Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: Title: 49.3 MW Wind Power Project by BPCL in Karnataka

Version 2.0

Date 24/02/2025

First CoU Issuance Period: 10 years, 7 months, 27 days

Date: 13/05/2014 to 31/12/2024

Monitoring Report (MR)
CARBON OFFSET UNIT (CoU) PROJECT

Monitoring Report	
Title of the project activity	**49.3 MW Wind Power Project by BPCL in Karnataka**
UCR Project Registration Number	465
Version	2
Completion date of the MR	24/02/2025
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 1 Duration of this monitoring Period: (first and last days included (13/05/2014 to 31/12/2024)
Project participants	BHORUKA POWER CORPORATION LTD
Host Party	India
Applied methodologies and standardized baselines	ACM0002., Consolidated baseline methodology for grid-connected electricity generation from renewable sources - Version 22.0
Sectoral scopes	01 Energy industries (Renewable/Non-renewable Sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	**2014**: 57534CoUs/yr (57534tCO2eq/yr) **2015**: 98275CoUs/yr (98275tCO2eq/yr) **2016**: 103266CoUs/yr (103266tCO2eq/yr) **2017**: 87656CoUs/yr (87656 tCO2eq/yr) **2018**: 81614CoUs/yr (81614tCO2eq/yr) **2019**: 67955CoUs/yr (67955 tCO2eq/yr) **2020**: 59401CoUs/yr (59401tCO2eq/yr) **2021**: 59647CoUs/yr (59647tCO2eq/yr) **2022**: 62707CoUs/yr (62707tCO2eq/yr) **2023**: 81509CoUs/yr (81509tCO2eq/yr) **2024**: 65498 CoUs/yr (65498 tCO2eq)
Total:	82,5062CoUs (825062 tCO2eq)

SECTION A. Description of project activity

A.1. Purpose and general description of project activity >>

The BHORUKA POWER CORPORATION LTD 49.3 MW project in Karnataka, situated in Bastwad, Birnal, Byakud, Nidgundi, Sansuddi, and Khandal Villages in Rayabag Taluk of Belgaum District, Karnataka State, India, has been successfully commissioned by Karnataka Power Transmission Corporation Limited (KPTCL). Approval for commissioning and interconnection was granted by the Chief Electrical Inspector to the Government of Karnataka, with corresponding permissions provided by the Chief Engineer (T&QC) at KPTCL.

a) Purpose of the project activity and the measures taken for GHG emission reductions >>

Sr. No.	Make	Turbine No	Site	Capacity	Commissioning Date	Latitude	Longitude
1	M/s. GE India Industrial Pvt. Ltd.	RayabagI T01	Rayabag	1.7 MW	13.05.2014	16.41927	74.88263
2	M/s. GE India Industrial Pvt. Ltd.	Rayabag-I T02	Rayabag	1.7 MW	13.05.2014	16.41956	74.87516
3	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T03	Rayabag	1.7 MW	13.05.2014	16.4203	74.86816
4	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T04	Rayabag	1.7 MW	13.05.2014	16.41741	74.86571
5	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T05	Rayabag	1.7 MW	13.05.2014	16.41691	74.86008
6	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T06	Rayabag	1.7 MW	13.05.2014	16.41764	74.89376
7	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T07	Rayabag	1.7 MW	13.05.2014	16.42221	74.8916
8	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T08	Rayabag	1.7 MW	13.05.2014	16.42383	74.88477
9	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T09	Rayabag	1.7 MW	13.05.2014	16.42803	74.88625
10	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T10	Rayabag	1.7 MW	13.05.2014	16.4282	74.89368

11	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T11	Rayabag	1.7 MW	04.06.2014	16.4316	74.90221
12	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T12	Rayabag	1.7 MW	04.06.2014	16.42476	74.86857
13	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T13	Rayabag	1.7 MW	04.06.2014	16.42945	74.86767
14	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T14	Rayabag	1.7 MW	04.06.2014	16.43436	74.86813
15	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T15	Rayabag	1.7 MW	04.06.2014	16.43866	74.86926
16	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T16	Rayabag	1.7 MW	04.06.2014	16.44426	74.87005
17	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T17	Rayabag	1.7 MW	04.06.2014	16.44878	74.87191
18	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T18	Rayabag	1.7 MW	04.06.2014	16.42406	74.87587
19	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T19	Rayabag	1.7 MW	05.11.2014	16.42861	74.87554
20	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T20	Rayabag	1.7 MW	05.11.2014	16.43368	74.87331
21	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T21	Rayabag	1.7 MW	05.11.2014	16.43734	74.87545
22	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T22	Rayabag	1.7 MW	05.11.2014	16.44087	74.87867
23	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T23	Rayabag	1.7 MW	05.11.2014	16.44565	74.88061
24	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T24	Rayabag	1.7 MW	05.11.2014	16.4333	74.88853
25	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T25	Rayabag	1.7 MW	05.11.2014	16.43348	74.88132

26	M/s. GE India Industrial Pvt. Ltd.	Rayabag - I T26	Rayabag	1.7 MW	05.11.2014	16.43675	74.8833
27	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T27	Rayabag	1.7 MW	05.11.2014	16.441454	74.885
28	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T28	Rayabag	1.7 MW	05.11.2014	16.45299	74.88822
29	M/s. GE India Industrial Pvt. Ltd.	Rayabag -I T29	Rayabag	1.7 MW	05.11.2014	16.45784	74.88865

The project seeks to utilize wind energy as a sustainable alternative for electricity generation, aiming to decrease the carbon footprint associated with human activities. By substituting electricity generation from current and proposed fossil fuel-based plants linked to the grid, the project offsets emissions equivalent to those emitted by such plants. The deployment of Wind Energy Converters (WEC) enables emission-free electricity generation. Here's a summary of the dates when the installed Wind Turbine Generators were operationalized:

The project generates approximately 843965.35 MWh of electricity, which will be supplied to KPTCL (HESCOM – Hubli Electricity Supply Company Limited) by the project owner under a Power Purchase Agreement. The power produced by the Project Activity is evacuated at Savsuddi village in Rayabag taluka in Belgaum district, Karnataka with associated electrical equipments interconnecting the wind farm with 110KV/11KV sub station Itnal KPTCL grid through 33KV/110KV pooling cum switching station at Savsuddi of M/S Bhoruka Power Corporation Limited. Through the utilization of wind energy, the project plays a role in mitigating greenhouse gas emissions, particularly CO2 equivalents, which would otherwise originate from fossil fuel-powered thermal plants. The CO2 Emission Reduction from the project is 82,5062 tCO2e for the monitoring period **13/05/2014 to 31/12/2024**

b) Brief description of the installed technology and equipment>>

The Project activity consists of Electric Wind Energy's GE 1.7 – 103 turbines installed at the Rayabag site in Belgaum District. The project consists of 29 units of these turbines, each with a capacity of 1.7 MW. The primary components of the wind turbines are delineated as follow

- **Rotor:** The rotor, with three adjustable blades, optimizes energy capture in varying wind conditions, enhancing overall efficiency and performance.
- **Gearbox:** Specially designed for high performance and noise reduction, the gearbox ensures smooth operation and longevity of the wind turbine system.
- **Braking Systems:** Blade pitching and mechanical disc brakes provide robust braking control, ensuring safe operation and quick response to varying wind speeds.

- **Generator:** A doubly-fed asynchronous machine with adjustable speed control enhances energy conversion efficiency while maintaining reliability and safety standards.
- **Yaw System:** Grid-fed drives and disc brakes enable precise yaw control, ensuring the turbine maintains alignment with wind direction for optimal energy capture.
- **Nacelle:** Featuring sound insulation and safety controls, the nacelle provides a secure environment for housing control units and emergency systems.
- **Tower:** With a modular design and corrosion protection, the tower ensures structural integrity and longevity, providing stability for the entire turbine system.

c) Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods, etc.)>>

Provide the duration of the crediting period corresponding to the monitoring period covered in this monitoring report.

UCR Project ID or Date of Authorization: **465**
Start Date of Crediting Period: **13/05/2014**
Project Commissioned: **13/05/2014**

d) Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

The total GHG emission reductions achieved in this monitoring period is as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	13/05/2014
Carbon credits claimed up to	31/12/2024
Total ERs generated (tCO_{2eq})	**82,5062**CO2eq
Leakage	0

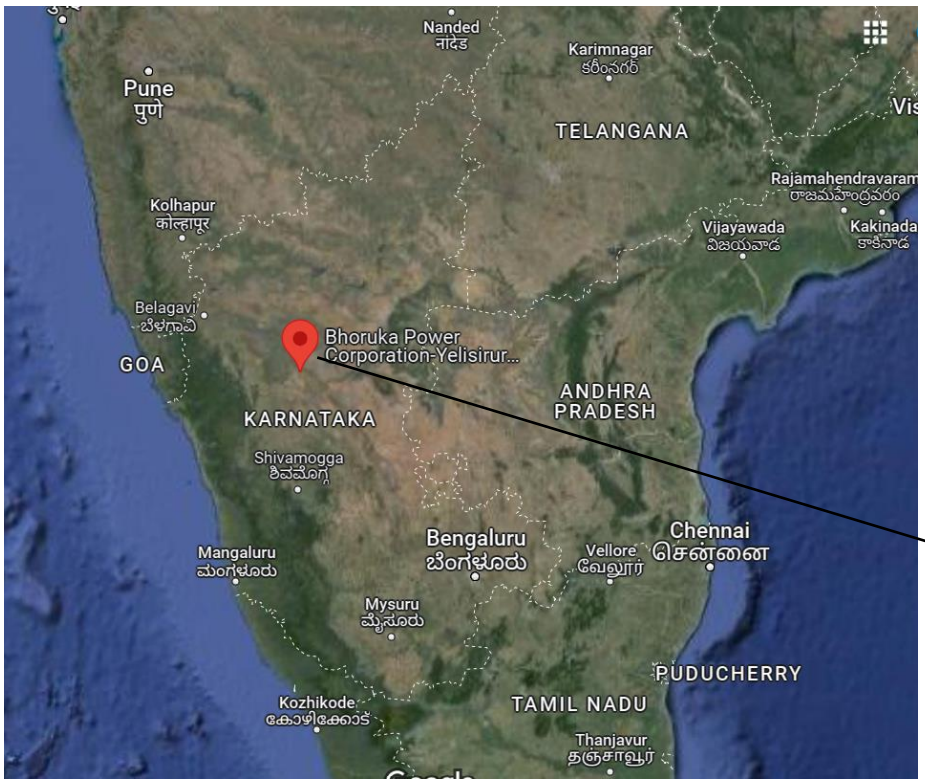
e) Baseline Scenario>>

This section provides details of emission displacement rates/coefficients/factors established by the applicable methodology selected for the project. As per approved consolidated methodology ACM0002, version 22.0, 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".

A.2. Location of project activity>>

Country: India
Village: Rayabag Taluk,
District : Belgaum
State: Karnataka
Code: 591235



Project Activity

A.3. Parties and project participants >>

Party (Host)	Participants
India	BHORUKA POWER CORPORATION LTD

A.4. References to methodologies and standardized baselines >>

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

TYPE - **Renewable Energy Projects**

CATEGORY- ACM0002., Consolidated baseline methodology for grid-connected electricity generation from renewable sources -Version 22.0

A.5. Crediting period of project activity >>

Length of the crediting period corresponding to this monitoring period: 10 years, 7 months, 27 days days 13/05/2014-31/12/2024

A.6. Contact information of responsible persons/entities >>

Contact Person- Lokesh Jain
Email- lokesh.jain@viviidgreen.com
Phone no- 91 89208 56146
Address- Sri Krishna Complex, New Link Road, Opp. Laxmi Industrial Estate, Andheri (West), Mumbai - 400053

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

The project successfully established and operates a 49.3 MW wind farm in high wind speed regions of Karnataka, generating clean and renewable electricity. Bhoruka Power Corporation Ltd served as the Project Proponent for these wind farms, which were commissioned on various dates with approvals from the relevant authorities in Karnataka. The technology employed is among the most environmentally sustainable, as wind power generation produces no greenhouse gas (GHG) emissions or other pollutants typically associated with conventional power plants. The project utilized reliable and proven technology to deliver a safe, efficient, and sustainable energy solution.

b) For the description of the installed technology(ies), technical process and equipment, include diagrams, where appropriate>>

The project activity involved the installation of GE 1.7–103 wind turbines by Electric Wind Energy at the Rayabag site. A total of 29 turbines, each with a capacity of 1.7 MW, were installed. These turbines feature advanced aerodynamic design and cutting-edge technology to optimize energy conversion efficiency. The turbine blades harness the wind's kinetic energy, converting it into mechanical energy via the rotor system. This mechanical energy then powers a generator to produce clean, renewable electricity. The GE 1.7–103 turbines deliver reliable performance and play a crucial role in reducing greenhouse gas emissions, underscoring a strong commitment to sustainable energy generation.

The key features of the project equipment are outlined in the table below.

Technical Data	Model No	GE 1.7– 103
	Make of WEG	M/s. GE India Industrial Pvt. Ltd
	Rotor Diameter	103m
	Cut in wind speed	3.5m/s
	Rated Wind speed	12 m/s (approx.)
	Speed	10-20 rpm
	Hub height	80m
Rotor	Number of blades	3
	Rotor shaft tilt angle	4°
	Rotational direction	Clockwise
	Orientation to the tower	Upwind
Gearbox	Type	Planetary Spur combination
	Rated power	1870Kw
	Rated efficiency	N=96.8%
Generator/ Transformer	Type	Doubly fed asynchronous generator
	Synchronous speed	1500rpm
	Rated speed	1800rpm
	Rated efficiency	96.10%
	Adjusting Speed Rated Power	0.5/sec 1700Kw

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

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

• Social Benefits:

- By generating employment opportunities and enhancing the local grid overseen by the state electricity utility, the project will contribute significantly to poverty alleviation and stimulating economic growth.
- Through the utilization of renewable energy sources, the project diminishes reliance on imported fossil fuels, consequently lessening price fluctuations and enhancing energy security.

• 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 offers employment prospects to both trained and semi-skilled workers within the wind park vicinity, encompassing temporary as well as permanent positions, thereby facilitating local economic advancement.
- Through power generation, the regional grid's performance will be enhanced, leading to increased accessibility and stability for local residents, consequently driving economic and industrial development in the vicinity and creating additional employment opportunities.

• Technical Benefits:

- Wind energy utilization provides technical benefits such as reduced mechanical complexity and modular design, making maintenance and scalability easier compared to traditional energy systems.
- Enhanced backing for wind energy initiatives will drive research and development endeavours by technology firms, resulting in the development of more sophisticated and effective equipment in the future.

United Nations Sustainable Development Goals:

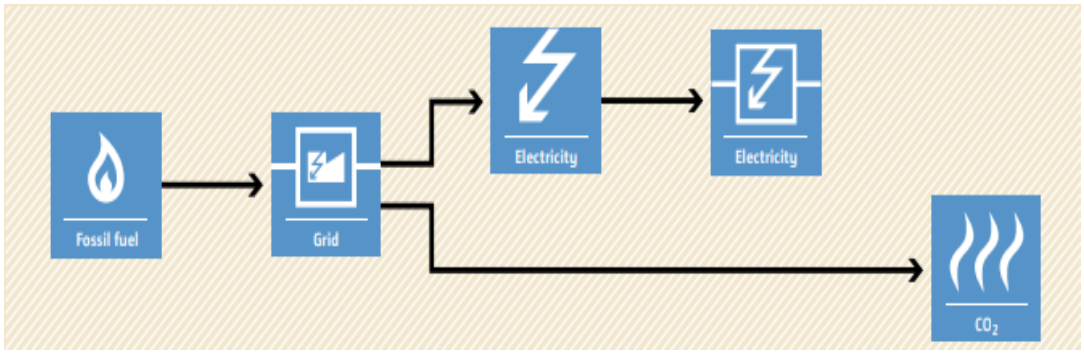
SDGs	Contribution
SDG 3: Good Health and Well-being 	- Lowers air pollution by cutting fossil fuel emissions, improving air quality and reducing respiratory issues.
	- Promotes better health by increasing access to healthcare services through economic growth and job creation.
SDG 7: Affordable and Clean Energy 	- Supports SDG 7 by producing renewable energy, offering a cleaner, sustainable alternative to fossil fuels.
	- Reduces dependence on imported fossil fuels, ensuring more stable energy prices and regional energy security.
SDG 8: Decent Work and Economic Growth 	- Generates both short-term and long-term jobs in construction, maintenance, and management.
	- Drives local economic development by enhancing regional grid infrastructure, supporting industries and creating more employment.
SDG 13: Climate Action 	- Reduces greenhouse gas emissions by replacing fossil fuel-based energy production, in line with SDG 13.
	- Prevents around **82,5062** tons of CO2 emissions annually, significantly contributing to climate change mitigation through renewable energy adoption.

B.3. Baseline Emissions>>

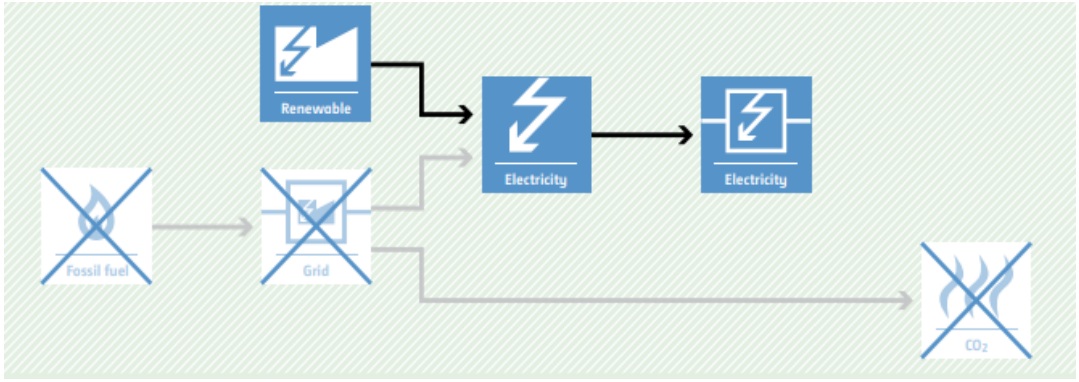
The baseline scenario identified during the PCN stage of the project activity entails the following:
• Grid:
If the project activity had not been implemented, an equivalent amount of electricity would have been generated from fossil fuel-based power plants and supplied to the southern regional grid, which is part of the unified Indian Grid system. This is because the national grid primarily relies on electricity generated from fossil fuel-based power plants. Therefore, the baseline scenario of the project activity corresponds to the grid-based electricity system, which aligns with the pre-project scenario.

The Schematic diagram showing the baseline scenario:

Baseline Scenario:



Project Scenario:



B.4. Debundling>>

This project is not a debundled component of a larger registered carbon offset project activity.

SECTION C. Application of methodologies and standardized baselines

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

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

TYPE **- Renewable Energy Projects**

CATEGORY- ACM0002., Consolidated baseline methodology for grid-connected electricity generation from renewable sources -Version 22.0

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

Applicability Criteria.	**Applicability status**
1)This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plant(s)/unit(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s), or (e) Involve a replacement of (an) existing plant(s)/unit(s). (f) Install a Greenfield power plant together with a grid-connected Greenfield pumped storage power plant. The greenfield power plant may be directly connected to the PSP or connected to the PSP through the grid.	The proposed project involves establishing a new grid-connected renewable wind power plant, confirming to the specified criteria.
2) In case the project activity involves the integration of a BESS, the methodology is applicable to grid-connected renewable energy power generation project activities that: (a)Integrate BESS with a Greenfield power plant; (b) Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic1 or wind power plant(s)/unit(s); (c) Integrate a BESS to (an) existing solar photovoltaic or wind power plant(s)/unit(s) without implementing any other changes to the existing plant(s); (d) Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s). (e) Integrate a BESS together with a Greenfield power plant that is operating in coordination with a PSP. The BESS is located at site of the greenfield renewable power plant.	The project entails installing a new grid-connected renewable wind power project without the integration of a Battery Energy Storage System (BESS). Therefore, this condition does not apply to the project activity.
3)The methodology is applicable under the following conditions: (a) Hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity; (c) In case of Greenfield project activities applicable under paragraph 7(a) above, the project participants shall demonstrate that the BESS was an integral part of the design of the renewable energy project activity (e.g., by referring to feasibility studies or investment decision documents); (d) The BESS should be charged with electricity generated from the	The proposed project involves installing new wind power plants without integrating a Battery Energy Storage System (BESS). Thus, the mentioned criterion does not apply

associated renewable energy power plant(s). Only during exigencies2 may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section 5.4.4 below. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant during a monitoring period. During the time periods (e.g., week(s), months(s)) when the BESS consumes more than 2 per cent of the electricity for charging, the project participant shall not be entitled to issuance of the certified emission reductions for the concerned periods of the monitoring period. (e) In case the project activity involves PSP, the PSP shall utilize the electricity generated from the renewable energy power plant(s) that is operating in coordination with the PSP during pumping mode	
4)In case of hydro power plants, one of the following conditions shall apply: a)The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or b)The project activity is implemented in an existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (7) is greater than 4 W/m2; or c)The project activity results in new single or multiple reservoirs and the power density calculate equation (7), is greater than 4 W/m2. d)The project activity is an integrated hydro power project involving multiple reservoirs, where the power density of any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m2, all of the following conditions shall apply. (i)The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii)Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m2 are: a) Lower than or equal to 15 MW; and b) Less than 10 per cent of the total installed capacity of integrated hydro power project.	The proposed project involves the installation of wind power plants/units. Hence, the mentioned criterion is not applicable.
5)In the case of integrated hydro power projects, project proponent shall: a)Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or b)Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability indifferent seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	The proposed project activity involves the installation of wind power plants/units. Therefore, the mentioned criteria are not applicable.
6) In the case of PSP, the project participants shall demonstrate in the PDD that the project is not using water which would have been used to generate electricity in the baseline.	The proposed project activity involves installing wind power plants/units. Therefore, the specified criteria are not applicable.
7)The methodology is not applicable to: a)Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass-fired power plants;	The proposed project activity involves installing wind power plants/units. Therefore, the specified criteria are not applicable.

8)In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance	The proposed project activity involves installing wind power plants/units. Therefore, the specified criteria are not applicable.

C.3 Applicability of double counting emission reductions >>

To avoid double counting of emission reductions in the project, the following measures are implemented:

• The project can be distinctly identified through its precise location coordinates.

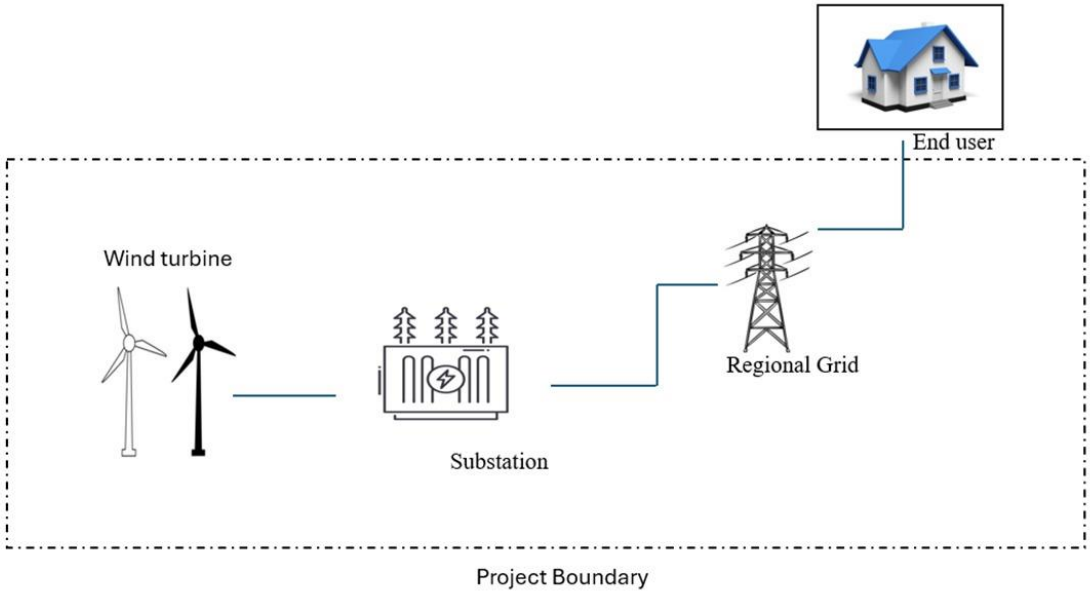
• It is equipped with a dedicated commissioning certificate and connection point.

• Energy meters specifically assigned to the project developer's consumption point are linked with the project.

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

According to the applied methodology ACM0002, Version 22.0, the project boundary encompasses both the Wind Turbine Generator (WTG) and all power plants physically connected to the same electricity system as the project power plant.

Source		Gas	Included?	Justification/Explanation
Baseline	CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main Emission Source
		CH_4	No	Minor Emission Source
		N_2O	No	Minor Emission Source
		Other	No	No other GHG emissions were emitted from the project
Project	Greenfield Wind Power Project Activity	CO_2	No	The Project activity does not emit CO2
		CH_4	No	Project activity does not emit CH_4
		N_2O	No	Project activity does not emit N_2O
		Other	No	No other emissions are emitted from the project



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C.5. Establishment and description of baseline scenario (UCR Protocol) >>

As per the endorsed consolidated methodology ACM0002, Version 22.0, when the project activity entails the installation of a new grid-connected renewable power plant/unit, the baseline scenario is described as follows: "**The baseline scenario is electricity delivered to the grid 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.**"

Emission reductions are calculated as follows:

$$ERy = BEy - PEy \qquad \textbf{(Eq. 1)}$$

Where,

ERy = Emissions reductions in year y (t CO2)
BEy = Baseline emissions in year y (t CO2)
PEy = Project emissions in year y (t CO2)

Baseline Emissions

The baseline emissions encompass solely the CO2 emissions stemming from electricity generation in power plants displaced by the project activity. The methodology operates on the assumption that any electricity generation exceeding baseline levels would have originated from established grid-connected power plants and the integration of new grid-connected power plants.
The Baseline emissions in year y can be calculated as follows:

$$BEy = EGPJ,y \times EFGrid,y, \qquad \textbf{(Eq. 2)}$$

Where,

BEy = Baseline emissions in year y (t CO2)

EGPJ,y= Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)
EFGrid,y = Grid emission factor in year y (t CO2/MWh)

[1]A "grid emission factor" denotes the CO2 emission factor (measured in tCO2/MWh) associated with each unit of electricity supplied by the grid. A grid emission factor of 0.9 tCO2/MWh is recommended for the years 2013-2023 as a conservative estimate for Indian projects not previously verified under any GHG program. Similarly, for the year 2024, a grid emission factor of 0.757 tCO2/MWh is to be applied. These conservative factors are used to calculate emission reductions.

Regarding project emissions, ACM0002 version 22.0 specifies that only emissions related to fossil fuel combustion, emissions from the operation of geothermal power plants due to the release of non-condensable gases, and emissions from water reservoirs of hydroelectric plants should be taken into account. Since the project involves a wind power project, emissions from renewable energy plants are negligible
Hence (PEy = 0).

Leakage, as outlined in ACM0002 version 22.0, is considered to be zero as there is no transfer of energy-generating equipment in the project activity.
Hence (LEy = 0).

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.

Year	Net Quantity of net electricity generation supplied by the project activity to the grid in year y	Emission Factor	Baseline Emission	Project emissions or actual net GHG removals by sink	Emission reductions or net anthropogenic GHG removals by sinks
	[MWh]	(tCO2e/MWh)	(tCO2e)	(tCO2e)	(tCO2e)
		[EFy]	[Bey]= [EGfacility, y]* [EFy]	[PEy]	[ERy]=[Bey]-[Pey]-[Ley]
2014	63,926.80	0.9	57534.00	0	57534.00
2015	1,09,194.93	0.9	98275.00	0	98275.00
2016	1,14,740.50	0.9	103266.00	0	103266.00
2017	97,395.76	0.9	87656.00	0	87656.00
2018	90,683.08	0.9	81614.00	0	81614.00
2019	75,506.03	0.9	67955.00	0	67955.00
2020	66,001.95	0.9	59401.00	0	59401.00
2021	66,274.95	0.9	59647.00	0	59647.00
2022	69,675.55	0.9	62707.00	0	62707.00
2023	90,565.83	0.9	81509.00	0	81509.00
2024	86,523.55	0.757	65498.00	0	65498.00
Total	**8,43,965.35**		**825062.00**		**825062**

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

C.6. Prior History>>

1. The project activity initially submitted a Prior Consideration under the Clean Development Mechanism (CDM) of the UNFCCC for registration on 06/12/2012. However, the project proponent did not pursue CDM registration thereafter. Currently, the project is being applied under UCR to issue carbon credits and receive carbon financing.

2. The project has not been applied under any other greenhouse gas (GHG) mechanism except for CDM. Additionally, for any period under UCR, CDM validation[2] and verifications have not been conducted, and no credits have been issued. Therefore, the project will not cause double accounting of carbon credits (i.e., COUs).

C.7. Monitoring period number and duration>>

Issuance Period	: 10 years, 7 months, 27 days
Crediting Period	: 13/05/2014 to 31/12/2024
Monitoring Period	: 13/05/2014 to 31/12/2024

C.8. Changes to start date of crediting period >>

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

C.9. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

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

C.10. Monitoring plan>>

Data/Parameter	$EF_{Grid,y}$
Data unit	tCO2 /MWh
Description	A "grid emission factor" denotes the CO2 emission factor (measured in tCO2/MWh) associated with each unit of electricity supplied by the grid. A grid emission factor of 0.9 tCO2/MWh is recommended for the years 2013-2023 as a conservative estimate for Indian projects not previously verified under any GHG program. Similarly, for the year 2024, a grid emission factor of 0.757 tCO2/MWh is to be applied. These conservative factors are used to calculate emission reductions

[2] https://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html?s=1220

Source of data Value(s) applied	UCRCoUStandardAug2022updatedVer6_090822220127104470.pdf (rackcdn.com) UCR CoU Standard Update: 2024 Vintage UCR Indian Grid Emission Factor Announced | by Universal Carbon Registry | Jan, 2025 | Medium
Measurement methods and procedures	-
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 NEWNE 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 [3](considered as per provision of CEA India). The net electricity generated by the project activity will be calculated.
Value Applied	**843965.35MWh**
Monitoring frequency:	Monthly The net energy exported to the grid is measured every month using calibrated energy meter by the State Electricity Board authorities in the presence of the project implementer or its representatives. The meter/s shall be jointly inspected and sealed by authorised representatives of the company and the state utility. Measuring procedure: Will be measured by an export-import energy meter. The net electricity exported by the project plant would either be directly sourced as a measured parameter or be calculated by deducting the amount of imported electricity from the total amount of exported electricity. Accuracy class of energy meter: 0.2s Calibration Frequency: As per the Central Electricity Authority the testing and calibration frequency should be once in five years.
QA/QC procedures:	Continuous monitoring, hourly measurement monthly recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.2s.
Any comment:	-

[3]meter_reg.pdf (cea.nic.in)

Appendix> Meter Details

Main Meter

Check Meter

Calibration Details

The Meter has been changed from old (13195816- Main Meter) & (1395827-Check Meter) to New (23004274- Main Meter) & (23004270- Check Meter) in July' 2023.

Meter Details	Calibration date	Calibration validity	Calibration delay
(13195816- Main Meter) & (1395827-Check Meter)	**29-11-2014**	**19-03-2018**	13-05-2014 to 29.11.2014
	20-03-2018	**16-09-2022**	
	17-09-2022	**17-09-2027**	

Site	Meter Details		Calibration Date	Calibration validity
	Main Meter	Check Meter		
Rayabag	**23004274**	**23004270**	**1/07/2023**	**1/07/2028**

There is calibration delay for the monitoring period mentioned above. The error factor has been applied in net export values for delay period as meters were not calibrated as per the calibration frequency. As per VVS requirement: error factor of "±0.2%" should be applicable for both export & import i.e. the measured values. However, net electricity generation is considered as per the registered monitoring plan, the separate export and import values are not available. Hence being conservative and to account for the error for both export & import, a cumulative error of "-0.4%" on net electricity generation has been applied for delay period.

https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf