



PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (COU) PROJECT

Title: 1.25 MW Wind Project by MPR Wind Farms in Karnataka.

Version 1.0

Date 05/06/2022

First COU Issuance Period:

8 years, 05 months

Date:

01/01/2014 to 31/05/2022



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

BASIC INFORMATION

Title of the project activity	1.25 MW Wind Project by MPR Wind Farms in Karnataka
Scale of the project activity	Small Scale
Completion date of the PCN	05/06/2022
Project participants	MPR Wind Farms.
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 1,971 CoUs per year]

SECTION A. Description of project activity

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

The project is titled as “1.25 MW Wind Project by MPR Wind Farms in Karnataka” which is a grid connected wind power project located in village Harogeri, Gadag district in the state of Karnataka (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 promoted by “MPR Wind Farms” which is an Independent Power Producer (IPP) focusing on producing green power and establishing environmental and social sustainability. This project is a greenfield power project through tapping of wind energy available in the existing barren land available in the identified project site, in the state of Karnataka in India. The project activity is installation and operation of total 1 Wind Turbine Generators (WTGs) having capacity of 1.25 MW; manufactured and supplied by Suzlon. Thus total aggregated installed capacity of the project is 1.25 MW, located in village Harogeri, Gadag district in the state of Karnataka (India).

The project activity aims to harness kinetic energy of wind (renewable source) to generate electricity. It is capable to generate around 2,190 MWh per year, which is estimated based on operation with around 20% utilization factor with efficient utilization of the available wind energy through adoption of an efficient and modern technology. The net generated electricity from the project activity has been evacuated to regional grid under a long-term power purchase arrangement with the Karnataka State Electricity Board (KSEB), where power is being sold to HESCOM (Hubli Electricity Supply Company Limited). The key details are as follows:

Capacity (MW)	Details (Nos., Type & Make)	Commissioning Date
1.25	1 WTGs @1.25 MW Suzlon	28-09-2006

Sl.No.	Loc #	Village	Taluka	District
1)	K-214	Harogeri	Mundaragi	Gadag

The project activity was developed as a greenfield activity with no power generation facility existing at the project site in the pre-project scenario that can be attributed to the captive power requirement of PP. In the pre-project scenario equivalent amount of electricity would have been generated and supplied from grid for the purpose of captive consumption, thus the power displaced by the project activity would have been otherwise generated from fossil fuel dominated thermal power plant and fed to the grid which is the current baseline for the project.

Hence, project activity is displacing the estimated annual net electricity generation i.e., 2,190 MWh from the southern grid (currently part of Unified Indian National Grid system), which otherwise would have been generated from fossil fuel based thermal power plant and exported to the national grid. The project activity doesn't involve any GHG emission sources. The estimated annual average CO_{2e} emission reduction by the project activity is expected to be 1,971 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 will generate 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.

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.

1. Social benefits:

- (a) Assist in creating local jobs
- (b) Helps improving nearby infrastructures such as access roads
- (c) No adverse effects on health as there is no fossil fuel components attached to the project and also no waste generated in the process.

2. Environmental benefits:

- (a) Wind energy does not emit toxic substances or contaminants into the air, water and soil, hence zero impact on the environment
- (b) There is negligible amount of surface usages as compared to the baseline, hence no negative impact on local ecosystem.
- (c) Due to zero discharge of any pollutant elements in the process, there is no environmental hazards produced due to the project
- (d) The maintenance related products such as oil, grease etc. if left out are sent for recycling, hence zero impact.

3. Economic benefits:

- (a) Direct Employment
- (b) Investment received in developing
- (c) Opportunities created for local vendors, contractors to take part in various activities related to the project, both during construction and operational phase
- (d) With the development of better infrastructure, more trade opportunities are being generated, also energy tourism is foreseen.

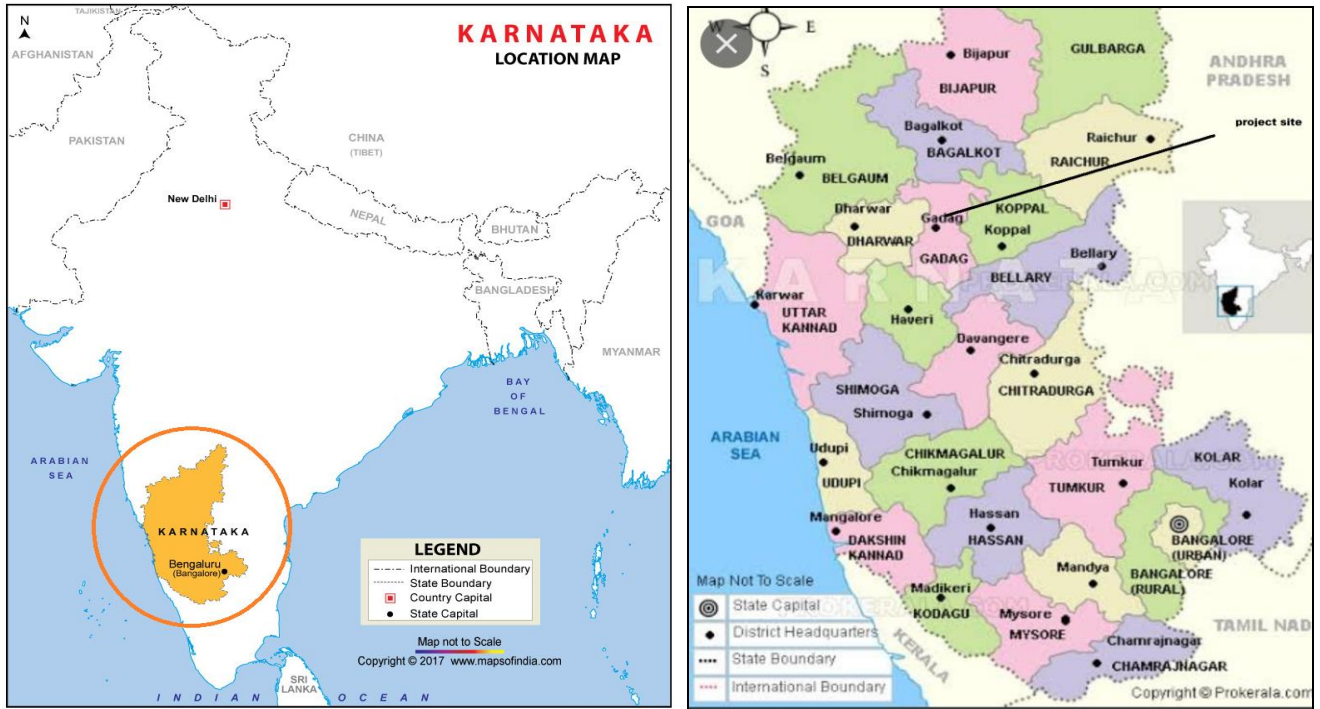
4. Technological well-being:

- (a) Being a clean energy project, the project promotes technological well-being in the state
- (b) Direct contribution to grid mix leading to energy security in the country
- (c) Example setting for peer companies/investors to consider clean technology projects.

A.3. Location of project activity >>

The project sites are located at in village Harogeri, Gadag district in the state of Karnataka (India). Gadag is approximately 416.4 km from Bangalore, capital of Karnataka. The site has been identified as ideally suited for wind power generation based on the micro siting studies and data analysis based on annual wind speed and frequency distribution, carried out by eminent agencies like Indian Institute of Tropical Meteorology and Karnataka Renewable Energy Development Limited.

The representative location map is included below:



(Courtesy: Google images)

Loc #	Latitude	Longitude	Village	Taluka	District
K-214	15 ⁰ 12' 11.43''	75 ⁰ 45' 36.55''	Harogeri	Mundaragi	Gadag

A.4. Technologies/measures >>

The project activity employs state-of-art horizontal axis wind turbines. The WTGs comprising the project activity generates clean power which is then exported to the nearest receiving station of KPTCL at Gadag (66/11 kV substation). The WTGs are grid connected and houses the metering, switchgear and other protection equipment. Representation of the same is provided below.

Describe in detail

The machine details are given below:

Specification	Value
Rated power	1,250 KW
Rotor Type	3 blade, upwind /horizontal axis
Gearbox Type	One planetary stage and two helical stages
Generator Type	Dual speed induction generator (asynchronous)
Tower Type	Tubular tower with welded steel
Breaking system	3 independent systems with blade pitching
Yaw system	Electric asynchronous motor, electric motor brake (spring applied), 5 stages planetary gear box with output pinion
Pitch system	3 independent blade pitch control with battery backup for each blade
Controller	Suzlon Control System

Further details given on appendix.

A.5. Parties and project participants >>

Party (Host)	Participants
India	<p>MPR Wind Farms.</p> <p>Contact details: Mr. Rajnikant. A rajnikant.a@nslpower.com</p> <p>Address: 8 - 2-684/2/A, 4th Floor, Road.No.12, Banjara Hills, Hyderabad - 500034, Telangana, India</p>

A.6. Baseline Emissions>>

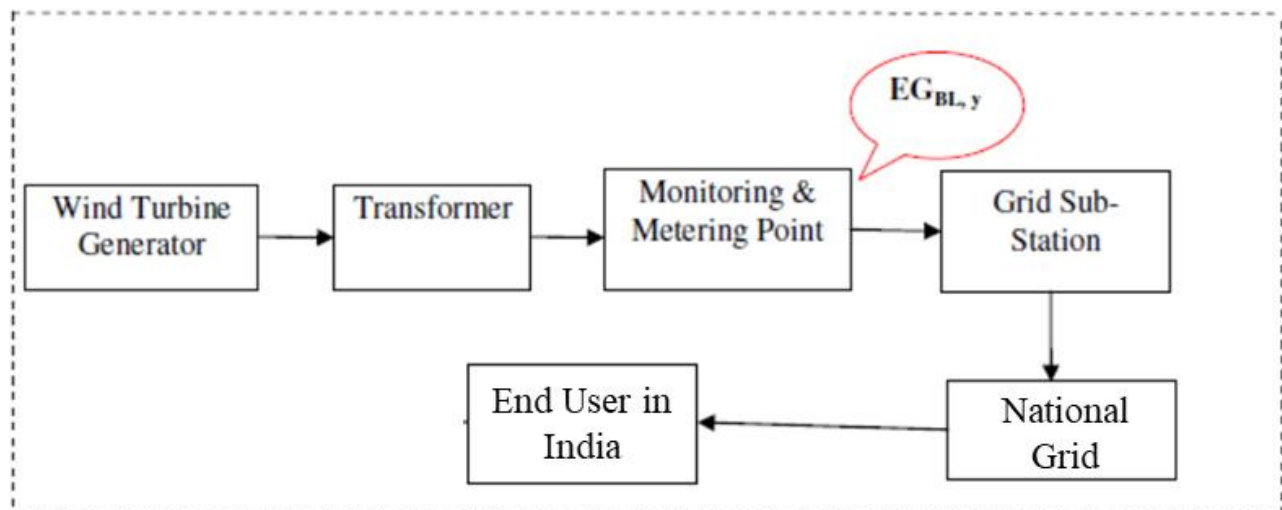
The baseline scenario identified at the PCN stage of the project activity is:

- Grid

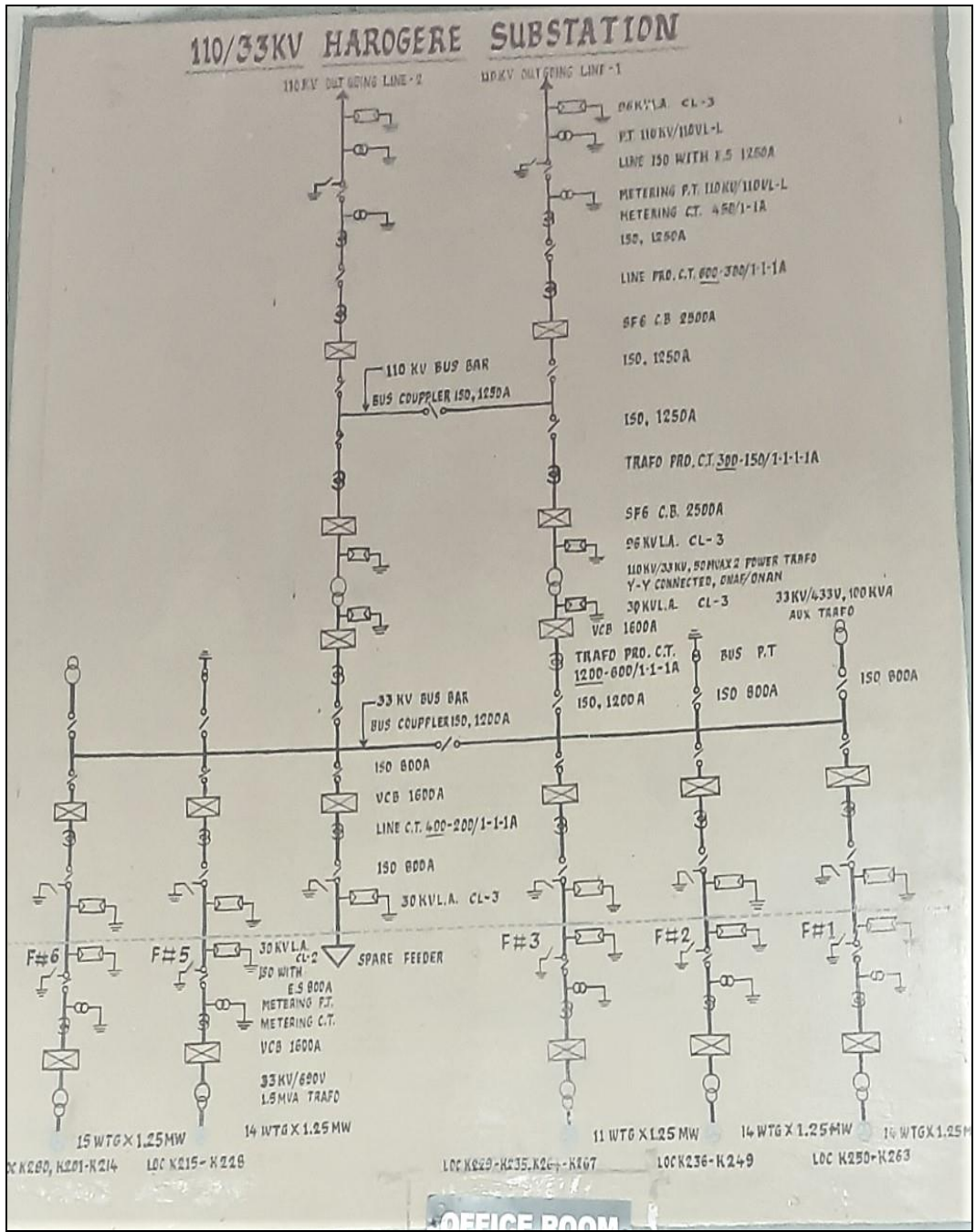
In the absence of the project activity, the equivalent amount of electricity would have been generated from fossil fuel-based power plants and exported to the southern regional grid (which is connected to the unified Indian Grid system) as national grid is predominantly sourcing from fossil fuel-based 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 baseline scenario:

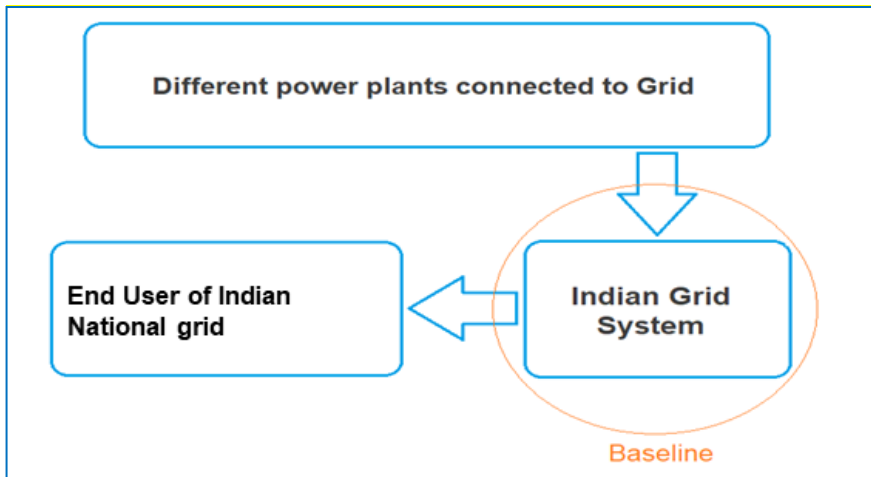
Project Scenario:



Technical layout of the project:



Baseline Scenario:



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. (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 operation of a new wind power project. The project activity has installed capacity of 1.25 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 involves setting up of a renewable energy (wind) generation plant that exports electricity to the fossil fuel dominated Indian electricity grid system. Thus, the project activity meets this applicability conditions.
2. Illustration of respective situations under which each of the methodology (i.e., AMS-I. D: Grid connected renewable electricity generation”, AMS-I. F: Renewable electricity generation for captive use and mini-grid” and AMS-I. A: Electricity generation by the user) applies is included in Table 2	According to the point 1 of the Table 2 in the methodology – “Project supplies electricity to a national/ regional grid” is applicable under AMS I.D. As the project activity supplies the electricity to the regional grid which is a regional grid, the methodology AMS-I.D. is applicable.
3. This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s); or	The Project activity involves the installation of new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity. Thus, Project activity is a Greenfield plant and satisfies this applicability condition (a).

Applicability Criterion	Project Case
(e) Involve a replacement of (an) existing plant(s).	
<p>4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <p>(a) The project activity is implemented in existing reservoir, with no change in the volume of the reservoir; or</p> <p>(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.</p> <p>(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.</p>	As the project activity is a wind power project, hence this criterion is not applicable.
5. 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 rated capacity of the project activity is 1.25 MW with no provision of Co-firing fossil fuel, only single renewable component (wind). Hence, this condition is not applicable.
6. 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.
7. 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.	There is no other existing renewable energy power generation facility at the project site. Therefore, this criterion is not applicable.
8. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted 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.
9. 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.	This is not relevant to the project activity as the project involves only wind power generating units.

Applicability Criterion	Project Case
C.: Thermal energy production with or without electricity” shall be explored.	
10. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	This is not relevant to the project activity as the project involves only wind power generating units.

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 generation/feeding point with the grid.
- Also, the project has not been applied under any GHG mechanism, hence no risk of double accounting.

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 fossil fuel-based 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 >>

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

As per para 19 of 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 sale to national grid through PPA arrangement. In the absence of the project activity, the equivalent amount of power would have been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new fossil fuel-based generation sources into the grid. 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 2021-22, 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

$$\text{Thus, } ER_y = BE_y - PE_y - LE_y$$

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 (tCO₂/y)

LE_y = Leakage emissions in year y (tCO₂/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 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 /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 wind 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 paragraph 22 of AMS-I.D. 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)

$$\begin{aligned} &= 2,190 \text{ MWh/year} \times 0.9 \text{ tCO}_2/\text{MWh} \\ &= 1,971 \text{ tCO}_2/\text{year (i.e., 1,971 CoUs/year)} \end{aligned}$$

B.6. Prior History>>

- (a) The project has never been applied under any other GHG mechanism.
- (b) There is no other applicability of the project under any mechanism to claim any form of environmental credits.
- (c) The project is in operation since the date of commissioning of the WTGs without any change in capacity or any other parameters.

Hence project will not cause any 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 applicable during this PCN submission.

The start date of crediting under UCR is considered as 01/01/2014, as the WTGs under the project were commissioned during 2006 and currently no GHG emission reduction has been claimed under the project since the date of commissioning.

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

Not applicable.

B.9. Monitoring period number and duration>>

Number : First Monitoring Period
Duration : 8 years, 05 months
01/01/2014 to 31/05/2022 (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 (current version 17, Year 2022) results into higher emission factor. Hence for 2021 & 2022 vintages UCR default emission factor remains conservative.

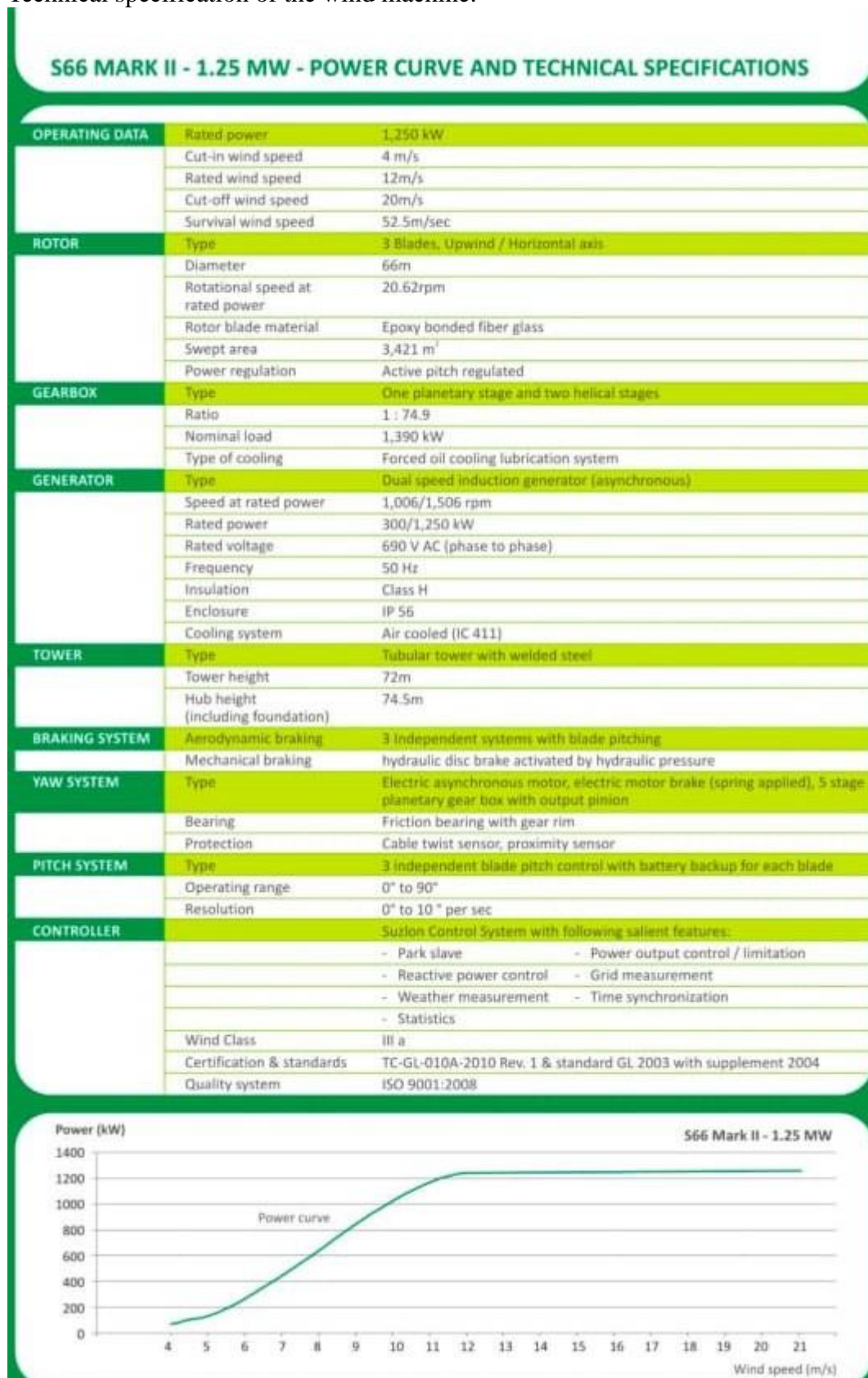
Data and Parameters to be monitored (ex-post monitoring values):

Data / Parameter	EG _{PJ,y}
Data unit	MWh / year
Description	Net electricity supplied to the grid by the project activity
Source of data	NSL records / KPTCL records
Measurement procedures (if any):	<p>For the purpose of a simplified and reliable measurement method, PP has proposed the following procedure for the parameter:</p> <ul style="list-style-type: none"> (i) If the B-forms/JMR/Share certificates/credit notes etc. generated for the project WTGs provide net export quantity, the same will be directly considered for calculation. (ii) However, if the monthly statement does not directly provide “net electricity” units, then quantity of net electricity supplied to the grid shall be calculated using the parameters reflected in the monthly document, such as Export units and Import units. <p>Thus, the difference between the measured quantities of the grid export and the import will be considered as net export: $EG_{PJ,y} = EG_{Export} - EG_{Import}$</p>

	<p>(iii) In case the monthly accounting procedure (as may be reflected in the monthly statement (e.g., B-form, JMR, share certificate, invoice etc. whichever is relevant during the crediting period) includes any transmission losses or other parameters to discount the units and month billing is done on such discounted net value, then PP may decide to consider this value for ER calculation, which is conservative.</p> <p>Thus, $EG_{PJ,y}$ is the net export which will be either directly sourced from the monthly generation statements (such as JMR) or to be calculated from export and import values reported and/or the losses parameters (if included).</p>
Measurement Frequency:	Monthly
Value applied:	2,190 (This is an annualized average value 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)
QA/QC procedures applied:	<p>Calibration of the KPTCL Main meters will be carried out once in five years as per National Standards (as per the provision of CEA, India) and faulty meters will be duly replaced immediately as per the provision of power purchase agreement.</p> <p>The energy meter details are attached in Appendix-2 for further reference. Any change/replacement in energy meters shall be addressed during periodic verification.</p> <p>The net amount of electricity considered for ER estimate which will be anyhow based on monthly statements to be issued by KPTCL, which can be further cross verified by the monthly bills.</p>
Purpose of data:	The Data/Parameter is required to calculate the baseline emission.
Any comment:	All the data will be archived till a period of two years from the end of the crediting period.

Appendix 1:

Technical specification of the wind machine:




Appendix 2:

List of energy meters and their basic details:

MPR Wind Farms					
Kappatgudda, Karnataka					
Energy Meter Serial numbers					
S.N	R.R Number	Make of Energy Meter	Energy Meter Accuracy	Main Meter	Check Meter
1	K-214	L&T	0.2s	6605004	6605009

The copy of the latest test report:

HUBLI ELECTRICITY SUPPLY COMPANY LIMITED



Suzlon

Meter Test Report

Customer : M/S. MPR Wind Farms
 Capacity : 1 x 1.25 = 1.25 MW
 Location No. : K-214
 RR No. : 800/Th253/WF/MPRH/K-214/31
 CT ratio : 30/1/1AMP
 PT ratio : 33KV/√3/110V/√3-110V/√3
 (M.C) : 9000 for both meters
 Date of Testing : 02/03/2022

PPA with: HESCOM
 DOLR- 01/07/2021

Reference standard Calibrator Details:
 Make : MTE/ETRA
 SI No. : 36707
 Class : 0.1

Main Meter Details:
 Make : L & T
 Amp : -1A
 Voltage : (3 x 63.5V)
 Class Accuracy : (0.2s)
 Imp/Unit : 50000
 SI No. : 06605004
 WR300BB11WM
 2006, Birdit

Test result of Main Meter
 Percentage error of meter : 0.046 % (for Kwh)
 (✓ Error found within permissible limits)
 Instantaneous Parameters at the Time of Testing

Voltage Ph-N in Volt			Current in mA			P.F.	Active Power in W
R	Y	B	R	Y	B		
64.10	64.09	63.89	2215	220.4	197.93	-0.999	- 27.50

Check Meter Details:
 Make : L & T
 Amp : -1A
 Voltage : (3 x 63.5V)
 Class Accuracy : (0.2s)
 Imp/Unit : 50000
 SI No. : 06605009
 WR300BB11WM
 2006, Birdit

Test result of Check Meter
 Percentage error of meter : 0.123 % (for Kwh)
 (✓ Error found within permissible limits)
 Instantaneous Parameters at the Time of Testing

Voltage Ph-N in Volt			Current in mA			P.F.	Active Power in W
R	Y	B	R	Y	B		
63.91	63.72	63.70	231.4	230.5	201.41	-0.998	26.90