CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

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Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

Title: 1.5 MW Wind Power Project in Maharashtra by M/s. Allgrow ventures
Version: 04
Date: 29/06/2011

A.2. Description of the small-scale project activity:

The project activity is a wind based power project with a main objective of mitigating the greenhouse gas effect. The project activity would generate electrical power using wind energy, through operation of wind Turbine Generator (WTG) in village Adwadi, Nashik District, Maharashtra state in India. The total installed capacity of the proposed project activity is 1.5 MW, which comprises of 1 nos. of Wind Turbine Generator (WTG) of 1500 kW. The electricity produced by the project activity, will reduce the associated emissions with thermal power generation in the NEWNE Grid of the country which is dominated by fossil fuel based electricity.

The electricity generated through the power project will be evacuated to Maharashtra State Electricity Board (MSEB).The power generated at 690 Volts and it will be stepped up to 132 KV to the nearest substation . The proposed project activity can replace approximately 2486 tonnes of CO2 equivalent annually.

The owner of the WTG is M/s Allgrow Ventures, A proprietorship firm, has a vast experience in the construction business. Proprietor Mrs. Giselle D. Mehta with its Group Company M/S. Allegro Ventures India Pvt is also successfully operating one more 1.25 MW wind mill in Bellary district, Karnataka, which was also considered for the CDM.

Purpose of the Project Activity:

The main purpose of the proposed project activity is to generate the electricity by using wind power resource and export the same to the state electricity board, which is dominating by fossil fuel based electricity. Share of different energy sources in Maharashtra Electricity is given below[1].

[1] *Annual Report (Ministry of Power: 2007-2008)*

Table 1 (Energy Mix of Maharashtra)

Region	Ownership Sector	Modewise Breakup							
		Thermal			Total Thermal	Nuclear	Hydro (Renewable)	RES** (MNRE)	Grand Total
		Coal	Gas	Diesel					
Maharastra	State	6546.00	912.00	0.00	7458.00	0.00	2638.83	217.73	10314.56
	Private	1650.00	180.00	0.00	1830.00	0.00	444.00	1707.30	3981.30
	Central	1787.00	2617.28	0.00	4404.28	852.06	0.00	0.00	5256.34
	Sub-Total	**9983.00**	**3709.28**	**0.00**	**13692.28**	**852.06**	**3082.83**	**1925.03**	**19552.20**

The table clearly depicts the facts that coal has the highest share in state's energy mix with 51%, while the share of renewable energy (except large Hydro) is only 9.8%. Therefore we can summarize the purpose of the project activity as:

1) To reduce the state's dependency on fossil fuels and further reduction in GHG emission.
2) To promote small scale renewable projects, as a corporate responsibility towards environment.
3) Apart from this the proposed project activity also contributes to the sustainable development of the region, socially, environmentally and economically:

Sustainable Development: Proposed CDM project activity has following sustainable development aspects:

Social well being: The project activity provides direct and indirect job opportunities to the local population during an Erection & operation of the windmill. Employment generation shall help poverty alleviation of Local community; infrastructure development for the project will also improve the living standard of local population.

Environmental well being: The purpose of the project activity is the electricity generation by wind energy, which replaces burning of fossil fuels in the power plants connected to the electricity grid. Thus the project activity reduces GHG emissions in the atmosphere. As there is no end products in term of waste in use of wind energy so there is no problem of solid waste disposal which is a main problem in the use of other source of power generation. The project activity is an environment friendly electricity generation system with no significant impact on the environment.

Economic well being: The proposed project activity creates job opportunities for local people during construction and operation period. The generated electricity will be fed into the NEWNE[2] grid this generation of electricity by the project activity, which will improve availability of electricity to the NEWNE grid.

Technological well being: The proposed project activity use 1500 KW WTG so the project has demonstrated the success of large capacity wind electricity generators (WEG) in the region and promotes them. In view of the above, the project participants consider that the project activity profoundly contributes to the sustainable development

[2] NEWNE: Integrated Northern, Eastern, Western and North Eastern Grid

A.3. Project participants:

Name of Party Involved (*) ((host) indicates a host party)	Private and/or Public entity (ies) Project Participants (*) as applicable	Kindly indicate if the party involved wishes to be considered as a project participant (Yes / No)
Government of India (Host Country)	M/s. Allgrow Ventures (Proprietorship Firm)	No
(*) In accordance with the CDM Modalities and procedures, at the time of making the CDM PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting the registration, the approval by the party (ies) involved is required.		
Note: When the PDD is filled in support of a new methodology (forms CDM-NBM and CDMNMM), at least the host party (ies) involved and any known project participant (e.g. those proposing a new methodology) shall be identified.		

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

A.4.1.1. Host Party(ies):

Country: India

A.4.1.2. Region/State/Province etc.:

State: Maharashtra

A.4.1.3. City/Town/Community etc:

District: Nashik
Village: Adwadi
Taluka: Sinner

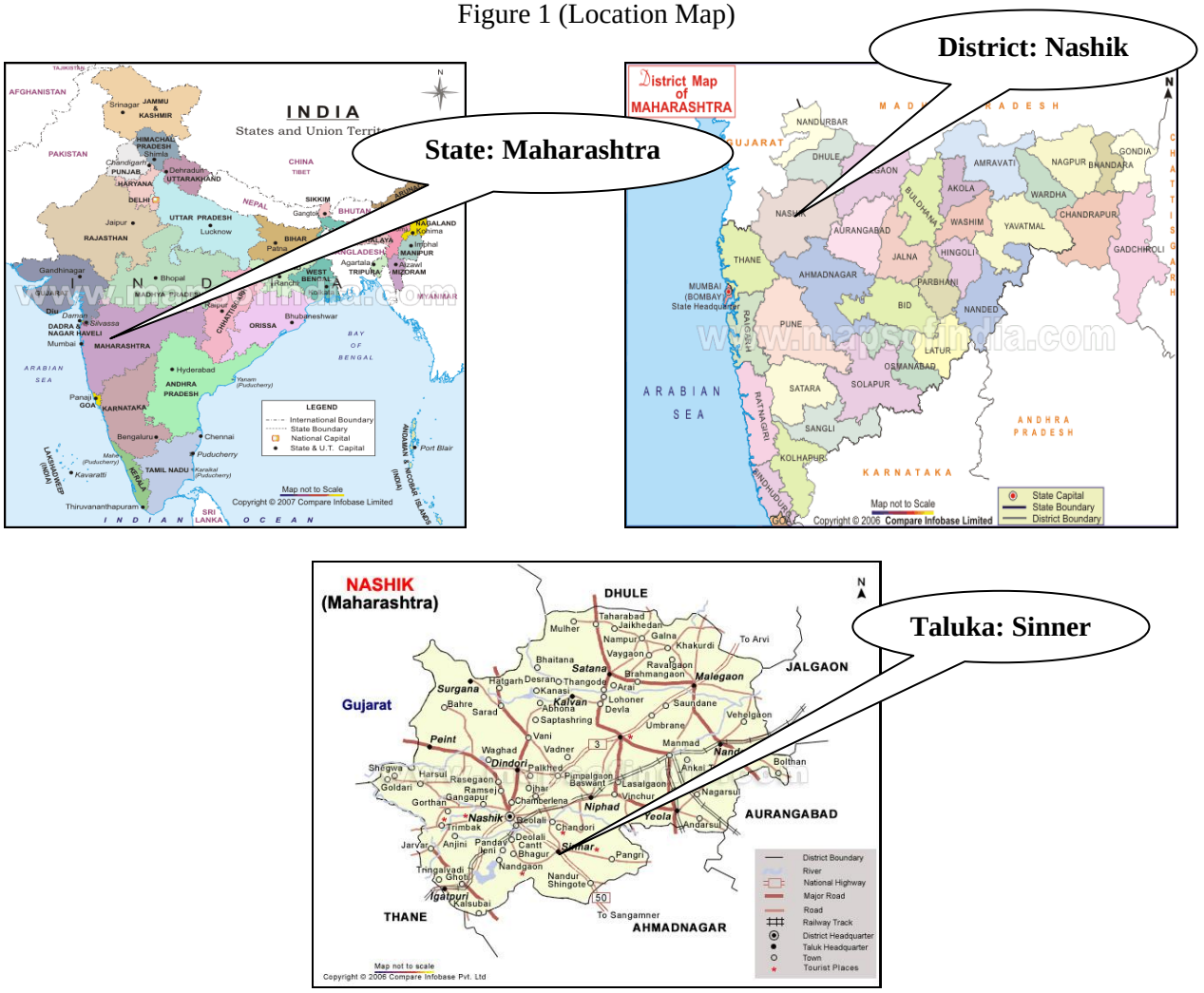
A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity :

The site has been identified as ideally suited for wind power generation based on the studies and data analysis carried out by the wind turbine manufacturer M/s Suzlon Energy Ltd. The location details of the site are:

Table 2 (Location Details)

Owner	Installed Capacity (MW)	Village/Taluka	Location Number	Latitude	Longitude
M/s Allgrow Ventures	1.5	Adwadi/Sinner	AD09	N19°43'8.33''	E73°54'5.42''

Figure 1 (Location Map)



A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:

The proposed project activity is small type of project activity which is less than the 15 MW for small-scale CDM project activities, the proposed project activity falls under the following type and category

Project type : Type I – Renewable Energy Projects
Category : I.D – Grid connected renewable electricity generation

Reference **:** AMS I.D, Version 16, in effect from 11/06/2010, Scope: 01,

The methodology also refers to the "**Tool to calculate the emission factor for an electricity system, version 2.0."**

The proposed project activity consists of WTG of 1500 kW, manufactured by M/s Suzlon Energy Limited & installed in Nashik district in Maharashtra. The technology as well as service provider for WTG is M/s Suzlon Energy Limited. The project is a clean renewable energy project that uses wind energy for electricity generation without GHG emissions associated with the conventional electricity generation

Table 3 (Technical details of the project activity):

Rotor	
Diameter	82.0 m
Cut in Speed	4 m /s
Cut out speed	20 m /s
Rated wind speed	14 m/s
Swept area	5278 m^2
Rotation speed	16.30 rpm
Regulation	Pitch
Generator	
Type	Asynchronous , 4 poles
Output	1500 kw
Rotation speed	1511 rpm
Operating voltage	690 V
Frequency	50 HZ
Cooling systems	Air cooling
Gear box	
Type	3 stage gear box
Rotation	95.09
Cooling systems	Oil cooling
Nominal load	1650 kw
Yaw Mechanism	
Drive system	4 active electrical yaw motors
Bearing	Polyamide slide bearings
Safety system	
Aerodynamic breaks	3 times independent pitch regulation
Mechanical breaks	Spring powered disc brake, hydraulically released fail safe
Control unit	Microprocessor Controlled indicating operating conditions with UPS backup system
Tower	
Type	Free standing, lattice type, hot dip galvanized

A.4.3 Estimated amount of emission reductions over the chosen crediting period:

The crediting period for the proposed project activity is 10 year, it is estimated that the proposed project would generate the 24,860CER during the crediting period.

Years	Estimation of annual emission reductions in tonnes of CO_2
1 September 2011- 31 August 2012	2,486
1 September 2012- 31 August 2013	2,486
1 September 2013-31 August 2014	2,486
1 September 2014- 31 August 2015	2,486
1 September 2015-31 August 2016	2,486
1 September 2016- 31 August 2017	2,486
1 September 2017-31 August 2018	2,486
1 September2018- 31 August 2019	2,486
1 September 2019- 31 August 2020	2,486
1 September 2020- 31 August 2021	2,486
Total estimated reductions (tonnes of CO_2)	24,860
Total number of crediting years	10
Annual average of the estimated reductions over the crediting period (tonnes of CO_2)	2,486

A.4.4. Public funding of the small-scale project activity:

No public funding for the proposed project activity

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:

The project proponents hereby confirm that the project activity is not a debundled component of another larger project activity A small-scale project is considered a debundled component of a large project activity if there is a registered small scale activity or an application to register another small-scale activity:

- With the same project participants
- In the same project category and technology
- Registered within the previous two years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small scale activity.

Proprietor Mrs. Giselle D. Mehta with its Group Company M/S. Allegro Ventures India Pvt is successfully operating one more 1.25 MW wind mill in bellary district, Karnataka, which was also considered for the CDM.

Therefore the project proponent further confirms that they have not registered any small scale CDM activity or applied to register another small scale CDM project activity within 1 km of the project boundary, in the same project category and technology/measure in the previous 2 years.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:

TYPE I: Renewable Energy Projects
Category AMS I D: Grid Connected Renewable Energy Generation
Version 16, in effect from 11/06/2010
Sectoral Scope: 01(Energy Industry Renewable/Non Renewable Sources)
Methodology AMS ID also refers to its tool[3]: "**Tool to calculate the emission factor for an electricity system, version 2.0.**"

B.2 Justification of the choice of the project category:

Proposed small scale project activity meets the eligibility criteria as proposed in approved baseline methodology AMS I D, Version 16. Applicability of methodology is justified as follows:

Table 4 (Applicability of Methodology)

Applicability Criteria	Project Activity
This category comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to a national, or regional grid.	The Project is a wind power project ,Supplying electricity to the grid to displace electricity hence applicable to this category.
This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	For the project participant, the project activity is a installation of new power plant at a site where Project Participant does not own any other renewable energy plant prior to the implementation of the project activity. Hence, according to the paragraph 2 of AMS ID version 16, the project activity qualifies as a Greenfield plant.
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir	Not Applicable as the project activity is a wind power project activity.

[3] http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html

is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2.	
In the case of biomass power plants, no other biomass types than renewable biomass are to be used in the project plant.	Not Applicable as the project activity is a wind power project activity.
If the new unit 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 new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	There is neither non renewable components added nor co-firing is required for the project activity. The project capacity is 1.5 MW , well below than 15 MW limit.
Combined heat and power (co-generation) systems are not eligible under this category.	This is not a combined heat and power (co-generation) system.
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	Not applicable. The project activity is a new activity and not a capacity enhancement or up-gradation project .
In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the modified or retrofitted or replacement unit shall not exceed the limit of 15 MW.	Project activity is not a retrofit or not a modification of existing facility.

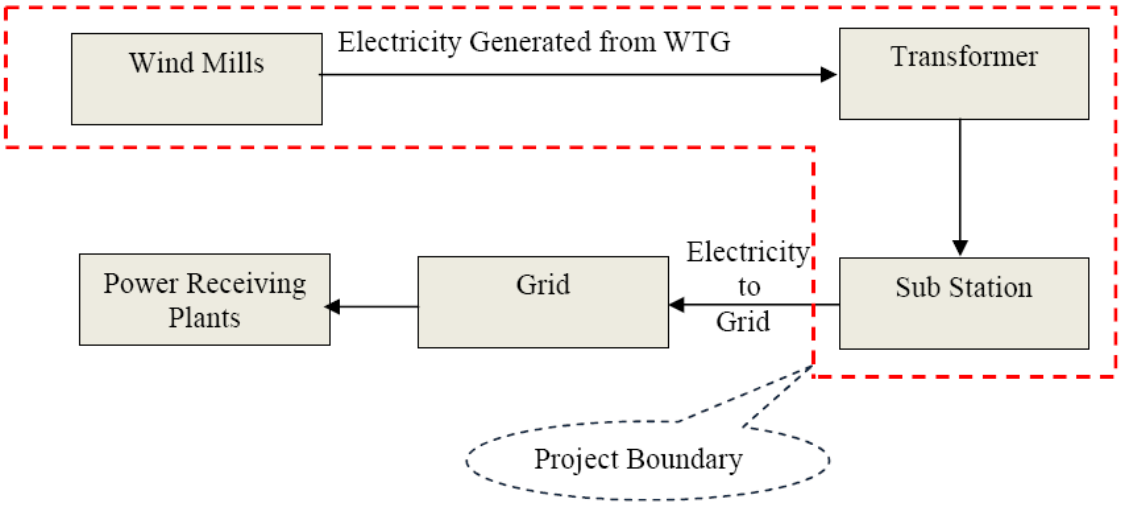
Hence, AMS.I.D 'Grid connected renewable electricity generation' is applied to the proposed project activity.

B.3. Description of the project boundary:

As per the Appendix B of simplified modalities & procedures for small scale CDM-project activities, the Project boundary is the boundary encompasses the physical, geographical site of the renewable Generation source."

The project boundary is thus composed of the Wind Turbine Generators, the metering equipment for each generator and substation. As per paragraph 6 of small scale methodology AMS I D project boundary encompasses the physical and geographical site of renewable generation source. Project boundary is delineated by the dotted box in diagram below.

Figure 2 (Project Boundary)



The GHG emission sources considered for the project boundary and their explanations are as follows:

Table 5 (GHG Emission Sources)

Source	Gas	Included	Justification / explanation
(BASELINE) Electricity Generation of Indian NEWNE Grid	CO2	Yes	Major emission sources
	CH4	No	Excluded for simplification. This is conservative
	N2O	No	Excluded for simplification. This is conservative
(PROJECT ACTIVITY) Wind Electricity Generation	CO2	No	As renewable wind power project, excluded for simplification
	CH4	No	The proposed project is wind power project, so CH4 is excluded for simplification.
	N2O	No	As renewable wind power project, excluded for simplification

B.4. Description of baseline and its development:

According to the paragraph 11 of the 16th version of AMS ID, the baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$\mathbf{BE_y = EG_{BL,y} X EF_{CO2,\ grid.y}}$$

Where,

BEy = Baseline Emissions in year y (tCO_2)
$EG_{BL, y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in the year y (MWh)
$EF_{CO2,grid,y}$ = CO_2 Emission Factor of the grid in year y (tCO_2/MWh)

Further it says that Emission factor must be calculated in a transparent and conservative manner as follows:

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

OR

b) The weighted average emissions (in tCO_2equ/MWh) of the current generation mix.

Option (a) has been considered to calculate the grid emission factor as per the 'Tool to calculate the emission factor for an electricity system' as per the methodology as data is available from an official source.

As per the "Tool to calculate the emission factor for an electricity system" version 2, the following steps has been followed.

STEP 1. Identify the relevant electricity power systems.
STEP 2. Choose whether to include off-grid power plants in the project electricity system (optional).
STEP 3. Select a method to determine the operating margin (OM) method.
STEP 4. Calculate the operating margin emission factor according to the selected method.
STEP 5. Identify the cohort group of power units to be included in the build margin (BM).
STEP 6. Calculate the build margin emission factor.
STEP 7. Calculate the combined margin (CM) emissions factor.

STEP 1. Identify the relevant electricity power systems.

The tool defines the electric power system as the spatial extent of the power plants that are physically connected through transmission and distribution lines to the project activity and that can be dispatched without significant transmission constraints. Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids (see table below).

Northern	Western	Southern	Eastern	North-Eastern
Chandigarh	Chhattisgarh	Andhra Pradesh	Bihar	Arunachal Pradesh
Delhi	Gujarat	Karnataka	Jharkhand	Assam
Haryana	Daman & Diu	Kerala	Orissa	Manipur
Himachal Pradesh	Dadar & Nagar Haveli	Tamil Nadu	West Bengal	Meghalaya
Jammu & Kashmir	Madhya Pradesh	Pondicherry	Sikkim	Mizoram
Punjab	Maharashtra	Lakshadweep	Andaman-Nicobar	Nagaland
Rajasthan	Goa			Tripura
Uttar Pradesh				
Uttaranchal				

However since 2007-08 as the four regional grids except the southern grid has been synchronized they are now being considered as one and named as NEWNE grid. Since the project supplies electricity to the NEWNE grid, emissions generated due to the electricity generated by the NEWNE grid as per CM calculations will serve as the baseline for this project. These states under the NEWNE grid have their own power generating stations as well as centrally shared power-generating stations.

STEP 2. Choose whether to include off-grid power plants in the project electricity system (optional).

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:
Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.

The Project Participant has chosen only grid power plants in the calculation.

STEP 3. Select a method to determine the operating margin (OM) method.

The calculation of the operating margin emission factor ($EF_{OM,y}$) is based on one of the following methods:

(a) Simple OM, or
(b) Simple adjusted OM, or
(c) Dispatch data analysis OM, or
(d) Average OM.

Dispatch data analysis is based on the data on the amount of power (MWh) that is dispatched from all plants in the system during each hour that the project activity is operating. This however is not possible due to lack of availability of this activity data to the project developers. The choice of other options for calculating the operating margin emission factor depend on the generation of electricity from low cost/must run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation.

Table 6: Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2004-2005	2005-06	2006-07	2007-08	2008-09
NEWNE	NA*	18.0%	18.5%	19.0%	17.3%
South	**21.6%**	**27.0%**	**28.3%**	**27.1%**	**22.8%**
India	18.0%	20.1%	20.9%	21.0%	18.6%

Data for NEWNE grid in the CEA database has been included from 2005-06 onwards

The above data clearly shows that the percentage of total grid generation by low cost/must run plants (on the basis of average of three most recent years) for the NEWNE grid is less than 50 % of the total generation. Thus the average emission rate method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The "Simple operating margin" has been calculated as per the weighted average emissions (in tCO_{2e}/MWh) of all generating sources serving the system, excluding hydro, geo-thermal, wind, low-cost biomass, nuclear and solar generation;

In the project activity, (*ex-ante*) the full generation-weighted average for the most recent 3 years for which data are available at the time of PDD submission has been considered. The data is published annually by the Central Electricity Authority. The CEA database is based on the methodology ACM0002 version 7.

It is confirmed that ex-ante vintage is considered in the project activity and cannot be changed during the crediting period.

STEP 4. Calculate the operating margin emission factor according to the selected method.

The operating margin emission factor has been calculated using a 3 year data vintage:

Table 7: Net Generation in Operating Margin (GWh)

Year	MWh
2005-2006	359,271
2006-2007	379,471
2007-2008	401,642

Table 8: Simple Operating Margin (tCO_2/MWh) (incl. Imports)

Year	tCO_2/MWh
2005-2006	1.0195
2006-2007	1.0083
2007-2008	0.9992

Simple Operating Margin = Generation weighted average of the simple operating Margin
= 1.0086

The $EF_{OM, Y}$ is estimated to be:

Thus the final $EF_{OM, Y}$ based on three years weighted average is estimated to be 1.0086 **tCO2/ MWh**.

STEP 5. Identify the cohort group of power units to be included in the build margin (BM).

The value of the data has been taken from the data published by CEA as referred in earlier step. The CEA Baseline Database has been calculated as per the methodology ACM0002 and the details of the key assumptions considered to calculate the figure can be found in the User Guide of the same.

Project participants can choose between one of the following two options:

Option 1
Calculate the Build Margin emission factor $EF_{BM,y}$ **ex-ante** based on the most recent information available on plants already built for sample group m at the time of PDD submission. The sample group *m* consists of either the five power plants that have been built most recently or the power plant 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 from these two options that sample group that comprises the larger annual generation.

Option 2
For the first crediting period, the Build Margin emission factor $EF_{BM,y}$ must be updated annually ex-post for the year in which actual project generation and associated emissions reductions occur. For subsequent crediting periods, $EF_{BM,y}$ should be calculated ex-ante, as described in option 1 above. The sample group *m* consists of either the five power plants that have been built most recently or the power plant 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 from these two options that sample group that comprises the larger annual generation.

The PP has chosen option 1 to identify the cohort group of power units included in the build margin (BM).

STEP 6. Calculate the build margin emission factor ($EF_{BM, y}$**)**

Option 1 as described above is chosen in the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PDD.
The $EF_{BM, y}$ is estimated as **0.5977 tCO_2/MWh** (With sample group constituting most recent capacity additions to the grid comprising 20% of the system generation)

STEP 7. Calculate the combined margin (CM) emissions factor.

Combined Margin – The combined margin is the weighted average of the simple operating Margin and the build margin. In particular, for intermittent and non-dispatchable generation types Such as wind and solar photovoltaic, the Tool to calculate the emission factor for an electricity system, version 2.0, allows to weigh the operating margin and Build margin at 75% and 25%, respectively**.**

The baseline is calculated using the combined margin approach. The baseline emission factor is calculated in the following steps:

Calculation of Baseline Emission Factor EF_y

The baseline emission factor EF_y is calculated as the weighted average of the Operating Margin emission factor ($EF_{OM,y}$) and the Build Margin emission factor ($EF_{BM,y}$):

$$EF_y = w_{OM} * EF_{OM,y} + w_{BM} * EF_{BM,y}$$

Where the weights w_{OM} and w_{BM}, are 75% and 25% respectively for wind energy projects, and $EF_{OM,y}$ and $EF_{BM,y}$ are calculated as described in Steps 1 and 2 above and are expressed in tCO_2/MWh.

Baseline Emission factor = (1.0086)* 0.75 + (0.5977)* 0.25
= 0.9059 tCO_2/MWh

Details of Baseline data:

Operating margin emission factor and Build Margin emission factor calculations:
Data of Operating and Build Margin for the three financial years from 2005 to 2008 has been obtained from – **'The CO_2 Baseline Database for the Indian Power Sector'** Ministry of Power: Central Electricity Authority (CEA) Version 4.0[4]
This database is prepared as per ACM0002, Version 7.
Methodology AMS ID also refers to its tool[5]: "**Tool to calculate the emission factor for an electricity system, version 2.0."**

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

The project activity is installation of wind power plant. In absence of the project activity, the equivalent amount of electricity would have been generated in the existing and future power plants in the NEWNE grid. Thus, the project activity avoids the emission of equivalent amount of GHGs associated with the current fuel mix in the grid.

[4] http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm

[5] http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html

Prior CDM Awareness:

1. Project Proponent's group company M/S. Allgrow Ventures India Pvt. Ltd. already has one 1.25 MW wind power project in Belarry district of State Karnataka. The WTG was also considered for the CDM, which shows that project proponent was well aware of the CDM benefits that can be earned from the project activity.

2. Application to Bank dated 14/12/2008, for loan considering CDM benefit.

Serious consideration of CDM:

As per UNFCCC EB 41, Annex 46 guidelines, UNFCCC and DNA of India were formally informed about the CDM consideration for the project activity within 6 months of the start date of the project activity. As the start date of the project activity is the date of Purchase Order raised for the project activity (19/02/2009), PP had intimated UNFCCC on 6/03/2009 regarding the CDM revenue consideration during the investment decision.

Detailed chronology of real and parallel action on CDM along with the project implementation has been provided below, which justifiesthat the project proponent has seriously considered the CDM revenues during the implementation stage of the project activity

Table 9 (Chronology of Events)

Date	Action on Project Implementation	Action on CDM Consideration	Supporting Documents
12/12/2008	Received Techno Commercial Proposal from Suzlon		Copy of proposals
14/12/2008		Discussion between PP and the Chartered Accountant on Financial Analysis and to consider the CDM benefits for the investment	Letter of CA
14/12/2008		**Date of Investment Decision considering CDM benefit**	Declaration by Proprietor
14/12/2008	Application for Loan along with the financial analysis and CDM Consideration		Copy of Loan application
24/01/2009	Loan Sanctioned		Loan Sanction Letter
19/02/2009	**Raised Purchase Order for WTG (Project Start Date)**		Copy of PO
27/02/2009		Contract with CDM Consultant	Copy of Contract

6/3/2009		Intimation to UNFCCC for the investment along with the CDM consideration	E-mail to UNFCCC and Snapshot of Website of UNFCCC
7/3/2009		Intimation to NCDMA for the investment along with the CDM consideration	Receipt of Registry post
10/3/2009		Received confirmation E-Mail from UNFCCC for intimation	E-Mail
31/03/2009	Commissioning of WTG		Commissioning Certificate
18/05/2009		Conducting Stakeholder Meeting	News Paper Advertisement attendance sheet
23/06/2009	PPA Signed		Power Purchase Agreement
28/07/2009		Meeting with NCDMA	Copy of HCA
9/8/2009		Webhosting	Web link
15/09/2009		Host Country Approval	Copy of HCA

Justification for additionality

As the project activity refers approved methodology AMS ID, which itself defines the baseline of such kind of projects according to the "Para-10", In this way the baseline has been taken directly as the Grid without defining alternative scenario to the project activity.

As per the UNFCCC simplified modalities to establish additionality of the project activity, project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

a) Investment barrier
b) Technological barrier
c) Barrier due to prevailing practice
d) Other barriers

The project viability has been analysed on the basis of the financial compatibility (Investment Barrier), which was found the most critical barrier, as this is the primary requirement of the private investors to analyse the project on its financial feasibility and compare it with his risk taking ability. But after the analysis it was found that to invest in a wind project is not a very good option:

Analysis was done on the basis of below mentioned parameters:

Table: 10 (Parameters of Financial Analysis)

Parameters	**Values**
Installed Capacity (MW)	1.5
Gross Annual generation (GWh)	2.889
Transmission Loss	5.00%
Net Annual generation (GWh)	2.74
Electricity price from grid (INR/kWh)	3.50
Escalation in Electricity Price from grid (INR/kWh)/year	0.15
O&M cost (Mill/Year)	
For First Year	0.00
For Second Year	0.00
From Third Year Onward	1.46
Yearly Increase (%) on O &M Cost (After 3rd Year)	5%
Term Loan Details	
Interest on Term Loan	13.25%
Loan Repayment Period	6 years (72 monthly instalments)
Other Details	
Income Tax	33.99%
Emission Factor (tCO_2/MWh)	0.9059
CER price Euro/Ton	15[6]
Exchange rate Euro=INR	60[7]
Incentives	
Tax holiday / years	10
Cost of the Project (Million INR)	**90.02**
Means of Finance	**Rs. Million**
Share Capital	41.02
Term Loans	49.00

[6] http://www.bluenext.fr/statistics/downloads.php >> Download excel sheet of Settlement prices Since 21/04/2008

(Average Settlement Price of BlueNext, BNF CER DEC08)

[7] http://www.x-rates.com/cgi-bin/hlookup.cgi

(The Euro-INR conversion rate at the time of investment decision (14/12/2008) was 64, while considering it volatile PP has conservatively assumed it as 60)

Benchmark Analysis:

With reference to the Guidance 16 of Annex 58 of EB 51, " *The benchmark approach is therefore suited to circumstances where the baseline does not require investment or is outside the direct control of the project developer, i.e. cases where the choice of the developer is to invest or not to invest."*

Also as per the Guidance 12 of Annex 58 of EB 51, "*In cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR " .*

In reference to both the guidance above, as the baseline scenario for the project activity is to supply the electricity from NEWNE grid, for which no investment is required by the Project Proponent benchmark approach is best suited approach for PP. Also Prime landing Rate (PLR) of Reserve Bank of India (RBI) has been used for the benchmark analysis. this PLR is compared with IRR of the project activity to demonstrate additionality. IRR is the most common financial indicator used by bankers as well as investors to identify the financial viability of the project. The Project IRR has been computed by taking into account the
cash outflows (capital investment in the project) and cash inflows comprising profit after tax, depreciation, interest on term loan and salvage value (in the terminal year).

RBI PLR:

Considering the financial year of (2008-2009) as the conceptualization phase of the project activity, the most recent available values of PLR with the project start date (Feb 2009), have been used.

The benchmark considering latest available weekly bulletin of RBI (12/12/2008) at the time of investment decision (14/12/2008), average of lowest (13.00%) and highest value (14.00%) of PLR during previous month (November-2008) has been assumed by the PP.

Table: 11 (Prime Lending Rates)7/11/2008	13.75%-14.00%
14/11/2008	13.00%-13-50%
21/11/2008	13.00%-13-50%
28/11/2008	13.00%-13-50%

Hence the PLR of 13.50% has been assumed as benchmark by PP.

The Internal Rate of Return:

As the Project is funded by both Debt and Equity, Project IRR is the most suitable financial indicator for the project activity. The same is compared with RBI PLR to prove that the proposed CDM project activity is unlikely to be financially attractive without CER revenue. The IRR for

the project works out to **10.94%%** and the same is lower against a benchmark of **13.50**%. Considering CDM revenue, the IRR improves to a level of **13.27%.**

According to the Annex 58 of EB 51, sensitivity analysis has been carried out to ascertain the robustness of the conclusion, viz., that the project is additional by subjecting critical parameters to reasonable variations. Guidance on investment analysis states that all parameters need not necessarily be subjected to both negative and positive variations of the same magnitude. Moreover, the guidance also states that though all the variables need not be subjected to variations to cover a range of +10% and –10%, if this is not deemed appropriate in the context of the specific project circumstances. In the above background, two parameters have been identified for conducting sensitivity analysis, viz., project cost and PLF and these 2 parameters were subjected to 10% variation on either side. The result of sensitivity analysis is given in the following table:

Table: 12 (Sensitivity Analysis)

Variation In Parameters	IRR without CDM	**Benchmark**
At 10% Increase in Generation	12.68%	**13.50%**
At 10% Decrease in Cost	12.82%	**13.50%**
At 10% Increase in Tariff after 13th Year	11.14%	**13.50%**
At 10% Decrease in O&M Cost	11.19%	**13.50%**

It could be seen from the details given above the project would remain additional even under the most optimistic conditions. In this context, it needs to be stated that none of the assumptions made above in computing sensitivity analysis is real and they are unlikely to occur for the following reasons:

Project cost: As regards project cost, the cost considered are from the loan application submitted to bank at the time of investment decision. However the actual incurred cost is same as the cost submitted to the bank and hence the question of any reduction in the project cost is unrealistic.

PLF: The MEDA study reveals that the WEGs in Maharashtra are covering around 19% PLF. . Also the third party assessment results the achievable PLF of 19.56% only. The project activity itself had achieved a PLF of only 8.81% (In FY 2009-10), and 19.48% (From April 2010 to Feb 2011). Hence, any increase in PLF is ruled out.

Tariff : The power purchase agreement signed between project participant and the utility is only for 13 years from the date of commercial operation, beyond which there is no commitment from the Discom to

buy electricity from the project. Hence there is significant amount of uncertainty over the project being able to sale electricity beyond the 13th year period. In the absence of clear-cut guidelines on the tariff for the further period, the project participant considered the lowest reference tariff value i.e. Rs. 3.5/kWh for project return calculations. However the sensitivity on this tariff after 13th year has been performed and found the project still unviable.

O&M Cost: Sensitivity on O&M cost has been performed, and found that the project does not meet its benchmark even if the O&M cost is made "0", which is highly unlikely.

The CDM benefits would enable the project to become financially attractive and hence CDM benefits are imperative for the project in as much as the CER income would enable the project to cross the benchmark.

Therefore considering the inflow and outflow, the project activity does not seem to be a very attractive option to the project proponent. However he had invested in the same, assuming that he can overcome the risk with the help of CDM revenue, which he can earn from the project.

B.6. Emission Reduction:

B.6.1. Explanation of methodological choices:

The Emission Reduction calculation for the project activity has been done according to the below formula:

Emission Reductions (ER_Y) = Baseline Emission (BE_Y) – Project Emission (PE_Y) -Leakage Emission (LE_Y)

Baseline Emission -
According to the paragraph 11 of the 16th version of AMS ID, the baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{BL,y} X EF_{CO2, grid.y}$$

Where,
BEy = Baseline Emissions in year y (tCO_2)
$EG_{BL, y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in the year y (MWh)
$EF_{CO2,grid,y}$ = CO_2 Emission Factor of the grid in year y (tCO_2/MWh)

Further it says that Emission factor must be calculated in a transparent and conservative manner as follows:

The Emission Factor can be calculated in a transparent and conservative manner as follows:

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

OR

b) The weighted average emissions (in tCO_2equ/MWh) of the current generation mix.

Option (a) has been considered to calculate the grid emission factor as per the 'Tool to calculate the emission factor for an electricity system' as per the methodology as data is available from an official source. The emission factor EF_{CO2} of the grid is represented as a combination of the Operating Margin and the Build Margin. Considering the emission factors for these two margins as OM and BM then the $EF_{CO2,grid,y}$ is given by:

$$\mathbf{EF_{CO2} = w_{OM} * OM + w_{BM} * BM}$$

With respective weight factors w_{OM} and w_{BM} (where $w_{OM} + w_{BM} = 1$); as per recommendations of ACM0002 for a wind project, the weightage for operating margin has been taken as, wOM = 0.75 and that for build margin, wBM = 0.25 has been considered.

For detailed calculation of baseline emission factor kindly refer the section B.4.

Project Emission (PE_Y) in tCO_{2eq}./ year **= 0**
Energy generated by project activity is from wind energy which is a renewable form of energy. So the generation of energy is not associated with GHGs emission.

Leakage Emission (LE_Y) in tCO_{2eq}./year = **0**
A consideration of the leakage effects generated by the project activity is not required as per the provisions of Type 1D Grid connected renewable electricity generation, Appendix B of the simplified modalities and procedures for small-scale CDM project activities, as the energy generating equipment used is not equipment transferred to another activity and there is no existing energy generating equipment on site.

B.6.2. Data and parameters that are available at validation:

(Copy this table for each data and parameter)

Data / Parameter:	**OM**
Data unit:	tCO_2/MWh
Description:	Simple Operating margin grid emission factor
Source of data used:	CEA published data,
Value applied:	1.0086
Justification of the choice of data or description of measurement methods and procedures actually applied :	The value has been calculated as per the, 3-year generation-weighted average of Net Generation in OM and Simple Operating Margin (tCO_2/MWh) (incl. Imports) Year | Net Generation in Operating Margin (GWh) | Simple Operating Margin (tCO_2/MWh) (incl. Imports) 2005-2006 | 359,271 | 1.0195 2006-2007 | 379,471 | 1.0083 2007-2008 | 401,642 | 0.9992 The detailed calculation is shown in the baseline section above. http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Any comment:	The calculation has been done ex-ante

Data / Parameter:	**BM**
Data unit:	tCO_2/MWh
Description:	Build margin grid emission factor
Source of data used:	CEA published data,
Value applied:	0.5977
Justification of the choice of data or description of measurement methods and procedures actually applied :	The value applied is taken from the CEA reviews. http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
Any comment:	The calculation has been done ex-ante

B.6.3 Ex-ante calculation of emission reductions:

The emission reductions $\mathbf{ER_Y}$ by the project activity during a given year Y is:

Emission Reductions (ER_Y) = Baseline Emission (BE_Y) – Project Emission (PE_Y) -Leakage Emission (LE_Y)

Calculation of annual electricity supplied to the grid by the Project and baseline emission is given in the table below:

Table: 13 (WTG Generation Details)**Number of WTGs**	1
Total Capacity of WTGs (MW)	1.5
Annual Generation (MWh)	2,889*

(* *Source: Gross Generation Provided to bank for loan application)*

Gross Generation from the project activity $EG_{Export,1}$ = 2,889 MWh/year
Electricity Import by the project activity $EG_{Import,1=}$ 0 MWh/year
Transmission Loss @ 5%= 144.50 MWh/year
Net Electricity supplied to the Grid ($EG_{BL,y}$)= $EG_{Export,1} – EG_{Import,1}$ - $EG_{Transmission\ Loss,1}$

2744.50 MWh/year

Emission Factor of Grid (EF_{CO2})= 0.**9059 tCO_2/MWh** (As described in Section B.4)

Baseline Emission BE_y = ($EG_{BL,y}$) * (EF_{CO2})
= 2744.5 * 0.9059tCO_2/year
= 2,486 tCO_2/year

Table: 14 (Emissions)

Baseline Emission (tCO_2eq./year)	2,486
Project Emission (tCO_2eq./year)	0
Leakage Emission (tCO_2eq./year)	0

Emission Reductions (ER_Y) = Baseline Emission (BE_Y) – Project Emission (PE_Y) -Leakage Emission (LE_Y)

Emission Reductions (tCO_2eq./year) = 2,486 – 0 – 0 = 2,486

B.6.4 Summary of the ex-ante estimation of emission reductions:

Summary of the ex ante estimation of emission reductions are furnished below.

Year	Estimation of project activity emissions (tCO_2 e)	Estimation of baseline emissions (tCO_2 e)	Estimation of leakage (tCO_2 e)	Estimation of overall emission reductions (tCO_2 e)
1 September 2011- 31 August 2012	0	2,486	0	2,486
1 September 2012- 31 August 2013	0	2,486	0	2,486
1 September 2013-31 August 2014	0	2,486	0	2,486
1 September 2014- 31 August 2015	0	2,486	0	2,486
1 September 2015-31 August 2016	0	2,486	0	2,486
1 September 2016- 31 August 2017	0	2,486	0	2,486
1 September 2017-31 August 2018	0	2,486	0	2,486
1 September2018-31 August 2019	0	2,486	0	2,486
1 September 2019- 31August 2020	0	2,486	0	2,486
1 September 2020- 31August 2021	0	2,486	0	2,486
Total (tonnes of CO_2e)		**24,860**		**24,860**

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	**EG_{Export}**
Data unit:	kWh/year
Description:	Electricity Exported to grid by WTG
Source of data to be used:	Certificate of Energy Delivered at MSEDCL Grid issued by MSEDCL
Value of data	2,889,000
Description of measurement methods and procedures to be applied:	The Gross Electricity supplied to the grid is measured, through joint meter reading, which would be done at the end of each month by the buyer of the electricity i.e. Maharashtra State Electricity Distribution Licensee (MSEDCL), and the PP representative, to ascertain the exact amount of electricity exported. The metering system will comprise of two sets of meters – meters on the generator cables recording gross electricity generation (M-2) and meters in the sub-station recording net electricity generation from all the WTGs connected to the grid (M-1) *(Kindly refer the diagram of Metering arrangement in Section B.7.2)* To ensure the continued and reliable measurement, each Main Meter has its backup meter also. The gross electricity export to the grid is measured through the primary monitoring which is the meter on generator cable i.e. Meter (M-2).
QA/QC procedures to be applied:	The project employs Class 0.2S high accuracy monitoring and control equipment that will measure, record, report, monitor and control of various key parameters of the plant. These monitoring and controls will be the part of the Control System of the Wind Power Project. All meters will be calibrated annually and sealed as per the industry practices. Training will be provided to the operators of the project for safe, efficient operations of the plant and handling emergency situations. Hence, high quality is ensured with the above parameter.
Any comment:	The Joint Meter Readings can be cross checked by Control Room Data and the invoices raised by PP towards MSEDCL.

Data / Parameter:	**EG_{Import}**
Data unit:	kWh/year
Description:	Electricity Imported from grid by WTG
Source of data to be used:	Certificate of Energy Delivered at MSEDCL Grid issued by MSEDCL
Value of data	0
Description of measurement methods and procedures to be	The Gross Electricity import from the grid is measured, through joint meter reading, which would be done at the end of each month by the buyer of the electricity i.e. Maharashtra State Electricity Distribution Licensee (MSEDCL),

applied:	and the PP representative, to ascertain the exact amount of electricity exported. The metering system will comprise of two sets of meters – meters on the generator cables recording gross electricity generation (M-2) and meters in the sub-station recording net electricity generation from all the WTGs connected to the grid (M-1) *(Kindly refer the diagram of Metering arrangement in Section B.7.2)* To ensure the continued and reliable measurement, each Main Meter has its backup meter also. The electricity imported by the WTG is measured through the primary monitoring which is the meter on generator cable i.e. Meter (M-2).
QA/QC procedures to be applied:	The project employs Class 0.2S high accuracy monitoring and control equipment that will measure, record, report, monitor and control of various key parameters of the plant. These monitoring and controls will be the part of the Control System of the Wind Power Project. All meters will be calibrated annually and sealed as per the industry practices. Training will be provided to the operators of the project for safe, efficient operations of the plant and handling emergency situations. Hence, high quality is ensured with the above parameter.
Any comment:	The Joint Meter Readings can be cross checked by Control Room Data and the invoices raised by PP towards MSEDCL.

Data / Parameter:	**$EG_{BL,y}$**
Data unit:	kWh/year
Description:	Net Electricity generated by WTG and exported to grid
Source of data to be used:	Certificate of Energy Delivered at MSEDCL Grid, issued by MSEDCL
Value of data	2,744,500
Description of measurement methods and procedures to be applied:	The net electricity supplied to the grid is calculated, by joint meter reading done by MSEDCL and the PP representative every month. The formula used to calculate net electricity supplied to the grid is: $EG_{BL,Y}=EG_{Export,1} – EG_{Import,1} - EG_{Transmission\ Loss,1}$ Where EG_{Export} and EG_{Import} are the measured value from the WTG meter as explained in above table and $EG_{transmission\ loss}$ is calculated from the apportioning method as explained in Section B.7.2. Joint Meter Reading would be done at the end of each month with the buyer of the electricity i.e. Maharashtra State Electricity Distribution Licensee (MSEDCL), to ascertain the exact amount of electricity exported. MSEDCL will monitor through state-of-the-art sealed and tested meters. The metering system will comprise of two sets of meters – meters on the generator cables recording gross electricity generation and meters in the sub-station recording net electricity generation from all the WTGs connected to the grid. Apportioning method is

	applied to calculate the net electricity supplied to the grid by each WTG and then a "Certificate of Energy Delivered at MSEDCL Grid" is issued by MSEDCL. The electricity sale invoices are generated on the basis of this certificated only. The net metered electricity generation data of WTG will be used to calculate and monitor the greenhouse gas emission reductions from the project. .
QA/QC procedures to be applied:	The project employs Class 0.2S high accuracy monitoring and control equipment that will measure, record, report, monitor and control of various key parameters of the plant. These monitoring and controls will be the part of the Control System of the Wind Power Project. All meters will be calibrated annually and sealed as per the industry practices. Training will be provided to the operators of the project for safe, efficient operations of the plant and handling emergency situations. Hence, high quality is ensured with the above parameter.
Any comment:	The Joint Meter Readings can be cross checked by Control Room Data and the invoices raised by PP towards MSEDCL.

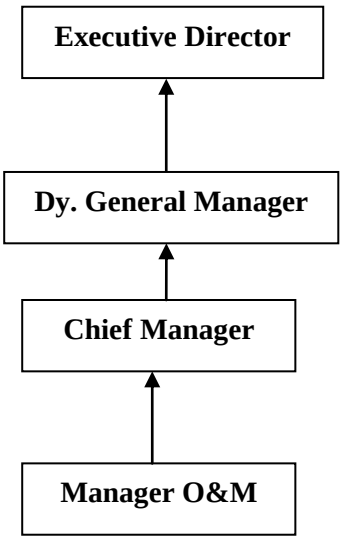
B.7.2 Description of the monitoring plan:

The monitoring plan for the propose project activity is developed as per the procedure for AMS 1D small scale project activity. The monitoring plan will be implemented by the project proponent.

The parameter needs to be regularly monitored to calculate the emission reduction is the net electricity supplied to the grid. Therefore the procedure to monitor and metering of electricity will be done according to the procedure given below:

The authority and responsibility of Project management as well as registration, monitoring measurement and reporting lies with Project Proponents. Project Proponents have envisaged a Project Team to ensure proper and continuous monitoring of the performance of WTGs and generation of Power. The same has been outlined below:

Figure: 3 (CDM Project Team for Information flow)



- **Responsibilities**

Executive Director:

- To be responsible for overall project management.

Dy. General Manager:

- To be responsible for generation data, CDM related monitoring Internal verification and presenting the same to the Executive director
- To verify if the monitored data is normal.
- To calculate the emission reductions regularly and write the monitoring report with the help of CDM consultant.

Chief Manager:

- To conduct the monitoring task strictly based on the monitoring manual and registered PDD. To record required monitored parameters. To report the monitoring results to the Dy. General Manager.

Manager O&M:

- The O&M personal are qualified engineers and are trained at the WTG manufacturing facility of Suzlon Infrastructure Ltd for operating and ensuring best performance of the WTGs.

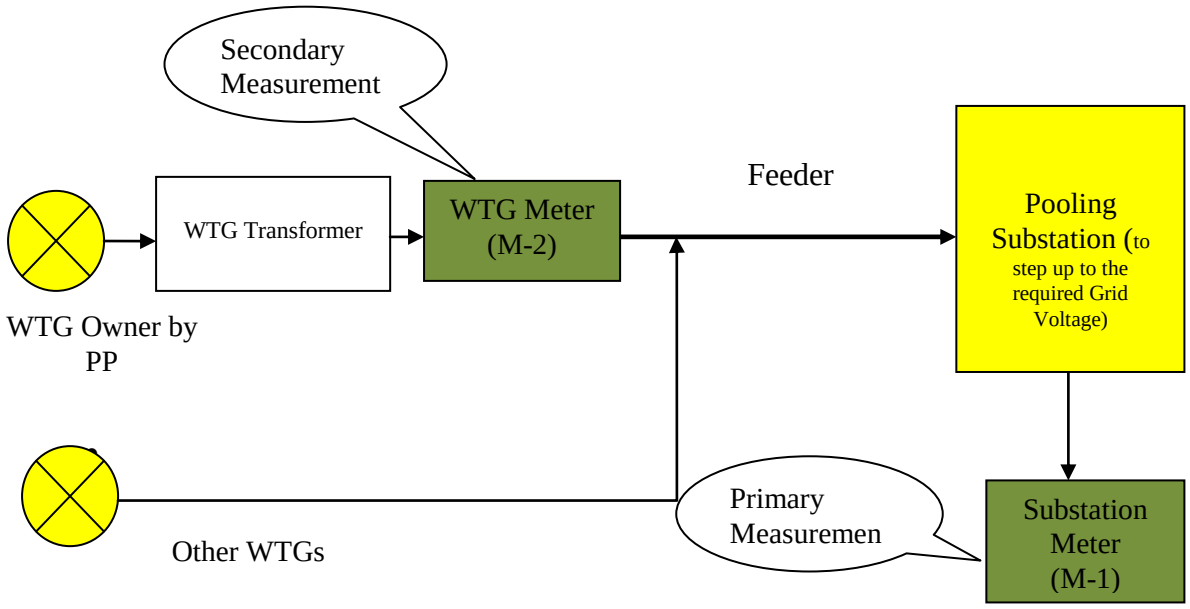
- **Metering and Data Archiving:**

The general conditions set out for metering, recording, meter readings, meter inspections, Test & Checking and communication shall be as per the PPA (Power Purchase Agreement) with MSEDCL.

1. **Metering Arrangement:**

- The proposed CDM project activity requires evacuation facilities for sale to grid and the evacuation facility is essentially maintained by the state utility MSEDCL.
- The project activity has therefore envisaged two independent measurements of generated electricity from the wind turbines – primary and secondary measurement.
  - Primary Measurement, Meter (M-1); at the pooling sub-station recording Gross Electricity by all wind mills connected to that substation.
  - Secondary Measurement, Meter (M-2) on the generator cables recording gross electricity generation by the wind mill

Figure 4: General Layout of Metering System in Wind Site



- The primary measurement of the electricity fed to the state utility grid will be carried out jointly at the incoming feeder of the state power utility, MSEDCL which is located at the sub station. Representatives of MSEDCL and the PP should be present during recording of the meter readings.

- The primary measurement is done through main meter which is located at the sub station. Also a check meter, will be installed to measure the delivery of wind energy during periods when the main meter or its related accessories have failed or developed a fault.

- If during any of the monthly meter readings, the variation between the main meter and the check meter is more than the permissible limit of error of 0.5%, all the meters are retested and calibrated immediately by MSEDCL.

- Secondary monitoring is done at individual WEG level. Each WEG is equipped with SCADA based monitoring system which is connected to the Central Monitoring Station (CMS) of the wind farm maintained by Suzlon Energy Limited and provide the continuous data, which also can be seen through the online connected monitor. The generation data of individual machine can be monitored as a real-time entity at CMS. Using data stored in CMS; hourly, Daily and monthly reports can be generated if required.

- Wherever, more than one Power Producer(s) are delivering energy produced by them using the common evacuation system and through the common metering equipment, then they shall identify a common agency (EPC contractor) responsible for JMR with MSEDCL. The joint meter reading taken at common evacuation system shall be supported by meter readings of individual power producers using such common evacuation system. Based on this break up, limited to total energy delivered, the power generated from the individual WEGs shall be

certified by MSEDCL.The calculation of the breakup will be done according to the formula as below:

$EG_{BL,Y}=EG_{Export,1} – EG_{Import,1} - EG_{Transmission\ Loss,1}$

Net Electricity Exported = Electricity Export – Electricity Import- Transmission Loss

Electricity Export ($EG_{Export,1}$) and Import($EG_{Import,1}$) are recorded monthly at the meter at project site .

For Calculation of Transmission losses below mentioned procedure is followed:

Z= %of line losses

X= Cumulative of all the exported energies from all the metering points connected to the sub-station.

i.e $X= EG_{Export,1}+EG_{Export,2}$

Y= Substation Bulk meter (M-1) readings

Z= [(X-Y)/X]*100

$EG_{Transmission\ Loss,1} = Z* EG_{Export,1}$

2. Metering Equipment, Measurement and Recording: Metering equipment shall be bidirectional electronic tri-vector meters of accuracy class 0.5% required for the Project (both Main and check meters). The meters are electronic tri vector meters and provide continuous and real time data. Hence hourly measurement is possible from the meters, however the monthly measurement is done through Joint Metering procedure as described below.**Joint Metering Procedure:** The joint reading at metering point is carried out once in a month in presence of authorized representative of project owner and MSEDCL. Joint meter reading will be furnished to Superintending Engineer for further processing. Wherever more than one project owners are delivering the energy through common power evacuation facility and through common metering equipment, there Joint meter reading is supported by the meter readings of individual meters installed at wind energy generator. Based on Joint Meter Reading and individual meter reading a break of electricity generated from individual wind energy generator is prepared and certified by MSEDCL. Billing records are maintained by project owner.

3. Meter Test Checking: All the main and check meters shall be tested for accuracy annually with reference to a portable standard meter which shall be of an accuracy class of 0.1%. The portable standard meter shall be owned by the Corporation at its own cost and expense and tested and certified at least once every year against an accepted laboratory standard meter in accordance with electricity standards. The meters shall be deemed to be working satisfactorily if the errors are within specifications for meters of 0.5% accuracy class. The consumption registered by the main meters

alone will hold good for the purpose of billing as long as the error in the main meter is within the permissible limits.

a) If during the annual tests, the main meter is found to be within the permissible limit of error and the corresponding check meter is beyond the permissible limits, then billing will be as per the main meter as usual. The check meter shall, however, be calibrated immediately.

b) If during the annual tests, the main meter is found to be beyond permissible limits of error, but the corresponding check meter is found to be within permissible limits of error, then the billing for the month up to the date and time of such test shall be as per the check meter. There will be a revision in the bills for the period from the previous calibration test up to the current test based on the readings of the check meter. The main meter shall be calibrated immediately and billing for the period thereafter till the next monthly meter reading shall be as per the calibrated main meter.

c) If during the annual tests, both the main meters and the corresponding check meters are found to be beyond the permissible limits of error, both the meters shall be immediately calibrated and the correction applied to the reading registered by the main meter to arrive at the correct reading of energy supplied for billing purposes for the period from the last month's meter reading up to the current test. Billing for the period thereafter till the next monthly meter reading shall be as per the calibrated main meter.

d) If during any of the monthly meter readings, the variation between the main meter and the check meter is more than that permissible for meters of 0.5 % accuracy class, all the meters shall be re-tested and calibrated immediately

e) In the event that the main/check meter error is found at the time of the meter calibration after the issuance of CERs during the crediting period, the correction of the meter error for the CER calculation will be incorporated in the next issuance of the CERs.

f) In the event that the date of registration is in the middle of the month, while the JMR is issued on monthly basis at the end of the month. The CERs will be estimated based on meter readings at the receiving station for the period from the start date of the project registration and the end of the month.

1. **Records:** O&M Contractor Suzlon Energy Ltd. will maintain an accurate and up to date operating log at the wind farm. All the records will be preserved for 2 years beyond the crediting period.

2. **Billing:** The billing will be done on monthly basis as per statement taken by MSEDCL at the end of each month for the energy supplied.

- **Operation & Maintenance:** The project proponents have signed an "Operation and Maintenance" agreement with M/s Suzlon Infrastructure Services Ltd for the operation and maintenance of wind turbines.

B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

Date:
12/06/2010

Name & Address:
Ms Akanksha Gupta
Gensol Consultants Pvt. Ltd.,
205-206, Sarthik II, Opp- Rajpath Club
Ahmadabad-380015
Gujarat

Status:
The Entity is not a Project Proponent

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

19/02/09 (Date of Purchase Order Raised for WTGs)

C.1.2. Expected operational lifetime of the project activity:

20 years 0 Month

C.2 Choice of the crediting period and related information:

Project Proponent have opt for the fixed crediting period

C.2.1. Renewable crediting period

Not chosen

C.2.1.1. Starting date of the first crediting period:

Not applicable

C.2.1.2. Length of the first crediting period:

Not applicable

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

1/09/2011 or the date of registration from Executive Board (Whichever is later)

C.2.2.2. Length:

10 Years 0 Months

SECTION D. Environmental impacts

As per the Schedule 1 of Ministry of Environment and Forests (MoEF - Government of India) Notification dated September 14, 2006, - 39 activities are required to undertake Environmental Impact Assessment (EIA). This project activity does not fall under the specified categories therefore EIA is not required for. Moreover, the project activity i.e., electricity generation from wind, clean and green source of power which will result in no negative impact on environment. Thus no EIA was conducted

D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

The project activity is a renewable energy project and therefore no significant environmental impacts are envisaged from the project activity

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

No significant environmental impacts considered due to implementation of project activity by the host party, hence, no references or procedures specified here.

SECTION E. Stakeholders' comments

E.1. Brief description how comments by local stakeholders have been invited and compiled:

In order to get the views of the local stakeholders and respond to their concerns (if any), a stakeholder meeting was organized by the project proponent. The meeting was open to all and invitations were sent through the paper advertisement on the local newspaper "DESHDOOT- Nashik Avruti" on 7th May 2009.Some of the identified stakeholders were invited personally.

The stakeholder meeting was organised on 18th May 2009 at the project site as per following agenda:

1. Welcome address and introduction

3. Introduction to the phenomenon of global warming and climate change
4. Project description of the wind project and the associated benefits
5. Introduction to CDM and how it helps in reducing the global warming concerns
7. Question and Answer session between the project proponent and the stakeholders
8. Vote of thanks
9. Signing of the attendance sheet
10. Filling of the comment sheet by the concerned stakeholders.

Following people attended the stakeholder consultation meet:

- Project Proponents
- Consultant
- Suzlon (Technology Supplier)
- Local Stakeholders (villagers)

The Project Proponent welcomed all the stakeholders and briefed them about the agenda for the meeting. She also introduced the consultant.

The consultant made a presentation on the phenomenon of global warming and climate change. He gave the non technical description of the project activity. The impacts of the project activity on the environment and its contribution to the improvement in country's power situation. He also explained how the GHG emissions would have occurred in the absence of the project activity.

The Project Proponent invited the stakeholders to come up with their queries or concerns that they may have.

E.2. Summary of the comments received:

People illustrated a very positive attitude towards wind farm. Stakeholders were more curious regarding the Global warming and its impacts therefore general points regarding the global warming, it's mitigating efforts and CDM were discussed.

E.3. Report on how due account was taken of any comments received:

The comments received from the stakeholders were all positive; therefore any corrective actions were not required. Minor queries of the stakeholders were satisfactorily answered by the technology supplier as well as by the consultant.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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E-Mail:	allgrowventures@gmail.com
URL:	
Represented by:	Mrs. G. D. Mehta
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Salutation:	Mrs.
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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding from the parties included in Annex -I is involved in the project activity

Annex 3
BASELINE INFORMATION

The baseline emission factor has been calculated as **"Combined Margin (Including Imports)"** (described in B.5) of NEWNE Region for the year 2007-2008, adopted from the "CO_2 Baseline Database" published by Central Electricity Authority (CEA), Govt. of India, Version 4, Sep 2008.
Calculation for Emission Factor

CENTRAL ELECTRICITY AUTHORITY: CO2 BASELINE DATABASE			
VERSION	4.0		
DATE	Sep-08		
BASELINE METHODOLOGY	ACM0002 / Ver 07		
	and "Tool to Calculate the Emission Factor for an Electricity System", Version 1.1		
Net Generation in Operating Margin (GWh)			
	2005-06	2006-07	2007-08
NEWNE	359,271	379,471	401,642
South	100,978	109,116	114,702
India	460,249	488,587	516,343
Simple Operating Margin (tCO2/MWh) (incl. Imports)			
	2005-06	2006-07	2007-08
NEWNE	1.0195	1.0083	0.9992
South	1.0057	0.9991	0.9906
India	1.0166	1.0063	0.9973
weighted average emissions (tCO2/MWh)		**1.0086**	
Build Margin (tCO2/MWh)			
Build Margin (tCO2/MWh) (excl. Imports)			
	2005-06	2006-07	2007-08
NEWNE	0.6725	0.6313	0.5977
South	0.7067	0.7013	0.7133
India	0.6808	0.6485	0.6253
Build Margin (tCO2/MWh)		**0.5977**	
combined Margin Emission Factor for NEWNE Grid (tCO2/MWh)		**0.9059**	
combined Margin Emission Factor for NEWNE Grid (tCO2/kWh)		**0.0009059**	

Annnex 4

MONITORING INFORMATION

A) Monitoring Details

Interconnection and Evacuation:

Wind energy generated from the facility is evacuated to the state grid system through the state grid EHV substation. Project owner makes all the arrangements at its cost for connecting the facility with state grid system at the point of delivery.

Generation Reports:

Project owner is required to furnish a generation report to the Chief Engineer (Electrical) and to the Electrical Inspector of project owner's area and the officer of MSEDCL before 10th Day of the subsequent month.

Metering Equipments:

Project owner installs the approved energy meter with online reading features at the Metering Point ("the main meter"). Project owner may also install a check meter to measure the delivery of electric energy to grid during period when the main meter is not working. Metering equipment shall be identical in make, technical standards and accuracy class and calibration and comply with the electricity rules.

Testing of metering equipment:

Main and check meter are tested for accuracy with a portable standard meter by Distribution Company. MSEDCL carries out the calibration and periodical testing of the meter in the presence of authorized representative of project owner. Frequency of meter testing is annually.
If during the test any one of the main or check meter is found to be beyond the permissible limit of error then the same should be calibrated immediately.

B) Operation & Management Service:

Routine Maintenance Services:

Routine Maintenance Labour work involves making available suitable manpower for operation and maintenance of the equipment and covers periodic preventive maintenance, cleaning and upkeep of the equipment including-
1) Tower Torquing
2) Blade Cleaning
3) Nacelle Torquing and Cleaning

4) Transformer Oil Filtration
5) Control Panel & LT Panel Maintenance
6) Site and Transformer Yard Maintenance

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

Management Services:

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

Technical Services:

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