PROJECT CONCEPT NOTE
CARBON OFFSET UNIT (CoU) PROJECT

Title: 4.8 MW Project by Wind World Wind Farms (MP) Pvt. Ltd
Version 1.0
Date 22/03/2025
First CoU Issuance Period: 11 years 11 months 30 days
Date: 01/01/2013 to 31/12/2024

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

BASIC INFORMATION	
Title of the project activity	4.8 MW Project by Wind World Wind Farm (MP) Pvt. Ltd
The scale of the project activity	Small Scale wind Project
Completion date of the PCN	22/03/2025
Project participants	Wind World Wind Farms (MP) Pvt Ltd.
Host Party	India
Applied methodologies and standardized baselines	AMS.I-D Grid-connected electricity generation from renewable sources --- Version 18.0
Sectoral scopes	01 Energy industries (Renewable/Non-renewable Sources)
Estimated amount of total GHG emission reductions	To be estimated during verification An ex-ante estimate is **7,842** CoUs (Annually)

SECTION A. Description of project activity

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

The "4.8 MW Project by Wind World Wind Farm (MP) Pvt. Ltd" is in Nagda hill, near village Rajoda, in Dewas district State of Madhya Pradesh. The project activity involves supply, erection, commissioning and operation of 6 machines of rated capacity 800 kW each. The machines are Enercon E-48 make.

It has been operational since 20 August 2006, which is the earliest commissioning date, and the last commissioning date of the project is 19 September 2006, previously under M/s Enercon Wind Farm (Madhya Pradesh) Pvt. Ltd., now operating as wind world wind farms (MP) Pvt Ltd. (hereinafter referred to as the Project Proponent or PP).

Purpose of the project activity:

WIND WORLD WIND FARMS(MP) PVT LTD has installed 4.8 MW wind farm in the state of Madhya Pradesh in India. Wind World (India) Limited ("Wind World") is the equipment supplier and the operations and maintenance contractor for the Project. There are 6 Wind Energy Convertors ("WEC's") of with rated capacity 800 KW each. The generated electricity is supplied to M.P Paschim Kshetra Vidyut Vitaran Co. Ltd, Indore under a long-term power purchase agreement (PPA). The expected operational lifetime of the project is for 20 years. The project being a renewable energy generation activity, leads to reduction in fossil fuel dominated electricity generation from the Indian grid.

Sl No	Make	Capacity	Commissioning date
1	Enercon	800 kW	19/09/2006
2	Enercon	800 kW	20/08/2006
3	Enercon	800kW	20/08/2006
4	Enercon	800 kW	20/082006
5	Enercon	800kW	20/08/2006
6	Enercon	800kW	20/08/2006

The purpose of the project activity is to generate emission free and environment friendly electricity from the wind energy potential available in the region. The project is expected to generate and supply **8,830.08 MWh** of electricity annually to the Indian grid. The project thus addresses the demand–supply gap in the state of Madhya Pradesh and will assist the sustainable growth, conservation of resources and reduction of greenhouse gas emissions by using renewable energy source like wind energy. The project activity will contribute towards reduction of greenhouse gas (GHG) emission from the atmosphere, which has been estimated to be approximately **7,842 tCO2e** per year, by displacing an equivalent amount of electricity generation through the operation of existing fuel mix in the grid comprising mainly of fossil fuel-based power plants. Thus, the project does not only reduce the demand-supply gap of the respective grid, but also helps in reducing other pollutants like SOx, NOx, etc. from the atmosphere. 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, which are/ will be predominantly based on fossil fuels.

This is also the pre-project scenario. The technology employed for the project is well proven and safe.

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.

Social benefits:

- The project activity will contribute to socio-economic development through improving the infrastructure for road network and other mode of communications in the remote part of the state during both the construction and operational period.
- The project activity will utilize renewable energy source for electricity generation instead of fossil fuel-based electricity generation which would have emitted gaseous, liquid and/or solid effluents/wastes. Thus, the project causes no negative impact on the surrounding environment and contributes to environmental well-being.
- The project activity will contribute towards reduction of the GHG emissions as well as emission of pollutants like SOx, Suspended Particulate Matters (SPMs) etc. by avoiding equivalent amount of power generation from fossil fuel-based power plants.

Environmental benefits:

- Utilizing wind energy instead of burning fossil fuels for electricity generation significantly decreases the emission of harmful pollutants, fostering cleaner air, water, and soil.
- Leveraging wind energy aids in preserving natural resources and minimizing detrimental impacts on the environment, contributing to overall ecological well-being.
- Moreover, harnessing wind energy offers a sustainable alternative to burning fossil fuels, which not only mitigates pollution but also conserves natural habitats and biodiversity, supporting healthier ecosystems and enhancing environmental resilience.

Economic benefits:

- The project will generate electricity utilizing renewable source like wind, thus will increase the contribution of renewable based power generation in the region and will also help in reducing the demand - supply gap of the respective grid.
- The project activity involves substantial amount of investment, thus will contribute towards generation of direct and indirect employment opportunities as per the requirement of the skilled and semi-skilled manpower.
- Use of a renewable source of energy reduces the dependence on imported fossil fuels and associated price variation, thereby leading to increased energy security.

United Nations Sustainable Development Goals:

The project activity generates electrical power using wind energy, which is generated from windmills, thereby displacing non-renewable fossil resources resulting to sustainable, economic and environmental development. In the absence of the project activity equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations. Thus, the renewable energy generation from project activity will result in reduction of the greenhouse gas emissions.

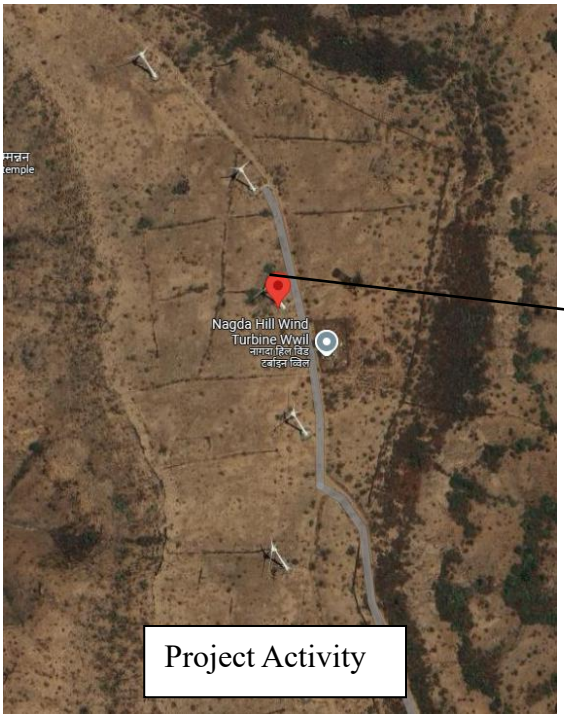
SDG Goals	Description
Goal 7 	This wind energy project will generate clean electricity at a more accessible price for consumers. By utilizing a renewable resource, the project contributes to a growing share of clean energy sources in the global energy mix, ultimately reducing reliance on fossil fuels.
Goal 8 	The wind farm project strengthens the local community by generating employment for the locals wherein a safe and inclusive work environment that empowers women is promoted.
Goal 13 	This 4.8 MW wind power project meets the SDG 13 goal by displacing fossil fuel-based energy generation by producing clean energy. This project is expected to reduce 7,842 tCO_2 emission per year.

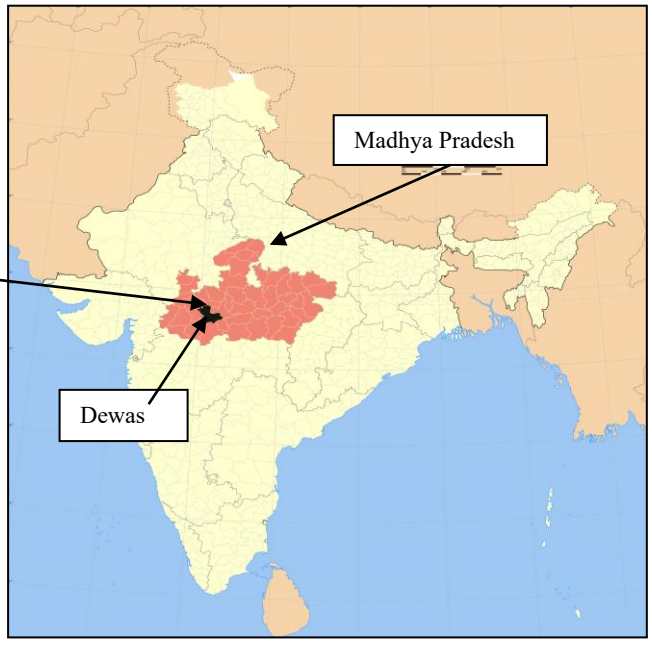
A.3. Location of project activity >>

The project activity is located at location No. 12 at Nagda Hills, near Village Rajoda, Distt. Dewas, of Madhya Pradesh.

Details of Latitude & Longitude of Individual machines have been Given below: -

SL no	LOC no	Make	Capacity	Village	Latitude	Longitude
1	12	E-48	800kW	Rajoda	22.91006565	76.08303331
2	12	E-48	800kW	Rajoda	22.91138227	76.08271664
3	12	E-48	800kW	Rajoda	22.91264895	76.08249997
4	12	E-48	800kW	Rajoda	22.91399894	76.08269996
5	12	E-48	800kW	Rajoda	22.91528229	76.08241665
6	12	E-48	800kW	Rajoda	22.90808232	76.08275





A.4. Technologies/measures >>

The project activity involves 6 numbers of wind energy converters (WECs) of Enercon make (800 KW, [1]E48) with internal electrical lines connecting the project activity with local evacuation facility. The WECs generate 3-phase power at 400V, which is stepped up to 33 KV. The other salient features of the state-of-art-technology are:

Feature	Specification
Turbine	
Configuration	Three blade, horizontal axis, upwind
Rated Power	800kW at 12m/s
Rotor Speed	16 to 32 rpm
IEC 61400-1 Turbine Class	IIA
Site Average Wind Speed	8.5 m/s
Survival Wind Speed	59.5 m/s
Rotor	
Rotor Diameter	48 m
Swept Area	1,810 m²
Blade Material	GRP (Epoxy)
Category	Feature/Specification
Power regulation	Pitch controlled variable speed
Generator	
Generator Type	ENERCON direct drive synchronous ring generator
Configuration	3-Phase, 400V, 50Hz - 60Hz
Brake & Safety System	
Main Brake System	3 independent pitch control systems with emergency power supply
Secondary System	Rotor brake and Rotor lock (maintenance purposes)
Automatic Shutdown triggered by	High wind speed, grid failure, over-speed, all other fault conditions
Controls	
Control Systems 1 User Interface	ENERCON SCADA
Towers	

[1] https://renewablesfirst.co.uk/renewable-energy-technologies/windpower/wind-turbines/enercon-e48-800-kw-wind-turbine/

Available Hub Heights	50 m, 60 m, 75 m

The project activity is new 4.8 MW wind power project, which consists of 6 machines of Enercon make E-58 type Wind Energy Converters (WECs) of 800 KW capacities each. 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, which are/ will be predominantly based on fossil fuels, hence baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario. Since the project activity involves power generation from wind, it does not involve any GHG emissions for generating electricity.

A.5. Parties and project participants >>

Party (Host)	Participants
India (Host)	WIND WORLD WIND FARMS(MP) PVT LTD

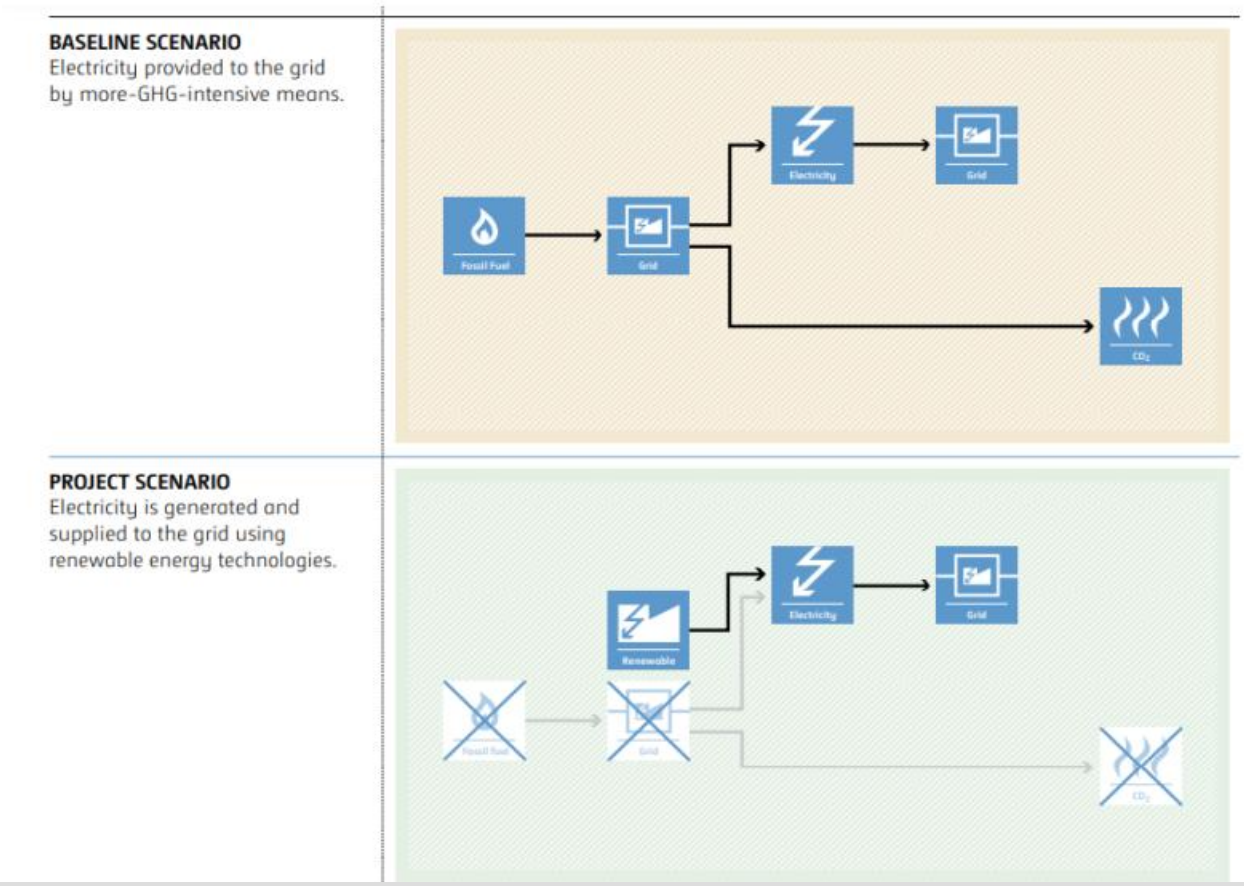
A.6. Baseline Emissions>>

The baseline scenario identified at the PCN stage of the project activity is:

The scenario existing prior to the implementation of the project activity, is electricity delivered to the facility by the project activity that would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources. This is a green field project activity. There was no activity at the site of the project participant prior to the implementation of this project activity. Hence pre-project scenario and baseline scenario are the same.

As per the approved AMS-I.D.: "Grid connected renewable electricity generation", version 18 if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: "If the project activity is the installation of a Greenfield power plant, the baseline scenario 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 to the grid".

The Schematic diagram showing the baseline scenario:



A.7. Debundling>>

This 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 **- Renewable Energy Projects**

CATEGORY- AMS-I.D.: "Grid connected renewable electricity generation", version 18

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

Applicability Criterion	Project Case
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 activity is a Renewable Energy Project i.e., Wind project which falls under applicability criteria option 1 (a) i.e., "Supplying electricity to a national or a regional grid"
2)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 option (a) of applicability criteria 2 is applicable as project is a Greenfield plant /unit. Hence the project activity meets the given applicability criterion
3) 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 the reservoir; (b) The project activity is implemented in an existing reservoir, where the volume of the 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 activity involves the installation of a Wind Power Plant Hence, this criterion is not applicable.

4) If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The proposed project is a 4.8MW Wind power project, i.e., the only component is renewable power project below 15 MW, thus the criterion does not apply to this project activity.
5) Combined heat and power (co-generation) systems are not eligible under this category.	This is not relevant to the project activity as the project involves only wind power generating units.
6) 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	There is no other existing renewable energy power generation facility at the project site. Therefore, this criterion is not applicable.
7) In the case of retrofit, rehabilitation or replacement, to qualify as a small-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 a new installation, it does not involve any retrofit measures nor any replacement and hence is not applicable for the project activity.
8) 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 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.	This is not relevant to the project activity as the project involves only wind power generating units.
9. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Not biomass is involved, the project is only a wind power project and thus the criterion is not applicable to this project activity.

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

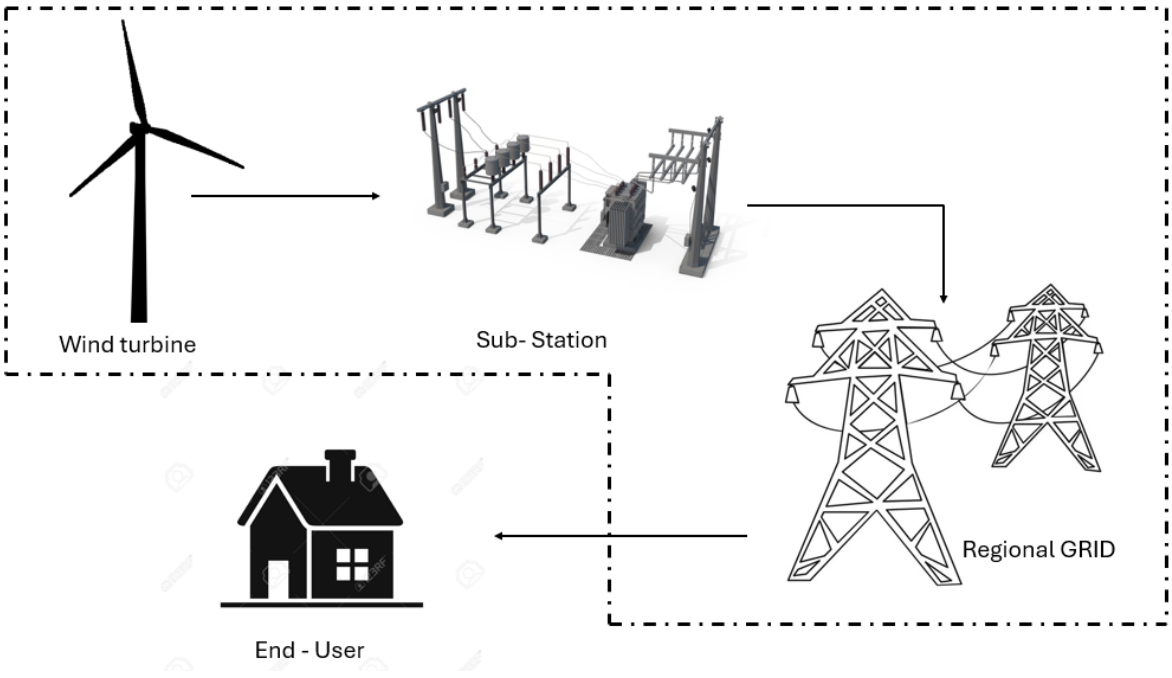
There is no double accounting of emission reductions in the project activity due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to the consumption point for project developer.

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

According to the applicable methodology, the spatial extent of this project activity includes the project site and all the power plants connected physically to the electricity system (grid) that the power project is connected to. Therefore, the project boundary includes all the 6 WECs along with the WECs of the other customers connected to the sub-station and the metering points. The project activity is further connected to the network of state transmission utility which Falls under the network of Indian grid. Thus, the project boundary also includes all the power plants physically connected to the Indian grid.

Project boundary:



Project Boundary

The baseline study of the Indian grid shows that the main sources of GHG emissions under the

baseline scenario are CO_2 emissions from the conventional power generating systems. Other emissions are that of CH_4 and N_2O but both emissions have been excluded for simplification. The project activity generates

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Grid connected electricity generation	CO_2	Yes	In the baseline scenario, the electricity would have been sourced from the Indian grid which in turn would be connected to fossil fuel fired power plants which emit CO_2.
		CH_4	No	No methane is expected to be emitted.
		N_2O	No	No nitrous oxide is expected to be emitted.
Project Scenario	Greenfield wind energy conversion system	CO_2	No	The project activity does not emit any emissions.
		CH_4	No	No methane is expected to be emitted.
		N_2O	No	No nitrous oxide is expected to be emitted.

B.5. Establishment and description of baseline scenario >>

As per the approved AMS-I.D.: "Grid connected renewable electricity generation", version 18, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

"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.

The project activity involves setting up of a new grid connected wind power plant to harness the green power from wind energy. 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. The power produced at grid from the other conventional sources which are predominantly fossil fuel based. Hence, the baseline for the project activity is the equivalent amount of power produced at the Indian grid.

As per approved consolidated AMS-I.D.: "Grid connected renewable electricity generation", version 18, emission reduction is estimated as difference between the baseline emission and project emission after factoring into leakage.

Emission reductions are calculated as per methodology:

Thus, $ER_y = BE_y - PE_y - LE_y$ **(Eq. 1)**

Where,

ER_y = Emissions reductions in year y (t CO2)

BEy = Baseline emissions in year y (t CO2)

PE_y = Project emissions in year y (t CO2)

LE_y : Leakage Emission in the year y (tCO_2/year)

Baseline Emissions

As per the CDM approved AMS-I.D.: "Grid connected renewable electricity generation", version 18, Baseline emissions include only CO2 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 as existing grid-connected power plants and the addition of new grid-connected power plants.

The Baseline emissions as per methodology AMS-I.D :

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

Where:

BE_y= Baseline emissions in year *y* (tCO_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)

$EF_{grid,y}$= Grid Emission factor in year y (tCO_2/MWh)

Since the project activity is the installation of a new grid connected renewable power plant (green field project), hence, $EG_{PJ,y}$ has been calculated as :

EGPJ,y = EGfacility,y

Where:

$EG_{PJ,y}$ = 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)

EGfacility,y = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

A "grid emission factor" denotes the CO2 emission factor (measured in tCO2/MWh) associated with each unit of electricity supplied by an electricity system. The UCR suggests employing an

emission factor of 0.9[2] from 2013 to 2023 and Emission Factor of 0.757 tCO2/MWh for 2024 as a cautious estimate for Indian projects not previously verified under any GHG program. Similarly, for the vintage 2021-22, the combined margin emission factor obtained from the CEA database in India corresponds with the default value. Consequently, the same emission factor is utilized for computing emission reductions.

Project Emission:
As per paragraph 39 of AMS-I.D. version-18, 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.

$PE_y = 0$.

Leakage Emission:
The Leakage emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected According to the applied methodology AMS-I.D Paragraph 42, Version 18 guidance on leakage, there is no leakage emission from this project activity has been considered.
Thus, $LE_y = 0$.

Hence no other leakage emissions are considered.

While the actual emission reduction achieved during the initial crediting period will be submitted during the first monitoring and verification, an ex-ante estimation is provided for reference.

Estimated Annual or Total baseline emission reductions (BEy)= 7,842 CoUs /year (7,842 tCO_{2eq}/year)

Year	Net Generation	Baseline Emissions	Project Emissions	Leakage	Emission Reductions	EF
	MWh	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO_2e)	(tCO2/MWh)
Year 1	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 2	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 3	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 4	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 5	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 6	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 7	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 8	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 9	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 10	8830.08	7947.07	0.00	0.00	7947.07	0.9

[2]As per UCR CoU Standard Update: 2024 Vintage UCR Indian Grid Emission Factor Announced | by Universal Carbon Registry | Jan, 2025 | Medium

Year 11	8830.08	7947.07	0.00	0.00	7947.07	0.9
Year 12	8830.08	6684.37	0.00	0.00	6684.37	0.757
Total Emission reduction	**105960**	**94102**	**0**	**0**	**94102**	
Average Emission Reduction	8830	7842	0	0	7,842	

B.6. Prior History>>

The project activity is a small-scale wind power project, and this project was never applied under any other GHG mechanism prior to this registration with UCR. Also, the capacity or the total project has not been applied for any other environmental crediting or certification mechanism. Hence the project will not cause double accounting of carbon credits (i.e., COUs).

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: 11 years 11 months 30 days – 01-01-2013 to 31/12/2024

B.8. Monitoring plan>>

Data and Parameters available at validation (ex-ante values):

Data/Parameter	*EF*Grid,y
Data unit	tCO2 /MWh
Description	A "grid emission factor" refers to a CO2 emission factor (tCO2/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO2/MWh for the 2013 – 2023 years & 0.757 tCO2/MWh for 2024 onwards as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
Source of data Value(s) applied	UCRCoUStandardAug2022updatedVer6_09082222012710

	4470.pdf (rackcdn.com) https://medium.com/@UniversalCarbonRegistry/ucr-cou-standard-update-2024-vintage-ucr-indian-grid-emission-factor-announced-ddb790cdc603
Measurement methods and procedures	- All the cluster meters and sub-station meters (main & check meters) are electronic and two-way (bi-directional) meters that measure both export and import of electricity and provide net electricity exported to the grid.
Monitoring frequency	Ex-ante fixed parameter
Purpose of data	For the calculation of Emission Factor of the grid

Data / Parameter:	$EGpj_{,y}$ net
Data unit:	MWh
Description:	Net electricity supplied to the Indian grid facility by the project activity.
Source of data:	Joint Meter Reading Report
Measurement procedures (if any):	- Data Type: Measured Monitoring equipment: Energy Meters are used for monitoring Archiving Policy: Electronic Calibration frequency: Once in 5 years (considered as per provision of CEA India). The net electricity generated by the project activity will be calculated.
Value Applied	**8,830 MWh** (Annualized average value has been considered here for an ex-ante estimation only, whereas this is an-ex post parameter hence actual value shall be applied during monitoring and verification)
Monitoring frequency:	Monthly
QA/QC procedures:	Continuous monitoring, hourly measurement monthly recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.2s.
Any comment:	-