Project design document form
(Version 11.0)

BASIC INFORMATION	
Title of the project activity	Bundled Wind Power Project by Peethambra Granites Pvt Ltd (EKIESL-CDM. November -11-01)
Scale of the project activity	☐ Large-scale ☒ Small-scale
Version number of the PDD	06
Completion date of the PDD	11/12/2020
Project participants	Peethambra Granites Pvt. Ltd. (India) EKI Energy Services Limited (Australia)
Host Party	India
Applied methodologies and standardized baselines	AMS-I.D: Grid connected renewable electricity generation (version 18) Standardized baselines – Not Applicable
Sectoral scopes	Sectoral scope I: Energy industries (renewable / non-renewable sources)
Estimated amount of annual average GHG emission reductions	8,223 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

The project activity uses renewable energy (wind) as a clean fuel to generate electrical energy. The total installed capacity of the project is 4 MW, which comprises 5 no. Wind Turbine Generator (WTG), of 800 kW each of make Enercon India Limited.

The wind power produced being GHG neutral will reduce the emissions associated with power generation through fossil fuels based power plant in the regional grids of India. The project activity is a green field project activity & can generate electricity using Wind energy thus reducing approximately 8,223 tonnes of CO2 equivalent at the regional Southern grid of India (now known as the Indian Grid), as respective WTGs will sell the power generated to the Indian grid.

The further information of the project WTGs are:-

Sr. No.	Project Participants' Name	Capacity (kW)	Date of Commissioning	Connected Grid	Generated Power use
WEG1	Peethambra Granites Pvt Ltd	1 X 800kW	31/03/2012	(Indian Grid)	Sale to TANGEDCO
WEG2	Neha Sharma	2 X 800kW	27/03/2012	(Indian Grid)	Sale to TANGEDCO
WEG3			31/03/2012		
WEG4	Atul Sharma	2 X 800kW	30/09/2011	(Indian Grid)	Sale to TANGEDCO
WEG5			31/03/2012		

Purpose of the project activity:

The project activity involves supply, erection, commissioning and operation of 5 Wind Electric Generators (WTGs) of 800 kW each, 3 at District Tuticorin and 2 at District Tirunelveli in Tamil Nadu; all WTGs are supplied and manufactured by Enercon India Ltd.

The main purpose of the project activity is to generate electrical energy through sustainable means using wind power resources, to utilize the generated output for selling it to the State Electricity Board and to contribute to climate change mitigation efforts.

The WTGs convert wind energy into electrical energy and do not use any other fuel for generating the electricity, therefore, the project emissions are taken as zero.

Pre-project Scenario:
The Project participant was not involved in generation of wind based power and supplying to grid at the same site under the pre-project scenario therefore, in the absence of the project activity, the equivalent amount of electricity would have been generated from the connected / new power plants in the Indian grid. The installed capacity is predominantly coal based and therefore is a major source of carbon dioxide emissions in India[1]. The main emission source in the pre-project scenario is the power plants connected to the Indian grid and main GHG involved is CO_2.

Baseline scenario:
As the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following as per applied methodology:

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

"Electricit
y delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid."

Hence, pre-project scenario and baseline scenario are the same.

Contribution of project activity to sustainable development:
The project investors believes that the project activity has contributed to the sustainable development as discussed below according to the indicators stipulated by Ministry of Environment and Forests, Govt. of India for sustainable development in its interim approval guidelines for host country approval eligibility criteria for Clean Development Mechanism (CDM) projects[2]:

Social well being:

- The project activity provided job opportunities to some of the local people during erection and operation of the wind farms contributing up to some extent in poverty alleviation of the local community. The company has developed both the sites and approach roads.
- The project activity will also contribute in infrastructure development by improving the availability of the electricity to the Indian grid, hence contributing towards meeting the electricity deficit in Tamilnadu.

Economic well being:

- The project activity leads to investment to a developing region which otherwise would not have happened in the absence of project activity. The generated electricity is fed into the regional grid through local grid, thereby improving the grid frequency and availability of electricity to the local consumers (villagers & sub-urban habitants) 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 development.
- The proposed CDM project activity requires temporary and permanent, skilled and semi-skilled manpower at the wind park; this will create additional employment opportunities.

Environmental well being:

- The project utilizes wind energy for generating electricity which otherwise would have been generated through the operation of power plants in the Indian grid mix, contributing to reduction in specific emissions (tons of emissions /MWh of energy generated) including GHG emissions.
- As wind power projects produce no end products in the form of waste (e.g. Particulate Matter, Fly ash, Water effluent etc.).
- Being a renewable resource, using wind energy to generate electricity contributes to natural scare resource (eg. Fossil fuel used for electricity generation) conservation.
- Thus, the project causes no negative impact on the surrounding environment contributing to environmental well being.

Technological well being:

- The project activity leads to the promotion of 800 kW of EIL WTGs into the region, demonstrating the success of this type of wind turbines, which fed the generated power into sub- station in Tamilnadu, thus strengthening the grid supply and improving quality of power under the service area of the substation.
- Hence the project leads to technological well being. The project technology

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

manufactured, operated & maintained indigenously and doesn't involve any technology transfer from foreign countries.

A.2. Location of project activity

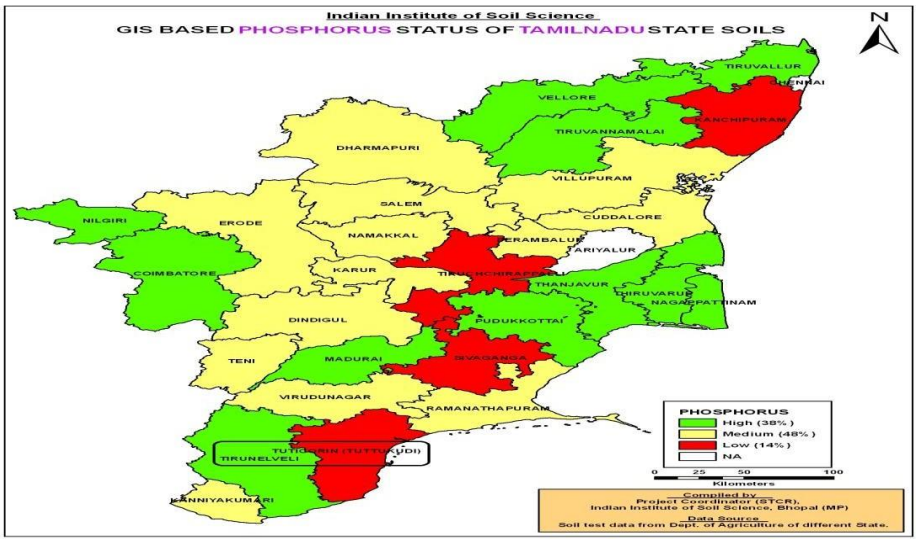
Country: India

This is bundled project activity and the machines are installed in the Tamil Nadu state of India.

Sr. No.	Investor Name	Capacity (MW)	Village	District	State	Country
WEG1	Peethambra Granites Pvt Ltd	1 X 0.8	Subramaniyapuram	Tuticorin	Tamil Nadu	India
WEG2	Neha Sharma	1 X 0.8	Pallankottai	Tirunelveli	Tamil Nadu	India
WEG3		1 X 0.8	Pallankottai	Tirunelveli	Tamil Nadu	India
WEG4	Atul Sharma	1 X 0.8	Karadikulam	Tuticorin	Tamil Nadu	India
WEG5		1 X 0.8	Karadikulam	Tuticorin	Tamil Nadu	India

Sr. No.	Village	State	Nearest Railway Station	Nearest Airport
WEG1	Subramaniyapuram	Tamil Nadu	Sankarankovil(21.2 KM apart)	Tuticorin
WEG2	Pallankottai	Tamil Nadu	Sankarankovil(21.2 KM apart)	Tuticorin
WEG3	Pallankottai	Tamil Nadu	Sankarankovil(21.2 KM apart)	Tuticorin
WEG4	Karadikulam	Tamil Nadu	Sankarankovil(21.2 KM apart)	Tuticorin
WEG5	Karadikulam	Tamil Nadu	Sankarankovil(21.2 KM apart)	Tuticorin

Sr. No.	UID/Location No.	Latitude (in decimals)	Longitude (in decimals)	Latitude		Longitude	
WEG1	HT SC No. 206/K38	9.102361°	77.691667°	N	9° 06' 8.5"	E	77° 41'30.0 "
WEG2	HT SC No. 4061/K14	9.143361°	77.680500°	N	9° 08' 36.1"	E	77° 40' 49.8"
WEG3	HT SC No. 4120/K18	9.132111°	77.673083°	N	9° 07' 55.6"	E	77° 40' 23.1"
WEG4	HT SC No. 174/K19	9.130528°	77.686278°	N	9° 07'49.9 "	E	77°41' 10.6"
WEG5	HT SC No. 205/K22	9.122056°	77.679333°	N	9° 07' 19.4"	E	77° 40' 45.6"



A.3. Technologies/measures

Type & Category

Since, the capacity of the proposed project is 4 MW, which is less than the maximum qualifying capacity of 15 MW, the project activity has been considered as a small scale CDM project activity and UNFCCC indicative simplified modalities and procedures are applied. The project activity utilizes the wind potential for power generation and exports the generated electricity to the grid. According to small scale CDM modalities the project activity falls under the following category:

Sectoral Scope: 1 Energy industries (renewable / non renewable sources)
Type: I Renewable Energy Projects
Category: D Version 18, Grid connected renewable electricity generation

Technology

It is to be noted that the project activity is a greenfield project for generation of renewable electrical energy by harnessing wind power. Thus, this project actually displaces the electricity in the grid which is essentially fossil-fuel based.

In wind energy generation, kinetic energy of the wind is converted into mechanical energy and subsequently into electrical energy. Wind turbines capture the wind's energy with three propeller-like blades, which are mounted on a rotor, to generate electricity. The turbines sit high atop towers, taking advantage of the stronger and less turbulent wind. As the wind blows through the blades of the windmill, a pocket of low-pressure air forms on the downwind side of the blade. The low-pressure air pocket then pulls the blade towards it, causing the rotor to spin. The rotor turns the shaft that further spins the connected generator. The spinning of this generator produces the required electricity. Since power is generated from wind energy, no emissions are attributed to the project emissions and due to that equivalent amount of electricity from fossil-fuel dominated grid can be displaced due to the project activity. Detailed information of gases & emission sources in baseline & project activity have been discussed in Section B.3 of this document. The project activity is the installation of an environmentally safe and sound technology since there are no GHG emissions associated with the electricity generation.

Being a renewable resource, using wind energy to generate electricity contributes to natural scare resource (eg. Fossil fuel used for electricity generation) conservation. Also the project leads to promotion of 800 kW WTGs which proves the success of this type of technology.
There do not stand any risk factors which influence the emission reductions.

Emission reductions will be claimed on the net electrical energy that is supplied to grid which will be metered using electricity meters (Main & Check meters) located at the electrical yard of the respective WTGs. These electrical energy meters are essentially electronic tri-vector meters of appropriate accuracy class. Since these meters are not designed to measure high voltages and currents as generated in the WTG, the WTG output is connected to these meters via transformers (CT/PT) for stepping down the generated voltage and current to ranges which the meters can record. As such, these meters have a multiplying factor which when multiplied to the meter reading provides the actual amount of electricity generated. The technology providers for the project have additionally installed an LCS meter at the WTG controller. Details of monitoring of emission reductions and their calculation have been provided in Section B.6.1 & Section B.7.2 of this document.

For the project activity, the project proponent has procured the WTGs from Enercon India Limited for supply of 5 units in total of E-53 800 kW capacity each. The salient features of the technology employed are:

Turbine model	Enercon E-53
Rated power	800 kW
Rated diameter	52.9 m
Hub height	75 m (concrete)
Turbine type	Direct driven, horizontal axis wind turbine with variable rotor speed
power regulation	independent pitch system for each blade
Cut in wind speed	3.0 m/s
Rated wind speed	12 m/s
cut out wind speed	28-34 m/s
extreme wind speed	59.5 m/s
Rated rotational speed	29 rpm
operating range rot. Speed	12-29 rpm
oreintation	Upwind
No. of blades	3
Blade material	Fibre glass Epoxy reinforced
Gear box type	Gearless
Generator type	Synchronous generator
Braking	Aerodynamic
Output voltage	400 v
Yaw system	Active yawing with 4 electric yaw drives with brake motor
Tower	74 m (concrete)

Generation of power through wind turbine has no sources of emission as discussed in detail in Section B.3 of this document. The electricity generated is monitored using electrical meters (Main & Check meters) which provide a measure of the actual electrical energy that would have been sourced from a fossil-fuel based power plants in the absence of the project activity. Hence, the fossil-fuel power based grid shall form the baseline to the project activity which has been developed in Section B.4 of this document. Further to this, a detailed monitoring procedure is provided in Section B.7 of this document.

A.4. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (Host Country)	Peethambra Granites Pvt. Ltd. (Private Entity)	No
Australia	EKI Energy Services Limited	No

A.5. Public funding of project activity

No Public funding is flowing into the project activity

A.6. History of project activity

The proposed CDM project activity is registered as a CDM project activity with UN reference number as UN 8890 . This project activity is not included as a component project activity (CPA) in a registered CDM programme of activities (PoA).

The proposed CDM project activity was not a CPA that has not been excluded from a registered CDM PoA. This is a registered CDM project activity whose first crediting period is ongoing and project exists in the same geographical location as the proposed CDM project activity

A.7. Debundling

As per 'Guidelines on assessment of de-bundling for SSC project activities' Annex 13 to EB 54, para 2, 'A proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

(a) With the same project participants;
(b) In the same project category and technology/measure;
(c) Registered within the previous 2 years; and
(d) Whose project boundary is within 1 km of the project boundary of the proposed small- scale activity at the closest point.

The project participant hereby 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 previous 2 years.

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines

As per the Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories, Type I.D Version 18 has been used.

Title: “Grid connected renewable electricity generation”.
Reference: AMS I D, Version 18[3]

It has been referred from the list of approved methodologies for CDM project activities in the UNFCCC/CDM (https://cdm.unfccc.int/methodologies/SSCmethodologies/approved) website

The approved methodology uses the
“Tool to calculate the emission factor for an electricity system” [4] Version 7.0 for determination of the baseline scenario,
“Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion”[5] Version 03.0 for determining project emissions and also draws upon Appendix B of the simplified modalities and procedures for small-scale CDM project activities “Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories” for demonstration of additionality.

[3] https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK
[4] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf
[5] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v3.pdf

"Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" Version 03.0.1

B.2. Applicability of methodologies and standardized baselines

The methodology AMS.I.D Version 18 is being applied for the project activity. The reasons for the choice of project type and category for the project activity are as follows:

Criteria	Applicability to the project
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	The project is renewable energy generation through WTGs. The project will supply electricity to the Indian grid. Thus, this criterion is applicable to the project activity and the project activity complies with this criterion.
2. Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A2) applies is included in Appendix	As per Appendix of the AMS.I.D Version 18 project activities that supply electricity to the national/regional grid are applicable under AMS.I.D Version 18. Since the proposed project activity under consideration will also supply electricity to the regional grid. Thus, this criterion is applicable to the project activity and the project activity complies with this criterion.
3. This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) involve a capacity addition in (an) existing plant(s); (c) involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) involve a replacement of (an) existing plant(s).	The project activity is Greenfield installation of new power plant at a site where there was no renewable energy power plant operating prior to implementation of project. Thus, this criterion is applicable to the project activity and the project activity complies with this criterion.
4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: (a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir; (b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m^2; (c) The project activity results in new reservoirs and the power density of the	The project activity is not a hydro power plant. Thus, this criterion is not applicable to the project activity.

power plant, as per definitions given in the project emissions section, is greater than 4 W/m^2.	
5. If new unit 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 new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.	The project does not involve any use of fossil fuel. Thus, this criterion is not applicable to the project activity.
6. Combined heat and power (co-generation) systems are not eligible under this category.	The project activity generates only power and hence is not a cogeneration system. Thus, this criterion is not applicable to the project activity.
7. 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.	The project activity is Greenfield and there is no existing power generation facility at the site. Thus, this criterion is not applicable to the project activity.
8. 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 neither retrofit nor modification of existing facility. Thus, this criterion is not applicable to the project activity.
9. In the case of landfill gas, waste gas, waste water treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS I.C.: Thermal energy production with or without electricity" shall be explored.	The project activity is a renewable wind energy power project and is not a landfill gas, waste gas, wastewater treatment and agro-industries projects or recovered methane emissions project. Hence, the criteria is not applicable to the project activity
10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The Project activity is a renewable wind energy power project and is not a biomass project. Hence the criteria is not applicable to the project activity.

Since the project activity is a small scale project activity of 4 MW Wind, the project activity falls under the Sectoral Scope: 01 - Energy industries (renewable/non-renewable sources), Project Type: I - Renewable Energy Projects and Project Category: Grid-connected electricity generation from renewable sources AMS-I.D (Version 18.0).

B.3. Project boundary, sources and greenhouse gases (GHGs)

Project boundary has been ascertained using para 18 of AMS I.D. – "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".

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

Source		GHG	Included?	Justification/Explanation
Baseline	Grid connected electricity generation.	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	No	Project activity does not emit other forms of GHG emissions
Project activity	Greenfield Wind Power Project Activity.	CO_2	No	No CO_2 emissions are emitted from the project
		CH_4	No	Project activity does not emit CH_4
		N_2O	No	Project activity does not emit N_2O
		Other	No	Project activity does not emit other forms of GHG emissions

B.4. Establishment and description of baseline scenario

Updated baseline for the second crediting period in line with the "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period." Version 03.0.1.

This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 283 to 286 of Project Standard version 02.0.

The tool stipulates the following steps to be carried out.

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

The baseline scenario remains unchanged and is in compliance with all the relevant mandatory national and/or sectoral policies.

Step 1.2: Assess the impact of circumstances

The baseline scenario identified at the validation of the project activity was the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources into the grid. Thus this project activity was a voluntary investment which intends to replace equivalent amount of electricity at grid from renewable source. PP was not bound to incur this investment; hence absence of project activity (i.e. the investment) does not lead to any continued baseline practice for PP within their scope whereas the continued operation of the project activity would continue to replace equivalent amount of electricity at grid. Hence, the same baseline as identified in the previous crediting period is still valid for the project. Therefore, the assessment of the changes in market characteristics is not required for the renewal of the project's crediting period under CDM.

Nevertheless, there is an impressive growth attained by the Indian Power Sector within the recent years, the installed capacity has grown from mere 1,713 MW in 1950 to 356,100.20 MW as on 31.03.2019, consisting of 226,279.34 MW Thermal, 77,641.63 MW Renew, 45,399.22 MW Hydro and 6,780 MW Nuclear. Sector-wise details of installed capacity are shown in Table 1. However, it is evident from Table 1 that the installed capacity is predominantly coal based and therefore, is a major source of carbon dioxide emissions in India. Hence, there exists scope for reducing the CO2 emissions in the country by increased use of renewable energy sources.

Furthermore, project participant has considered the latest available CO2 Baseline Database (CEA database, version 15) at the time of requesting renewal of the crediting period for establishing the baseline emission factor, which itself considered all the new circumstances. Hence, the new circumstances do not have an impact on the baseline emission. As per below table, the fossil fuel based thermal power generation is dominant over the renewable based power generation, thus baseline scenario remains same as original.

Table 1: Sector- wise installed capacity (MW) as on 31/03/2019 (CEA Database version 15)

Sector	Thermal				Nuclear	Hydro	RES	Total
	Coal	Gas	Diesel	Total				
State	65366.50	7118.71	363.93	72849.14	0.00	29878.80	2347.93	105075.86
Central	58820.00	7237.91	0.00	66057.91	6780.00	12126.42	1632.30	86596.63
Private	76518.00	10580.60	273.70	87372.30	0.00	3394.00	73661.40	164427.70
All India	200704.50	24937.22	637.63	226279.34	6780.00	45399.22	77641.63	356100.19

Note - In the above table, the last column “Total” includes the total summation of installed capacity of thermal, Nuclear, Hydro and Renewable Energy.

Thus, current baseline remain same and there is no impact if circumstances, existing at the time of requesting renewal of crediting period.

Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested

As explained in step 1.2, the baseline scenario was the electricity import/generation from the power plants connected to the electricity grid. The project activity in green field project and there is no any baseline equipment or investment involved in project activity. Therefore this condition is not applicable to the project activity.

Step 1.4: Assessment of the validity of the data and parameters

This step stipulates that "Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity."
In the context of the present project activity the emission factor has been updated along with the approach used to calculate the emission factor.

Step 2: Update the current baseline and the data and parameters

As evident from the explanation provided above the baseline scenario remains unchanged. Only the approach used to calculate the baseline emission factor is updated as per the latest version of CEA database available at the time of PDD submission for renewal.

In line with the project standard version 02.0, the impact of new relevant national and/or sectoral policies and circumstances on the baseline taking into account relevant EB guidance with regard to renewal of the crediting period at the time of requesting renewal of crediting period; and the correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period

Impact of the national and/or sectoral policies and circumstances upon the baseline scenario of the project activity

The Government of India enacted the Electricity Act in the year 2003 to harmonize and rationalize the provisions in the existing laws. The Act consolidated the laws relating to generation, transmission, distribution, trading and use of electricity. With the Enactment of the act, the then existing laws viz, The Indian Electricity Act 1910, The Electricity Supply Act, 1948 and The Electricity Regulatory Commissions Act, 1998 were repealed. The Electricity Act 2003 was in force at the time of the completion of the baseline study for the registered PDD.

Section 3 of the said act required the Central Government to prepare the national electricity policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilization of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy. In accordance with the section 3 of the Electricity Act 2003, the Central Government notified the National Electricity Policy[6] on 12th February 2005 which was in force at the time of completion of the baseline study as stated in the registered PDD of the project activity. This policy has not been revised since then and is currently in force as well.

The state electricity regulatory commission issues tariff order in respect of procurement of power generated wind generators and there is no mandatory national and/or sectoral policies have come into effect that would affect the compliance of the current baseline. Hence, it can be concluded the current baseline complies with all relevant mandatory national and/or sectoral policies that have come into effect after the submission of the project activity for validation and are applicable at the time of requesting renewal of the crediting period.

However, in spite of the financial incentives given by the government to renewable power projects in India the generation from the low cost must run resources connected to the IndianGrid has not increased to such an extent that this would lead to more than 50% contribution from the low cost must run resources towards the total generation from the Indian Grid.

[6] http://www.cercind.gov.in/Act-with-amendment.pdf

The approved small scale methodology for Grid connected renewable electricity generation, AMS-I.D (Version 18), has been used to determine the baseline and the estimation of emission reductions for the applicable crediting period. As referred in the methodology "*Tool to calculate the emission factor for an electricity system*" *(version 07.0)* has been used to determine continued validity of the baseline based on combined margin (CM) calculations.

As per CEA database version 15, the fossil fuel dominated electricity is more than renewable sector and is continuing with same pattern. In light of the above discussion it is to be concluded that in accordance with relevant guidelines stipulated in the Project Standard version 02.0, national and/or sectoral policies and circumstances had been considered towards formulating the OM & BM baseline scenario. Hence the baseline scenario as applied for the present project activity remains justified.

As per the approved small scale methodology for Grid connected renewable electricity generation, AMS-I.D (Version 18.0) para 19: If the project activity is the installation of a Greenfield power plant, "the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into grid".

The project activity involves setting up of wind project to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid,y}$ or $EF_{grid,CM,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publically available. The CEA database version 15 is the latest available data at the time of PD submission to DOE for validation, hence same is considered for emission factor calculations.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,y}$ or $EF_{grid,CM,y}$	0.9419 tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO_2 Emission Database, Version 15.0, Dec 2019 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9622 tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system in year y	Calculated as the last 3 year (2016-17, 2017-18, 2018-19) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 15.0, Dec 2019 published by Central Electricity Authority (CEA), Government of India

$EF_{grid,BM,y}$	0.8811 tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system in year y	Baseline CO_2 Emission Database, Version 15.0, Dec 2019 published by Central Electricity Authority (CEA), Government of India

B.5. Demonstration of additionality

As per of EB 22, Annex 3, baseline scenario should be established taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.

Para 7(a) of same states that, only those national and/or sectoral policies or regulations under paragraph 6(a) i.e. type E+ policy that increase GHG emissions, that have been implemented before adoption of the Kyoto Protocol by the COP (decision 1/CP.3, 11 December 1997), shall be taken into account when developing a baseline scenario. For more emitting power sector, there was no policy with comparative advantage existed before 11 December 1997. Hence it is not applicable for baseline determination.

Para 7(b) of the same state that those National and/or sectoral policies or regulations under paragraph 6(b), i.e. type E- policy that decrease GHG emissions, that have been implemented since the adoption by the COP of the CDM M&P (decision 17/CP.7, 11 November 2001) need not be taken into account in developing a baseline scenario. As per Electricity Act 2003, Section 86(1), SERC shall "Promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person". The Ministry of Power has published the implementation plan[7] of various sections (of Electricity Act 2003) including the provision of incentivising renewable energy projects through State Electricity Regulatory Commissions. Hence, it can be concluded that the provincial and sectoral policies are E-, policies that decrease GHG emissions. Also, these policies have been implemented since the adoption by the COP of the CDM M & P (decision 17/CP.7, 11 November 2001).

Hence the PP has not considered them in developing the baseline scenario for the project activity. Instead the baseline scenario is based on hypothetical situation without the provincial and sectoral polices being in place. Hence the selection of baseline scenario confirms to Annex 3 of EB 22.

Moreover, The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid, and is in line with para 10 of the methodology AMS ID version 18.

The implementation of the project activity was a voluntary step undertaken by the project developers with no direct or indirect mandate by law. The project activity is in line with the policies of the Government of India – Ministry of New and Renewable Energy (MNRE). Wind Power Project is one of the thrust areas of power generation from renewable in the Ministry of New and Renewable Energy. It has been recognized that wind power projects can play a critical role in improving the overall energy scenario of the country and in particular for remote and inaccessible areas like deserts, sea soars etc.

In accordance with paragraph 28 of the Simplified Modalities and procedures for Small Scale CDM project activities, a Simplified Baseline and Monitoring methodology listed in Appendix B may be used for a Small Scale CDM project activity if project participants are able to

[7] http://www.powermin.nic.in/whats_new/national_electricity_policy.htm

demonstrate that the project activity would otherwise not be implemented due to the existence of one or more barriers listed in "Guidelines on the demonstration of additionality of small-scale project activities" version 09, annex27 EB 68 .These barriers are:

A. Investment Barrier
B. Technology Barrier
C. Barriers due to Prevailing Practice
D. Other Barriers.

Demonstration of additionality for the CDM project activity:

In accordance with simplified modalities and procedures for small-scale project activities, simplified baseline and monitoring methodology listed in Appendix B may be used if project participant can demonstrate that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in Guidelines on the demonstration of additionality of small-scale project activities. Similarly, for the indentified CDM project, following barriers have been overcome during project planning & execution.

The project follows the Annex 34 of EB 35 "Non-binding best practice examples to demonstrate additionality for SSC project activities." and, paragraph 1 of Annex 27 of EB 68, "Guidelines on the demonstration of additionality of small-scale project activities" option (a) i.e. Investment Barrier to demonstrate additionality.

Though the detail methods are not mentioned in above tool, the PP has taken reference for investment analysis by using UNFCCC "Tool for the demonstration and assessment of additionality", (Version- 06.1.0, Annex 20, EB- 69).

Investment Analysis:
As per *Tool for the demonstration and assessment of additionality*, it is to be determined that the project activity is not:

a) The most economically or financially attractive; or
b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).

Determine appropriate analysis method

As per Sub-step 2a, Paragraph (1), as the project activity is selling the generated electricity to state electricity utility & getting financial benefits other than CDM benefits hence, Option- I is not applicable under this situation. Also as per EB-62, Annex 05, clause no.19 "If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate. Hence Option-II is also not applicable under this situation. So the project promoter has chosen Option- III or benchmark analysis as an appropriate analysis method to demonstrate the investment barrier.

Apply benchmark analysis

Additionality Tool (Version 06.1.0) requires the PP to identify the financial indicator, such as IRR, most suitable for the project type and decision context. The PP has selected Equity IRR as a suitable financial indicator for a comparison with the selected benchmark. Additionality Tool (Ver. 06.1.0) permits the use of Equity IRR, for demonstrating the additionality using benchmark analysis.

Benchmark:

Annex 05 of EB 62 para 12 states that where the Equity IRR has used to demonstrate the additionality of the project, required/expected returns on equity are appropriate benchmarks for an Equity IRR.

PPs have selected post tax Equity IRR as financial indicator of the project and used Capital Asset Pricing Model (CAPM) for deciding benchmark for this project. CAPM is a model of linear general equilibrium return. In the CAPM theory, investors are assumed to have homogeneous expectations during the decision-making period. Investors make their decision only on the basis of the expected returns, standard deviations and covariance of all pairs of security. According to CAPM, all investors hold only the market portfolio and riskless securities. The market portfolio is a portfolio comprised of all stocks in the market. The required rate of return is given by the following formula -

$$\text{Required rate of return} = R_F + \beta \times (R_M - R_F)$$

Where-
R_F = Risk free rate
β = Beta which shows risk
R_M = Market return

Risk free rate:

The risk free rate is the return on a security (or a portfolio of securities) that is free from default risk. Typically, the rate of long term government bonds is used to determine the risk free rate. In the context of the present project activity, YTM (Yield to Maturity) at primary issues over a period of 10 years has been considered to represent the risk free rate. (Reference has been taken from Guidance 16 of Annex 05 of EB 62)

Expected market rate of return = *Returns of BSE-Sensex is considered as Market index.* Return on well-diversified market portfolio.

{From the available market indices BSE-Sensex[8] acts as a better financial/economic indicator when compared to other indices based *on:*

- *It is the major index of India that is being monitored at the international market.*
- *It had tracked the Indian stock market for a long time period. Thus large number of data points are available which provide a better estimate of expected market return.*
- *It includes various phases of the economy and various types of investors who have been active in the market at different points in time.*

Moreover, it comprises of 30 large companies, based on their market capitalization. The index can therefore be considered as relatively stable with low random fluctuations and thus is in line with the assumptions of the CAPM model and it is reasonable to refer to BSE-SENSEX for determining the average market return.

Market Risk Premium

The market risk premium is the difference between the expected market rate of return and the average risk free rate and is usually measured by looking at the average of the historical returns on a market portfolio. In the context of the present project activity, the period selected to calculate the expected market return has been calculated from the inception of BSE Sensex uptill the decision making date.

Thus the market risk premium estimated is

$$\text{Market risk premium} = R_M - R_F$$

[8] http://www.bseindia.com/sensex/index.htm

However, the market risk premium should not be viewed on a standalone basis. The overall risk premium depends on market risk premium as well as on a parameter called Beta, which has been explained below:

Beta = Covariance (R, R_M) / Variance (R_M)

Beta is the measure of the expected volatility of a particular stock relative to a well-diversified market portfolio. It measures the systematic risk of a stock, i.e. the risk that cannot be eliminated in a well- balanced, diversified portfolio. The beta is calculated as the covariance between its return and the return on a well-diversified market portfolio, divided by the variance of the return on a well-diversified market portfolio.

For companies that are not publicly listed, the beta is determined by referring beta values of publicly listed companies that are engaged in similar types of business. The project activity type is wind power generation; the approach therefore should be to base the beta for the project on the beta values of listed wind power generation companies in India. However, since there was only no exclusive wind energy companies listed on any stock exchange in India, in the absence of adequate data on companies which are exclusively into the same type of business (i.e wind power projects), the next best option for assessing the risk of these projects is to consider the data available on companies which are involved in similar businesses.

Therefore, PP has considered beta values of the power companies in India. The group of companies considered includes renewable as well as conventional power generating companies. It is understood that risky businesses are likely to have higher cost of equity than safer businesses; projects in riskier businesses will have to cover these higher costs. Hence, investors demand a higher return from renewable energy projects than from conventional energy ones, given the higher risks in renewable, including risks of technology, risks from significantly varying and unpredictable resource availability (e.g. wind), and a lower established support base for such projects relative to that for conventional power (e.g. grid connections, bank finance, suppliers, etc.). The use of this Beta value is therefore considered conservative, as it does not add for the higher risk of non conventional energy.

Nevertheless, being more conservative, in this case, to arrive at Beta value of Proposed Project Activity, PP has taken average of unlevered beta of the Companies which are included in Power - Generation/Distribution sector categorized by money control & have trading data of 3 years at the time of investment decision date. Project Proponent has taken the average of Unlevered Beta value arrived for six power companies (TATA Power, Neyveli Lignite, Reliance Infra, CESC, GIPCL, BF Utilises) listed on Bombay Stock Exchange (BSE) available at the time of investment decision.

β_a = Unlevered Beta or Asset Beta = β_e / {1+(1-T)*(D/E)}

where - β_a = Asset Beta or Unlevered Beta of the stock
β_e = Equity Beta or Levered Beta of individual stock
T = Marginal Tax Rate
D/E = Debt/Equity

Thus the benchmark for each project case in the bundle is as follows:-

Sr. No.	WTG Owner	Benchmark (Equity IRR)
1	Peethambra Granites Pvt.Ltd – WTG1	17.06%
2	Neha Sharma – WTG2 & WTG3	17.00%
3	Atul Sharma – WTG4	17.00%
4	Atul Sharma – WTG5	17.00%

Benchmark determination input values is based on publicly available data sources which can be clearly validated by the DOE, thus it complies with guidance 13 of EB 62, Annex 5.

The key assumptions supporting financial projections:

Assumption and financial of the project							
		Peethambra Granites Pvt.Ltd -	Neha Sharma	Article I. Atul Sharma	Atul Sharma		
		WTG1	WTG 2 & 3	WTG 4	WTG 5		
Details of the project						Source	Link
State where the project is situated		Tamilnadu	Tamilnadu	Tamilnadu	Tamilnadu	As Per Offer Letter	
No. of machine		1	2	1	1	As Per Offer Letter	
Capacity /machine	MW	0.8	0.8	0.8	0.8	As Per Offer Letter	
Total Capacity	MW	0.8	1.6	0.8	0.8		
Date of Commissioning (Expected)		31-Mar-12	31-Mar-12	31-Mar-12	31-Mar-12	As Per Offer Letter	
Life of the plant	Years	20	20	20	20	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Generation and sale of electricity							
PLF	Percent	25.02%	24.82%	25.12%	24.82%	As per Third Party Report in accordance to EB 48 Annex 11	
Issuance dates of PLF report		25-Aug-11	10-Jun-11	10-Jun-11	10-Jun-11	As per Third Party Report	
Annual generation	kWh	1,753,000	3,479,000	1,760,000	1,739,000		
Tariff Rate at the decision making	INR/kWh	3.39	3.39	3.39	3.39	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Deration after 10th year, every year	Percent	1.00%	1.00%	1.00%	1.00%	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Operation and maintenance cost and Insurance							
O & M Expenses	INR Million	0.72	1.43	0.72	0.72	As per offer letter	
Escalation in the O & M Expenses	Percent	6%	6%	6%	6%	As per offer letter	

O & M Expenses (TNEB)	INR Million	0.14	0.28	0.14	0.14	As per e-mail communication from technology provider	
Escalation in the O & M Expenses (TNEB)	Percent	5%	5%	5%	5%	As per e-mail communication from technology provider	
Financial parameters							
TOTAL COST	INR Million	46	92	46	46	As Per Offer Letter	
Loan Amount	INR Million	32.2	64.4	32.2	32.2		
Equity Investment	INR Million	13.8	27.6	13.8	13.8		
Term loan							
Loan Amount	INR Million	32.2	64.4	32.2	32.2	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Interest rate	Percent	12.00%	12.00%	12.00%	12.00%	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Loan Tenure	Quarter	40	40	40	40	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Moratorium Period	Quarter	4	4	4	4	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Repayment Period	Quarter	36	36	36	36		
Repayment installments value	INR Million	0.894	1.789	0.894	0.894		
1st installment from	Quarter end	Jun-13	Jun-13	Jun-13	Jun-13	Considered , as from next quarter from the date of commissioning	
Book Depreciation							
Transportation Charges	INR Million	1.50	3.00	1.50	1.50		
Transfer of Development rights	INR Million	1.60	3.20	1.60	1.60		
Gross Depreciable Value[8]	INR Million	40.60	81.20	40.60	40.60		

Salvage value	%	10.00%	10.00%	10.00%	10.00%	As per TNERC order dated 20.03.2009, Pg 54	http://tnerc.gov.in/orders/draft%20order%2020-3-2009%20complete%20final. pdf
Salvage value	INR Million	4.06	8.12	4.06	4.06		
Net Depreciable Value	INR Million	36.54	73.08	36.54	36.54		
Book Depreciation	INR Million	1.83	3.65	1.83	1.83		
Residual value	INR Million	6.36	12.72	6.36	6.36		
IT Depreciation on (WDV)	Percent	40.00%	40.00%	40.00%	40.00%	As Per Income Tax Act	http://www.incometaxindia pr.gov.in/incometaxindiacr/ contents/ITRules2010/appe ndix264.htm
Income Tax							
Financial Year		FY 2011-2012	FY 2011-2012	FY 2011-2012	FY 2011-2012		
Income tax rate	Percent	30.00%	30.00%	30.00%	30.00%	As Per Income tax rule Pg 35 Para E(l)	http://indiabudget.nic.in/ub 2011-12/fb/bill91.pdf
MAT	Percent	18.50%	0.00%	0.00%	0.00%	As Per Income tax rule Pg 25	http://indiabudget.nic.in/ub 2011-12/bs/bs.pdf
Surcharge	Percent	5.00%	5.00%	5.00%	5.00%	As Per Income tax rule Pg 31	http://indiabudget.nic.in/ub 2011-12/bs/bs.pdf
Education cess	Percent	3.00%	3.00%	3.00%	3.00%	As Per Income tax rule Pg 35 Para E(l)	http://indiabudget.nic.in/ub 2011-12/fb/bill91.pdf
Service Tax	Percent	10.00%	10.00%	10.00%	10.00%	As Per Income tax rule Pg 3 & 4, Points 2.(11) and 2.(12)	http://indiabudget.nic.in/ub 2011-12/fb/bill2.pdf
Final Tax rates							
Income tax rate	Percent	32.45%	32.45%	32.45%	32.45%		
MAT	Percent	20.01%	0.00%	0.00%	0.00%		
Service Tax	Percent	10.30%	10.30%	10.30%	10.30%		

Tax Shield
PP has considered 40% accelerated depreciation due to which he is enjoying benefit of tax shield for the first two years, the details of which are presented in the IRR Sheet.

Calculation and comparison of financial indicators
PP has calculated the IRR for the project for a period of twenty years (i.e. complete life time of the WTG). Values that have been considered for calculation of IRR, has been incorporated above.

This substantiates that the investment is not financially attractive (equity IRR for the project activity is less than the Benchmark) for any of the investor. Thus it can be easily concluded that project activity is additional & is not business as usual scenario. Thus, successful CDM registration of this project activity is important to make it financially viable.

Sensitivity Analysis

As per Guidance 20 of Annex 5 of EB 62, only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. Guidance also states, "All parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude". The Annex also states, as a general point of departure, variations in the sensitivity analysis should at least cover a range of +10% and –10%, unless this is not deemed appropriate in the context of the specific project circumstances.

Since the project cost is already firmed up, the cost is not variable. The tariff is determined by PPA which is fixed for years mentioned as per the respective State Electricity Board's tariff order and hence it need not be subjected to variation. All other expenses are much less than 20% of the total cost. Hence, only PLF needs to be subjected to reasonable variation. Nevertheless, following factors have been subjected to sensitivity analysis:

1. PLF
2. O&M Cost
3. Project Cost
4. Tariff Rate.

The results of sensitivity analysis are as follows:

Equity IRR	Peethambra Granites Pvt.Ltd – WTG1			
Variation %	-10%	Normal	10%	Breaching Value
PLF	3.95%	7.65%	11.87%	21.70%
O&M	8.40%	7.65%	6.97%	-144.59%
Project Cost	11.29%	7.65%	4.97%	-21.59%
Tariff Rate	3.95%	7.65%	11.87%	21.70%

Equity IRR	Neha Sharma – WTG2 & WTG3			
Variation %	-10%	Normal	10%	Breaching Value
PLF	3.72%	7.45%	12.03%	19.64%
O&M	8.20%	7.45%	6.69%	-134.46%
Project Cost	11.43%	7.45%	4.74%	-19.82%
Tariff Rate	3.72%	7.45%	12.03%	19.64%

Equity IRR	Atul Sharma – WTG4			
Variation %	-10%	Normal	10%	Breaching Value
PLF	4.07%	7.98%	12.68%	18.21%
O&M	8.74%	7.98%	7.22%	-126.19%
Project Cost	12.08%	7.98%	5.09%	-18.60%
Tariff Rate	4.07%	7.98%	12.68%	18.21%

Equity IRR	Atul Sharma – WTG5			
Variation %	-10%	Normal	10%	Breaching Value
PLF	3.72%	7.45%	12.03%	19.63%
O&M	8.20%	7.45%	6.69%	-134.46%
Project Cost	11.43%	7.45%	4.74%	-19.82%
Tariff Rate	1.03%	7.45%	12.03%	19.63%

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favourable conditions.

	Probability to breach the benchmark
PLF	Not possible as the PLF has been reported as per the Third Party Report based on long term data and hence a PLF fluctuation of more than 10% is unlikely to happen.
O&M	With the country experiencing 5% inflation on an average, the question of O&M coming down is ruled out. Moreover, CERC[9] Draft orders specifies 5.72% escalation in O&M Cost & in recent time offer letter for most of the project proponents provides for a 6% escalation in the cost every year for the first 5 years.
Project Cost	The Purchase Order cost for all project proponents is less than 10% of the Offer letter cost which was considered during decision making. However, we have conducted sensitivity analysis for all project proponents for project cost being 10% less than that considered during decision making. Still, the IRR does not breach the Benchmark for any of the project proponents. Hence, there is no any probability of the Benchmark being breached.
Tariff Rate	The tariff is determined by PPA which is fixed for years mentioned as per the respective State Electricity Board's tariff order. Hence, there is no probability to get variation for the same.

Demonstration of Parallel and continuing actions as per the 'guidelines on the demonstration and assessment of prior consideration of the CDM' annex 13 para 2 to EB 62[10].

Project Investors' Name	Board Resolution date	Purchase Order date	F-CDM sent to UNFCCC & NCDMA
Peethambra Granites Pvt Ltd	30/08/2011	20/10/2011	01/12/2011
Atul Sharma	15/06/2011	16/06/2011	
Neha Sharma	15/06/2011	16/06/2011	

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

As per the approved consolidated Methodology AMS - I.D, version 18:

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid- connected power plants. The baseline emissions are to be calculated as follows:

$$\mathbf{BE_y = EG_{PJ,y} \times EF_{grid,y}}$$

Where:

BE_y = Baseline emissions in year y (t CO_2/yr)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

[9] CERC order Pg.25 http://www.cercind.gov.in/2011/Whats-New/cer2012_17.pdf

[10] https://cdm.unfccc.int/filestorage/P/U/2/PU2ARNBM3KFXS9HZ6OELGTICJ81VYD/eb62_repan13.pdf?t=VGF8cWxnd2x0fDDv11tniOHCGAk9WLb7EZ8k

$EF_{grid,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO_2/MWh). The emission factor is also abbreviated as $EF_{grid,CM,y}$ as per tool.

As per para 23 of methodology AMS I.D Version 18, The emission factor shall be calculated in a transparent and conservative manner as follows:
(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 t CO2/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

PP has followed option a) for calculation of grid emission factor.

As per para 26 of AMS I.D methodology Version 18, If the project activity is the installation of a greenfield power plant, then:
$EG_{PJ,y} = EG_{PJ,Facility,y}$
Where:
$EG_{PJ,Facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)

As per methodology, combined grid emission factor as per the "Tool to calculate the emission factor for an electricity system" version 07 is calculated as below.

CO_2 Baseline Database for the Indian Power Sector, Version 15, December 2019[11] published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per Methodological tool: Tool to calculate the emission factor for an electricity system (Version 07.0, EB 100, Annex 4), following six steps have been followed:

(a) **Step 1:** Identify the relevant electricity systems;

(b) **Step 2:** Choose whether to include off-grid power plants in the project electricity system (optional);

(c) **Step 3:** Select a method to determine the operating margin (OM);

(d) **Step 4:** Calculate the operating margin emission factor according to the selected method;

(e) **Step 5:** Calculate the build margin (BM) emission factor;

(f) **Step 6:** Calculate the combined margin (CM) emission factor.

Step 1: Identify the relevant electricity systems

As described in tool "For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems". It also states that "If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used".

[11] https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver15.pdf

Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern.

However since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO_2 Baseline Database. As of 31 December 2013, the Southern grid has also been synchronised with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

Table: Geographical Scope of Indian Electricity Grid

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

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)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods, which are described under Step 4:

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

The data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for

calculating operating margin emission factor depends on 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.

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

	2014-15	2015-16	2016-17	2017-18	2018-19
India	16.8%	15.1%	14.6%	14.3%	14.5%

Data Source: Central Electricity Authority (CEA) database Version 15, Dec 2019[12]

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

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

(a) **Ex-ante option:** if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.

OR

(b) **Ex-post option:** if the ex-post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

PP has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PD to the DOE for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

Step 4: Calculate the operating margin emission factor ($EF_{grid,OMSimple,y}$) according to the selected method

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

Net Generation in Operating Margin (GWh) (incl. Imports)			
	2016-17	2017-18	2018-19
INDIAN Grid	916,278	960,639	995,957

Simple Operating Margin (tCO_2/MWh) (incl. Imports)			
	2016-17	2017-18	2018-19
INDIAN Grid	0.9636	0.9543	0.9685

[12] https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver15.pdf

Weighted Generation Operating Margin	
INDIAN Grid	**0.9622**

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 72:

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

(a) **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 m at the time of 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.

(b) **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.

Option 1 as described above is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PD and is fixed for the entire crediting period.

Build Margin (tCO_2/MWh) (not adjusted for imports)	
	2018-19
INDIAN Grid	**0.8811**

Step 6: Calculate the combined margin (CM) emission factor ($EF_{grid,CM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 07.0, EB 100, Annex 4) para 81:

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

(a) Weighted average CM; or
(b) Simplified CM.

PP has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (t CO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year y (t CO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (per cent)
W_{BM} = Weighting of build margin emissions factor (per cent)

The following default values should be used for W_{OM} and W_{BM}:

For wind project activities: W_{OM} = 0.75 and W_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods. Since project activity meets above criteria, the above weightage has been considered for OM and BM.

Therefore, $EF_{grid,CM,y}$ = 0.9622 * 0.75 + 0.8811 * 0.25
= 0.9419 tCO_2/MWh

Baseline emission factor (EF_y):

The baseline emission factor is calculated using the combined margin approach as described in Step 6 above:

Therefore, $EF_{grid,y} = EF_{grid,CM,y}$ = 0.9419 tCO_2/MWh

Investor Name	Capacity (MW)	PLF	Transmission Loss	Net Generation (MWh/year)	Emission Factor (tCO_2/MWh)	Baseline emission (tCO_2e/ year)
Peethambra Granites Pvt.Ltd	**0.8**	25.02%	0%	1,753	0.9419	1651
Neha Sharma	**0.8**	24.82%	0%	1,739	0.9419	1638
Neha Sharma	**0.8**	24.82%	0%	1,739	0.9419	1638
Atul Sharma	**0.8**	25.12%	0%	1,760	0.9419	1658
Atul Sharma	**0.8**	24.82%	0%	1,739	0.9419	1638
Total	**4**			**8,732**		**8,223**

B.6.2. Data and parameters fixed ex ante

Data/Parameter	**$EF_{grid,OM,y}$**
Data unit	tCO_2/MWh
Description	Operating Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 15, Dec 2019[13]
Value(s) applied	0.9622
Choice of data or measurement methods and procedures	Calculated as the last 3 year (2016-17, 2017-18, 2018-19) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 15.0, Dec 2019 published by Central Electricity Authority (CEA), Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period

[13] https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver15.pdf

Data/Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 15, Dec 2019[14]
Value(s) applied	0.8811
Choice of data or measurement methods and procedures	Calculated as per "Tool to calculate the emission factor for an electricity system, version 07" as per the latest data available for the most recent year 2018-19. The data is obtained from "CO_2 Baseline Database for Indian Power Sector" version 15, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period

Data/Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 15, Dec 2019[15]
Value(s) applied	0.9419
Choice of data or measurement methods and procedures	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$= Build margin CO_2 emission factor in year *y* (tCO_2/MWh) $EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year *y* (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%
Purpose of data	For the calculation of the Baseline Emission
Additional comment	This parameter is fixed ex-ante for the entire crediting period

B.6.3. Ex ante calculation of emission reductions

Baseline emissions (BE_y)

The ex-ante calculation of baseline emission are tabulated below:

EX- ANTE EMISSION REDUCTION CALCULATIONS FOR PEETHAMBRA GRANITES PVT LTD PROJECT ACTIVITY									
Sr. No.	Capacity (MW)	Investor's Name	PLF	Net Generation (MWh/year)	Baseline Emission factor (tCO2/MWh)	Baseline emissions (ton of CO_2e/ year)	Project emissions (ton of CO_2e/ year)	Leakage Emissions (ton of CO_2e/ year)	Emission reductions ton of CO_2e/year
WTG 1	0.8	Peethambra Granites Pvt.Ltd	25.02%	1,753	0.9419	1651	0	0	1651
WTG 2	0.8	Neha Sharma	24.82%	1,739	0.9419	1638	0	0	1638
WTG 3	0.8		24.82%	1,739	0.9419	1638	0	0	1638

[14] https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver15.pdf
[15] https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver15.pdf

WTG 4	0.8	Atul Sharma	25.12%	1,760	0.9419	1658	0	0	1658
WTG 5	0.8	Atul Sharma	24.82%	1,739	0.9419	1638	0	0	1638
Total				**8,732**		**8,223**	**0**	**0**	**8,223**

Project activity emissions (PE_y)
As per para 39 of methodology, For most renewable energy project activities, PEy = 0. As there would be no emissions due to the implementation of the project, the project emissions are estimated to be zero.

Leakage (LE_y)
As per AMS I.D, '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', in the project activity, there is no transfer of energy generating equipment and therefore the leakage from the project activity is considered as zero.

Emission reductions (ER_y) are calculated as follows:

Baseline Emissions (BE_y)	8,223	tCO_2/y
Project Activity Emissions (PE_y)	0	tCO2/y
Leakage (LE_y)	0	tCO_2/y
Emission Reductions (ER_y) = BE_y - PE_y - LE_y	**8,223**	**tCO_2/y**

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
Year 1*	8,223	0	0	8,223
Year 2	8,223	0	0	8,223
Year 3	8,223	0	0	8,223
Year 4	8,223	0	0	8,223
Year 5	8,223	0	0	8,223
Year 6	8,223	0	0	8,223
Year 7	8,223	0	0	8,223
Total	90,126	0	0	90,126
Total number of crediting years	7			
Annual average over the crediting period	8,223	0	0	8,223

* Year 1 represents first year of second crediting period and same approach followed for further years.

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data/Parameter	$EG_{PJ,y}$ or $EG_{PJ,Facility,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Source of data	Joint Meter Readings
Value(s) applied	8,732
Measurement methods and procedures	Measurement method: The net electricity exported to grid is calculated as a difference in the electricity exported to the grid and imported from the grid. Monitoring: Electrical Energy Meters which are electronic tri-vector meters of accuracy class 0.2[16] (Main & Check meters) Data type: Measured & Calculated Archiving: Paper & Electronic Responsibility: The O&M site-in-charge shall be responsible for the regular recording of data. Calibration Frequency: The meters shall be calibrated once every two years. Recording Frequency: Continuous Monitoring, Continuous Measurement and at least monthly recording
Monitoring frequency	Monthly
QA/QC procedures	The amount of electricity exported to grid is cross-checked with the invoices for sale of power. Meter calibration shall be conducted once every two years and internal audit system is in place as mentioned in Section B.7.3
Purpose of data	To determine Baseline Emissions
Additional comment	The data will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later. In the case of the crediting period start & end dates of the project activity falls in between the billing cycles, then for emission reduction calculations, the daily generation reports measured at TANGEDCO provided by the O&M service provider, shall be considered.

B.7.2. Sampling plan

Not Applicable

B.7.3. Other elements of monitoring plan

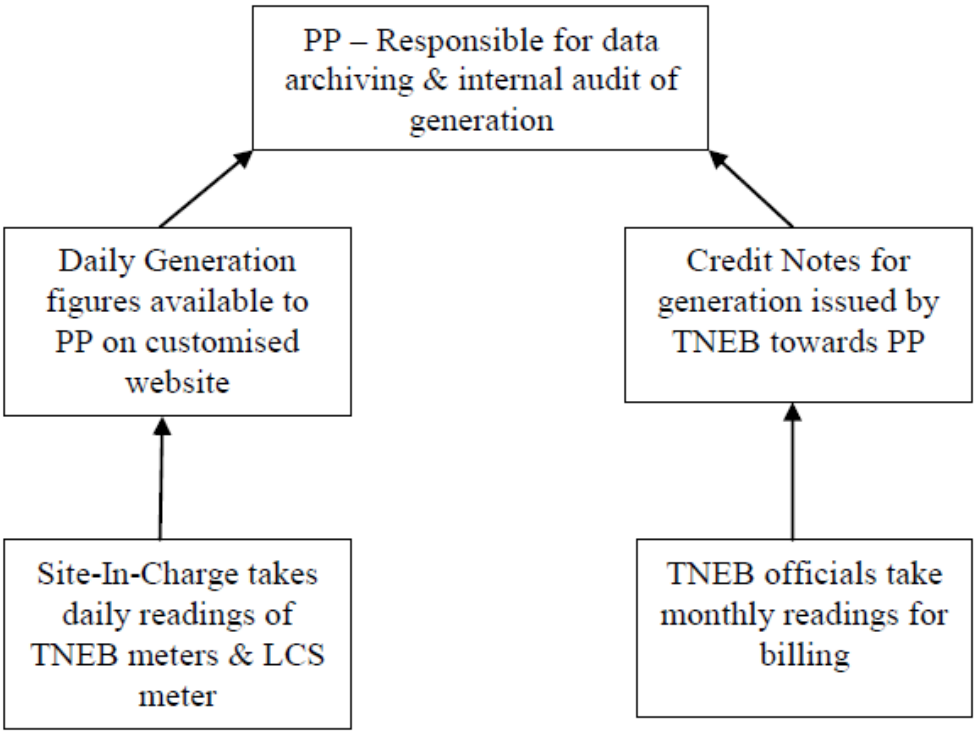
The Monitoring plan is designed to be in accordance with the modalities and procedures for small
scale project activities. The monitoring plan describes the parameters to be monitored, monitoring practices, QA and QC procedures, data storage and archiving.

The project activity is in accordance with approved small scale methodology AMS I.D, and therefore, can use the monitoring methodology for type I.D of 'Appendix B of the simplified M&P for small-scale CDM project activities-Version 18, - Grid connected renewable electricity generation.

The monitoring methodology specified in the methodology requires that the project-monitoring plan to consist of monitoring of quantity of net electricity supplied to the grid in the year y. In order to monitor the mitigation of GHG due to the project activity, the total energy exported needs to be measured. The net energy supplied to grid by the project activity multiplied by emission factor for regional grid, would form the baseline for the project activity.

[16] Currently project activity involves 0.2s accuracy class meters. The accuracy of meters is under control of state electricity board (as per state electricity board regulations) and PP do not have any control on it. Thus in future the accuracy class of meters may change however it will be 0.5s or more accurate.

Since the baseline emission factor is based on an ex-ante determination, monitoring of this parameter is not required. The sole parameter for monitoring is the net electricity exported to the grid. The Project is operated and managed by Enercon India Limited (EIL). Enercon India Limited (EIL) will have a designated Site-In-Charge (O&M) on site, who will be responsible for monitoring the electricity exported from the project activity. The overall flow of information has been depicted using the following hierarchical structure:



As per the project boundary diagram provided in Section B.3 of this document, the monitoring is done at the WTG electrical yard substation using a TANGEDCO owned electronic tri-vector meters (Main & Check Meters).

The net electricity exported to grid is calculated as a difference in the electricity exported to the grid and imported from the grid. The electricity export and import values are calculated as the product of difference of current and previous TANGEDCO meter readings multiplied with the multiplying factor of the meter. Additionally, all the WTGs at the site are connected to a central monitoring system located at that site only. This system captures daily generation figures which are later made available to PP on the customized website of EIL.

Training

Training of staff operating and maintaining the WEGs will be carried out by the WEG manufacturer or O&M Service Provider or Investors contract agency. Special emphasis will be given to the training of the employees to enable them to develop their skills to meet changing WEG technology and to provide efficient and effective O&M services. There is an initial learning program as well as continuous learning programs for all employees.

The training program focuses mainly on the management, monitoring and maintenance, and safety & reliability aspects of wind power. The objectives include:

1. Understanding the various stages and aspects in the management of wind power systems.

2. Understanding the importance of monitoring and maintenance of wind power systems and hence the various tasks involved in this.
3. Understanding the importance of safety and reliability aspects involved with wind power and the measures taken.
4. Managing generation and other data for future reference.

All the relevant data & reports for maintaining accuracy in monitoring and reporting of GHGs emission reductions is with the O & M contractor/ investors representative , which follows Quality Management System (QMS) procedure as per ISO 9001 and is ISO certified organization (it will by default incorporate Management review meeting and the internal audits as per procedures) . Project in-charge is deputed to look after overall project activity. The project in-charge will supervise the functioning of the wind farm in close coordination with the officials & technical personnel of O & M contractor

Internal audits & Performance review

The records are regularly audited and checked by the senior officials from project proponent on an annual basis. The officials will monitor the actual emission reduction. The personnel responsible for taking readings at site are adequately trained.

Emergency Preparedness

In the context of the project activity, the main & check meters will be kept in sealed by TANGEDCO and all maintenance will be taken up by TANGEDCO only. In case of failure of the main meter, generation value would be arrived at as per standard clause (8) and (9) of Article 4 of the Energy Purchase agreement as provided below:

"(8) Check meter readings shall be considered when Main Meters are found to be defective or stopped. Provided that, if difference between the readings of main and check meters vis-à-vis main meter reading exceeds twice the Percentage error applicable to the relevant class, both meters shall be tested and the one found defective shall be immediately replaced and reading of other will be considered.

(9) If during test or calibration, both the main meter and check meter are found to have errors beyond permissible limits, the bill shall be revised for the previous 3 (Three) months or the exact period if known and agreed upon by the parties, by applying correction as determined by the meter testing Wing of the STU/Distribution Licensee to the consumption registered by the meter with lesser error.

The project promoters have contracted the technology supplier for providing O&M services for the power project. The service provider would be responsible for maintenance of the necessary spare parts and consumables for the maintenance of the WTGs such as anemometers, wind vanes and sensors, oil filters, batteries, auxiliary motors and pumps, WTG controllers, slip rings, limit switches and sensors, detergents & solvents etc. The service provider would also be responsible for supply of necessary main components of the WTG such as main gearboxes, blades, generators, towers, hubs, main shafts & bearings, ground and top controller and hydraulic systems. The service provider would also ensure that occupational health and safety procedures are adhered to during the operation & maintenance activities. Additionally, spare meters would also be kept available at the site for replacement in case of failure of any of the monitoring equipment's

SECTION C. Start date, crediting period type and duration

C.1. Start date of project activity

The starting date of a CDM project activity is the date at which the implementation or construction or real action of a project activity begins. Date of raising purchase order is the

conclusive evidence of project activity implementation. Hence start date of project activity is 16/06/2011 (Purchase Order date placed for WTG by Neha Sharma & Atul Sharma).

C.2. Expected operational lifetime of project activity

20 Years 00 Months

C.3. Crediting period of project activity

C.3.1. Type of crediting period

The project activity will use renewable crediting period.

C.3.2. Start date of crediting period

The Project Proponent has applied for Renewal of 2nd crediting period of the project activity. As per UNFCCC Project page, the second crediting period will start from 19/12/2019 to 18/12/2026.

C.3.3. Duration of crediting period

7 years 00 months

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

Proposed project activity is using renewable energy generation technology which is free from any kind of anthropogenic emission. Project activity is not having any negative environmental impact. Only small amounts of oily and solid wastes associated with the installation of the WTG can be ignored when compared to Emission reductions. Project activity will result into GHGs emission reduction equivalent to 7,833 tCO2/year.

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 studies.

There are no negative environmental effects envisaged for the project. Wind turbines are considered as zero GHG emitting projects, so there will be no pollution caused by this project. Hence the proposed project does not fall under the list of activities requiring EIA as it will not involve any negative environmental impacts. Thus no EIA study was conducted

D.2. Environmental impact assessment

Project activity has no significant emissions. Hence environmental impact of the project activity are not considered to be significant by the project participants or the host party.

SECTION E. Local stakeholder consultation

E.1. Modalities for local stakeholder consultation

The followings are the local stakeholders for the project activity:

- Local community (category represented by word, LC)
- Local village administration (category represented by word, LVA)
- Technology suppliers (category represented by word, TS)
- Local vendors (category represented by word, LV)

In order to address and incorporates the concern of the stakeholders, invitations have been handed over directly to the stake-holders to attend the stakeholders meeting.

In the introductory speech, the representatives of EKI Energy Services Ltd. welcomed the gathering and informed the stakeholders about the project activity; project's associated benefits with respect to CO_2 emission reductions and explained the purpose of conducting the stakeholder meeting in order to gather the views and comments of the local stakeholders on the project activity. Subsequent to the introductory speech, comments were received from the stakeholders.

The Minutes of meeting with commenting sheet from LSH, invitation letter reception copy has been submitted to the DOE.

Invitation Date	Meeting Date	Location of the Local Stakeholder Meeting		
		Village	District	State
02/01/2012	12/01/2012	Kalagumalai, Tamilnadu	Tutikorin	Tamil Nadu

E.2. Summary of comments received

Stakeholders Involvement:
The project participants prepared necessary documentation before implementation of the project activity and approached the above stakeholders individually. The project participants have received all clearances and approvals with no negative comments for the project activity from the Governmental agencies vested with the authority to examine the proposals from all aspects and issue the same.

Stakeholders' comments:
After the brief overview of CDM and project activity given by the project proponent, stakeholder interaction session was held, wherein villagers and other stakeholders recommended that there are no adverse effects of the project on the village and have improved employment in the area. Promotion of these activities was also advocated. This is also evident from issuance of approvals/consents/licenses for setting up and commissioning of the project activity and no adverse comments for the project.

E.3. Consideration of comments received

It has been taken care of all the conditions stipulated in the relevant clearances and no adverse comment has been raised. The stakeholders have given positive feedback and thus no measures were required to be taken

SECTION F. Approval and authorization

The project obtained Host Country Approval from MOEF vide letter no 4/16/2012-CCC dated 6th Nov, 2012.

Appendix 1. Contact information of project participants

Organization name	Peethambra Granites Pvt. Ltd.
Country	India
Address	Building No. 80, Civil Lines, Jhansi, Uttar Pradesh- 284001, India.
Telephone	+91 510 2471288
Fax	-
E-mail	prem_pgpl@rediffmail.com
Website	-
Contact person	Mr. Atul Sharma

Organization name	EKI Energy Services Limited
Country	India
Address	Enking Embassy, Office no. 201, Plot 48 Scheme 78 part 2, Vijay Nagar, Indore, Madhya Pradesh 452010
Telephone	0731 428 9086
Fax	-
E-mail	naveen@enkingint.org
Website	https://www.enkingint.org/
Contact person	Mr. Naveen Sharma

Appendix 2. Affirmation regarding public funding

NO PUBLIC FUNDING HAS BEEN RECEIVED FOR THIS PROJECT.

Appendix 3. Applicability of methodologies and standardized baselines

Please refer section B.2 of the PDD.

Appendix 4. Further background information on ex ante calculation of emission reductions

Please refer Section B.6.1 of the PDD

Appendix 5. Further background information on monitoring plan

Please refer section B.7.1 and B.7.2 for information on monitoring

Appendix 6. Summary report of comments received from local stakeholders

Please refer section E.2 of the PDD.

Appendix 7. Summary of post-registration changes

Not Applicable

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Document information

Version	*Date*	*Description*
11.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the "CDM project standard for project activities" (CDM-EB93-A04-STAN); • Make editorial improvements.
10.1	28 June 2017	Revision to make editorial improvement.
10.0	7 June 2017	Revision to: • Improve consistency with the "CDM project standard for project activities" and with the PoA-DD and CPA-DD forms; • Make editorial improvement.
09.0	24 May 2017	Revision to: • Ensure consistency with the "CDM project standard for project activities" (CDM-EB93-A04-STAN) (version 01.0); • Incorporate the "Project design document form for small-scale CDM project activities" (CDM-SSC-PDD-FORM); • Make editorial improvement.
08.0	22 July 2016	EB 90, Annex 1 Revision to include provisions related to automatically additional project activities.
07.0	15 April 2016	Revision to ensure consistency with the "Standard: Applicability of sectoral scopes" (CDM-EB88-A04-STAN) (version 01.0).
06.0	9 March 2015	Revision to: • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Make editorial improvement.

Version	*Date*	*Description*
05.0	25 June 2014	Revision to: • Include the Attachment: Instructions for filling out the project design document form for CDM project activities (these instructions supersede the "Guidelines for completing the project design document form" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the project activity in B.7.4 and Appendix 1; • Change the reference number from F-CDM-PDD to CDM-PDD-FORM; • Make editorial improvement.
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	13 March 2012	Revision required to ensure consistency with the “Guidelines for completing the project design document form for CDM project activities” (EB 66, Annex 8).
03.0	26 July 2006	EB 25, Annex 15
02.0	14 June 2004	EB 14, Annex 06b
01.0	03 August 2002	EB 05, Paragraph 12 Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: Registration
Keywords: project activities, project design document