



PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT



Title: 5.5 MW Bundled Wind Power Project in Gujarat, India

Version 1.0

Date 30/08/2024

First CoU Issuance Period: 11 Years, 05 Months

Date: 01/01/2013 to 31/05/2024



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

BASIC INFORMATION

Title of the project activity	5.5 MW Bundled Wind Power Project in Gujarat, India
Scale of the project activity	Small Scale
Completion date of the PCN	30/08/2024
Project participants	Advait Greenergy Private Limited (Representator) M/s. Panoli Intermediates (India) Pvt Ltd. (Developer) M/s. Kutch Chemical Industries Ltd. (Developer)
Host Party	India
Applied methodologies and standardized baselines	Applied Methodologies: UNFCCC Approved Small Scale Methodology “AMS-I.D, Grid connected renewable electricity generation”, Version – 18.0 Standardized Baselines: N/A
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources)
Estimated amount of total GHG emission reductions	8,672 CoUs (8,672 tCO _{2eq})

SECTION A. Description of project activity

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

The project **5.5 MW Bundled Wind Power Project in Gujarat, India** is located in Village Nani Sindholi and Bada & Panchetiya (Laiza substation), District Kutch, State Gujarat, Country India. The project is an operational activity with continuous reduction of GHG, currently being applied under “Universal Carbon Registry” (UCR).

The details of the registered project are as follows:

Purpose of the project activity:

The project activity is a renewable power generation activity which incorporates installation and operation of 4 Wind Turbine Generators (WTGs) having capacity 1x1500 kW, 1x1500 kW, and 2x1250 kW each manufactured and supplied by Suzlon Energy with aggregated installed capacity of 5.5 MW in Kutch district of Gujarat state in India. This project has been promoted by M/s. Panoli Intermediates (India) Pvt. Ltd. and M/s. Kutch Chemical Industries Limited.

The WTGs under the project activity were commissioned as per the below table:

Project Developer	Capacity of WTG	Commissioning Date
M/s. Panoli Intermediates (India) Pvt. Ltd.	1x1500 kW	14-Feb-08
M/s. Kutch Chemical Industries Limited	1x1500 kW	14-Feb-08
M/s. Kutch Chemical Industries Limited	2x1250 kW	29-Sep-08

As per the ex-ante estimate, the project will generate approximately 9,636 MWh of electricity per annum. The net generated electricity from the project activity is being wheeled to manufacturing facility of project proponent (PP) in Gujarat for captive consumption through the Indian grid (previously known as NEWNE grid) as per wheeling agreement signed between Gujarat Energy Transmission Corporation Limited (GETCO) and PP. Through utilization of renewable power at the manufacturing unit, the project activity would be displacing equivalent amount of grid electricity resulting in emission reduction of 8,672 tCO₂ per annum. The project activity has been helping in greenhouse gas (GHG) emission reduction by using renewable resources (wind energy) for generating power which otherwise would have been generated using grid mix power plants, which is dominated by fossil fuel based thermal power plants.

The estimated annual average and the total CO_{2e} emission reduction by the project activity is expected to be 8,672 tCO_{2e}, whereas actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification. Since the project activity generates electricity through wind energy, a clean renewable energy source it will not cause any negative impact on the environment and thereby contributes to climate change mitigation efforts.

Project's Contribution to Sustainable Development

This project is a greenfield activity where grid power is the baseline. Indian grid system has been predominantly dependent on power from fossil fuel powered plants. The renewable power generation is gradually contributing to the share of clean & green power in the grid; however, grid emission factor is still on higher side which defines grid as distinct baseline.

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 (MoEFCC), 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:

The project would help in generating direct and indirect employment benefits accruing out of ancillary units for manufacturing towers for erection of the Wind Turbine Generator (WTG) and for maintenance during operation of the project activity. It will lead to development of infrastructure around the project area in terms of improved road network etc. and will also directly contribute to the development of renewable infrastructure in the region.

Economic well-being:

The project is a clean technology investment decided based on carbon revenue support, which signifies flows of clean energy investments into the host country. The project activity requires temporary and permanent, skilled and semi-skilled manpower at the project location; this will create additional employment opportunities in the region. The generated electricity will be utilized for captive consumption, thereby reducing the demand from the grid. In addition, improvement in infrastructure will provide new opportunities for industries and economic activities to be setup in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Technological well-being:

The project activity employs state of art technology WTGs which has high power generation potential with optimized utilization of land. The successful operation of project activity would lead to promotion of this technology and would further push R&D efforts by technology providers to develop more efficient and better machinery in future. Hence, the project leads to technological well-being.

Environmental well-being:

The project activity will generate power using zero emissions wind-based power generation facility which helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities. The project utilizes wind energy for generating electricity which is a clean source of energy. The project activity will not generate any air pollution, water pollution or solid waste to the environment which otherwise would have been generated through fossil fuels. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

With regards to ESG credentials:

At present specific ESG credentials have not been evaluated, however, the project essentially contributes to various indicators which can be considered under ESG credentials. Some of the examples are as follows:

Under Environment:

Environmental criteria may include a company's energy use, waste, pollution, natural resource conservation, and treatment of animals etc. For PP, energy use pattern is now based on renewable energy due to the project and it also contributes to GHG emission reduction and conservation of depleting energy sources associated with the project baseline. Also, the criteria can be further evaluated on the basis of any environmental risks which the company might face and how those risks are being managed by the company. Here, as the power generation will be based on wind

power, the risk of environmental concerns associated with non-renewable power generation and risk related to increasing cost of power etc. are now mitigated. Hence, project contributes to ESG credentials.

Under Social:

Social criteria reflect on the company's business relationships, qualitative employment, working conditions with regard to its employees' health and safety, interests of other stakeholders' etc. With respect to this project, the PP has robust policies in place to ensure equitable employment, health & safety measures, local jobs creation etc. Also, the organizational CSR activities directly support local stakeholders to ensure social sustainability. Thus, the project contributes to ESG credentials.

Under Governance:

Governance criteria relates to overall operational practices and accounting procedure of the organization. With respect to this project, the Project Proponent practices a good governance practice with transparency, accountability and adherence to local and national rules & regulations etc. This can be further referred from the company's annual report. Also, the project activity is a wind power project owned and managed by the PP for which all required NOCs and approvals are received. The electricity generated from the project can be accurately monitored, recorded and further verified under the existing management practice of the company. Thus, the project and the proponent ensure good credentials under ESG.

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

There was no harm identified from the project and hence no mitigations measures are applicable.

Rational: As per ‘Central Pollution Control Board (MoEFCC, Govt. of India)’, final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (07/03/2016), 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.

Additionally, 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: Kutch

Village: Nani Sindholi and Bada & Panchetiya (Laiza substation)

Tehsil: Abdasa and Mandvi

State: Gujarat

Code: 370655 and 370475

The representative location map is included below:

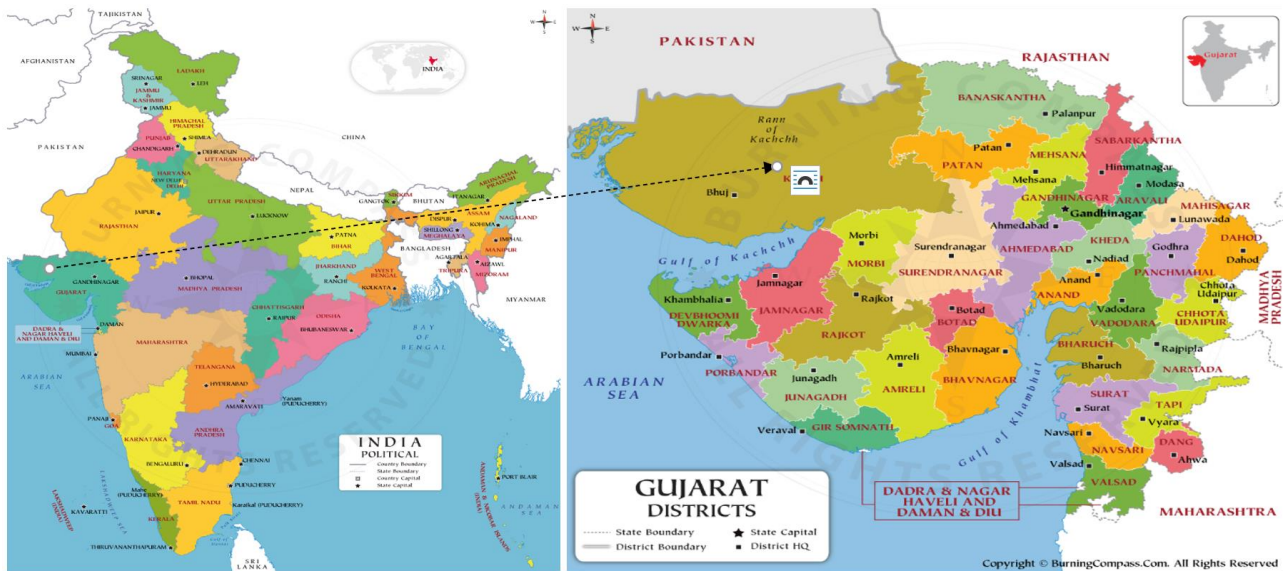


Figure 1: Project Location

(Courtesy: google images, www.burningcompass.com)

The WTG location numbers are detailed out in below table 1:

Project Developer	Capacity of WTG	Commissioning Date	WTG Location No.
M/s. Panoli Intermediates (India) Pvt. Ltd.	1x1500 kW	14-Feb-08	M-523
M/s. Kutch Chemical Industries Limited	1x1500 kW	14-Feb-08	
M/s. Kutch Chemical Industries Limited	2x1250 kW	29-Sep-08	

A.4. Technologies/measures >>

The project activity is installation and operation of 4 Wind Turbine Generators (WTGs) manufactured and supplied by Suzlon Energy with an aggregate installed capacity of 5.5 MW in the state of Gujarat state of India.

Technical details for WTG Machine at the sites are as follows:

Project Developer	M/s. Panoli Intermediates (India) Pvt. Ltd.
Capacity	1x1500 kW
WTG Location No.	M-523
WTG ID Number	SEL/1500/07-08/0881
WTG Make	Suzlon

Project Developer	M/s. Kutch Chemical Industries Limited
Capacity	1x1500 kW
WTG Location No.	M-438
WTG ID Number	SEL/1500/07-08/0880
WTG Make	Suzlon

Project Developer	M/s. Kutch Chemical Industries Limited
Capacity	2x1250 kW
WTG Location No.	B-1 & B-480
WTG ID Number	SEL/1250/08-09/1306 & SEL/1250/08-09/1307
WTG Make	Suzlon

Apart from the above technical specification of WTGs, the connectivity of all the WTGs is to a central Monitoring Station (CMS) through high-speed WLAN modem or fiber optic cable which helps in providing real time status of the turbine at CMS with easy GUI (Graphical User Interface) and ability to monitor the functioning of the turbine from CMS.

A Supervisory Control & Data Acquisition System (SCADA) provides a graphical representation of data providing ease to understand the behavior of WTG, long time data storage facility, access to daily generation report and power curve related information & helps to analyze the problem with graphical tools offline as well as online. The other specifications include a safety system with instrumentation for tracking individual functions of the wind turbine generator. The life time of the WTG is 25 years as per manufacturer specifications.

A.5. Parties and project participants >>

Party (Host)	Participants
Government of India	Advait Greenergy Private Limited (Representator) M/s. Panoli Intermediates (India) Pvt Ltd. (Developer) M/s. Kutch Chemical Industries Ltd. (Developer)

A.6. Baseline Emissions>>

Project activity installs the wind power project at a barren land. Project activity is the installations of green field energy production with the installation of 4 WTGs totalling 5.5 MW project capacity.

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 fuels¹, 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 emit any emissions in the atmosphere.

Project activity will harness wind as a source of energy production which is environmentally safe and sound technology. There is no GHG emission through project activity. The WTGs confirms to the relevant code of safety and standards mandatory for setting up wind projects. The standard includes Wind Turbine Safety and Design, Noise level and Mechanical Load. Therefore, the technology implemented can be depicted as environmentally safe and sound one.

Schematic diagram showing the baseline scenario:

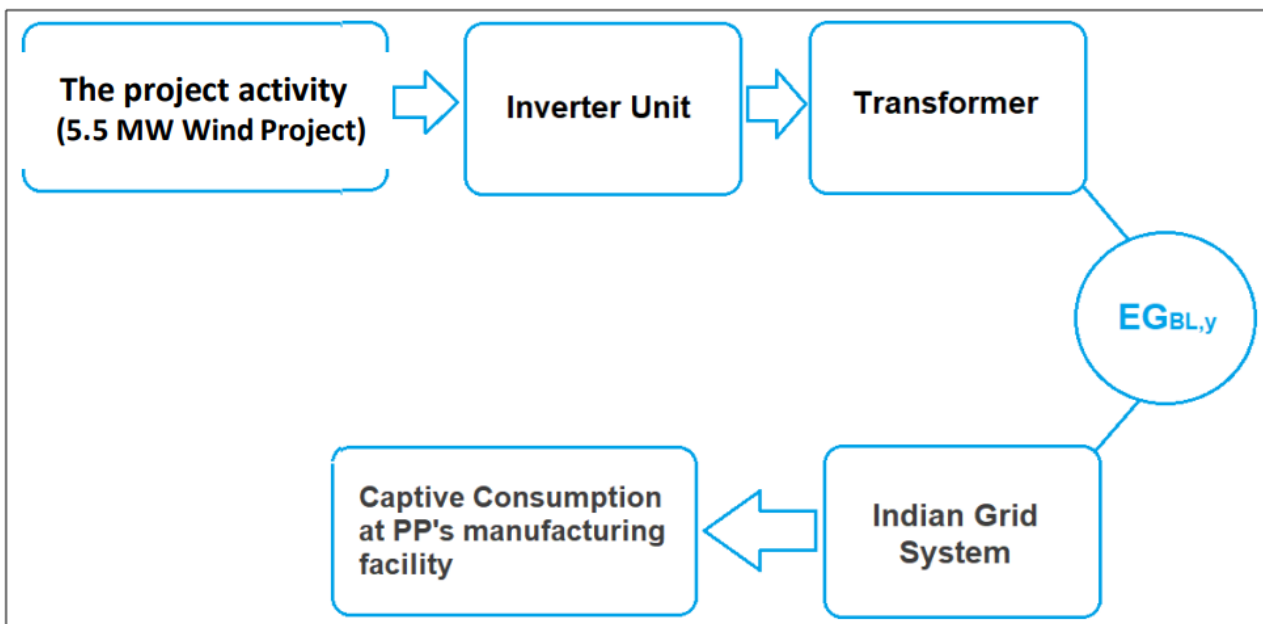


Figure 2: Project Scenario

¹ http://www.cea.nic.in/installed_capacity.html

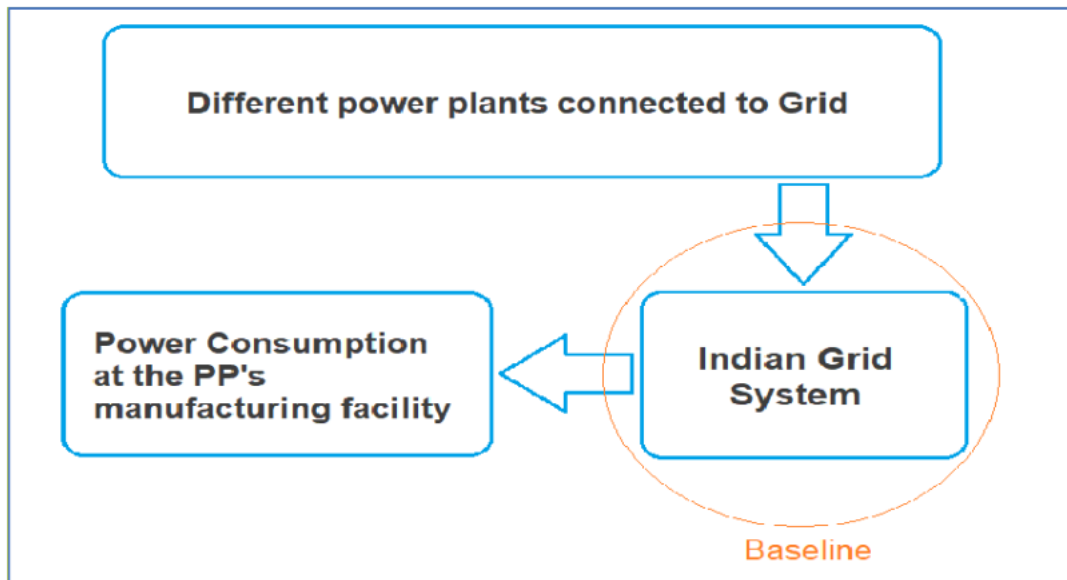


Figure 3: Baseline Location

A.7. Debundling>>

This project activity 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 18²

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

The project activity is wind based renewable energy source, zero emission power project connected to the Gujarat state grid, which forms part of the Indian grid. The project activity will displace fossil fuel-based electricity generation that would have otherwise been provided by the operation and expansion of the fossil fuel-based power plants in Indian grid.

The approved consolidated baseline and monitoring methodology “AMS-I.D, Grid connected renewable electricity generation, Version 18” is the choice of the baseline and monitoring methodology. The applicability conditions of the methodology are discussed below:

Applicability Condition	Justification
1. 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 involves installation of greenfield wind power generation plant. Hence the methodology is applicable to the project activity.
2) 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 power plant, as per definitions given in the project emissions section, is greater than 4 W/m ² .	The project activity is NOT a hydro power project. Hence the condition does not apply.
3) 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 project activity only has renewable component (i.e. wind power) of 5.5 MW and hence meets the applicability condition.

² [2P7FS6ZQAR84LG3NMKYUH50WI9ODBC \(unfccc.int\)](https://unfccc.int/2P7FS6ZQAR84LG3NMKYUH50WI9ODBC)

4) Combined heat and power (co-generation) systems are not eligible under this category.	The project activity is a greenfield wind power generation project and hence this condition does not apply.
5) 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 distinct from the existing units.	The project activity is a greenfield project and NOT a capacity addition project. Hence the condition does not apply.
6) 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 greenfield project. Hence the condition does not apply.
7) 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.	The project activity is a wind power project. Hence the condition does not apply.
8) 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 Neither a fossil fuel switch project nor a biomass fired power plant. Hence the condition does not apply.

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)>>

As per applicable methodology AMS-I.D, Grid connected renewable electricity generation, Version 18, “The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the project power plant is connected to”.

Thus, the project boundary includes the Wind Turbine Generators (WTGs) and the Indian grid system.

Source		Gas	Included?	Justification/ Explanation
Baseline	Grid connected electricity generation	CO ₂	YES	Main emission source
		CH ₄	NO	Minor emission source
		N ₂ O	NO	Minor emission source
		Other	NO	No other GHG emissions were emitted from the project
Project	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 ₂ O	NO	Project activity does not emit N ₂ O
		Other	NO	No other emissions are emitted from the project

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

This section provides details of emission displacement rates/ coefficients/ factors established by the applicable methodology selected for the project.

As per the approved consolidated methodology 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 wind power plant to harness the green power from wind energy and to use for captive purpose via grid interface through wheeling arrangement. 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. 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 2014-2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021, 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.

Net GHG Emission Reductions and Removals

Thus,

$$ER_y = BE_y - PE_y - LE_y$$

Where:

- ER_y = Emission reductions in year y (tCO₂/y)
 BE_y = Baseline Emissions in year y (t CO₂/y)
 PE_y = Project Emissions in year y (t CO₂/y)
 LE_y = Leakage Emissions in year y (t CO₂/y)

Baseline Emissions

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:

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

Where;

- BE_y = Baseline Emissions in year y (t CO₂)
 $EG_{PJ,y}$ = 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)
 $EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO₂/MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Project Emissions

As per paragraph 39 of AMS-I.D, Grid connected renewable electricity generation, 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.

Thus, $PE_y = 0$.

Leakage Emissions

As per paragraph 42 of AMS-I.D, Grid connected renewable electricity generation, Version 18, '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, $LE_y = 0$.

The actual emission reduction achieved during the first CoU 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)

$$\begin{aligned} BE_y &= 9,636 \text{ MWh/year} \times 0.9 \text{ tCO}_2/\text{MWh} \\ &= 8,672 \text{ tCO}_2/\text{year (i.e., 8,672 CoUs/year)} \end{aligned}$$

B.6. Prior History>>

The project activity is a bundle of wind machines. Following are the key details under the prior

history of the project:

- a) The project was not applied under any other GHG mechanism. Hence project will not cause double accounting of carbon credits (i.e., COUs).

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

The crediting period under UCR has been considered from the date of commissioning of the project, i.e., 14/02/2008.

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

Not applicable.

B.9. Monitoring period number and duration>>

First Issuance Period: 11 years, 05 months – 01/01/2013 to 31/05/2024

B.8. Monitoring plan>>

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

Data/Parameter	UCR recommended emission factor
Data unit	tCO ₂ /MWh
Description	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. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
Source of data	UCRCoUStandardAug2022updatedVer6_090822220127104470.pdf (rackcdn.com)
Value(s) applied	0.9
Measurement methods and procedures	-
Monitoring frequency	Ex-ante fixed parameter
Purpose of data	For the calculation of Emission Factor of the grid

Data and Parameters to be monitored (ex-post monitoring values):

Data / Parameter:	EG_{PJ,y}
Data unit:	MWh
Description:	Net electricity supplied to the Indian grid facility by the project activity
Source of data:	Generation Statements/ SLDC Certificates/ Joint Meter Readings
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 from net electricity supplied to grid from the share certificate issued by state utility (currently GETCO) on monthly basis for respective WTGs. The amount of energy supplied by the WTGs are continuously monitored and recorded once a month. The same can be cross-checked from the State utility website which is publicly available.
Monitoring frequency:	Monthly
Value applied	9,636 (Ex-ante estimate)
QA/QC procedures:	Continuous monitoring, hourly measurement monthly recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.2s
Purpose of data:	Calculation of baseline emissions
Any comment:	Data will be archived electronically for a period of 36 months beyond the end of crediting period. Since the renewable power generated from the project is used for captive consumption via wheeling, hence during the monitoring and verification the provision of the wheeling agreement may be referred.