Voluntary Carbon Standard
Project Description Template

[06th May 2009]

As per the requirements of VCS 2007 standards, the following topics are covered in this document:

1. ***Description of the project***
2. ***VCS methodology***
3. ***Monitoring***
4. ***GHG emission reductions***
5. ***Environmental Impact***
6. ***Stakeholder comments***
7. ***Schedule***
8. ***Ownership***

1 Description of Project:

1.1 Project title:

10.2 MW Wind Power Project by Ruchi Infrastructure Limited
Version: 02
Date: 06/05/2009

1.2 Type/Category of the project:

Since the capacity of the project activity is only 10.2 MW, which is less than the maximum qualifying capacity of 15 MW for small scale, the project activity has been considered as a small scale project activity and UNFCCC indicative simplified modalities and procedures are applied.

According to APPENDIX B[1] of "simplified modalities and procedures for small-scale clean development mechanism project activities" the type and category of project activity are tabulated bellow:

Project type	**Project category**
Type (I): Renewable energy projects	D. Grid connected renewable electricity generation.[2]

As per the VCS standards, any combination of GHG projects or project categories that meets the requirements of the VCS 2007 can be registered as a grouped project. The present project activity falls under one single category and is therefore not a grouped project.

1.3 Estimated amount of emission reductions over the crediting period including project size:

Crediting period: The project participant has selected the fixed crediting period of 10 years starting from the date of commissioning of first WEG in the project activity i.e. 31/01/2008.

Project size: 20,031 tCO2-e per year. It falls in the range of 5,000 to 1,000,000 tCO2e per year, therefore, the project activity comes under the group "projects".

Estimated Emission Reductions: The estimated amount of emission reductions over the chosen crediting period are tabulated below:

Years	Duration	**Estimation of annual emission reductions in tonnes of CO_2e**
2008-09	31/01/2008-30/01/2009	19,901
2009-10	31/01/2009-30/01/2010	20,033
2010-11	31/01/2010-30/01/2011	20,033
2011-12	31/01/2011-30/01/2012	20,033
2012-13	31/01/2012-30/01/2013	20,088
2013-14	31/01/2013-30/01/2014	20,033
2014-15	31/01/2014-30/01/2015	20,033
2015-16	31/01/2015-30/01/2016	20,033
2016-17	31/01/2016-30/01/2017	20,088
2017-18	31/01/2017-30/01/2018	20,033
Total estimated reductions (tonnes of CO_2e)		200,308
Total number of crediting years		10
Average of annual estimated reductions over the crediting period (tCO_2e)		20,031

1.4 A brief description of the project:

[1] http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf
[2] http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_PHPV5WESACMBTJ2YY54GAJYSIEI3HD

Project activity:

The project activity is promoted by M/s. Ruchi Infrastructure Limited (RIL). The project activity involves supply, erection, commissioning and operation of seventeen WTGs of 600 kW each at Palsodi, District-Ratlam in Madhya Pradesh (MP), make – Suzlon. The total installed capacity is 10.2 MW. The generated electrical power from the project activity will be sold to Madhya Pradesh State Electricity Board (MPSEB), connected with the NEWNE grid at 132 kVA substation at Sailana (Ratlam).

Purpose of the project activity:

- The purpose of the project activity is to utilize renewable wind energy for generation of electricity. The project activity generates average 22,112.13 MWh electricity per year and consequently replaces anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere, which is estimated to be 20,031 tonnes of CO2e per year, by displacing the equivalent amount of electricity generation through the operation of existing fuel mix in the grid comprising mainly fossil fuel based power plants and future capacity expansion connected to the grid.
- To sell the generated electricity to Madhya Pradesh State Electricity Board connected with the NEWNE grid.
- To contribute up to some extent in mitigating the climate change.

Plant Load Factor:

The power production through wind turbines depends on many factors like the speed of wind and the grid availability factor etc., which are external factors to the system. The project participant hired an engineering company to estimate the plant load factor of the project activity. The estimated plant load factor is 24.75%. The same PLF has been used in evaluating the financial indicators.

Reduction of GHGs emissions due to the project activity:

The use of wind as a renewable energy source for generating electricity involves the conversion of wind energy contained in masses of moving air into rotating shaft power. The conversion process utilises aerodynamic forces (lift and/or drag) to produce a net positive turning moment on a shaft, resulting in the production of mechanical power that is converted to electrical power.

The project activity employed 17 WTGs, 600 kW each, that convert wind energy into electrical energy and do not use any other fuel as input for electricity generation, thus, reduce the consumption of the depleting non-renewable natural resources and associated GHGs emissions. The operation of WTGs is also emission free and hence no emissions are produced during the lifetime of the project activity. The project activity reduces anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere, which is estimated to be approximately 20,031 tonnes of CO_2e per year, by displacing the equivalent amount of electricity generation through the operation of existing fuel mix in the grid comprising mainly fossil fuel based power plants and future capacity expansion connected to the grid.

As per the methodology the baseline scenario is the grid based electricity system, which is same as that of the pre-project scenario.

WTGs

1.5 Project location including geographic and physical information allowing the unique identification and delineation of the specific extent of the project:

The project activity is located in the state of Madhya Pradesh (MP) in India. Details of location of the WTGs installed are mentioned in Table 1 and Figure 1 below:

TABLE 1: GEOGRAPHICAL DETAILS OF INSTALLED WTGs

Machine No.	Village	Elevation (m)	Latitude	Longitude
P 161	Gopalpura	580	23^0 23’37.7” N	74^0 55’46.8” E
P 162	Gopalpura	584	23^0 23’47.8” N	74^0 55’45.5” E
P 163	Gopalpura	576	23^0 23’55.3” N	74^0 55’55.6” E
P 164	Tajpuriya	596	23^0 23’42.0” N	74^0 55’30.5” E

P 165	Tajpuriya	586	23^0 23’50.4” N	74^0 55’33.4” E
P 166	Tajpuriya	594	23^0 23’42.5” N	74^0 55’17.0” E
P 167	Tajpuriya	594	23^0 23’47.4” N	74^0 54’52.5” E
P 170	Tajpuriya	566	23^0 23’55.5” N	74^0 54’39.3” E
P 171	Tajpuriya	592	23^0 24’00.0” N	74^0 55’04.3” E
P 172	Tajpuriya	586	23^0 24’09.5” N	74^0 54’52.4” E
P 173	Tajpuriya	574	23^0 24’15.1” N	74^0 54’44.0” E
P 174	Tajpuriya	586	23^0 24’17.9” N	74^0 54’53.8” E
P 175	Tajpuriya	590	23^0 24’21.8” N	74^0 55’06.5” E
P 176	Tajpuriya	578	23^0 24’26.4” N	74^0 54’52.0” E
P 177	Tajpuriya	562	23^0 24’45.4” N	74^0 54’52.5” E
P 178	Tajpuriya	552	23^0 24’49.1” N	74^0 55’05.2” E
P 179	Tajpuriya	550	23^0 24’52.6” N	74^0 54’46.9” E

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. Palsodi is about 160 km away from Indore via road.

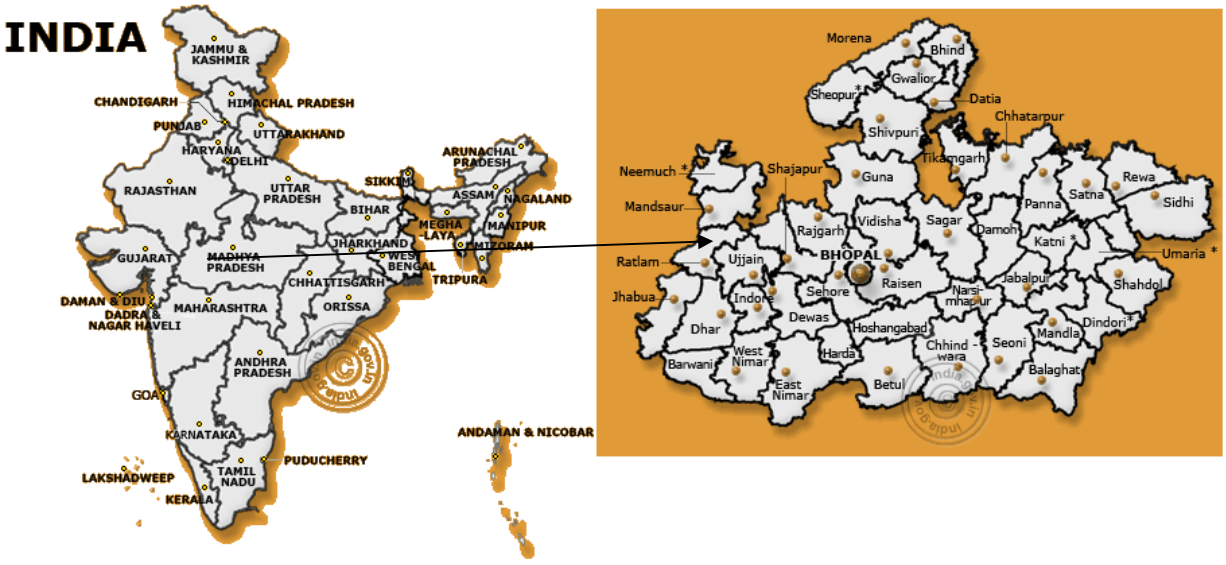

Figure 1: The location of the site in the project activity

1.6 Duration of the project activity/crediting period:

Project Start Date: 31/01/2008 (Date of commissioning of first WEG in the project activity).
Crediting Period Start Date: 31/01/2008.
Duration of the Crediting period: 10 Years (from 31/01/2008 to 30/01/2018).

1.7 Conditions prior to project initiation:

In 2007, the total Indian power generation installed capacity was 138 GW, of which thermal based system constituted 65%, hydro 25%, nuclear 3% and renewable 7%[3]. The government of India has planned to add over 100000 MW of power generation capacity to achieve the promise ***“Power to all by 2012”*** and per capita power to be increased to over 1000 units by 2011-2012. Accordingly, it has planned to add 62000 MW in the XI Five Year Plan (2007-2012) and at least 66500 MW (2012-2017) in the XII Five Year Plan[4]. Though the current fuel mix shows diversity but coal continues to be the dominant fuel with

[3] Power Scenario At A Glance, CEA Planning Wing, Integrated Resource Planning, December, 2007. www.cea.nic.in
[4] Report of the Working Group on Power for 11th Five Year Plan (2007-12), Ministry of New and Renewable Energy, Government of India, December 2006. www.planningcommission.nic.in/aboutus/committee/wrkgrp11/wg11_power.pdf

over 50% usage. Despite the potential, India has not done enough in renewable area. The current renewable capacity is little more than 10000 MW, half of which was added in last two years[5].

In spite of significant growth in electricity generation over the years, the shortage of power continues to exist in India primarily on account of growth in demand for power, outstripping the growth in generation and generating capacity addition. Therefore, in the absence of the project activity equal amount of electricity would have been generated from the operation of existing fuel mix in the grid comprising mainly fossil fuels[6] based power plants and future capacity expansion connected to the grid.

1.8 A description of how the project will achieve GHG emission reductions and/or removal enhancements:

Pre-Project Scenario:
The project participant was not involved in generation of power, supplying the electricity to the grid and/or using for captive consumption under the pre-project scenario.

Project Scenario:
The project activity is a renewable source of power generation and would supply electricity to the NEWNE grid. The total installed capacity of the project activity is 10.2 MW equipped with 17 sets of WTGs with capacity of 600 kW each (model S52-600 kW) made by SUZLON.

Therefore, in the absence of the project activity, equal amount of electricity would have been generated from the operation of existing fuel mix in the grids comprising mainly fossil fuel based power plants and future capacity expansion connected to the NEWNE grids.

1.9 Project technologies, products, services and the expected level of activity:

SUZLON is a well-known supplier of wind turbines from India and so far has installed WTGs of different capacities in various countries. Suzlon Infrastructure Services Limited (SISL), a SUZLON Group company, will provide all operations and maintenance services to the project activity.

Technology: [7]
The use of wind as a renewable energy for generating electricity involves the conversion of wind power contained in masses of moving air into rotating shaft power. The conversion process utilises aerodynamic forces (lift and/or drag) to produce a net positive turning moment on a shaft, resulting in the production of mechanical power that is converted to the electrical power.

Technical Specifications:

KILO WATT SERIES (S-52: 600 kW):

The S-52: 600 kW wind turbine is specially designed to deliver high-performance in the low-to-medium wind regime prevalent across most of the parts in India. The design incorporates Suzlon innovations starting from blades manufactured using state-of-the-art Vacuum Assisted Resin Infusion Molding technology, to a unique Micro Pitch system, advanced controls, and the highest hub-height in its class, all leading to a robust, reliable and efficient product which generates high-quality grid-friendly power with negligible harmonics[8].

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[5] Report of the Working Group on New and Renewable Energy for 11th Five Year Plan (2007-12), Ministry of New and Renewable Energy, Government of India, December 2006. www.planningcommission.nic.in/aboutus/committee/wrkgrp11/wg11_renewable.pdf

[6] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm ,see Baseline Carbon Dioxide Emission Database

[7] http://www.ireda.in/homepage1.asp?parent_category=2&sub_category=21&category=78

[8] http://www.suzlon.com/WindTurbines.html?cp=2_3

Operating Data	
Cut-in wind speed	4 m/s
Rated wind speed	13 m/s
Cut-out wind speed	25 m/s
Generator	
Type	Single speed Asynchronous generator
RPM at Rated Power	1539
Rated Voltage	690 V
Frequency	50 Hz
Enclosure class	IP56
Cooling system	Air cooled
Rated output	600 kW
Insulation	Class H
Rotor	
Diameter	52 m
No. of Rotor Blade	3
Orientation	Upwind/Horizontal axis
Rotational speed	24 rpm
Rotational direction	Clockwise
Rotor Blade material	Glass reinforced epoxy, vacuum injected
Swept Area	2124 m^2
Hub Height	75 m
Regulation	Pitch regulated
Gear box	
Type	3 stage (1 planetary and 2 helical)
Ratio	1:63.633
Manufacturer	Flender – Winergy / Equivalent
Nominal Load	660 kW (Mechanical power)
Type of cooling	Oil cooling system, forced lubrication
Operating Brakes	
Aerodynamic brake	3 Independent systems with blade pitching
Yaw drive	
Yaw drive System	2 Active electrical motors
Yaw bearing type	Polyamide slide bearing
Tower	
Type	Free standing., Lattice tower, hot dip galvanized
Tower height	74.090 m
Assembly	Bolted structure, assembly at side
Erection	With crane
Design	GL class II

The power production through wind turbines depends on the speed of wind and the grid availability factor, which are external factors to the system. The PLF of the project activity is estimated by an engineering company contracted by the project participant as 24.75%. The calculations of financial indicators and emission reductions are carried out with the PLF of 24.75% as per third party estimations.

The wind turbines have an average lifetime of 20 years as per the industry standards and MPERC recommendations[9]. All WTGs in the project activity are newly purchased and 15 out of which were commissioned on 31/01/2008 and remaining 2 were commissioned on 29/02/2008. The baseline scenario is the grid based electricity system, which is same as that of the pre-project scenario. The project activity does not result in any greenhouse gas emissions and it is a clean source of electricity. The technology is a clean technology as there are no GHG emissions associated with the electricity generation. Technology is indigenous, available within the country, and environmentally safe and sound.

Expected level of the project activity: 22,112.13 MWh per year.

1.10 Compliance with relevant local laws and regulations related to the project:

The project activity is in compliance with all mandatory applicable legal and regulatory requirements as shown below:

- The implementation of the project activity is a voluntary initiative and it is not mandatory or a legal requirement.
- The Indian Electricity Act, 2003 does not restrict or empower any authority to restrict the fuel choice for power generation.
- The applicable environmental regulations do not restrict the use of wind energy for power generation.
- There is no legal requirement on the choice of a particular technology for power generation in India.

1.11 Identification of risks that may substantially affect the project's GHG emission reductions or removal enhancements:

The project developer has taken higher investment risks compared to the alternatives, which are demonstrated below:

- Critical component failures (e.g. gear train / box, bearings, blades etc).
- Wind resource variability.
- The proponents have to remain dependent on the O&M agency for all issues regarding operations. This factor, coupled with low CUF values being experienced as compared with fossil fuel based power plant, provided a constraint to the proponents for going ahead with the project activity.

1.12 Demonstration to confirm that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

The project activity primarily aims at displacement of grid electricity in which majority of power is generated from fossil fuels like coal. Therefore the aim of the project activity is to reduce GHG emissions and not to create GHG emissions.

1.13 Demonstration that the project has not created another form of environmental credit (for example renewable energy certificates).

Ruchi Infrastructure Limited has declared that no other environmental credit has been created from the project activity. It is also declared that the same project activity is also under CDM validation and on registering the project activity with UNFCCC as CDM project the project activity will be withdrawn from VCS.

[9] http://www.mperc.org/windenergy.pdf pp. 14

1.14 Project rejected under other GHG programs (if applicable):

No, the project has not been rejected under any other GHG reduction schemes. However, the project is under CDM validation with the same DOE.

1.15 Project proponents roles and responsibilities, including contact information of the project proponent, other project participants:

The roles and responsibilities of the project proponent are provided in the monitoring plan in section 3.4. The contact information of the project proponent is given below:

Organization:	Ruchi Infrastructure Limited
Street/P.O.Box:	7/5, South Tukoganj, Nath Mandir Road
Building:	301, Mahakosh House
City:	Indore
State/Region:	Madhya Pradesh
Postfix/ZIP:	452001
Country:	India
Telephone:	0731-2513281
FAX:	0731-2513285
E-Mail:	mukesh_rawal@ruchigroup.com
URL:	www.ruchigroup.com
Represented by:	
Title:	DGM- Projects
Salutation:	Mr.
Last Name:	Rawal
Middle Name:	P.
First Name:	Mukesh
Department:	Projects
Mobile:	+919893278557
Direct FAX:	+917312513285
Direct tel:	+917314017261
Personal E-Mail:	mrawal1@yahoo.com

1.16 Any information relevant for the eligibility of the project and quantification of emission reductions or removal enhancements, including legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and temporal information.):

- **VCS approved GHG programs are as follows:**

UNFCCC Clean Development Mechanism
UNFCCC Joint Implementation
Climate Action Reserve

The project activity falls in UNFCCC Clean Development Mechanism program, hence applicable CDM methodology, AMS I.D., has been applied to the project activity.

- **VCS Program Criteria for GHG Projects:**

The applicability of the principles[10] that must be met by the VCUs under the VCS Program has been demonstrated as follows:

Principle	Description	Applicability to the project activity
2.2.1 Real	All the GHG emission reductions and removals and the projects that generate them must be proven to have genuinely taken place.	All the WTGs involved in the project activity have already been commissioned. The calculations of GHG reductions will be carried as per the electricity generated by them actually. Hence, the project and GHG reductions have genuinely taken place.
2.2.2 Measurable	All GHG emission reductions and removals must be quantifiable using recognised measurement tools (including adjustments for uncertainty and leakage) against a credible emissions baseline.	The emission reductions are quantifiable as these are being calculated from the measured data of electricity generated by the project activity. The methodology, AMS-I.D., and the associated tools are applied to establish the baseline and to evaluate the baseline emission factor.
2.2.3 Permanent	Where GHG emission reductions or removals are generated by projects that carry a risk of reversibility, adequate safeguards must be in place to ensure that the risk of reversal is minimized and that, should any reversal occur, a mechanism is in place that guarantees the reductions or removals will be replaced or compensated.	No GHG emissions take place in generation of the wind power. GHG emission reductions from the project are of permanent nature as reversibility of GHG emission reductions will not take place in this case.
2.2.4 **Additional**	Project-based GHG emission reductions and removals must be additional to what would have happened under a business as usual scenario if the project had not been carried out.	Business as usual scenario is power generation from the power plants connected to the grid. In the absence of the project activity equal amount of electricity would have been generated by the existing / new power plants connected to the grid, most of them are based on fossil fuels. Electricity generated from the project will not emit any GHG emission. Hence, the project will reduce the additional GHG emissions by generating emission free electricity and supplying to the power deficit grid.
2.2.5 **Independently verified**	All GHG emission reductions and removals must be verified to a reasonable level of assurance by an accredited validator/verifier with the expertise necessary in both the country and sector in which the project is taking place.	All GHG emission reductions will be verified to a reasonable level of assurance by an accredited validator/verifier with the expertise necessary in both the country and sector in which the project is taking place.
2.2.6 **Unique**	Each VCU must be unique and should only be associated with a single GHG emission reduction or removal activity. GHG Programs must contain checks to ensure that	The VCUs are unique and associated with a single GHG emission reduction activity, wind power generation. GHG Programs contain checks to ensure that double counting of reductions and removals – in mandatory or other

[10] http://www.v-c-s.org/docs/Voluntary%20Carbon%20Standard%20Program%20Guidelines%202007_1.pdf

	double counting of reductions and removals – in mandatory or other voluntary markets – does not take place.	voluntary markets – will not take place.
2.2.7 **Transparent**	Publicly disclose sufficient and appropriate GHG related information to allow intended users to make decisions with reasonable confidence.	A public notice was circulated among the stakeholders of the project activity for conducting the stakeholders' consultation meeting. The complete VCS-PD will be available to the public for helping them to make their decisions with confidence.
2.2.8 **Conservative**	Use conservative assumptions, values and procedures to ensure that the GHG emission reductions or removals are not over-estimated.	The conservative assumption(s), values and procedures are used to ensure that the GHG emission reductions are not over-estimated.

- **Validation Date Deadline**

The validation deadline as per Clause 5.2.1 of the VCS 2007 is as follows[11]:

"VCS 2007 validations shall be completed within two years of the project start date, or shall be completed or contracted before 19 November 2008. In relation to contracts entered into before 19 November 2008, validation shall be completed by 19 November 2009 and proof of contracting prior to 19 November 2008 shall be provided."

Project started on 31/01/2008. So according to above, validation should be completed within two years i.e. till 30/01/2010. The validation is in progress and it is expected that the validation will be completed before the required date.

- **Applicability of Section 5.2.2 of the VCS 2007.1: Double Counting[12]**

  The above concept of double counting is not applicable to the project, as the project is neither in emission trading program, nor takes place in a jurisdiction or sector in which binding limits are established on GHS emissions. The PP is not bound to implement this project; PP involved himself voluntary with this project.

- **Baseline & Monitoring Methodologies Requirement(s)**

The following baseline scenario and monitoring methodologies are approved under the VCS[13]:

Clean Development Mechanism methodologies
Climate Action Reserve

To achieve/attain the above points, Project activity has applied Clean Development Mechanism methodology, AMS I.D.; Version 15

Contribution of the project activity to sustainable development
Ministry of Environment and Forests, Govt. of India has stipulated the social well being, economic well being, environmental well being and technological well being as the four indicators for sustainable development in the interim approval guidelines for host country approval of the project activity[14].

The project proponent believes that the project activity has contributed to sustainable development in following manners:

I. Social well being:

[11] http://www.v-c-s.org/100908deadline.html
[12] http://www.v-c-s.org/docs/VCSA%20Policy%20Announcement,%20Applicability%20of%20Section%205-2-2.pdf
[13] http://www.v-c-s.org/methodologies.html

The project activity provided / provides job opportunities to some of the local people during erection and operation of the wind farm contributing up to some extent in poverty alleviation of the local tribal community. The company has also developed the site and constructed an approach road. The company also distributed solar lanterns to the villagers and arranged health awareness program around the project site, in which twelve schools and 600 peoples were beneficiaries. Due to the wind farm the company is developing some of the basic amenities, like toilets / bathrooms inside the houses, primary education etc., to the local community, which would not happen if the project activity was not taken up, leading to improvement in living standards. Thus, the project activity has contributed to social well-being.

II. Economic well being:

The project participant / wind energy developer procured land on lease from Department of Forests, M.P. in Palsodi, the cost of land of surrounding areas appreciated benefiting the local landowners directly. The investment in the project activity has increased the economic activity of the local area. The generated electricity is fed into the NEWNE regional grid, thereby improving the grid frequency and availability of electricity to the local consumers, which will provide new opportunities for industries and economic activities to be setup in the area, thereby, resulting in greater local employment, ultimately leading to overall economic development. The project activity does not interfere any activity including forestation programme of Department of Forests.

III. Environmental well being:

The project activity uses wind energy to produce electricity which otherwise would have been produced through the grid connected power plants which are primarily fossil fuel based. The following environmental benefits are derived from the project activity that contribute to environmental well-being:

- Reduction in emissions including local and global pollutants.
- Produces electricity from a renewable wind energy and contributes to resource conservation.
- There is no solid waste from the project activity.

IV. Technological well being:

There is continuous research and development on the geometry of the wind blades, height of towers, diameters of towers etc., which augurs well for the technological well being. The project activity leads to the promotion of WTGs into the region, demonstrating the success of wind turbines, which feed the generated power into the nearest sub-station, thus increasing energy availability and improving quality of power under the service area of the substation. Hence, the project leads to technological well-being.

All the above-discussed points are the contributions of the project activity for the sustainable development.

1.17 List of commercially sensitive information (if applicable):

Not Applicable.

2 VCS Methodology:

2.1 Title and reference of the VCS methodology applied to the project activity and explanation of methodology choices:

As identified in the VCS 2007 standards, the project activity should follow the Clean Development Mechanism methodologies. Since the capacity of the project activity is only 10.2 MW, which is less than the maximum qualifying capacity of 15 MW for small scale, the project activity has been considered as a small scale VCS project activity and UNFCCC indicative simplified modalities and procedures are applied as follows:

Title: Grid connected renewable electricity generation
AMS I.D.; Version 15; Sectoral scope-01
As per AMS I.D. latest version of methodological tool 'Tool to calculate the emission factor for an electricity system', version 01.1 has been applied.

Reference:
http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_PHPV5WESACMBTJ2YY54GAJYSIEI3HD
.
http://cdm.unfccc.int/methodologies/Tools/EB35_repan12_Tool_grid_emission.pdf

Explanation:
The project activity involves generation of grid connected electricity from renewable wind energy. Since the capacity of the project activity is 10.2 MW which is less than the maximum qualifying capacity of 15 MW for a small scale CDM project activity under Type-I of the small scale methodologies and this capacity will not increase throughout the whole crediting period of 10 years, hence the project activity falls under the small scale category AMS I-D.

AMS-I.D. version 15 has been applied to the project activity and the project activity does not require any methodology deviation and methodology revision.

2.2 Justification of the choice of the methodology and why it is applicable to the project activity:

The project activity generates electrical power from wind energy and its capacity is 10.2 MW. The generated power is being supplied through the grid. Therefore, small scale methodology AMS I-D is applied. The justification of the choice of the methodology and its applicability of the project activity is demonstrated as follows:

Para of AMS-ID	Applicability Criteria	Project Case
1.	This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit.	The project activity comprises generation of electricity using wind energy and the electricity is being supplied to the concerned electricity distribution system (grid), NEWNE Grid, which is predominantly fossil fuels fired system[15].
2.	If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel**, the capacity of the entire unit shall not exceed the limit of 15 MW.	There is neither non-renewable component added nor co-firing is required in the project activity. The renewable wind project activity is 10.2 MW that is less than 15 MW. Hence, this criterion is satisfied.
3.	Combined heat and power (co-generation) systems are not eligible under this category.	The project activity is not a co-generation system. Therefore, this criterion is not relevant.
4.	In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct*** from the existing units.	Not relevant as the project activity is entirely new.
5.	Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small-scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.	Not relevant as the project activity is not a retrofit or modification of an existing facility.

[15] http://www.cea.nic.in/power_sec_reports/general_review/0304/tables.pdf

** Co-fired system uses both fossil and renewable fuels.
*** Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct".

It is clear from above mentioned discussion that the project activity satisfies the applicability criteria of AMS-ID.

2.3 Identifying GHG sources, sinks and reservoirs for the baseline scenario and for the project:

GHG Sources are as follows:

Scenario	Source	Gas	Included?	Justification/Explanation
Baseline	Electricity generation	CO_2	Yes	The electricity is generated mostly from fossil fuels in Indian grids which are carbon intensive; other gases are not considered by following a conservative approach.
		CH_4	No	
		N_2O	No	
Project Activity	Leakage due to transfer of energy generating equipment	CO_2	No	The emissions from transportation of WTGs are considered as negligible.
		CH_4	No	
		N_2O	No	
	Electricity generation	CO_2	No	No emission takes place in generating power from wind energy.
		CH_4	No	
		N_2O	No	

No carbon sequestration is taking place in the baseline and project activity. Therefore, no GHG sink is involved.

GHG reservoirs in baseline scenario: The fossil fuels being used in the power plants connected to the grid.

GHG reservoir in the project activity: Wind Energy

2.4 Description of how the baseline scenario is identified and description of the identified baseline scenario:

Pre-Project Scenario:
In spite of significant growth in electricity generation over the years, the shortage of power continues to exist in India primarily on account of growth in demand for power, outstripping the growth in generation and generating capacity addition. Therefore, in the absence of the project activity, equal amount of electricity would have been generated from the operation of existing fuel mix in the grids comprising mainly fossil fuel based power plants[16] and future capacity expansion connected to the grids. The project proponent was not involved in generation of power and supplying the electricity to the grid under the pre-project scenario.

Project Scenario:
The project activity is a renewable source of power generation and would supply electricity to the NEWNE grid. The total installed capacity of the project activity is 10.2 MW equipped with 17 sets of WTGs with capacity of 600 kW each (model S52-600 kW) made by SUZLON.

Baseline Scenario:
As mentioned in the pre-project scenario above that the project proponent was not involved in generation of power and supplying the electricity to the grid under the pre-project scenario. Therefore, in the absence of the project activity, equal amount of

[16] http://www.cea.nic.in/power_sec_reports/general_review/0304/tables.pdf

electricity would have been generated from the operation of existing fuel mix in the grids comprising mainly fossil fuel based power plants and future capacity expansion connected to the grids. Hence, baseline scenario is same as of pre-project scenario.

The applicable baseline, as per AMS I.D is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_2e/kWh) calculated in a transparent and conservative manner as:

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system'.

OR

(b) The weighted average emissions (in kg CO2e/kWh) of the current generation mix. The data of the year in which project generation occurs must be used.

Establishing Baseline:
The baseline is established using the option (a) of combined margin. The combined margin is calculated for NEWNE grid and data is obtained from Central Electricity Authority of India (CEA) database on CO_2 baseline for Indian Power Sector. The CEA has calculated the baseline emission factors using the tool "Tool to calculate the emission factors for an electricity system", for the regional grids (NEWNE and Southern) in India. As this is the most authentic information available in the public domain, the baseline emission factor used in the calculation of baseline emissions for the project activity is being calculated from the same for transparency and accuracy[17]. The detailed calculations of combined margin for NEWNE grid is given in section 4.1 and summarized as follows:

NEWNE Grid:

Factor	Value	Weight	Weighted Value
Operating Margin (Average of last three years)	1.008626	75%	0.756469
Build Margin (for the latest year)	0.597712	25%	0.149428
Combined Margin	-	-	0.90589

2.5 Description of how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity (assessment and demonstration of additionality):

The project proponent used Test 1 (The Project Test) to demonstrate the additionality as follows:

Step 1: Regulatory Surplus
The project activity is in compliance with all mandatory applicable legal and regulatory requirements as shown below:

- The implementation of the project activity is a voluntary initiative and it is not mandatory or a legal requirement.
- The Indian Electricity Act, 2003 does not restrict or empower any authority to restrict the fuel choice for power generation.
- The applicable environmental regulations do not restrict the use of wind energy for power generation.
- There is no legal requirement on the choice of a particular technology for power generation in India.

Step 2: Implementation Barriers

[17] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

The project activity faces the investment barrier as demonstrated below:

The investment barrier faced by the project consists of barrier due to high capital cost and consequent impact on return.

The project activity generates revenue by selling electricity to MPSEB. Thus, simple cost analysis cannot be applied to the proposed CDM project activity.

The baseline to the project activity is the grid electricity system. This alternative will not require capital investment. Hence, investment comparison analysis (option II) cannot be applied and benchmark analysis (option III) is most appropriate.

Internal Rate of Return (IRR) is one of the known financial indicators used by banks, financial institutions and project developers for making investment decisions. Hence, to conduct the investment analysis of the project activity the post tax project internal rate of return (Project – IRR) is selected as the financial indicator.

As per para 11 of 'Guidance on the assessment of investment analysis, (EB 41, Annex 45)' Prime Lending Rate (commercial) can be taken as an appropriate benchmark for project IRR. PLR or Prime Lending Rate is defined as the benchmark rate for all bank loans. Historically, the PLR has been the rate at which banks lend to the best borrower—one who is the safest or the least likely to default on the loan. As per the guidance on assessment of investment analysis, PLR is comparable with project IRR. If the project does not even earn sufficient returns to cover the PLR then investment in the project can be considered financially unattractive.

The prime lending rate (PLR) of five major banks in India was in the range of 12.75% to 13.25% at the time of decision making[18]. The project participant has taken an average prime lending rate, 13%, as benchmark for the project activity.

The project participant has taken following assumptions for investment analysis as per information available at the time of decision making and references are given in attached financial calculations (excel sheets):

Capacity of the wind farm	10.2 MW
No. of machines	17
Capacity of each machine	600 kW
Plant load factor	24.75 %
Project cost	INR 621.48 Million
Debt (100%) FCCB Equity[19]	INR 621.48 Million Nil
Premium rate (compounded yearly)	7.64%(loan document)
Total premium on maturity in Feb. 2012	44.50%
Deprecation rate	4.50% (SLM)
Maximum Depreciation	90%
Salvage Value	10%
Insurance Charges	0.57 (INR Mn.)
O&M Charges	First year – nil; 'INR 0.6 Million/WTG+ service tax of 12.36%'for 2nd year and 5% escalation afterwards

[18] http://www.rbi.org.in/scripts/WSSView.aspx?Id=11383

[19] The project activity is funded 100% from the funds raised by the company from overseas markets in the form of zero coupon unsecured Foreign Currency Convertible Bonds (FCCB). The bonds either can be converted into equity shares with voting rights or can be redeemed on the maturity date at 144.50% of their principal amount. The funds from FCCB were raised in February 2007 with maturity in February 2012. Even though the funds were available with the company in Feb. 2007 but it could invest the money in wind projects during September – October, 2007 when suitable offer from the supplier could be available.

Power tariff (INR/kWh) (as per MPERC) [20]	Ist Year: 4.03 IInd Year: 3.87 IIIrd Year: 3.70 IVth Year: 3.53 5-20th Years: 3.36
Project life time	20 years

The post tax project IRR without VCS revenue for 20 years of cash flow comes out 9.59% and it improves to 10.60% when VCS revenue is considered.
(Assumptions in this case are: 1.VCU Price- 5 Euro/VCU, Exchange Rate- 1Euro=INR 56)

Project IRR without VCS revenue is much less than the benchmark of 13.00%.

Sensitivity Analysis:
The following sensitivity analysis has been conducted on project IRR to check the robustness of the financial attractiveness of the project without VCS revenue by using Guidance on the Assessment of Investment Analysis, version-02, Annex-45, EB 41.

The project cost is affected by the following cost parameters more than 20%:

- Cost of WTGs
- Premium on maturity of the bonds
- O&M Charges

The cost of WTGs was finalised before taking financial decision and premium on FCCB was also fixed before financial decision. Therefore, these two parameters will remain constant during life time of the project. O&M charges were finalised for first 10 years and will vary after 10 years. Therefore, variation of ±10% in O&M cost has been taken into sensitivity analysis.

The project revenue is mainly affected by following parameters:

- Capacity Utilization Factor (CUF) / Plant Load Factor (PLF)
- Tariff

PLF is very sensitive parameter for the project activity and it is beyond the control of the PP. Therefore, variation of ± 15% in PLF is considered for the sensitivity analysis. As PPA was signed later for 20 years variation of ±10% in tariff is considered appropriate for the sensitivity analysis.

The results are as follows:

Scenario	Project IRR without VCS revenue
Variation in O&M charges	
O&M Charges (-10%)	9.95%
O&M Charges (0%)	9.59%
O&M Charges (+10%)	9.21%
Variation in Tariff	
Tariff (-10%)	7.59%
Tariff (0%)	9.59%
Tariff (+10%)	11.76%
Variation in PLF	
PLF (-15%)	6.98%
PLF (0%)	9.59%
PLF (+15%)	12.41%

The sensitivity analysis clearly shows that project IRR (without VCS revenue) remains below the benchmark in all the scenarios. It shows that without VCS revenue the project will remain financially unattractive in all the scenarios. It is the only VCS revenue that can make the project financially viable at 15% higher PLF.

Thus, overall investment analysis clearly indicates that the project is definitely financially unattractive and VCS revenue is much needed to improve the financials and make the project financially viable at higher PLF.

[20] http://www.mperc.org/windenergy.pdf13

Step 3: Common Practice

The common practice analysis has been carried out as per the GHG protocol for project accounting, chapter-7[21] referred by VCS guidelines for common practice under step 3.

The project activity produces the grid connected electricity. The baseline candidates to produce the grid connected electricity are:

Thermal power plants (coal / gas / diesel)
Nuclear power plants
Hydro power plants (large scale)
Renewable Energy based power plants like small hydro power plants, biogas plants, biomass based power plants, power plants using urban and industrial waste as fuel, and wind power plants.

All India installed capacity (MW) of electricity power generation as on 31/03/2008 (from thermal, nuclear and hydro sources,[22] renewable energy sources[23]) is summarised in the table below:

Fuel Source	**Install Capacity (MW)**	**% share**
Thermal (Coal)	76048.88	52.76
Thermal (Gas)	14656.21	10.17
Thermal (Diesel)	1201.75	0.83
Nuclear	4120	2.86
Hydro	35908.76	24.91
Renewable Energy Sources (RES)*	12194.57	8.46
Total Power Generation	**144130.2**	

*Renewable energy sources include small hydro power plants, biogas plants, biomass power, urban and industrial waste power and wind energy.

It is clear from the table that the common practice to produce the grid connected power is thermal power plants and large hydro power plants connected to the grid.

The power generated from renewable energy sources including wind contributes just 8.46% in the total power generation. The total installed wind power capacity in India is 8697.925 MW[24] as on 31/03/2008 against the gross potential of 45195 MW[25]. Hence, the contribution of wind power in Indian power generation comes out 6.03% only. It shows that wind power generation is not a common practice in India. The same can also be supported by the fact that out of gross potential of 45195 MW of wind power in India only 8697.925 MW (19.25%) could be installed by 31/03/2008 even with several promotional offers by the central and state Governments. GHG emissions are much more in common practice of producing the electricity through thermal power plants while no GHG emission takes place when it is produced through the project activity i.e. wind power.

The Kyoto protocol has been ratified by India in the year 2002 and the Electricity Act has been introduced in the year 2003, thus the data pertaining to the duration from 2002-03 to 2006-07 has been considered for the common practice analysis. After introducing provisions of Kyoto protocol and Electricity Act the installation of WTGs has been triggered off suddenly in the country.

The installed capacity of WTGs in different states of India during the years 2001 to 2007 is given in the table below:

[21] Section 7.4.2 http://www.ghgprotocol.org/files/ghg_project_protocol.pdf
[22] http://www.cea.nic.in/power_sec_reports/executive_summary/2008_03/8.pdf
[23] http://www.cea.nic.in/power_sec_reports/executive_summary/2008_06/8.pdf
[24] http://www.windpowerindia.com/statyear.html
[25] http://www.windpowerindia.com/statest.html

Growth of Wind Power Installed Capacity (As on 31.03.2008)								
Sl. No.	State	Year-wise Installed Capacity Addition (MW)						
		Upto Mar'01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
1	Andhra Pradesh	91.790	1.500	-	6.000	25.850	0.900	0.800
2	Gujarat	164.905	8.650	7.150	29.275	51.175	84.600	328.950
3	Karnataka	50.650	22.500	52.460	81.430	200.400	170.930	264.750
4	Kerala	2.350	-	-	-	-	-	-
5	Madhya Pradesh	21.690	-	-	-	6.250	11.200	17.450
6	Maharasthra	198.060	196.545	2.000	6.250	48.750	545.100	483.600
7	Rajasthan	9.110	8.380	44.440	129.580	93.860	74.525	111.750
8	Tamil Nadu	806.860	46.960	132.905	355.145	688.330	860.655	564.960
9	West Bengal	1.000	-	-	-	-	0.250	0.500
10	Others	1.300	-	-	-	-	-	-
	TOTAL (MW)	1347.715	284.535	238.955	607.680	1114.615	1748.160	1772.760

Source: http://www.windpowerindia.com/statyear.html

The total installed capacity of WTGs during 2002-03 to 2006-07 in the state of Madhya Pradesh is 34.9 MW. Out of which WTGs of capacity 30.05 MW are in different stages of CDM process. Hence, it can be concluded that wind power project is not a common practice without VCS/CDM consideration in state of Madhya Pradesh.

(Source for UNFCCC: – http://cdm.unfccc.int/Projects/registered.html
http://cdm.unfccc.int/Projects/validation.index.html)
(The detailed list will be provided to DOE)

It can be seen from the above table that a majority of the wind power projects which have started after the year 2003 have been structured as VCS/CDM projects.

From the above analysis it can be seen that similar activities are not widely observed and commonly carried out without VCS/CDM consideration.

3 Monitoring:

3.1 Title and reference of the VCS methodology (which includes the monitoring requirements) applied to the project activity and explanation of methodology choices:

The project activity involves generation of grid connected electricity from renewable wind energy. Since the capacity of the project activity is 10.2 MW which is less than the maximum qualifying capacity of 15 MW for a small scale VCS project activity under Type-I of the small scale methodologies and this capacity will not increase throughout the whole crediting period of 10 years. Therefore, small scale methodology AMS I-D is applied.

The explanation of the choice of the methodology, I.D. Grid connected renewable electricity generation, and its applicability to the project activity is demonstrated as follows:

Para No. of Methodology	Applicability Criteria	Project Case
1.	This category comprises renewable energy generation units, such as photovoltaics, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to and/or displace electricity from an electricity	The project activity comprises generation of electricity using wind energy and the electricity is being supplied to the concerned electricity

	distribution system that is or would have been supplied by at least one fossil fuel fired generating unit.	distribution system (grid) – NEWNE, which is predominantly fossil fuels fired system[26].
2.	If the unit added has both renewable and non-renewable components (e.g.. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel**, the capacity of the entire unit shall not exceed the limit of 15 MW.	There is neither non-renewable component added nor co-firing is required in the project activity. The renewable wind project activity is 10.20 MW that is less than 15 MW. Hence, this criterion is satisfied.
3.	Combined heat and power (co-generation) systems are not eligible under this category.	The project activity is not a co-generation system. Therefore, this criterion is not relevant.
4.	In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct*** from the existing units.	Not relevant as the project activity is entirely new.
5.	Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small-scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.	Not relevant as the project activity is not a retrofit or modification of an existing facility.

** Co-fired system uses both fossil and renewable fuels.
*** Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct".

Monitoring shall consist of metering the electricity generated by the renewable technology. The electricity generated by the project activity will be recorded jointly, once in a month, by the representatives of MPSEB and the authorized representative of the contractor as per the applicable provisions mentioned in the Power Purchase Agreement. Authorised representative of contractor, on daily basis will also record meter readings.

3.2 Monitoring, including estimation, modelling, measurement or calculation approaches:

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:

- EGexport: Electricity exported to the grid during the year y
  MWh: Unit of measurement

[26] http://www.cea.nic.in/power_sec_reports/general_review/0304/tables.pdf

- EGimport: Electricity imported (consumed) from the grid during the year y
  MWh: Unit of measurement

Data to be calculated:

- EGy: Net electricity exported to the grid during the year y
  MWh: Unit of measurement

C. Origin of the data

EGexport / EGimport will be measured by the billing meter (MPSEB meter) installed at common metering point.
Net electricity exported (EGy) to grid is calculated from EGexport and EGimport as (EGexport – EGimport).

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. incentive policy notified on 17/10/2006. Billing of the metered energy is being carried out on the monthly basis. The meter readings shall be carried out by MP Pashchim Kshetra Vidyut Vitaran Company Limited (hereinafter called "MPPKVV CO. LTD.") and Contractor (SISL).

Metering Equipment and Calibration:

The project activity has the following metering systems:

Controller:

The controller installed on the WTG records import of the electricity, and export 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.

Billing meter:

-One billing meter for all 17 WTGs at Palsodi site is installed and owned by MPPKVV CO. LTD. Billing meter will be tested, checked for accuracy once in a year and also be calibrated and adjusted once in a year in the presence of the concerned persons.

-The meter will be deemed to have been working satisfactorily even 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 billing meter shall be conducted by the meter relay testing staff of the MPPKVV CO. LTD. 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, in respect to power supplied to grid, at the common metering point will be jointly undertaken by the representatives of MPPKVV CO. LTD. and the authorized representative of the contractor (SISL) as far as possible in the middle of each calendar month for previous month. Both representatives of MPPKVV CO. LTD. and authorized representative of the contractor (SISL) will jointly certify the billing meter reading.

At controller entire day generation is recorded by the end of day (00:00). This generation is then uploaded on customer (Project participant) portal, which remains there for three years. All WTG are connected to a central monitoring system located at project site whereby any connected WTG is accessible from single point.

Secondary Monitoring and Contingency 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 the facility provided by the contractor. This generation will be kept as a record both in electronic as well as printed (paper) form.

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 will have to be done to arrive at electricity supplied for that certain period. The following apportioning procedure will be followed, if the crediting period start or end dates falls in between the main meter reading cycles:

The apportioning will be 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

Example:

Let us consider a case of the WTGs of the project activity where the project participant starts / ends claim of emission reduction in middle of a monitoring period of main meter reading / credit report, for example crediting period ends on 31st December and starts from 1st of January and the corresponding full main meter reading / credit report period is from 22nd December to 21st January. Let us assume in this case,

X1 = Sum of the net electricity generation at the controller of each WTG of the project activity during 22nd December to 31st December (kWh)

X2 = Sum of the net electricity generation at the controller of each WTG of the project activity during 1st January to 21st January (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 i.e. 22nd December to 21st January (kWh)

Ratio of the net electricity generation during the first partial period (22nd December to 31st December), Z1 = X1/Y

Ratio of the net electricity generation during the second partial period (1st January to 21st January),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 (22nd December to 21st January): G

Then net electricity supplied by the WTGs of the project activity to the grid during the first partial period, 22nd December to 31st December, (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 second partial period, 1st January to 21st January, (for calculating emission reduction for partial period) = G*Z2

Operational and organizational structure for monitoring

Monitoring responsibility (contractor (SISL))

-Daily meter readings of each controller and billing meter 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 billing meter reading by the representative of the MPPKVV CO. LTD. 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 CDM implementation, lies with Deputy General Manager (DGM)-Projects. 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 DGM-Projects and actions are taken accordingly.
- Collect credit reports issued by MPPKVV CO. LTD. 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 DGM-Projects and actions are taken accordingly.

3.3 Data and parameters monitored / Selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals:

Data / Parameter:	EGexport
Data unit:	MWh (Mega-watt hour)
Description:	Electricity exported to the grid during the year y
Source of data to be used:	Billing meter (MPSEB Meter) located at common metering point and owned by MPPKVV CO. LTD.
Value of data applied for the purpose of calculating expected emission reductions	22,112.13 MWh
Description of measurement methods and procedures to be applied:	The export of electricity will be measured by the billing meter installed at common metering point. Billing meter readings will be taken and verified, once in a month, jointly by the representatives of MPPKVV CO. LTD. and the authorized representative of the SISL as per the applicable provisions mentioned in the Power Purchase Agreement. Site operator on daily basis will also record billing meter's export readings. For details please refer to section – 3.2
QA/QC procedures to be applied:	*Calibration:* with actual load comparing to standard reference meter which itself will be calibrated once in a year at the approved laboratory of Govt. of India or Govt. of M.P. as per terms and conditions of supply.

	Accuracy: 0.5% (Billing meter), 0.2% (standard reference meter)
Any comment:	-The data will be archived on logbooks. 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:	EGimport
Data unit:	MWh (Mega-watt hour)
Description:	Electricity imported from the grid during the year y
Source of data to be used:	Billing meter (MPSEB Meter) located at common metering point and owned by MPPKVV CO. LTD.
Value of data applied for the purpose of calculating expected emission reductions	0 MWh (assumed)
Description of measurement methods and procedures to be applied:	The import of electricity will be measured by the billing meter installed at common metering point. Billing meter readings will be taken jointly and verified, once in a month, by the representatives of MPPKVV CO. LTD. and the authorized representative of the SISL as per the applicable provisions mentioned in the Power Purchase Agreement. Site operator on daily basis will also record billing meter import readings. For details please refer to Section-3.2
QA/QC procedures to be applied:	*Calibration:* with actual load comparing to standard reference meter which itself will be calibrated once in a year at the approved laboratory of Govt. of India or Govt. of M.P. as per terms and conditions of supply. *Accuracy:* 0.5% (Billing meter), 0.2% (standard reference meter)
Any comment:	-The data will be archived on logbooks. 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:	EGy
Data unit:	MWh (Mega-watt hour)
Description:	Net electricity exported to grid during the year y
Source of data to be used:	Calculated from EGexport and EGimport as (EGexport – EGimport)
Value of data applied for the purpose of calculating expected emission reductions	22,112.13 MWh
Description of measurement methods and procedures to be applied:	Net electricity supplied to grid will be calculated by subtracting the EGimport from EGexport.
QA/QC procedures to be applied:	Sale of energy provided by office of executive engineer O&M Divn. MPPKVV CO. Ltd.
Any comment:	-The data (net electricity supplied to the grid) will be archived on electronic media as well as on paper.

	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.

3.4 Description of the monitoring plan

The project participant, RIL, has entered into a contract with Suzlon Infrastructure Services Limited for operating and maintenance of the wind mills installed in the project activity at Site I and Site II. As per the agreement, Suzlon Infrastructure Services Limited (SISL) will prepare and submit a monthly operating status report. ~~Please refer to Annex 4 for further details on monitoring.~~

The daily production report shall also be made available containing the following:

- Daily production for each WTG
- Accumulated production for each WTG
- Daily WTG and grid availability
- ~~Details~~ Hours of stoppages
- Joint metering report

Daily reports are also available on online. The project participant has also entered into a power purchase agreement with MPSEB and the operating records would be maintained as per the agreement.

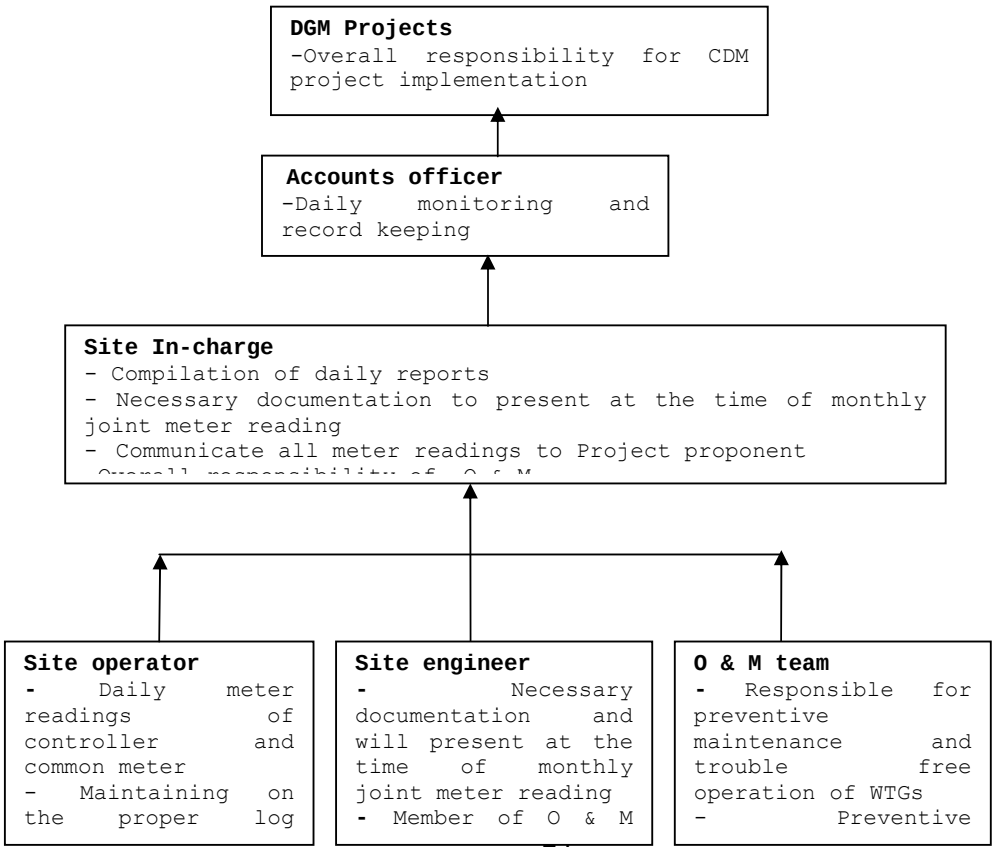
~~Net export of electricity from each WTG is evaluated with the following formula:~~

~~Net electricity exported by a WTG = [(Electricity generated by that WTG at the controller)*(Total electricity exported to the grid calculated from joint meter readings)] / (Total electricity generated at controller by all the WTGs connected to the joint meter)~~

~~Individual Credit Report for WTGs connected to the Joint Meter is developed on the basis of net export of the electricity calculated as above.~~

Operational and organizational chart for monitoring:

Monitoring responsibility - Project participant (RIL) & O&M contractor (SISL)



4 GHG Emission Reductions:

4.1 Explanation of methodological choice:

In the absence of the project activity, equal amount of electricity would have been generated from the plants connected to the grid that gets power from most of the fossil fuel based plants. Hence, displacing the grid power by wind power is actually saving equivalent amount of GHGs emissions that can be estimated based on the grid emission factor.

The emission reductions from the project activity will occur directly from exports of electricity to the grid. Electricity is generated from wind energy, which is the cleanest renewable source of energy. A renewable source of energy is one, which gets replenished and does not undergo depletion due to its use. Electricity generation from project activity does not lead to any GHG emissions.

The energy supplied by project activity to the state grid would reduce anthropogenic GHG emissions as per the combined margin carbon intensity of the NEWNE grid, which is mainly dominated by fossil fuel based power plants.

Baseline emissions due to displacement of electricity by the project activity:

Baseline emissions in the year y (in tCO_2), BEy, due to displacement of grid-electricity are the product of the baseline grid emission factor for the year y, $EF_{grid,y}$ (in tCO_2/MWh) and the net electricity supplied by the project activity to the grid in the year y, EGy, (in MWh), over the crediting period as given below:

$$BEy = EGy * EF_{grid,y}$$

Where:
BEy = Baseline emissions of the project activity in the year y (tCO_2)
EGy = Net electricity supplied to grid in year y (MWh)
$EF_{grid,y}$ = Baseline emission factor of the grid in the year y (tCO_2/MWh)

The project activity is located in state of Madhya Pradesh that falls under NEWNE grid.

Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system'. Calculation of Combined Margin (CM) is done in accordance with the following three steps:

Step 1: Calculating the Operating Margin emission factor ($EF_{OM,y}$)
The tool 'Tool to calculate the emission factor for an electricity system' provides four options for calculating the operating margin, and guidance for how to choose which options for the corresponding project activity. The options are:

a) Simple OM, or
b) Simple adjusted OM, or
c) Dispatch Data Analysis OM, or
d) Average OM.

The simple adjusted OM and dispatch data analysis OM cannot be currently applied in India due to lack of necessary data[27]. The choice of other options for calculating the operating margin emission factor depends on the generation of electricity from low cost/must run sources. In the context of the methodology low cost/must run resources

[27] http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver4.pdf

typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation.

The percentage share of power generation from low cost / must run power plants for the latest three years in the NEWNE is as follows[28]:

Share of power generation from low cost/must run resources (% of Net Generation)			
	2005-06	2006-07	2007-08
NEWNE	18.0%	18.5%	19.0%
India	20.1%	20.9%	21.0%

The average percentage of power generation by low cost / must run plants in the NEWNE grids for latest three years is just 18.5%. As low cost / must run resources constitute less than 50% of total power generation the average OM method cannot be applied and the Simple OM option can be used for the proposed project activity. The Simple OM emission factor can be calculated using either of the two following data vintages for year (s) *y*:

- ***Ex ante*** option: A 3-year generation-weighted average, based on the most recent data available at the time of submission of the VCS-PD to the DOE for validation, without requirement to monitor and recalculate the emissions factor during the crediting period,

or

- ***Ex post*** option: The year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring. If the data required to calculate the emission factor for year y is usually only available later than six months after the end of year y, alternatively the emission factor of the previous year (y-1) may be used. If the data is usually only available 18 months after the end of year y, the emission factor of the year proceeding the previous year (y-2) may be used. The same data vintage (y, y-1 or y-2) should be used throughout all crediting periods.

For the proposed project activity the Simple OM emission factor has been calculated as ***ex-ante*** based on the full generation-weighted average for the most recent 3 years for which data are available at the time of VCS-PD submission to DOE for validation.

Simple OM: The simple OM emission factor ($EF_{OM,y}$) is calculated as the generation weighted average emissions per electricity unit (tCO2/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants:

$$EF_{OM,simple,y} = \frac{\Sigma_{i,j} FC_{i,j,y} * NCV_{i,y} * EF_{co2,i,y}}{\Sigma_j EG_{j,y}}$$

Where:

$EF_{OM,simple,y}$ = Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)

$FC_{i,j,y}$ = Amount of fossil fuel type i consumed by power plant / unit j in year y (mass or volume unit)

$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type i in year y (GJ / mass or volume unit)

$EF_{CO2,i,y}$ = CO_2 emission factor of fossil fuel type i in year y (tCO_2/GJ)

$EG_{j,y}$ = Net electricity generated and delivered to the grid by power plant / Unit j in year y (MWh)

i = All fossil fuel types combusted in power plant / unit j in year y

j = All power plants / units serving the grid in year y except low-cost / must-run power plants / units

y = Three most recent years for which data is available at the time of submission of the VCS-PD to the DOE for validation (***ex ante*** option)

The Simple OM emission factor ($EF_{OM,simple,y}$) is calculated separately for the most recent three years and an average value has been considered as the OM emission factor for the baseline ($EF_{OM,y}$).

[28] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

Step 2: Calculating the build margin ($EF_{BM,y}$)

The sample group of power unit's j used to calculate the build margin consists of either:

(a) The set of five power units that have been built most recently, or
(b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently.

Project participants should use the set of power units that comprises the larger annual generation. In India, the latter approach generally yields the larger sample and hence followed[29].

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units j during the most recent year y for which power generation data is available, calculated as follows:

$$EF_{BM,,y} = \frac{\Sigma_j EG_{j,y} * EF_{EL,,j,y}}{\Sigma_j EG_{j,y}}$$

Where:

$EF_{BM,y}$ = Build margin CO_2 emission factor in year y (tCO_2/MWh)
$EG_{j,y}$ = Net quantity of electricity generated and delivered to the grid by power plant / unit j in year y (MWh)
$EF_{EL,j,y}$ = CO_2 emission factor of power unit j in year y (tCO_2/MWh)
j = Power units included in the build margin
y = Most recent historical year for which power generation data is available

In terms of vintage of data, project participants can choose between one of the following two options:

Option 1. For the first crediting period, calculate the build margin emission factor ***ex-ante*** based on the most recent information available on units already built for sample group j at the time of VCS-PD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Option 2. For the first crediting period, the build margin emission factor shall be updated annually, ***ex-post***, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ***ex-ante***, as described in option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

As project participant can use any of above two options, here option 1 has been adopted. The BM emission factor will be calculated ***ex-ante,*** for whole crediting period, based on the most recent information available on plants already built for sample group j of NEWNE grid at the time of PD submission. The sample group j consists of the 20 % of power plants supplying electricity to grid that have been built most recently, since it comprises of larger annual power generation. Further, none of the power plant capacity additions in the sample group have been registered as CDM/VCS project activities.

Step 3: Determining the combined margin

As per the "Tool to calculate the emission factor for an electricity system" version 01.1, EB 35, the combined margin is calculated based on the weighted average of the operating margin emission factor and the build margin emission factor as follows:

$$EF_{CM,y} = w_{OM} \cdot EF_{OM,y} + w_{BM} \cdot EF_{BM,y}$$

Where:

$EF_{CM,y}$ = The combined margin CO_2 emission factor in year y (tCO_2/MWh)

[29] http://www.cea.nic.in/planning/c%20and%20e/user_guide_ver4.pdf (page 42)

$EF_{BM,y}$ = Build margin CO_2 emission factor in year y (tCO_2/MWh)
$EF_{OM,y}$ = Operating margin CO_2 emission factor in year y (tCO_2/MWh)
w_{OM} = Weighting of operating margin emissions factor (%)
w_{BM} = Weighting of build margin emissions factor (%)

The project activity is the wind power generation; therefore, default values of w_{OM} and w_{BM} are taken as 0.75 and 0.25 respectively (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods.

$EF_{OM,y}$ Operating margins of the NEWNE is calculated ***ex ante*** using three year's vintage data (2005-2006, 2006-2007, 2007-2008) obtained from CEA database on CO_2 baseline for Indian Power Sector. $EF_{BM,y}$ Build margin of the NEWNE Grid is calculated ***ex ante*** using NEWNE grid contributing 20% of grid generation during 2007-2008 obtained from CEA database on CO_2 baseline for Indian Power Sector.

The CEA has calculated the baseline emission factors using the tool "Tool to calculate the emission factors for an electricity system", for the regional grids (NEWNE and Southern) in India. As this is the most authentic information available in the public domain, the baseline emission factor used in the calculation of baseline emissions for the project activity is being calculated from the same for transparency and accuracy[30].

To evaluate the emission factors for NEWNE Grid the equations mentioned above are used as follows:

$EF_{CM,y} = w_{OM} * EF_{OM,y} + w_{BM} * EF_{BM,y}$
$EF_{CM,y} = 0.75*EF_{OM,y} + 0.25*EF_{BM,y}$

The $EF_{OM,y}$ is calculated as average of latest three years values of OM emissions factors for the NEWNE Grids as follows based on latest CEA data[31]:

Operating margin Emission Factor for NEWNE Grid

Simple Operating Margin (including imports) in the year 2005-06 = 1.019485 tCO2 / MWh
Simple Operating Margin (including imports) in the year 2006-07 = 1.008350 tCO2 / MWh
Simple Operating Margin (including imports) in the year 2007-08 = 0.999174 tCO2 / MWh

Net generation in operating margin in the year 2005-06 = 359270979.80 MWh
Net generation in operating margin in the year 2006-07 = 379470597.76 MWh
Net generation in operating margin in the year 2007-08 = 401641585.97 MWh

Total generation in operating margin during last three years, 2005-06, 2006-07 & 2007-08 = 1140383163.53 MWh

Net Emissions in operating margin in the year 2005-06 = 1.019485x359270979.80 = 366271374.84 tCO2

Net Emissions in operating margin in the year 2006-07 = 1.008350x379470597.76 = 382639177.25 tCO2

Net Emissions in operating margin in the year 2007-08 = 0.999174x401941585.97 = 401309830.02 tCO2

Total Emissions in operating margin during last three years, 2005-06, 2006-07 & 2007-08 = 1150220382.11 tCO2

Operating Margin Emission Factor ($EF_{OM,Y}$) = 1150220382.11/1140383163.53 = 1.008626 tCO2/MWh

The value of $EF_{BM,y}$ has been taken from CEA data (Version 4) [19] as latest value (2007-08) of build margin for NEWNE Grids as follows:

[30] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm
[31] http://www.cea.nic.in/planning/c%20and%20e/Government%20of%20India%20website.htm

Build margin for NEWNE Grid

$EF_{BM, y} = EF_{BM, (2007-08)} = 0.597712$ tCO2/MWh

Now,

Combined margin for NEWNE grid

$EF_{CM,y} = 0.75 * 1.008626 + 0.25 * 0.597712 = 0.756469 + 0.149428 = 0.90589$ tCO2/MWh

The grid emission factor, $EF_{grid, y} = 0.90589$ tCO2/MWh

The emission factors calculated ***ex-ante*** will remain same throughout the crediting period.

Net electricity supply to grid is calculated as:

EGy = EGexport- EGimport

Where:
EGexport = Electricity exported to the grid by the project activity in year y (MWh)
EGimport = Electricity imported (consumed) by the project activity in year y (MWh)

The total power generated by the project activity is based on the wind speed, turbine blade diameter and the operating days of power generation from the project activity in each year. Single electronic meter, located at common metering point / metering point and owned by SEB, is capable to recording import, export and RKVAH consumption of electricity.

This generated electrical energy will displace an equivalent amount of electricity that would be generated by the NEWNE grid mix. Without the project activity, the same energy load would have been taken up by power plants of the project electricity system and equivalent CO_2 emissions would have been occurred due to fossil fuel combustion. The net electricity exported to the grid is considered for estimation of emission reductions.

Project Emissions:

As per the AMS I.D./version 15, there are no project related emissions, therefore, $PE_y = 0$.

Leakage:

As per the AMS I.D./version 15, 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

No equipment transfer of any type is taking place in the project activity, hence the leakage is considered as zero, $L_y = 0$.

Emission Reductions:

The project activity reduces carbon dioxide emissions through displacement of grid electricity generation with predominantly fossil fuel based power plants[32] by renewable electricity. The emission reduction ER_y due to project activity during a given year y is estimated as the difference between baseline emissions (BE_y), project emissions (PE_y) and 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

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

[32] http://www.cea.nic.in/power_sec_reports/general_review/0304/tables.pdf

Therefore, $ERy = BE_y$

4.2 Quantifying GHG emissions and/or removals for the baseline scenario:

To evaluate the emission reductions the equations mentioned in section 4.1 are used as follows:

$ER_y = BE_y$
$BE_y = EG_y * EF_{grid, y}$
$EF_{grid,y} = EF_{CM,y}$

Estimation of net electricity generation and emission reduction:
Net electricity generation (EGy) is evaluated by subtracting electricity imported from the electricity exported by the WTGs.

The baseline emissions are evaluated with the formula:
Baseline emissions (BEy) = $EG_y * EF_{grid, y}$

EF_{grid}	Capacity of each WTG (kW)	No. of WTGs	PLF	Total export to Grid (EGexport)	Total import, consumed, from Grid (EGimport)	Net generation (EGy)* MWh	Emission reduction (ER_y) (tCO2)
0.9127	0.6	17	24.75%	22,112.13	0	22,112.13	20,031

Hours of Operation = 24*365=8760 h

* Net generation (EGy) = EGexport- EGimport
= Capacity*No. of WTGs*PLF*Hours of operation-0 (assumed)
= 0.6*17*0.2475*8760 – 0 = 22,112.13 MWh

Therefore, baseline emissions (BEy) = $EG_y * EF_{grid, y}$ = 22,112.13*0.90589 = 20,031 tCO2 (approx)

Project emissions = 0
Leakage = 0

Therefore, $ER_y = BE_y$

Estimated emission reductions per year = 20,031 tCO2

(Detailed calculations for power generation and VCUs are available in attached MS-excel files).

4.3 Quantifying GHG emissions and/or removals for the project:

Project Emissions:
As per the AMS I.D./version 15, there are no project related emissions, therefore, PE_y = 0.

Leakage:
As per the AMS I.D./version 15, 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. No equipment transfer of any type is taking place in the project activity, hence the leakage is considered as zero, $L_y = 0$.

4.4 Quantifying GHG emission reductions and removal enhancements for the GHG project:

Emission Reductions:

The project activity reduces carbon dioxide emissions through displacement of grid electricity generation with predominantly fossil fuel based power plants[33] by renewable electricity. The emission reduction ER_y due to project activity during a given year y is estimated as the difference between baseline emissions (BE_y), project emissions (PE_y) and 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

Here,
PE_y = 0 for the project activity as per the methodology.
L_y = 0 for the project activity.

Therefore, ERy = BE_y

Years	BE_y	PE_y	L_y	ER_y
2008-09	19,901	0	0	19,901
2009-10	20,033	0	0	20,033
2010-11	20,033	0	0	20,033
2011-12	20,033	0	0	20,033
2012-13	20,088	0	0	20,088
2013-14	20,033	0	0	20,033
2014-15	20,033	0	0	20,033
2015-16	20,033	0	0	20,033
2016-17	20,088	0	0	20,088
2017-18	20,033	0	0	20,033
Total estimated reductions (tonnes of CO_2e)	200,308	0	0	200,308
Annual average of the estimated reductions over the crediting period (tCO_2e)	20,031			20,031

5 Environmental Impact:

Wind power is one of the cleanest sources of renewable energy, with no associated emissions and waste products. As per the Schedule 1 of notification issued by Ministry of Environment and Forests (MoEF), Government of India on September 14, 2006, thirty nine activities are required to undertake environmental impact assessment studies[34]. The project activity does not fall under the list of activities requiring EIA as it will not involve any negative environmental impacts, except related with disposal of disposal of solid and oily sludge, which is negligible. Thus, no detailed EIA study was conducted.

6 Stakeholders' comments:

Brief description how comments by local stakeholders have been invited and compiled:
RIL conducted a stakeholder's consultation meeting on 13th May, 2008 at the project activity site, village – Palsodi (Ratlam) to get the comments and suggestions of the local stakeholders on the project activity. Following are the stakeholders identified for the project activity:

- Local Community
- Non Government Organizations
- Village Panchayat
- Wind Farm Developers (Suzlon)
- Consultants

Formal invitation letters were sent to different stakeholders well in advance for the stakeholder's consultation meeting for the project activity. The stakeholders present in the meeting were local villagers, deputy sarpanch (village chief), ex sarpanch (village

[33] http://www.cea.nic.in/power_sec_reports/general_review/0304/tables.pdf
[34] http://envfor.nic.in/legis/eia/so1533.pdf

chief), teachers from local school, Gram Panchayat (Local Governing Body of a Village) members, college/school students, social workers, employees of Suzlon etc. The lists of the persons attended the stakeholders' consultation meetings are available with the project proponent. The project participant made all the necessary arrangements for the meeting like arrangement for sitting, putting a banner, photography, provision of refreshments etc. The chairperson was elected for the meeting among the present stakeholders. The presentations were made on Kyoto Protocol, Clean Development Mechanism, role of the project activity in mitigating the GHGs emissions etc. in local language. The chairperson invited the comments from the persons present in the meeting and the concerned persons made responses.

The minutes of the meeting were written and signed by the chairperson. The minutes of the meeting will be made available to the DOE at the time of validation and verification of the project activity.

Summary of the comments received

The project activity is situated in the tribal area of Madhya Pradesh. The tribal people were happy with the project activity as it generated jobs to some of local persons and developed the site, approach road etc. The company in participation with local tribal people has provided amenities like solar lanterns, toilets / bathrooms inside the house, basic education etc. They were also interested to know the ways to mitigate the GHG emissions at local village level.

The meeting was very cordial and ended on a positive note. No adverse comments were received. It would be appropriate to state at this point that the stakeholders, particularly the local people / representatives left the meeting with a clear understanding of the background of the project activity and its relevance under the Clean Development Mechanism on Climate Change. They were strongly supporting the project activity and were happy due to the potential benefits to their local area.

Report on how due account was taken of any comments received

Only positive comments were received. The project is welcomed by all the stakeholders because it is environmentally clean, generates income and jobs, supports the development of the nearby rural areas and the state, reduces dependence on imported fuels, etc.

No corrective actions were recorded due to the absence of negative comments established. The list of people attended the meeting and the minutes of the meeting are available with the PP and will be made available to the DOE at the time of validation.

7 Schedule:

Schedule of events in the project activity is given below:

i.	*Raising of funds for wind projects with CDM consideration:*	*05/02/2007*
ii.	*Suzlon's Offer letter date:*	*14/07/2007*
iii.	*Date of meeting of Board of Directors:*	*31/07/2007*
iv.	*Appointment of CDM/VCS consultant by RSIL:*	*04/10/2007*
v.	*Date of purchase order:*	*16/10/2007*
vi.	*Date of commissioning of 15 WTGs:* (Also considered as project start date)	*31/01/2008*
vii.	*Date of commissioning of remaining 2 WTGs:*	*29/02/2008*
viii.	*Stakeholders consultation meeting:*	*13/05/2008*
ix.	*Date of Power Purchase Agreement:*	*11/08/2008*
x.	*Submission for DNA approval:*	*15/11/2008*
xi.	*Meeting at MOEF for DNA approval:*	*28/01/2009*
xii.	Project start date: (date of commissioning of the WTGs in the project activity)	31/01/2008
xiii.	Project Termination Date: (as per 20 years life time of WTGs).	30/01/2028
xiv.	Crediting period start date: (date of commissioning of the first WTGs in the project activity).	30/01/2008
xv.	Duration of the Crediting period: (from 31/01/2008 to 30/01/2018).	10 Years
xvi.	*Appointment of DOE for VCS validation and verification:*	*14/04/2009*

Monitoring of project will start from date of commissioning of each WTG. The frequency of monitoring and reporting of monitoring has been explained in section 3.2 and 3.3.

8 Ownership:

8.1 Proof of Title:

Project Owner: Ruchi Infrastructure Limited (RIL)
Document(s) demonstrating the ownership of the project:

- Purchase Orders placed by RIL to WTGs supplier
- Invoices placed by WTG suppliers
- O&M agreement between RIL and supplier
- Land documents
- Power Purchase Agreement

8.2 Projects that reduce GHG emissions from activities that participate in an emissions trading program (if applicable):

Not applicable as there are no compliance/binding limits of emission reductions in the host country.