruchi Soya Industries Ltd.
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City:	Indore
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E-Mail:	vinay_shah@ruchigroup.com
URL:	www.ruchigroup.com
Represented by:	
Title:	Vice President (Banking)
Salutation:	Mr.
Last Name:	Shah
Middle Name:	-
First Name:	Vinay
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Direct tel:	+917312528352; +917314017206
Personal E-Mail:	vinay_shah@ruchigroup.com

1.4 Other Entities Involved in the Project

No other entity is involved in the project.

1.5 Project Start Date

Project Start Date: 29-02-2008 (Day-29, Month-February, Year-2008)

1.6 Project Crediting Period

Project Crediting Period Start Date: 29-02-2008 (Day-29, Month-February, Year-2008)

Project Crediting Period End Date: 09-01-2011 (Day-09, Month January, Year-2011)

Total Crediting Period: 2 Years 10 Months 12 days

(The project activity has already been registered with UNFCCC for CDM on 10/01/2011 with Ref. No. 3996. Therefore, crediting period with VCS would be completed on 09/01/2011 due to withdrawn from VCS.

1.7 Project Location

The project site is located in the hills of Sambharkho range falls in Village-Palsodi, District-Ratlam. The aerial distance from midpoint of the site to the Ratlam city is about 12 km. The site is easily approachable by road vehicles up to the foot of the hill. Nearest airport is at Indore and nearest railway station is at Ratlam. Ratlam is about 150 km away from Indore via road.

Details of location of the WTGs installed are mentioned in Table 1 and Figure 1 below:

Table: Location details of all installed WTGs

S.No.	Location No.	Latitude	Longitude
1	P 101	23° 20'22.4" N	74° 54'55.7" E
2	P 104	23° 20'33.9" N	74° 54'40.2" E
3	P 107	23° 20'36.2" N	74° 55'18.4" E
4	P 109	23° 20'45.1" N	74° 54'57.1" E
5	P 112	23° 20'53.8" N	74° 55'23.2" E
6	P 113	23° 20'54.4" N	74° 55'41.3" E
7	P 114	23° 21'00.6" N	74° 55'05.6" E
8	P 131	23° 21'15.5" N	74° 55'17.1" E
9	P 137	23° 21'37.9" N	74° 56'02.7" E
10	P 140	23° 21'49.4" N	74° 55'51.1" E
11	P 143	23° 22'07.2" N	74° 55'47.0" E
12	P 145	23° 22'15.7" N	74° 55'25.5" E
13	P 148	23° 22'09.6" N	74° 56'06.1" E
14	P 150	23° 22'22.8" N	74° 55'51.1" E
15	P 154	23° 22'37.7" N	74° 55'58.3" E

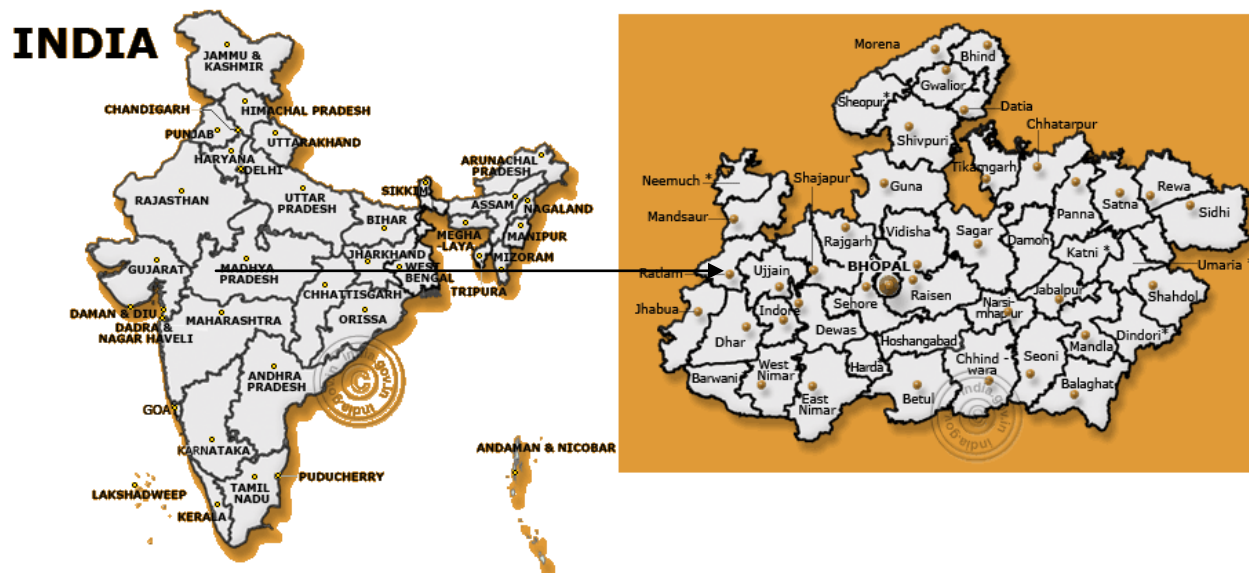


Figure 1: Maps showing location of the project activity

1.8 Title and Reference of Methodology

Title of the approved baseline and monitoring methodology applied to the project activity:

“Consolidated baseline methodology for grid-connected electricity generation from renewable sources”;

Reference of the methodology applied to the project activity: ACM0002; Version 10

Title and reference of tool, which the approved consolidated methodology ACM 0002 drawn upon:

1. “Tool for the demonstration and assessment of additionality”; Version: 05.2 (EB 39)
<http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v5.2.pdf>
2. “Tool to calculate the emission factor for an electricity system”; Version: 01.1 (EB 35).
<http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v1.1.pdf>

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

Project start date 29-02-2008

Commissioning dates of all WTGs:

Location No.	Date of Commissioning
P143, P145, P148, P150, P154	29-02-2008
P109, P112, P113, P114, P131, P137, P140	29-03-2008
P101, P104, P107	30-05-2008

The summary of major breakdown and maintenance in year 2010:

Month	Loc No.	Breakdown Date	Total Duration (Hours)	Month	Loc No.	Breakdown Date	Total Duration (Hours)
Jan-10	P107	08-01-2010	5.40	Aug-10	P107	19-08-2010	9.00
Jan-10	P101	16-01-2010	6.40	Aug-10	P107	20-08-2010	22.50
Feb-10	P101	03-02-2010	11.40	Aug-10	P101	21-08-2010	6.90
Feb-10	P109	03-02-2010	6.80	Aug-10	P143	25-08-2010	7.80
Feb-10	P145	06-02-2010	7.50	Aug-10	P154	25-08-2010	6.80
Feb-10	P101	08-02-2010	5.90	Aug-10	P143	27-08-2010	8.20
Mar-10	P137	02-03-2010	10.50	Aug-10	P112	31-08-2010	17.80
Apr-10	P145	01-04-2010	12.60	Sep-10	P112	01-09-2010	24.00
Apr-10	P114	02-04-2010	7.00	Sep-10	P112	07-09-2010	6.70
Apr-10	P145	02-04-2010	19.80	Sep-10	P104	20-09-2010	13.20
Apr-10	P104	20-04-2010	7.60	Nov-10	P148	02-11-2010	7.90
Apr-10	P107	20-04-2010	5.20	Nov-10	P131	03-11-2010	12.00
May-10	P148	06-05-2010	8.80	Nov-10	P131	04-11-2010	17.20
May-10	P137	27-05-2010	8.90	Nov-10	P140	10-11-2010	11.00
May-10	P140	27-05-2010	8.90	Dec-10	P109	11-12-2010	7.90
May-10	P150	27-05-2010	6.70	Dec-10	P148	20-12-2010	14.20
Jun-10	P150	03-06-2010	6.10	Dec-10	P148	21-12-2010	24.00
Jun-10	P154	06-06-2010	8.50	Dec-10	P148	22-12-2010	24.00
Jul-10	P150	24-07-2010	10.60	Dec-10	P148	23-12-2010	22.10
Jul-10	P113	25-07-2010	11.30	Dec-10	P150	24-12-2010	10.90
Jul-10	P150	25-07-2010	8.10	Dec-10	P150	25-12-2010	13.70
Jul-10	P154	26-07-2010	10.60	Dec-10	P150	25-12-2010	9.10
Aug-10	P154	03-08-2010	6.50	Dec-10	P150	26-12-2010	24.00
Aug-10	P148	11-08-2010	6.50	Dec-10	P150	27-12-2010	19.40
Aug-10	P107	18-08-2010	14.50	Dec-10	P101	29-12-2010	8.70
Aug-10	P107	19-08-2010	13.80	Dec-10	P145	30-12-2010	11.70
Total			235.9				360.7

2.2 Deviations from the Monitoring Plan

The monitoring plan has been detailed in section 3.3 below. There are following additions in the validated monitoring plan:

Troubleshooting Contingency Plan

Procedure for apportioning of electricity supplied to the grid where dates of monitoring period are not matching with dates of credit reports

The same modified monitoring plan has already been validated during verification of earlier monitoring reports.

2.3 Grouped Project

The project activity is an individual and not a grouped project activity. It involves establishment of a wind power project with the total installed capacity of 22.5 MW in the district of Ratlam in Madhya Pradesh, India.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data Unit / Parameter:	$EF_{grid,OM,y}$
Data unit:	tCO ₂ /MWh
Description:	Operating margin CO ₂ emission factor of NEWNE grid in year y
Source of data:	“CO ₂ Baseline Database for Indian Power Sector” version 5.0, published by the Central Electricity Authority, Ministry of Power, Government of India. The “CO ₂ Baseline Database for Indian Power Sector” is available at http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Value applied:	1.004919 tCO ₂ /MWh
Purpose of the data:	To calculate combined margin CO ₂ emission factor of NEWNE grid
Any comment:	It is calculated on <i>ex ante</i> basis and will remain same throughout the crediting period.

Data Unit / Parameter:	$EF_{grid,BM,y}$
Data unit:	tCO ₂ /MWh
Description:	Build margin CO ₂ emission factor of NEWNE grid in year y
Source of data:	“CO ₂ Baseline Database for Indian Power Sector” version 5.0, published by the Central Electricity Authority, Ministry of Power, Government of India. The “CO ₂ Baseline Database for Indian Power Sector” is available at http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Value applied:	0.675181 tCO ₂ /MWh
Purpose of the data:	To calculate combined margin CO ₂ emission factor of NEWNE grid
Any comment:	It is calculated on <i>ex ante</i> basis and will remain same throughout the crediting period.

Data Unit / Parameter:	$EF_{grid,CM,y}$
Data unit:	tCO ₂ /MWh
Description:	Combined margin CO ₂ emission factor for NEWNE grid connected power generation in year y calculated using the “Tool to calculate the emission factor for an electricity system”, version 01.1, EB 35.

Source of data:	Estimated figure evaluated as 75% of OM plus 25% of BM values using data obtained from “CO ₂ Baseline Database for Indian Power Sector” version 5.0, published by the Central Electricity Authority, Ministry of Power, Government of India, which is based on tool “Tool to calculate the emission factors for an electricity system” published by CDM Executive Board. http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Value applied:	0.92248 tCO ₂ /MWh
Purpose of the data:	To calculate baseline emissions.
Any comment:	It is calculated on <i>ex ante</i> basis and will remain same throughout the crediting period.

3.2 Data and Parameters Monitored

Data Unit / Parameter:	EG _{TOTAL,y}
Data unit:	kWh (Kilo-watt hour) As per actual
Description:	Total electricity generation by the wind mills during the year y
Source of data:	Controller attached with each WTG
Description of measurement methods and procedures to be applied:	Data is measured continuously at Central Monitoring System (CMS) through controller attached with each WTG. Site operators on daily basis will record the generation of each WTG at CMS.
Frequency of monitoring/recording:	Daily
Value monitored:	49,919,000 kWh
Monitoring equipment:	Controller
QA/QC procedures to be applied:	The net electricity recorded at controller can be cross checked with the CMS data.
Calculation method:	Not applicable
Any comment:	-The data on the electricity generation will be archived electronically. The data will be kept for two years after the end of the crediting period or the last issuance of VCUs for this project activity, whichever occurs later.

Data / Parameter:	EG _{export}
Data unit:	MWh(Mega-watt hour)-As per VCS-PD kWh (Kilo-watt hour)-As per measuring practice
Description:	Electricity exported to the grid by the project activity in year y
Source of data :	Two Main meters (MPSEB Meters) located at common metering points (one for 8 WTGs at feeder-I and second for 7 WTGs at feeder-III) and owned by MPPKVV CO. LTD.

Description of measurement methods and procedures to be applied:	The export of electricity is measured continuously by the main meters. Main meters' readings are recorded and verified, once in a month, jointly by the representatives of MPPKVV CO. LTD. and the authorized representative of the SISL. Site operators also record main meters readings daily.
Frequency of monitoring/recording:	Monthly
Value monitored:	48,784.65MWh-As per VCS-PD 48,784,650 kWh-As per actual measuring practice and credit reports
Monitoring equipment:	Monitoring Equipment: Energy Meters Type: two-way tri-vector energy meters Accuracy class:0.5% Calibration Frequency: Yearly
QA/QC procedures to be applied:	The energy meters were calibrated as follows: Feeder-I: Meter No. 15233 Date of calibration: 23-03-2009; 20-02-2010 Calibrating agency: MPPKVV Co. Ltd., Ratlam Result of calibration: No defect Next calibration due date: 20-02-2011 Feeder-III : Meter No.57986 Date of calibration: 23-03-2009; 19-03-2010 Calibrating agency: MPPKVV Co. Ltd., Ratlam Result of calibration: No defect Next calibration due date: 19-03-2011
Calculation method:	Not applicable
Any comment:	The data will be kept for two years after the end of the crediting period or the last issuance of VCUs for this project activity, whichever occurs later.

Data / Parameter:	EG _{import}
Data unit:	MWh(Mega-watt hour)-As per VCS-PD kWh (Kilo-watt hour) -As per measuring practice
Description:	Electricity imported (consumed) by the project activity in year y.
Source of data to be used:	Two Main meters (MPSEB Meters) located at common metering points (one for 8 WTGs at feeder-I and second for 7 WTGs at feeder-III) and owned by MPPKVV CO. LTD.
Description of measurement methods and procedures to be applied:	The import of electricity is measured continuously by the main meters. Main meters' readings are recorded and verified, once in a month, jointly by the representatives of MPPKVV CO. LTD. and the authorized representative of the SISL. Site operators also record main meters readings daily.
Frequency of	Monthly

monitoring/recording:	
Value monitored:	154.52 MWh- As per VCS-PD 154,524 kWh- As per actual measuring practice and credit reports
Monitoring equipment:	Monitoring Equipment: Energy Meters Type: two-way tri-vector energy meters Accuracy class:0.5% Calibration Frequency: Yearly
QA/QC procedures to be applied:	The energy meters were calibrated as follows: Feeder-I: Meter No. 15233 Date of calibration: 23-03-2009; 20-02-2010 Calibrating agency: MPPKVV Co. Ltd., Ratlam Result of calibration: No defect Next calibration due date: 20-02-2011 Feeder-III : Meter No. 57986 Date of calibration: 23-03-2009; 19-03-2010 Calibrating agency: MPPKVV Co. Ltd., Ratlam Result of calibration: No defect Next calibration due date: 19-03-2011
Calculation method:	Not applicable
Any comment:	The data will be kept for two years after the end of the crediting period or the last issuance of VCUs for this project activity, whichever occurs later.

Data Unit / Parameter:	EG _y
Data unit:	MWh(Mega-watt hour)-As per VCS-PD kWh (Kilo-watt hour) -As per measuring practice
Description:	Net Electricity exported to grid by the project activity in year y
Source of data:	Credit reports
Description of measurement methods and procedures to be applied:	The data is calculated as $EG_y = EG_{\text{export}} - EG_{\text{import}}$ The export (EG_{export}) and import (EG_{import}) of electricity is measured continuously by the main meters. Main meters' readings are recorded and verified, once in a month, jointly by the representatives of MPPKVV CO. LTD. and the authorized representative of the SISL.
Frequency of monitoring/recording:	Monthly
Value monitored:	48,630.13 MWh- As per VCS-PD 48,630,126 kWh- As per actual measuring practice and credit reports
Monitoring equipment:	Monitoring Equipment: Energy Meters Type: two-way tri-vector energy meters Accuracy class:0.5% Calibration Frequency: Yearly
QA/QC procedures to be applied:	The data can be cross-checked with the invoices generated.
Calculation method:	Calculated as $EG_y = EG_{\text{export}} - EG_{\text{import}}$
Any comment:	The data will be kept for two years after the end of the crediting period or the last issuance of VCUs for this project activity,

	whichever occurs later.
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3.3 Description of the Monitoring Plan

A. Purpose of monitoring

- To ensure efficient day to day operations.
- For proper maintenance and calibration of the equipments.
- Lead to successful implementation of the project and maximization of the benefits.
- To record the electricity generation in a proper and systematic way this is very important for emission reduction calculations.

B. Types of data and information to be reported, including units of measurement

Data to be monitored:

- $EG_{TOTAL,y}$: Total electricity generation by the wind mills during the year y
MWh: Unit of measurement
- EG_{export} : Electricity exported to the grid by the project activity in year y
MWh: Unit of measurement
- EG_{import} : Electricity imported (consumed) by the project activity in year y.
MWh: Unit of measurement

Data to be calculated:

- EG_y : Net Electricity exported to the grid by the project activity in year y
MWh: Unit of measurement

C. Origin of the data

EG_{export} / EG_{import} will be measured by the main meters (MPSEB meters) installed at common metering points.

Net electricity exported (EG_y) to grid is calculated from EG_{export} and EG_{import} as $(EG_{export} - EG_{import})$.

D. Monitoring Information

The Project participant has undertaken maintenance and services agreement with Suzlon Infrastructure Services Limited (SISL), the contractor. The performance of the WTGs, safety in operation and scheduled / breakdown maintenances are organized and monitored by the contractor. So the authority and responsibility of project management lies with the contractor.

Metering:

The metering arrangement is done at site as per the provisions of the Government of M.P. policy notified on 17.10.06. Billing of the metered energy is being carried out on the monthly basis. The meter reading shall be carried out by the Parties MPPKVCL and Contractor (SISL).

Metering Equipment and Calibration:

Controller:

The controller installed on the WTG records total generation and import of the electricity by the WTG. Its primary use is to gather data from the anemometer (weather station) located on the top of the wind turbine. With the collected data the controller points the turbine in the most desired direction with respect

to wind direction. It controls the operations of the WTG to optimize working of the WTG through Central Monitoring System (CMS). The controller does not require calibration as it operates with the software.

Main meters:

-Two main meters are installed-one for seven WTGs and second for eight WTGs. These meters record export, import and reactive electrical energy. The main meters are installed and owned by MPPKVVCL. Main meters shall be tested, checked for accuracy once in a year in the presence of the parties and also be calibrated and adjusted once in a year.

-The meters shall be deemed to have been working satisfactorily if the errors as determined in the tests are within the permissible limit as allowed in the relevant IS specification applicable to high precision energy meters.

-All the tests on main meters shall be conducted by the meter relay testing staff of the MPPKVVCL jointly with the staff of the company and results and corrections so arrived at mutually shall be applicable and binding on both the parties.

Meter Readings:

A monthly reading of power supplied to the grid at the common metering point shall be jointly undertaken by the representatives of MPPKVVCL and the authorized representative of the contractor (SISL). As per the applicable provisions mentioned in the power purchase agreement the main meters' readings will be taken in the middle of each calendar month for previous one month as far as possible. Both representatives of MPPKVVCL and authorized representative of the contractor (SISL) will jointly certify the meter readings.

At controller entire day generation is recorded by the end of day (00:00). This generation is then uploaded on customer's (project participant's) portal for three years. All WTGs are connected to a Central Monitoring System (CMS) located at project site, from where any connected WTG is accessible from single point.

Secondary Monitoring Plan:

The secondary monitoring, which will provide a backup (fail-safe measure) in case the primary monitoring is not carried out, would be done at the individual WTGs. Each WTG is equipped with an integrated electronic controller. The generation data of individual machine can be monitored as a real-time entity at the controller installed at individual WTG. The generation data is also available online through facility provided by the contractor. This generation will be kept as a record in electronic form.

Troubleshooting Contingency Plan:

-If the electricity recorded at the main meter in any month differs from the reading at the CMS beyond the permissible limit the main meter shall be tested as per provisions of power purchase agreement. If on such testing the main meter error is found to exceed the permissible limit then it will immediately be repaired and recalibrated and correction will be applied, as agreed between the parties, to the monthly main meter readings to arrive at the correct energy for billing purpose for the period of the month up to the time of such test repair and recalibration. The tests on main meters shall be conducted by the meter relay testing staff of the MPPKVVCL jointly with the staff of the contractor SISL and results and corrections so arrived at mutually shall be applicable and binding on both the parties. The correction factor means the percentage of error between standard test meter and main meter. The main meter will be used only after calibration.

-If the main meter fails to record energy due to any reason whatsoever, the net supplied electricity to the grid during the period of outage will be calculated by apportioning the net supply of the electricity recorded at the energy meter, owned by MPPKVVCL and located at the sub-station, as follows:

*Net supply of the electricity by i^{th} WTG = (Total net supply of the electricity by entire wind farm as recorded at energy meter installed at the sub-station) * (Net generation of the electricity by i^{th} WTG as recorded on its controller / Sum of net generation by all WTGs of the wind farm as recorded on their controllers).*

Procedure for apportioning of electricity supplied to the grid where dates of monitoring period are not matching with dates of credit reports:

There are instances when the claim of emission reduction starts or ends in middle of a monitoring period and apportioning has to be done to arrive at electricity supplied for that certain period. The following apportioning procedure has been followed, if the crediting period start or end dates falls in between the main meter reading cycles:

The apportioning has been done as per the net electricity generated at controllers of the WTGs of the project activity. The daily generation data on controllers will be used for deriving a ratio for apportioning.

Procedure for apportioning:

Let us assume,

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

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

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

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

Then net electricity supplied by the WTGs of the project activity to the grid during the partial period (for calculating emission reduction for partial period) = G*Z

The billing cycle for the main meter reading for the project activity is 10th to 09th of respective month. The monitoring period of the project activity starts from 01st of January 2010 to 09th of January 2011. The credit notes of the share of electricity for the month of January 2010 is not available for the duration of 1st January to 09th January and the start date of monitoring falls between the billing cycle of December 2010. In order to claim the emission reduction for the duration of 01st to 09th of January 2010 the following approach has been used;

X1 = Sum of the net electricity generation at the controller of each WTG of the project activity during 10th December 2009 to 09th January 2010 (kWh)

X2 = Sum of the net electricity generation at the controller of each WTG of the project activity during 10th December 2009 to 09th January 2010

Y = Sum of the net electricity generation at controller of each WTG of the project activity during the corresponding full period of main meter reading i.e. 10th December 2009 to 09th January 2010

Ratio of the net electricity generation during the partial period for the feeder I (10th December 2009 to 09th January 2010),

$$Z1 = X1/Y$$

Ratio of the net electricity generation during the partial period for the feeder III (10th December 2009 to 09th January 2010),

$$Z2 = X2/Y$$

If net electricity supplied by the WTGs of the project activity to the grid as per credit report during the corresponding full month of main meter reading (10th December 2009 to 09th January 2010) = G

Then net electricity supplied by the WTGs of the project activity to the grid during the partial period for feeder I, 10th December 2009 to 09th January 2010, (for calculating emission reduction for partial period) = G*Z1

And net electricity supplied by the WTGs of the project activity to the grid during the partial period for feeder III, 10th December 2009 to 09th January 2010, (for calculating emission reduction for partial period) = G*Z2

Net electricity generation from the controller are based on the daily generation reports

Net electricity generation as per controller during:	Feeder- I	Feeder- III
10/12/2009 to 31/12/2009 (X1)	1116021	701302
01/01/2010 to 09/01/2010 (X2)	838297	548119
10/12/2009 to 09/01/2010 (Y= X1 + X2)	1954318	1249421

The ratio of net electricity for the period 01/01/2010 to 09/01/2010 comes out to be

$$Z1 = X2/Y; \quad \text{Feeder- I} \quad 0.428946057$$

$$Z2 = X2/Y; \quad \text{Feeder- III} \quad 0.438698405$$

The readings for the month of January 2010 (10/12/2009 to 09/01/2010) as per the credit report are:

	Feeder- I	Feeder- III
Electricity exported (G1)	1906800	1308400
Electricity imported (G2)	11200	6800
Net Electricity Exported	1895600	1301600

Electricity calculated at main meter as per apportioning during 01/01/2010 to 09/01/2010 is:

	Feeder- I	Feeder- III
Electricity exported (G1 * Z1or Z2)	817914	573992

Electricity imported (G2 * Z1or Z2)	4804	2983
Net Electricity exported	813110	571009

This value is further used to calculate the Net electricity supplied by the project activity for the entire monitoring period.

Operational and organizational structure for monitoring

Monitoring responsibility - contractor (SISL):

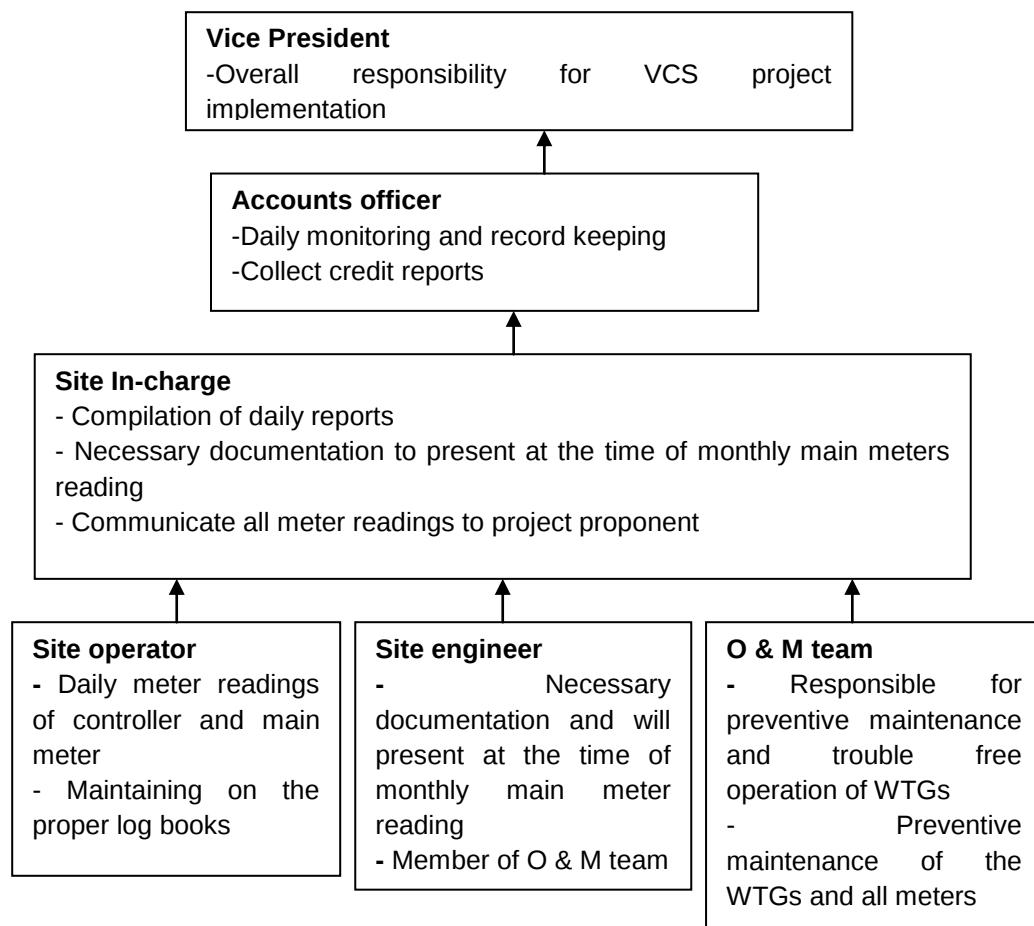
- Daily meter readings of controller on the WTGs and main meters are maintained on the proper log books by site operator.
- Compilation of daily reports for monthly monitoring will be done by site in-charge.
- Site in-charge/site engineer will do necessary documentation and will present at the time of monthly main meter reading by the representative of the MPPKVVCL also they will be authorized representative to jointly certify the meter reading.
- Site in-charge will communicate all meter readings to the project participant.
- O&M team at site will be responsible for preventive maintenance and trouble free operation of WTGs under the overall responsibility of site in-charge. He/she will insure preventive maintenance of the WTGs and all meters.

Monitoring responsibility - Project Participant:

Overall project management responsibility, which includes responsibility for VCS implementation, lies with Vice President (VP). Under his guidance, officer account will arrange for:

- Daily monitoring the project and record keeping- i.e., checking generation on customer portal provided by the contractor (SISL), any deviation from terms of PO and /or O&M agreement is reported to VP and actions are taken accordingly.
- Collect credit reports issued by MPPKVVCL with the help of O&M developer. This job is done and updated on monthly basis.
- Raising invoices, sending copy of this invoice to accounts department and making sure that payment is as per invoice, any deviation reported to VP and actions are taken accordingly.

Operational and organizational chart for monitoring:



4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Baseline emissions in the year y (in tCO_2), BE_y , due to electricity supplied to the grid are the product of the baseline grid emission factor, $EF_{\text{grid},y}$ (in tCO_2/MWh) and the electricity supplied to the grid in the year y , EG_y , (in MWh), over the crediting period as given below:

$$BE_y = EG_y * EF_{\text{grid},y}$$

Where:

BE_y = Baseline emissions of the project activity in the year y (tCO_2)

EG_y = Net electricity supplied to grid in year y (MWh)

$EF_{\text{grid},y}$ = Baseline emission factor of the grid in the year y (tCO_2/MWh)

Emission Factor for NEWNE grid, $EF_{\text{grid},y} = 0.92248 \text{ tCO}_2/\text{MWh}$

Crediting Period: 01/01/2010 to 09/01/2011

Electricity Supplied to the NEWNE Grid, $EG_y = 48630.13 \text{ MWh}$

Baseline Emission, $BE_y = 48630.13 \times 0.92248 = 44860 \text{ tCO}_2$

4.2 Project Emissions

The project activity is based on renewable wind energy, therefore, project emissions should not be considered as per methodology ACM0002, $PE_y = 0$.

4.3 Leakage

According to the applied methodology, ACM0002, no leakage is considered for the project activity. Therefore, $LE_y = 0$

4.4 Summary of GHG Emission Reductions and Removals:

The emission reduction ER_y due to project activity during a given year y is estimated as the difference between baseline emissions (BE_y), and project emissions (PE_y) & emissions due to leakage (L_y), as per the formula given below:

$$ER_y = BE_y - PE_y - L_y$$

Where,

BE_y = Baseline emissions in the year y in tCO_2

PE_y = Project emissions in the year y in tCO_2

L_y = Emissions due to leakage in the year y in tCO_2

In case of the project activity,

$PE_y = 0$ for the project activity as per the methodology.

$L_y = 0$ for the project activity.

Therefore, $ER_y = BE_y$

The Baseline Emissions in NEWNE grid during the crediting period (BE_y) = 44860 tCO_2

The Emission Reductions in NEWNE grid during the crediting period (ER_y) = 44860 tCO_2

The comparison of actual emission reductions and estimated as per VCS-PD is as follows:

Crediting Period	Actual Emission Reductions ER_y (tCO_2)	Estimated Emission Reductions (ex-ante) ER_y , (tCO_2)
01/01/2010 to 09/01/2011	44,860	$46,691 \times (1 + (9/365)) = 47,842$

5 ADDITIONAL INFORMATION

Energy Meters' Details:

Feeder	Sr. No. of Energy Meter	Date of Calibration of Energy Meter
Feeder-I	Main meter: 15233	23-03-2009, 20-02-2010
Feeder-III	Main meter: 57986	23-03-2009, 19-03-2010

Staff Training Details:

Training date	Training Program	Training Venue	No. of Staff Members Trained
02-11-2010	Behavioral Based Safety	Palsodi	3
25-11-2010	Basic Safety	Ratlam	1