PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

Title: 6.40 MW BUNDLED WIND ENERGY PROJECT BY PRASAD GROUP

Version 1.0

Date 14/03/2022

First CoU Issuance Period:

Date: 01/01/2014 to 31/12/2022

Project Concept Note (PCN)
CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION	
Title of the project activity	6.40 MW BUNDLED WIND ENERGY PROJECT BY PRASAD GROUP
Scale of the project activity	SMALL SCALE
Completion date of the PCN	14/03/2022
Project participants	M/S. PRASAD GROUP
Host Party	INDIA
Applied methodologies and standardized baselines	AMS-I.D.: Grid connected renewable electricity generation --- Version 18.0[1]
Sectoral scopes	01 Energy industries (renewable - / non-renewable sources)
Estimated amount of total GHG emission reductions	9169 CoUs (9169 tCO2eq)

[1] https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

SECTION A. Description of project activity

A.1. Purpose and general description of Carbon offset Unit (CoU) project activity >>

The project 6.40 Mw Bundled Wind Energy Project By Prasad Group is located in Village Majjur, Kyalakonda, Javalbanchi and Kongapura Tehsil Shirhatti, Hveri and Shiggaon. District Gadag and Haveri. State Karnataka, Country India.

The details of the 6.40 MW bundled project are as follows:

1. 2.4 Wind Power Project by M/s. Prasad Group at Gadag District, Karnataka
2. 4.0 Wind Power Project by M/s. Prasad Group at Haveri District, Karnataka

Purpose of the project activity:

The main purpose of the project activity is the implementation and operation of 6.40 MW wind farms to generate electricity Karnataka. M/s. Prasad Group is the promoter of these wind farms. The project activity consists of 45 wind electric generators (WEGs) installed in three phases at various locations within Karnataka. The generated electricity from WEGs is connected to state electric utility namely Karnataka Power Transmission Corporation Limited (KPTCL)) transmitted through state electric grid.

The project implementation schedule is placed below:

Sr.No.	Bundle	Company Name	WTG No.	Capacity in MW	Model No.	Make	Date of commissioning
1	Bundle 1	Prasad Global Solutions	64	0.8	E-48	Enercon	29.12.2006
2			131	0.8	E-48	Enercon	29.12.2006
3		Abhilash Garments	80	0.8	E-48	Enercon	29.12.2006
4	Bundle 2	Abhilash Software	362C	0.8	E-53	Enercon	27.09.2012
5			363C	0.8	E-53	Enercon	27.09.2012
6		Prasad wind mill	256	0.8	E-53	Enercon	07.05.2014
7			278A	0.8	E-53	Enercon	30.06.2014
8		A.B. Mallikarjuna	800	0.8	E-53	Enercon	01.08.2012
8 Wtgs			**Total**	**6.4 MW**			

The project replaces anthropogenic emissions of greenhouse gases (GHGs) estimated to be approximately 9,169.26 tCO2e per annum there on displacing 8251 MWh/ year amount of electricity from the generation mix of power plants connected to the Indian electricity grid, which is mainly dominated by the thermal / fossil fuel-based power plant.

The project activity is the installation of a new grid connected renewable power plant/unit. The scenario existing prior to the implementation of the project activity is 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. Baseline scenario and scenario existing prior to the implementation of the project activity are both same.

Contribution of project activity to sustainable development:
The Government of India has stipulated following indicators for sustainable development in the interim approval guidelines for such projects which are contributing to GHG mitigations. The Ministry of Environment, Forests & Climate Change, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. It has been envisaged that the project shall contribute to sustainable development using the following ways:

Social well being:

- Social well-being is assessed by contribution by the project activity towards improvement in living standards of the local community.
- The project activity has resulted in increased job opportunities for the local population on temporary and permanent basis.
- Manpower was required both during erection and operation of the wind farms. This has resulted in poverty alleviation of the local community and development of basic infrastructure leading to improvement in living standards of the local population.

Economic well being

- The project activity has created direct and indirect job opportunities to the local community during installation and operation of the WEGs.
- The investment for the project activity has increased the economic activity of the local area.
- The project activity also contributes in economic well being of the nation's economy by reducing import of fossil fuel for electricity generation in hard currency.

Environmental well being

- The project utilizes wind energy for generating electricity which otherwise would have been generated through alternate fuel (most likely - fossil fuel) based power plants, contributing to reduction in specific emissions (emissions of pollutant/unit of energy generated) including GHG emissions.
- As wind power projects produce no end products in the form of solid waste (ash etc.), they address the problem of solid waste disposal encountered by most other sources of power.
- Being a renewable resource, using wind energy to generate electricity contributes to resource conservation. Thus, the project causes no negative impact on the surrounding environment.

Technological well being

- There is continuous research and development on the geometry of the wind blades, height of towers, diameters of towers, etc., which augurs well for the technological well being in the development of wind energy to produce clean electricity.
- The generated electricity from the project activity is connected to the grid. The project activity improves the supply of electricity with clean, renewable wind power while contributing to the regional/local economic development.
- Wind energy plants provide local distributed generation, and provide site-specific reliability and transmission and distribution benefits including:
    - improved power quality
    - Reactive power control
    - Mitigation of transmission and distribution congestion

All the above are the contributions of the project activity to sustainable development.

A.2 Do no harm or Impact test of the project activity>>

There are social, environmental, economic and technological benefits which contribute to sustainable development.

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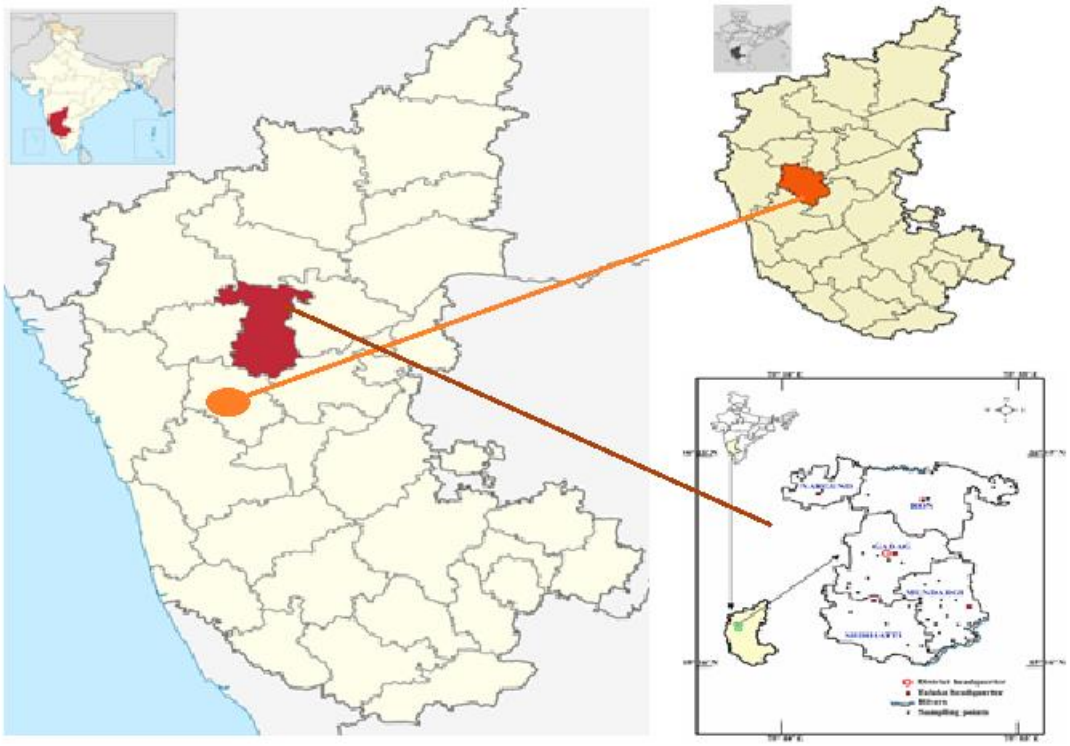
Rational: As per 'Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)', final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (07/03/2016)[2], it has been declared that wind project activity falls under the "White category". White Category projects/industries do not require any Environmental Clearance such as 'Consent to Operate' from PCB as such project does not lead to any negative environmental impacts. Additionally, as per Indian Regulation, Environmental and Social Impact Assessment is not Required for Wind Projects.

There are social, environmental, economic and technological benefits which contribute to sustainable development. The key details have been discussed in the previous section.

A.3. Location of project activity >>

Country: India
District: Gadag & Haveri
Village: Majjur, Kyalakonda, Javalbanchi and Kongapura
Tehsil: Shirhatti, Hveri and Shiggaon
State: Karnataka
Code: 560094



[2] http://moef.gov.in/wp-content/uploads/2017/07/Latest_118_Final_Directions.pdf

WTG No.	Actual Complete WTg Address	Latitude	Longitude
64	Near Majjur Village, Shirahatti Taluk, Gadag Dist, Karnataka	15.16887	75.64292
131	Near Majjur Village, Shirahatti Taluk, Gadag Dist, Karnataka	15.13871	75.65049
80	Machinahalli village, Shirahatti Taluk, Gadag Dist, Karnataka	15.14924	75.64394
362C	Tadas Site, Near Kyalakonda Village, Haveri ist,Karnataka	15’04.816’	75’16.138
363C	Tadas Site, Near Kyalakonda Village, Haveri ist,Karnataka	15’04.952	075’16.226
256	Near Javalabanchi Village, Gadag Taluk & Dist, Karnataka	15.35932	75.68418
278A	Near Javalabanchi Village, Gadag Taluk & Dist, Karnataka	15.35756	75.68396
800	Kongapura Village, Shiggaon taluk, Haveri Dist Karnataka	15’02.812	075’16.130

A.4. Technologies/measures >>

All the 8 machines are made of Enercon Model E-48 .The primary driver for the development of the turbines commitment to make wind energy more accessible - in terms of technology, yield and cost.

In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind has considerable amount of kinetic energy when blowing at high speeds. This kinetic energy when passes through the blades of the WEG is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation.

The important parts of a windmill are:

Main Tower
This is a very tall structure with a door and inside ladder at the bottom. The door is used to enter into the tower for operation and maintenance.

Blades
The WEGs are provided with three blades. The blades are self-supporting in nature made up of Fiber Reinforced Polyester. The blades are mounted on the hub.

Nacelle
The Nacelle is the one which contains all the major parts of a WEG. The nacelle is made up of thick rugged steel and mounted on a heavy slewing ring. Under normal operating conditions, the nacelle would be facing the upstream wind direction.

Hub
The Hub is an intermediate assembly between the wing and the main shaft of the wind turbine. Inside the hub, a system to actuate the aerodynamic brake is fitted. The hub is covered with nose cone.

Main Shaft

The shaft is to connect the gear box and the hub. Solid high carbon steel bars or cylinders are used as main shaft. The shaft is supported by two bearings.

Gear Box, Bearing and Housing

The gearbox is used to increase the speed ratio so that the rotor speed is increased to the rated generator speed. Oil cooling is employed to control the heating of the gearbox. Gearboxes are mounted over dampers to minimize vibration. The main bearings are placed inside housing.

Brake

Brake is employed in the WEGs to stop the wind turbine mainly for maintenance check. Brakes are also applied during over speed conditions of the wind turbine. The brakes are placed on the high-speed shaft.

Generator

The generator uses induction type of generator. The generators are provided with monitoring sensors in each phase winding to prevent damage to the generators.

Specification	Value
Power	
Rated power:	800.0 kW
Cut-in wind speed:	3.0 m/s
Rated wind speed:	12.0 m/s
Cut-out wind speed:	34.0 m/s
Survival wind speed:	Survival wind speed:
Wind zone (DIBt):	III
Wind class (IEC):	IIa

Specification	Value
Rotor	
Diameter	48.0 m
Swept Area	1809.6 m^2
Number of Blades	3
Rotor Speed	31.0 U/min
Tip speed	78m/s
Type	Aero E-48
Material	GFK

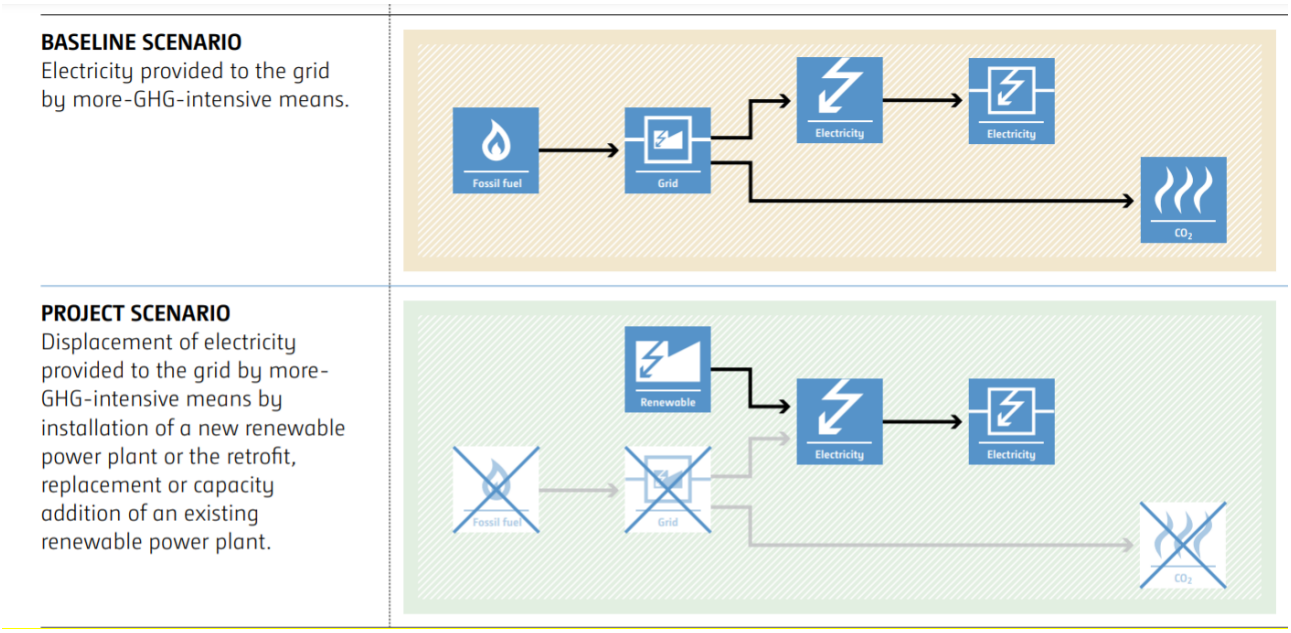
Specification	Value
Tower	
Hub Height	50/55/60/65/76 m
Type	Steel tube /hybrid
Shape	Conical
Corrosion protection	Painted

A.5. Parties and project participants >>

Party (Host)	Participants
India	M/s. Prasad Group
	M/s. EKI Energy Services Limited As Aggregator UCR ID -546142885 Contact – Mr. Manish Dabkara Address- EnKing Embassy, Office No. 201, Plot 48, Scheme 78, Part 2 Vijay Nagar, Near brilliant Convention Centre, Indore- 452010 Madhya Pradesh, India. Mobile - 990734900 Email ID: registry@enkingint.org,manish@enkingint.org Website: www.enkingint.org

A.6. Baseline Emissions>>

In the absence of the project activity, the equivalent amount of electricity would have been imported from the regional grid (which is connected to the unified Indian Grid system), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants. Hence, baseline scenario of the project activity is the grid-based electricity system, which is also the pre project scenario.



A.7. Debundling>>

This "6.40 Mw Bundled Wind Energy Project By Prasad Group" project is not a debundled component of a larger project activity.

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines >>

SECTORAL SCOPE – 01 Energy industries (Renewable/Non-renewable sources)

TYPE I - Renewable Energy Projects

CATEGORY- AMS-I.D.: Grid connected renewable electricity generation --- Version 18.0[3]

B.2. Applicability of methodologies and standardized baselines >>

The project activity involves generation of grid connected electricity from the construction and operation of a new wind power-based power project for supply to grid. The project activity has installed capacity of 6.40 MW which not qualifies for a large-scale project activity. The project status is corresponding to the methodology AMS-I.D version 18.0 and applicability of methodology is discussed below:

[3] https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

Applicability Criterion	Project Case
4. 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 a Renewable Energy Project i.e., Wind Power Project which falls under applicability criteria option 1 (a) i.e., "Install a Greenfield power plant". Hence the project activity meets the given applicability criterion.
5. 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; AMS-I.D Large-scale Consolidated Methodology: Grid-connected electricity generation from renewable sources version 18.0 Sectoral scope(s): 01. 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/m2 ; (c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m2 .	The project is installation of new wind-based electricity generation plants (not a hydro power plant). Hence this criterion is not applicable.
6. If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a Large-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The project is wind power project and thus the criterion is not applicable to this project activity.
7. Combined heat and power (co-generation) systems are not eligible under this category	The project is wind power project and thus the criterion is not applicable to this project activity.
8. In the case of project activities that involve the capacity 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 distinct1 from the existing units	The project is a greenfield wind power project and does not involve in capacity addition and thus the criterion is not applicable to this project activity.
9. In the case of retrofit, rehabilitation or replacement, to qualify as a Large-scale project, the total output of the retrofitted, rehabilitated or replacement power plant/unit shall not exceed the limit of 15 MW.	The project activity is Greenfield and there is no switching of fossil fuel to renewable energy. Hence the criteria is not applicable to the project activity
10. In the case of landfill gas, waste gas, wastewater 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	This project is a wind power project and hence the criteria is not applicable.

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.	
11. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The project is not a biomass fired power plant. Hence the criteria is not applicable to the project activity.

B.3. Applicability of double counting emission reductions >>

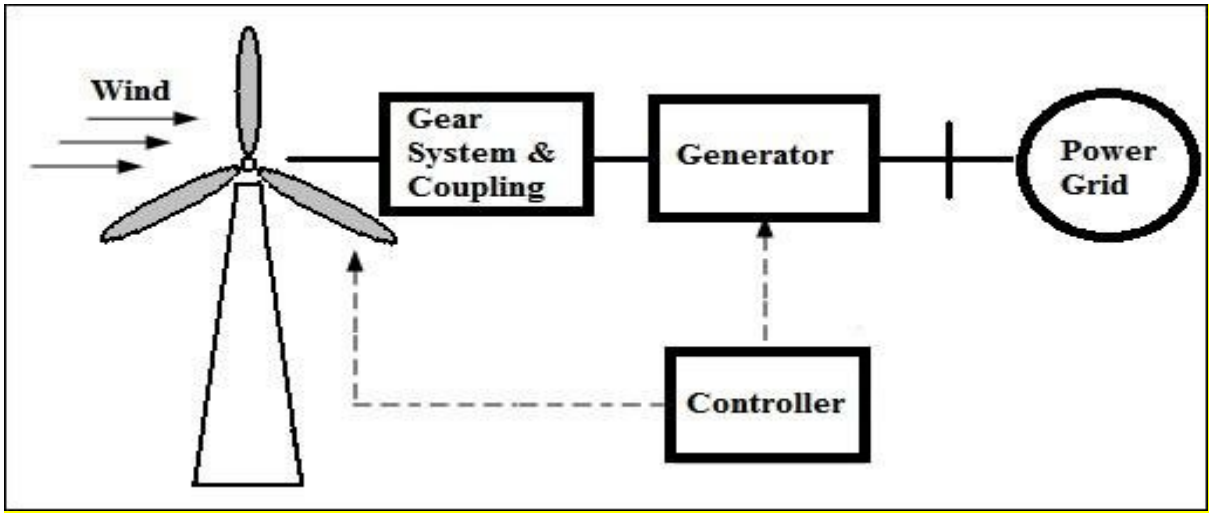
PP will request for issuance of carbon offsets in UCR for the post completion of the fixed crediting period (01/01/2014 – 31/12/2022) i.e., crediting period will start from 01/01/2014. The part of this project Bundle 1- machines are registered with CDM voluntary market. 3 Machines out of 6 has been registered with CDM– All three machines which is associated project No CDM Project 1291[4] : Enercon Wind Farms in Karnataka Bundled Project – 30.40 MW, Client will not have any benefit for Bundle-1 machines with this project from 01/04/2020. Hence, the criteria for double counting are not applicable for the project.

PP will provide undertaking for no double accounting for the same monitoring period during verification stage and will ensure that there will not be any double accounting for same project location.

B.4. Project boundary, sources and greenhouse gases (GHGs)>>

As per applicable methodology AMS-I.D version 18.0, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the UCR project power plants are connected. Thus, the project boundary includes the Wind Turbine Generators (WTGs) and the Indian grid system.

The project boundary includes the physical, geographical site(s) of:



[4] https://cdm.unfccc.int/Projects/DB/SGS-UKL1187092432.51

Scenario	Source	GHG	Included?	Justification/Explanation
Baseline Emission	Grid connected electricity generation	CO2	Yes	Main source of emission
		CH4	Excluded	Minor source of emission
		N2O	Excluded	Minor emission source
Project Emission	Greenfield Wind Power Project Activity	CO2	Excluded	No CO2 emission are emitted from the project
		CH4	Excluded	CH4
		N2O	Excluded	No other emissions are emitted from the project

B.5. Establishment and description of baseline scenario (UCR Standard or Methodology) >>

As per the approved methodology AMS-I.D version 18.0, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

A "grid emission factor" refers to a CO_2 emission factor (tCO_2/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO_2/MWh for the 2014- 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021 and 2022, the combined margin emission factor calculated from CEA database in India results into higher emission than the default value. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.

Baseline emissions include only CO2 emissions from electricity generation in 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:

$$BEy = EGPJ,y \times EFgrid,y$$ **Equation (1)**

Where:
BEy = Baseline emissions in year y (t CO2)
$EGPJ,y$ = 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)
$EFgrid,y$ = Combined margin CO2 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 CO2/MWh)

Project Emissions
As per AMS-I.D version 18.0, only emission associated with the fossil fuel combustion, emission from operation of geo-thermal power plants due to release of non-condensable gases, emission from water reservoir of Hydro should be accounted for the project emission. Since the project activity is a wind power project, project emission for renewable energy plant is nil. Thus, PE_y =0.

Leakage
As per AMS-I.D version 18.0, 'If the energy generating equipment is transferred from 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. Hence, $LE_y = 0$

Net GHG Emission Reductions and Removals:

Thus, $ER_y = BE_y – PE_y – LE_y$
Where:
ER_y = Emission reductions in year y (tCO_2/y)
BE_y = Baseline Emissions in year y ($t CO_2/y$)
PE_y = Project emissions in year y (tCO_2/y)
LE_y = Leakage emissions in year y (tCO_2/y)

The actual emission reduction achieved during the first crediting period shall be submitted as a part of first monitoring and verification. However, for the purpose of an ex-ante estimation, following calculation has been submitted: Estimated annual baseline emission reductions (BE_y) = 9,169.26 MWh/year *0.9 tCO2/MWh = 8,251 tCO2e/year (i.e. 8,251 CoUs /year)

B.6. Prior History>>

The project activity is having prior history of any registration with any other mechanism.

Refer Section B.3

B.7. Changes to start date of crediting period >>

There is no change in the start date of crediting period.

B.8. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

There are no permanent changes from registered PCN monitoring plan and applied methodology

B.9. Monitoring period number and duration>>

First Issuance Period: 09 years, 03 months – 01/01/2014 to 31/12/2022

B.8. Monitoring plan>>

The project activity essentially involves generation of electricity from wind, the employed WEG can only convert wind energy into electrical energy and cannot use any other input fuel for electricity generation. Thus, no special ways and means are required to monitor leakage from the project activity.
The recording of the electricity fed to the state utility grid is carried out jointly at the incoming feeder of the state power utility.
The joint measurement is carried out once in a month in presence of both parties (the developer's representative and officials of the state power utility). Both parties sign the recorded reading.

Data/Parameter	$EG_{PJ,y}$
Data unit	MWh/yr.
Description	Quantity of net electricity supplied to the grid in year y
Source of data Value(s) applied	Joint meter reading issued State electricity board for project proponent
Measurement methods and procedures	Monitoring of Generation with the help of inbuilt control panel

	meters: This generation data will be measured continuously with the help of inbuilt control panel meters located at individual WEGs. The Technicians will record the generation data at CMS. Monitoring of Net export of electricity to grid from WTG's connected to Common Meters: The reading from State electricity board meter will be recorded every month by State electricity board personnel in the presence of site Engineer. The State electricity board will apply the apportioning logic and issues the JMR which provided the "Net export of electricity by each WTG" or "Net export of electricity by each project promoter" accordingly the PP raises invoices.
Monitoring frequency	Monitoring continuously and recording monthly. The accuracy of the main meter and check meter can be verified by comparing with each other. The calibration of the common meters (main & check meter) will be done by state utility normally once in five years.
Purpose of data	To calculate baseline emission