



PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT



Title: 4.5 MW Wind Project by MKP Power Pvt. Ltd. in Tamil Nadu

Version 1.0

Date: 18/05/2022

First CoU Issuance Period:
8 years, 4 months

Date: 01/01/2014 to 30/04/2022



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

BASIC INFORMATION	
Title of the project activity	4.5 MW Wind Project by MKP Power Pvt. Ltd. in Tamil Nadu
Scale of the project activity	Small Scale
Completion date of the PCN	18/05/2022
Project participants	MKP POWER PVT LTD
Host Party	India
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I.D : “Grid connected renewable electricity generation”, version 18 Standardized Methodology: Not Applicable.
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 7,095 CoUs per year]

SECTION A. Description of project activity

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

The proposed project tile under UCR is “4.5 MW Wind Project by MKP Power Pvt. Ltd. in Tamil Nadu”, which is a Wind Power project located in Theni districts in the state of Tamil Nadu (India). The project is an operational activity with continuous reduction of GHG, currently being applied under “Universal Carbon Registry” (UCR).

Purpose of the project activity:

The project activity is a renewable power generation activity which incorporates installation and operation of 3 Wind Turbine Generators (WTGs) having individual capacity of 1500 kW manufactured and supplied by Regen Power Tech Private Limited with aggregated installed capacity of 4.5 MW in Village- Poomalaikundu of the state of Tamil Nadu in India.

The WTGs under the project activity were commissioned on 22/03/2011 and 26/03/2011 in Theni district (location details provided under the section A.3). The project is developed under a Group Captive arrangement. As per the ex-ante estimate, the project will generate approximately 7,884 MWh of electricity per annum. The net generated electricity from the project activity is being wheeled to manufacturing facility of PP in Tamil Nadu for captive consumption through Southern Regional grid as per wheeling agreement (via Group Captive arrangements) with Tamil Nadu Electricity Board (TNEB). Through utilization of renewable power at the respective facilities of the group captive members; the project activity would be displacing an equivalent quantum of grid electricity which would have otherwise been imported by the respective facilities; hence resulting in reduction of carbon emissions. An estimated emission reduction is 7,095 tCO_{2e} per annum. Thus, 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.

As informed, the estimated annual average and the total CO_{2e} emission reductions by the project activity is expected to be 7,095 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.

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 the project proponent, the energy supplied by the project to the respective group captive consumers is based on renewable energy contributes to GHG emission reduction and conservation of depleting energy sources associated with the project baseline. The power generation is 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 Project Proponent has required policies in place to ensure equitable employment, health & safety measures, local jobs creation etc. Also, through various social philanthropic activities the project proponent directly supports 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. The project activity is a wind power project owned and managed by the proponent 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. All required norms and policy based approaches are being considered for employees and staffs, thus the project and the proponent ensure good credentials under ESG.

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. Some key impact areas are cited below:

Social benefits: This project would have a visible impact on the community. There is no fossil fuel component except the wind power generators, hence nearby people would not be exposed to hazardous wastes and emissions from burning fossil fuels etc. compared to the project baseline. Additionally, the project has facilitated direct and indirect employment opportunities accruing out of the production, erection and commissioning etc. of the Wind Turbine Generators (WTGs) and during maintenance and operation of the project activity. The project has also led 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.

Environmental benefits: The project activity will generate power using zero emissions wind-based power generation facility, hence no negative impact to environment. The project would directly impact in reducing global warming emissions; harnessing power from the project would be one of the cleanest and most sustainable ways to generate electricity. This project is established as a much needed alternative to fossil fuel based power plants contributing to regional grid, also such fossil fuel sources are depleting while the wind being renewable source is inexhaustible and abundant in nature. The National Wind Coordinating Committee (NWCC) depicted that impacts on wildlife, most notably on birds and bats are relatively low and do not pose a threat to species populations. There is also no water, air or soil impact associated with the operation of wind turbines unlike generated in use of fossil fuels.

Economic benefits: The project is an investment of clean green technology investment decided based on carbon revenue support, which signifies connotes flows of clean energy investment flows into the host country. Wind energy projects provide many economic benefits to neighboring

communities: such as local jobs (temporary, permanent, skilled and semi-skilled manpower at the project location), created means of small businesses for localities in and around the project site. This will create additional employment/income opportunities in the region. Additionally, the generated electricity is being utilized for captive consumptions, thereby reducing the demand for conventional fossil based power from the grid mix. 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. Wind projects can also attract tourists who want to see wind farms in person. Locally owned community wind projects create even more of an economic opportunity for those involved.

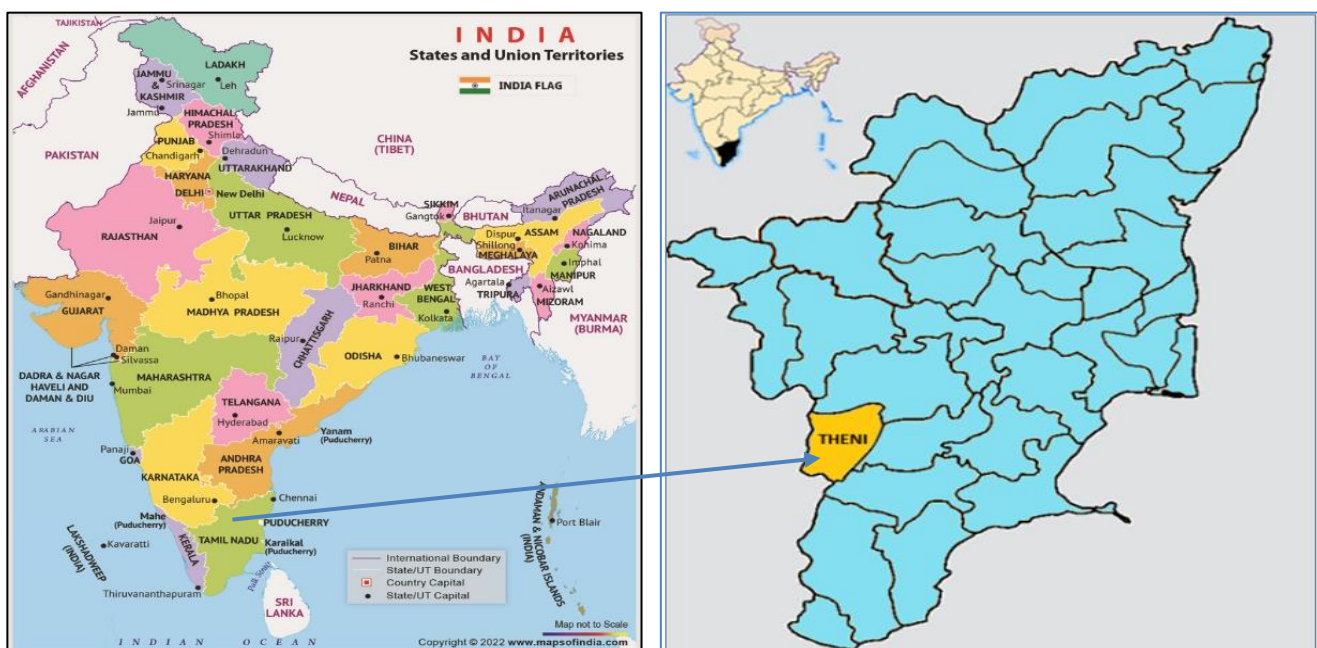
A.3. Location of project activity >>

Country : India
District : Theni
Village : Poomalaikundu
State : Tamil Nadu
Pin Code : 625 520

The project location details are further provided below:

Site Name	Connected SS	Feeder Name	Location Name	Old HT.Sc.No	New HT.Sc.No	Co - Ordinate	
						East	North
Kamatchipuram Site	Kamatchipuram Regen 10(1)SS 110/33KV	Feeder #4	PKKKP 01	WES-RE 1-T04	059224760125	767220	1094785
		Feeder #4	PBRKP 01	WES-RE 1-T03	059224760124	768476	1095581
		Feeder #4	PBRKP 02	WES-RE 1-T11	059224760132	766967	1094191
			Kamatchipuram SS			770071	1092557

The representative location map is included below:



(Courtesy: google map and images)

A.4. Technologies/measures >>

The proposed project activity is installation and operation of 3 Wind Turbine Generators (WTGs) having individual capacity 1500 kW manufactured and supplied by Regen Power Tech Pvt. Ltd. with aggregated installed capacity of 4.5 MW in the state of Tamil Nadu state of India.

The project activity consists of WTGs of the following WTGs:

Capacity of individual machine Installed	Machine Manufacturer
1,500 kW	Regen Power Tech Pvt. Ltd.

Technical details for the particular 1,500 kW Machine type manufactured by Regen Power Tech Pvt. Ltd. are as follows:

SR. NO.	PARTICULARS	DETAILS
1	Rated power	1500 kW
2	Cut-in wind speed	3 m/s
3	Rated wind speed	Approx. 12.5 m/s
4	Cut-off wind speed	22 m/s
5	Survival wind speed	52.5 m/s
6	Generator	Variable Speed, Multi-pole Synchronous with Permanent Magnet Excitation
7	Rotor diameter	82 m
8	Rotational speed at rated power	9-17.3 rpm
9	Swept area	5325 sq. m.
10	Hub height	85m
11	Design	Tubular, Four sections
12	Aerodynamic braking	Aerodynamic brake, Single pitch control/triple redundant
13	Speed control	Variable, Micro-controller based
14	Wind turbine type class	GL III A

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 fibre 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 behaviour 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 20 years as per manufacturer specifications.

In the absence of the project activity the equivalent amount of electricity imported from “Southern Regional Grid which is part of Unified Indian Grid System”, which is 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.

A.5. Parties and project participants >>

Party (Host)	Participants
India	<u>Project Proponent:</u> MKP POWER Private Limited <u>Authorized Representative</u> NSL Renewable Power Private Limited. Contact person: Mr. Rajnikant A Contact: rajnikant.a@nslpower.com Address: C/o NSL, 8 - 2-684/2/A, 4th Floor, Road.No.12, Banjara Hills, Hyderabad - 500034, Telangana, India.

A.6. Baseline Emissions>>

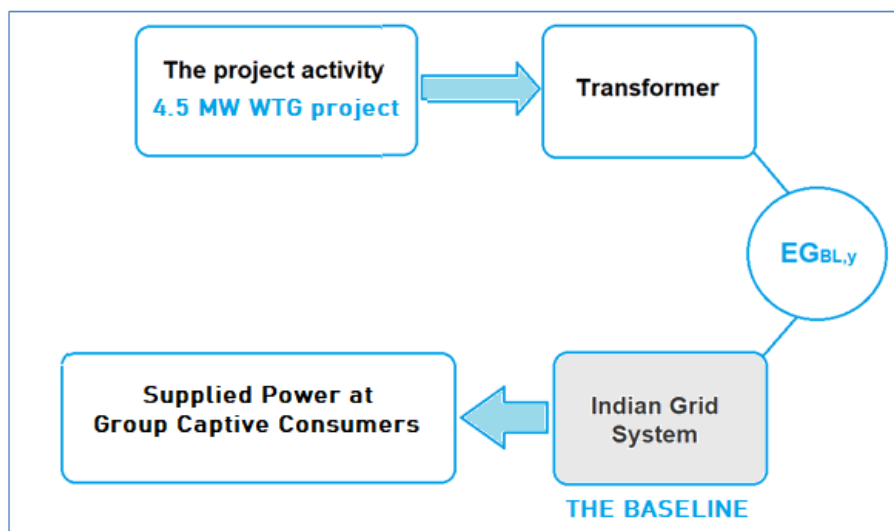
The baseline scenario identified at the PCN stage of the project activity is:

- Grid

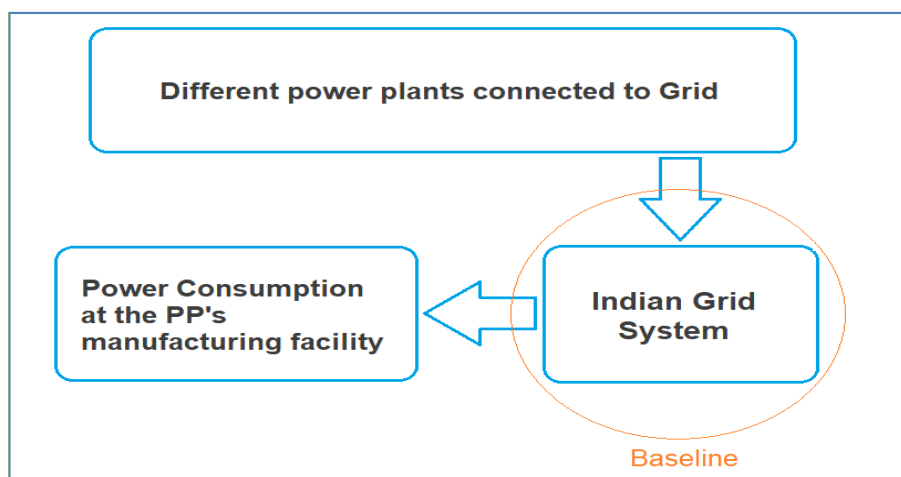
In the absence of the project activity, the equivalent amount of electricity would have been imported by the captive consumers from the Southern regional grid, part of Unified Indian Grid System, which is carbon intensive due to predominantly sourced from fossil fuel-based power plants. Hence, baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario.

Schematic diagram showing the project and the baseline scenario:

Project Scenario:



Baseline Scenario:



A.7. Debundling>>

This wind 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. (Title: “Grid connected renewable electricity generation”, version 18)

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 captive consumption of the power at the PP’s facility. The project activity has installed capacity of 4.5 MW which will qualify for a small scale project activity under Type-I of the Small Scale methodology. The project status is corresponding to the methodology AMS-I.D., version 18 and applicability of methodology is discussed below:

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 power project for captive consumption which falls under applicability criteria option 1 (b) i.e., “Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling”. Hence the project activity meets the given applicability criterion as well as satisfies the applicability illustration mentioned in Appendix of AMS-I.D Table 1 – Scope of AMS-I.D. version 18.
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);	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.

(d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s).	
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 existing reservoir, with no change in the volume of the reservoir; or (b) The project activity is implemented in existing reservoir, where the volume of the reservoir(s) is increased and the power density as per definitions given in the project emissions section, is greater than 4 W/m². (c) (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 installation of Wind Turbine Generators (WTGs), 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 4.5 MW Wind power project, i.e. only component is renewable power project below 15 MW, thus the criterion is not applicable to this project activity.
5. Combined heat and power (co-generation) systems are not eligible under this category	The project is w wind power project and thus the criterion is not applicable to this project activity.
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.	The proposed project is a greenfield 4.5 MW wind power project, i.e. only component is renewable power project below 15 MW, thus the criterion is not applicable to this project activity.
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 proposed project is a greenfield 4.5 MW wind power project, i.e. only component is renewable power project below 15 MW, thus the criterion is not applicable to this 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	The proposed project is a greenfield 4.5 MW wind power project, hence, this criterion is not applicable to this project activity.

applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.	
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)>>

As per applicable methodology AMS-I.D. 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)

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. 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 (tCO₂e/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO₂e/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 & 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

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:

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

BE_y	=	Baseline emissions in year y (t CO ₂)
$EG_{PJ,y}$	=	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 tCO ₂ e/MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Project Emissions:

As per 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.

Thus, P_{Ey} = 0.

Leakage:

As per paragraph 22 of AMS-I.D. version-17, '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, L_{Ey} = 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 (B_{Ey})

$$= 7,884 \text{ MWh/year} * 0.9 \text{ tCO}_2\text{e/MWh}$$

$$= 7,095 \text{ tCO}_2\text{e/year (i.e. 7,095 CoUs/year)}$$

B.6. Prior History>>

The project activity is a bundle of 3 wind machines owned and promoted by MKP Power Pvt. Ltd. Following are the key details under the history of the project:

- (a) 4.5 MW Wind power project Tamil Nadu was commissioned in between 22/03/2011 to 26/03/2011 and since then the project is operational without any change in project design.
- (b) The project was not applied under any other GHG mechanism; except under UCR.

Thus, CoUs to be claimed under this project activity does not lead to any double accounting of emission reductions claim.

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

Not applicable (i.e. there is no change in the start date of crediting period), as the project is submitted under UCR as a fresh project.

The crediting period under UCR has been considered from 01/01/2014.

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

Not applicable.

B.9. Monitoring period number and duration>>

Monitoring Period Number	: 01
First Issuance Period duration	: 8 years, 4 months (01/01/2014 to 30/04/2022, inclusive of both dates)

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	https://a23e347601d72166dcd6-16da518ed3035d35cf0439f1cdf449c9.ssl.cf2.rackcdn.com//Documents/UCRStandardNov2021updatedVer2_301121081557551620.pdf
Value 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
Additional Comment	The combined margin emission factor as per CEA database (the recent version 16, Year 2021) results into higher emission factor. Hence for 2021-22 vintage UCR default emission factor remains conservative.

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

Data / Parameter	EG _{PJ,y}
Data unit	MWh
Description	Net electricity supplied to the Southern regional grid, part of Unified Indian Grid System, by the project activity
Source of data	Monthly statements issued by TNEB (Tamil Nadu Electricity Board) or the concerned authority
Measurement procedures (if any)	Data Type: Measured Monitoring equipment: Energy Meter used for monitoring Archiving (details to be provided during the first verification under UCR) 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 for the purpose of wheeling under group captive arrangement, on monthly basis for respective WTG. The amount of energy supplied by the WTGs are continuously monitored and recorded once a month.
Monitoring Frequency	Monthly

QA/QC procedures applied	Continuous monitoring, hourly measurement monthly recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.2s. The monthly values can be further referred from the monthly invoices.
Purpose of data	The Data/Parameter is required to calculate the baseline emission.
Any comment:	Data will be archived electronically for a period of 36 months beyond the end of crediting period.