



MONITORING REPORT

CARBON OFFSET UNIT (CoU) PROJECT



Title : 4.5 MW Small Scale Wind Power Project by Nutan
Wind Farms in Gujarat, India

Version : 1.0

MR Date : 30/05/2025

First CoU Issuance Period : 10 Years and 9 Months

First Monitoring Duration : 07/03/2014 to 31/12/2024



Monitoring Report (MR)

CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION

Title of the project activity	4.5 MW Small Scale Wind Power Project by Nutan Wind Farms in Gujarat, India
UCR Project Registration Number	503
Version	1.0
Completion date of the MR	30/05/2025
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Duration of this monitoring Period: 10 Years and 9 Months First and last days included (07/03/2014 to 31/12/2024)
Project participants	Creduce Technologies Private Limited (Aggregator) M/s Nutan Wind Farms (Project Owner)
Host Party	India
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I. D: “Grid connected renewable electricity generation”, version 18
Sectoral Scope	01 Energy industries (Renewable/Non-Renewable Sources)
	2014 : 5,873 CoUs (5,873 tCO_{2e}) 2015 : 8,234 CoUs (8,234 tCO_{2e}) 2016 : 7,289 CoUs (7,289 tCO_{2e}) 2017 : 7,558 CoUs (7,558 tCO_{2e}) 2018 : 7,167 CoUs (7,167 tCO_{2e}) 2019 : 7,660 CoUs (7,660 tCO_{2e}) 2020 : 5,721 CoUs (5,721 tCO_{2e}) 2021 : 6,537 CoUs (6,537 tCO_{2e}) 2022 : 5,886 CoUs (5,886 tCO_{2e})

	2023 : 6,157 CoUs (6,157 tCO ₂ e)
	2024 : 4,945 CoUs (4,945 tCO ₂ e)
Total:	73,027 CoUs (73,027 tCO ₂ e)

SECTION - A - Description of project activity

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

The project activity titled under UCR as “4.5 MW Small Scale Wind Power Project by Nutan Wind Farms in Gujarat, India” (hereinafter referred to as the project proponent, ‘PP’) is a grid-connected renewable power generation activity located in Gujarat. It involves the installation and operation of three Wind Turbine Generators (WTGs), each with a capacity of 1.5 MW, resulting in a total aggregated capacity of 4.5 MW. The WTGs are manufactured and supplied by Suzlon Energy Ltd. in the district Devbhumi Dwarka of the state of Gujarat in India. The project is an operational activity with continuous reduction of GHG, currently being applied under “Universal Carbon Registry” (UCR).

A.1.1 Purpose of the project activity:

The project activity aims to harness the kinetic energy of wind (a renewable source) to generate electricity. The project activity was initially commissioned to M/s Divine Wind Farms but was later transferred to M/s Nutan Wind Farms, with a MoU signed between them on 14/11/2018. A wheeling agreement is signed between M/s Nutan Wind Farms and Gujarat Urja Vikas Nigam Limited (GUVNL) i.e., state discom, under the Power Purchase Agreement (PPA) signed between the PP and the utility. Currently, the NEWFNE grid is connected to large numbers of fossil fuel-based power plants. Hence, project activity is displacing the gross electricity generation i.e., 82,186 MWh from the NEWNE grid, which otherwise would have been imported from the NEWNE grid.

The WTG under the project activity was commissioned by the Gujarat Energy Development Agency (GEDA), Government of Gujarat, India.F

The project activity doesn't involve any GHG emission sources. The annual and the total CO₂e emission reduction by the project activity over the defined monitoring period is as per **Annexure I**.

A.1.2 Description of the installed technology and equipment:

The project activity involves one wind turbine generator (WTG) having a capacity of 4.5 MW manufactured and supplied by Suzlon Energy Ltd. The average life of the generator is around 20 years as per the equipment supplier's specification. The other salient features of the technology are:

The wind turbine is used to produce electricity using the kinetic energy of the wind. This is transformed into electrical energy using wind turbines or wind energy conversion systems. Wind first hits a turbine's blades, causing them to rotate and turn the turbine connected to them. That changes the kinetic energy to rotational energy, by moving a shaft which is connected to a generator, and thereby producing electrical energy through electromagnetism.

Below is a description of the different components of a Wind Turbine Generator.

1. **Main Tower:** The main support tower is made of steel, finished in a number of layers of protective paint to shield it against the elements. The tower is tall enough to ensure the rotor blade does not interfere with normal day-to-day operations at ground level.
2. **Rotor Blades:** The rotor blades are the three (usually three) long thin blades that attach to the hub of the nacelle. These blades are designed to capture the kinetic energy in the wind as it passes,

and convert it into rotational energy.

3. **Nacelle:** The nacelle is the ‘head’ of the wind turbine, and it is mounted on top of the support tower. The rotor blade assembly is attached to the front of the nacelle. It contains all the major parts of the WEG.
4. **Hub:** The hub of the wind turbine is the component that connects the blades to the main shaft and ultimately to the rest of the tower. The hub transmits and withstands all the loads generated by the blades.
5. **Main Shaft:** It is a piece of metal in the form of a tube that constitutes the most important spinning constituent since it conveys the energy from the wind turbine blades to the other parts of the wind turbine.
6. **Gear Box:** A gearbox is often used in a wind turbine to increase the rotational speed from a low-speed main shaft to a high-speed shaft connecting with an electrical generator. Gears in wind turbine gearboxes are subjected to severe cyclic loading due to variable wind loads that are stochastic in nature.
7. **Brake:** A wind turbine rotor brake is a brake placed next to the gearbox that reduces the rotational speed of the blade assembly, fixes the blade so that it does not rotate in the case of power transmission maintenance or power generator rest, and in an emergency.
8. **Turbine generator:** The turbine generator is the component that turns the rotational energy in the high-speed output shaft from the gearbox into an electrical current. The electrical principle of electromagnetic induction shows that while a magnet is moving past a coil of wire, an electric current is created (or “induced”) in the wire.

A.1.3 Relevant dates for the project activity (e.g., construction, commissioning, continued operation periods, etc.)

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

UCR Project ID : 503
Start Date of Crediting Period : 07/03/2014
The project was commissioned : 07/03/2014
on

The wind turbines are commissioned as per the below table

Sr. No.	Name Of PP	District	WTG Number	Commissioning Date
1	M/S Nutan Wind Farm	Devbhumi Dwarka	SEL/1500/13-14/3422	11/03/2014
2	M/S Nutan Wind Farm	Devbhumi Dwarka	SEL/1500/13-14/3423	07/03/2014
3	M/S Nutan Wind Farm	Devbhumi Dwarka	SEL/1500/13-14/3424	07/03/2014

A.1.4 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 are as follows:

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	07/03/2014
Carbon credits claimed up to	31/12/2024
Total ERs generated (tCO ₂ e)	73,027 tCO ₂ e
Leakage Emission	0
Project Emission	0

A.1.5 Baseline Scenario

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”.**

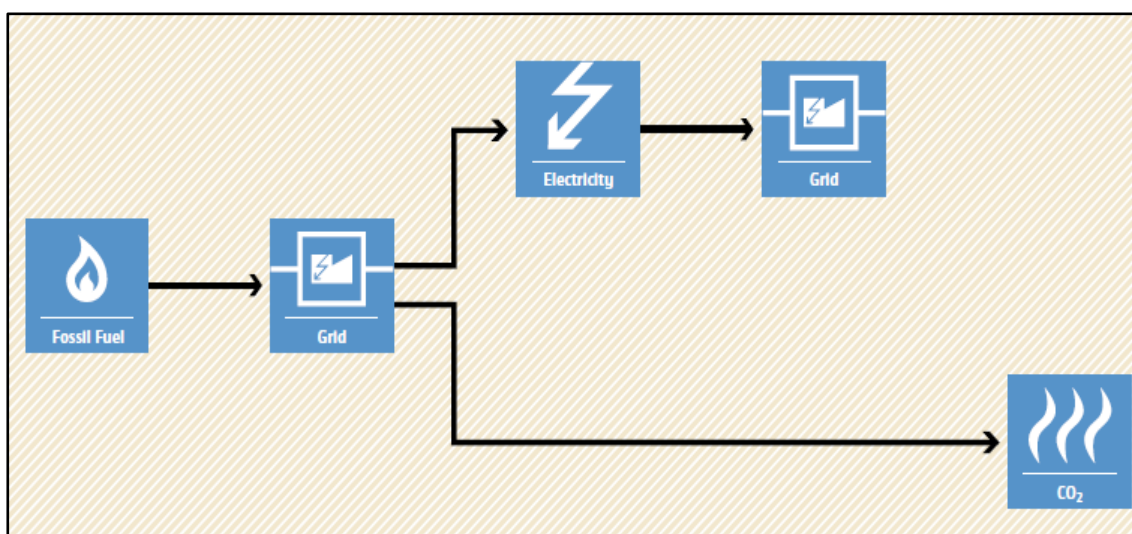


Figure 1 Baseline Scenario

A.2 Location of Project Activity

The project location is situated at village – Vinjalpur, Taluka – Jamkhambhaliya, Dist – Devbhumi Dwarka in the state of Gujarat. The nearest airport Facilities The project site is well connected by district and village roads to the nearest town. The geographic co-ordinates of the project locations have been provided below.

The representative location map is included below:

Sr. No.	Name Of PP	District	WTG Number	Pinpoint Location
1	M/S Nutan Wind Farm	Devbhumi Dwarka	V14 SEL/1500/13-14/3422	22°10'10.5"N 69°36'27.9"E
2	M/S Nutan Wind Farm	Devbhumi Dwarka	V15 SEL/1500/13-14/3423	22°09'58.6"N 69°36'11.5"E
3	M/S Nutan Wind Farm	Devbhumi Dwarka	V17 SEL/1500/13-14/3424	22°09'24.3"N 69°36'30.8"E

The representative location map is included below:

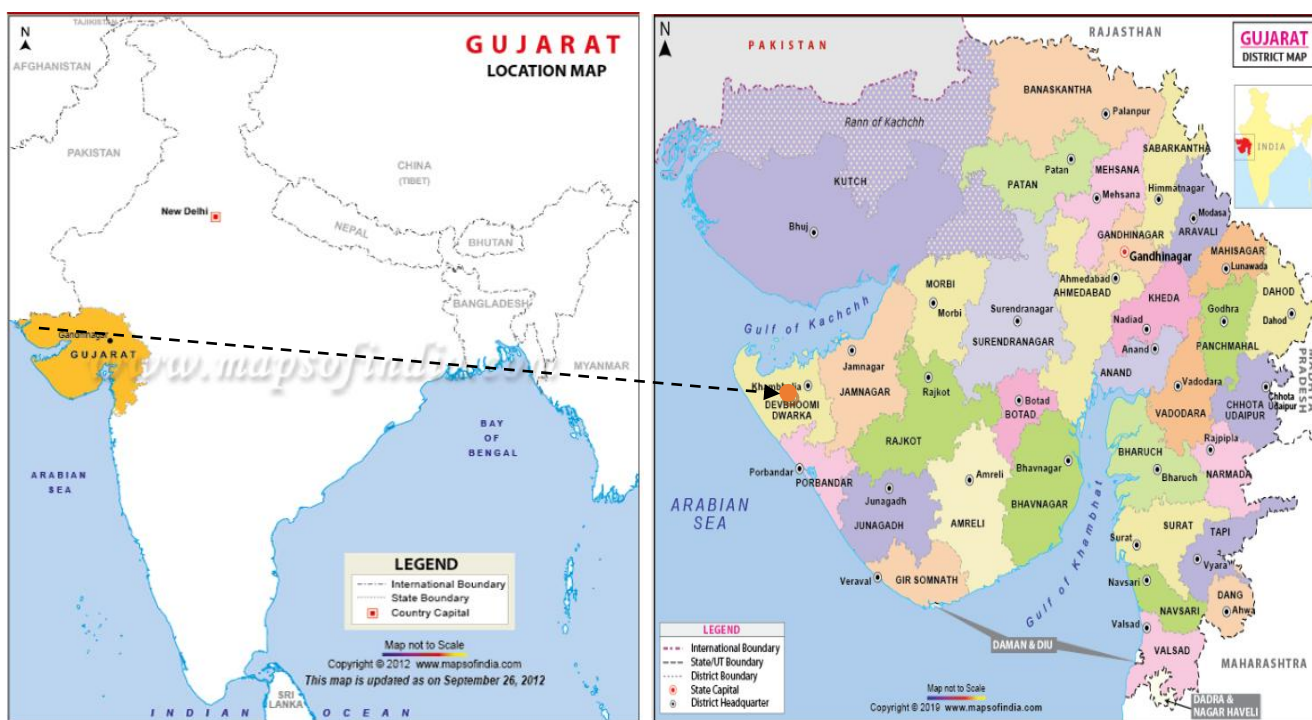


Figure-1- Location of the project activity (courtesy: google images and www.mapofindia.com)

A.3 Parties and project participants

Party (Host)	Participants
India	Creduce Technologies Private Limited (Aggregator) Contact person : Shailendra Singh Rao Mobile : +91 9016850742, 9601378723 Address : 2-O-13,14 Housing Board Colony, Banswara, Rajasthan -327001, India M/s Nutan Wind Farms (Project Owner) Address: 301, Karishma Complex, Stadium Circle, C. G. Road, Ahmedabad, Gujarat - 380009, India.

A.4 Methodologies and standardized baselines

Sectoral Scope : 01 Energy industries (Renewable/Non-Renewable Sources)

Type : Renewable Energy Projects

Category : AMS-I. D: “Grid connected renewable electricity generation”¹, Version 18

A.5 Crediting period of project activity

Start date of the crediting period: 07/03/2014

Crediting period corresponding to this monitoring period: 10 Years and 9 Months

07/03/2014 to 31/12/2024 (Both dates are inclusive)

A.6 Contact information of responsible persons/entities

Contact person : Shailendra Singh Rao
Mobile : +91 9016850742, 9601378723
Address : 2-O-13,14 Housing Board Colony,
Banswara, Rajasthan -327001, India.

¹ <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

SECTION - B - Implementation of project activity

B.1 Description of implemented registered project activity

B.1.1 Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN

The project consists of 3 WTG with a capacity of 4.5 MW which was implemented and commissioned by the Gujarat Energy Development Agency (GEDA), Government of Gujarat at District Devbhumi Dwarka, Gujarat. M/s Nutan Wind Farms is the owner of this project. The project generates clean energy by utilizing the kinetic energy of wind.

B.1.2 For the description of the installed technology, technical process, and equipment, include diagrams, where appropriate

The project activity involves three Wind Turbine Generator which is manufactured and supplied by Suzlon Energy Ltd. with an installed aggregate capacity of 4.5 MW. The connectivity of the WTG is to a central Monitoring Station (CMS) through a high-speed WLAN modem or fiber optic cable which helps in providing real-time status of the turbine at CMS with easy GUI (Graphical User Interface) and the ability to monitor the functioning of the turbine from CMS. The life of the WTG is 20 years as per manufacturer specifications.

Technical details for the turbine installed at Medi with a total capacity of 4.5 MW manufactured by Suzlon Energy Ltd. are as follows:

Make of WTG	SUZLON
Total number of wind turbine	3
Capacity of Each Wind Turbine Generator	1500kW
Total Capacity of Windfarm	4.50 MW

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

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

Rational: As per ‘Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)’², the final document on the revised classification of Industrial Sectors under Red, Orange, Green and White Categories (11/07/2024), has been declared that Wind project activity falls under the “White category”. White Category projects/industries do not require any Environmental Clearance such as ‘Consent to Operate’ from PCB as such project does not lead to any negative environmental impacts.

²<https://cpcb.nic.in/openpdf.php?id=TGF0ZXN0RmlsZS9fMTczNzYxMzk2OV9tZWVpYXBob3RvMTEzODMucGRm>

Additionally, as per Indian Regulations, Environmental and Social Impact Assessment is not required for Wind Projects.

The Government of India has stipulated the following indicators for sustainable development in the interim approval guidelines for such projects which are contributing to GHG mitigations. The Ministry of Environment, Forests & Climate Change, has stipulated economic, social, environmental, and technological well-being as the four indicators of sustainable development. It has been envisaged that the project shall contribute to sustainable development using the following ways:

Social well-being: The project would help in generating direct and indirect employment benefits accruing out of ancillary units for manufacturing towers for the erection of the wind turbine generator and for maintenance during the operation of the project activity. It will lead to the 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.

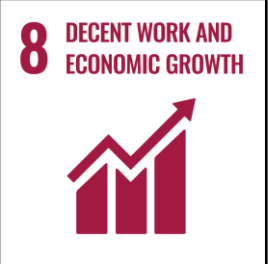
Environmental well-being: The project utilizes Wind energy for generating electricity which is a clean source of energy. The project activity will not generate any air pollution, wind pollution or solid waste to the environment which otherwise would have been generated through fossil fuels. Also, it will contribute to the reduction of GHG emissions. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

Economic well-being: Being a renewable resource, using Wind energy to generate electricity contributes to the conservation of precious natural resources. The project contributes to economic sustainability through the promotion of decentralization of economic power, leading to the diversification of the national energy supply, which is dominated by conventional fuel-based generating units. Locally, improvement in infrastructure will provide new opportunities for industries and economic activities to be set up in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Technological well-being: The project activity leads to the promotion of a 4.5 MW WTG in the region and will promote practice for small-scale industries to reduce the dependence on carbon-intensive grid supply to meet the captive requirement of electrical energy and also increase energy availability and improve quality of power under the service area. Hence, the project leads to technological well-being.

The project activity contributes to the following SDGs;

SDG	Description
Goal 7	➤ The project activity has generated 82,186 MWh of clean energy, which with increased shared will increase the affordability at a cheaper rate to end user. ➤ The project activity will utilize Wind energy (renewal resource) to generate power. The project activity will increase the share of renewable resource-based electricity in global mix of energy

	consumption.
Goal 8 	➤ Decent work and economic growth. The project activity generates additional employment for skilled and unskilled, also the project situated in a remote area will provide employment opportunities to unskilled people from villages. Training on various aspects including safety, operational issues, and developing skill sets will also be provided to employees.
Goal 13 	➤ This 4.5 MW wind power project meets the SDG 13 goal by saving fossil fuel and producing clean energy. ➤ This project has avoided 73,027 tons of CO₂ emissions during this monitoring period. ➤ SDG 13 on clean energy is closely related and complementary. ➤ In a greenfield project, electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants. Thereby the project activity reduces the dependence on fossil fuel-based generation units and as there are no associated emissions with this project it contributes to the reduction of greenhouse gases (GHG) emissions.

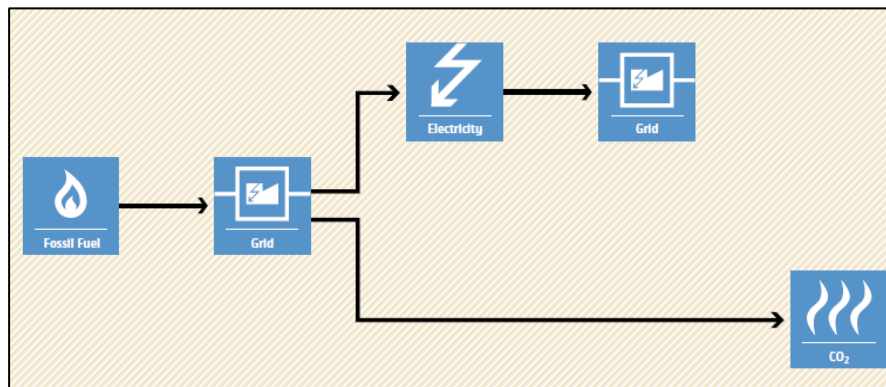
B.3 Baseline Emissions

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

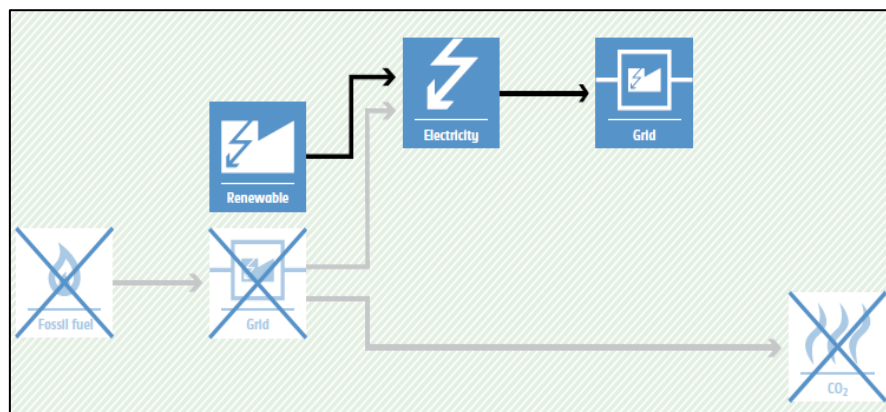
In the absence of the project activity, the equivalent amount of electricity would have been imported from the grid (which is connected to the unified Indian Grid system (NEWNE Grid)), which is carbon intensive due to being predominantly sourced from fossil fuel-based power plants. Hence, the baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario.

Schematic diagram showing the baseline scenario:

Baseline Scenario:



Project Scenario:



Thus, this project activity was a voluntary investment that replaced an equivalent amount of electricity from the Indian grid. The project proponent was not bound to incur this investment as it was not mandatory by national and sectoral policies. Thus, the continued operation of the project activity would continue to replace fossil fuel-based power plants and fight against the impacts of climate change. The PP hopes that revenues from the carbon credits generated will help repay the loans and help in the continued maintenance of this project activity.

B.4. De-bundling

This project activity is not a de-bundled component of a larger 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	:	I-Renewable Energy Projects
Category	:	AMS. I.D. (Title: “Grid connected renewable electricity generation”, version 18)

C.2 Applicability of methodologies and standardized baselines

The project activity involves the generation of grid-connected electricity from the construction and operation of a new Wind Power based project for captive consumption. A wheeling agreement is signed between M/s Nutan Wind Farms and Gujarat Urja Vikas Nigam Limited (GUVNL) i.e., state utility.

The project activity has an 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 the applicability of the 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., a wind power project 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.
2. This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s).	The option (a) of applicability criteria 2 is applicable as project is a Greenfield plant/unit. Hence the project activity meets the given applicability criterion.

3. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a) The project activity is implemented in the existing reservoir, with no change in the volume of the reservoir; or b) The project activity is implemented in the 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) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m².	The project activity involves the installation of 4.5 MW WTG; 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 project is a 4.5 MW Wind power project, i.e., the only component is a renewable power project below 15MW, 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 a 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 distinct from the existing units.	The project is a greenfield 4.5 MW wind power project, i.e., the only component is a 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 project is a greenfield 4.5 MW wind power project, i.e., the only component is a 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	The project is a greenfield 4.5 MW wind power project; hence, this criterion is not applicable to this project activity.

under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.	
9. In case biomass is sourced from dedicate plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	No biomass is involved, the project is only a wind power project and thus the criterion is not applicable to this project activity.

C.3 Applicability of double counting emission reductions

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

C.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.” Thus, the project boundary includes the Wind Turbine Generator 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 Electric 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

C.5 Establishment and description of the baseline scenario

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 WTG to harness the wind energy and use it for captive consumption i.e., the Indian grid system through wheeling and banking 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 from 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 unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO₂/MWh for the 2014-2023 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2024, the combined margin emission factor calculated from CEA database in India results into emission factors of 0.757 as a fairly conservative estimate. Hence, the emission factor 0.9 for 2013-2023 and 0.757 for the year 2024 has been considered to calculate the emission reduction.

C.5.1 Net GHG Emission Reductions and Removals

Thus, $ER_y = BE_y - PE_y - LE_y$

Where:

ER_y = Emission reductions in year y (tCO₂/y)

BE_y = Baseline Emissions in year y (t CO₂/y)

PE_y = Project emissions in year y (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:

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

BE_y = Baseline emissions in year y (tCO₂)

- $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)
- $EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO₂/MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Hence

Baseline Emissions Calculation				
Sr. No	Year	EG _{py} (MWh)	EF _{grid,y}	BE _y
1	2014	6,526.10	0.9	5,873
2	2015	9,149.86	0.9	8,234
3	2016	8,099.15	0.9	7,289
4	2017	8,398.63	0.9	7,558
5	2018	7,964	0.9	7,167
6	2019	8,511.91	0.9	7,660
7	2020	6,357.53	0.9	5,721
8	2021	7,263.69	0.9	6,537
9	2022	6,540.65	0.9	5,886
10	2023	6,842.08	0.9	6,157
11	2024	6,533.23	0.757	4,945
12	BE (tCO ₂ e) for the period 2014 to 2024			73,027

Estimated annual baseline emission reductions (BE_y)

• Project Emissions

As per Paragraph 39 of AMS-I.D. version-18, only emissions associated with fossil fuel combustion, emissions from the operation of geothermal power plants due to the release of non-condensable gases, emissions from a water reservoir of hydro should be accounted for the project emission. Since the project activity is a wind energy project, project emission for renewable energy plants is nil.

Thus, PE = 0

• Leakage Emission

As per paragraph 42 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 zero.

Hence, LE = 0

The actual emission reduction achieved during the first CoU period is calculated below:

Hence Net GHG emission reduction, = 73,027-0-0 = 73,027 tCO₂/year (i.e., 73,027 CoUs/year)

C.6 Prior History

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

C.7 Changes to the start date of crediting

The crediting period under UCR has been considered from the date of the generation of electricity. There is no change in the start date of crediting period.

C.8 Permanent changes from MR monitoring plan, applied methodology, or applied standardized baseline

Not applicable.

C.9 Monitoring period number and duration

Total Monitoring Period: 10 Years and 9 Months

Date: 07/03/2014 to 31/12/2024 (inclusive of both dates).

C.10 Monitoring Plan

The project activity essentially involves the generation of electricity from wind, the employed WTG only converts wind energy into electrical energy and does not use any other input fuel for electricity generation, thus no special ways and means are required to monitor leakage from the project activity. The recording of the electricity fed to the state utility grid is carried out jointly at the incoming feeder of the state power utility (GETCO).

Data and Parameters available:

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 unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO ₂ /MWh for the 2013-2023 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2024, the combined margin emission factor calculated from CEA database in India results into emission factors of 0.757 as a fairly conservative estimate. Hence, the emission factor 0.9 for the 2013-2023 and 0.757 for the year 2024 has been considered to calculate the emission reduction.
Source of data	https://a23e347601d72166dcd6-16da518ed3035d35cf0439f1cdf449c9.ssl.cf2.rackcdn.com//Documents/UCRCoUStandardAug2022updatedVer6_090822220127104470.pdf https://medium.com/@UniversalCarbonRegistry/ucr-cou-standard-update-2024-vintage-ucr-indian-grid-emission-factor-announced-ddb790cdc603

Value applied for 2013 - 2023	0.9
Value applied for 2024	0.757
Measurement methods and procedures	-
Monitoring frequency	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 16, Year 2021) results into higher emission factor. Hence for 2024 vintage UCR default emission factor remains conservative.

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

Data / Parameter	EGPJ _{facility, y}																								
Data unit	MWh																								
Description	Net electricity supplied to the grid facility by the project activity for wheeling between 07/03/2014 to 31/12/2024.																								
Source of data	SLDC Certificate/Energy Generation Report/Monthly Energy Invoices																								
Measurement procedures (if any):	Data Type: Measured Monitoring equipment: Energy Meters are used for monitoring Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually Archiving Policy: Paper & Electronic Calibration frequency: 5 years (as per CEA provision) The Net electricity generation by the WTG is recorded at the sub-station. At the end of every month, SLDC Certificate is generated based on the total monthly electricity exported to the grid. Meter calibration details: <table><tr><td>Location</td><td>Meter No.</td><td>Make</td><td>Accuracy</td><td>Calibration Date</td></tr><tr><td>V14</td><td>GJU70560</td><td>SECURE</td><td>0.2 S</td><td>02/04/2024</td></tr><tr><td>V15</td><td>GJU70561</td><td>SECURE</td><td>0.2 S</td><td>02/04/2024</td></tr><tr><td>V17</td><td>GJU70562</td><td>SECURE</td><td>0.2 S</td><td>02/04/2024</td></tr></table>					Location	Meter No.	Make	Accuracy	Calibration Date	V14	GJU70560	SECURE	0.2 S	02/04/2024	V15	GJU70561	SECURE	0.2 S	02/04/2024	V17	GJU70562	SECURE	0.2 S	02/04/2024
Location	Meter No.	Make	Accuracy	Calibration Date																					
V14	GJU70560	SECURE	0.2 S	02/04/2024																					
V15	GJU70561	SECURE	0.2 S	02/04/2024																					
V17	GJU70562	SECURE	0.2 S	02/04/2024																					

Measurement Frequency:	Monthly
Value applied:	82,186 (Ex-post estimate)
QA/QC procedures applied:	Continuous monitoring, hourly measurement monthly recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.2s
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.

ANNEXURE I (Emission Reduction Calculation)

4.5 MW wind turbine by M/S Nutan Wind Farms												
Month - Wise Energy Delivered to Grid (in kWh)												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	-	-	3,31,496	3,84,673	8,11,098	14,24,784	13,57,886	7,29,552	2,87,035	1,56,022	2,11,519	8,32,032
2015	7,30,995	5,35,808	5,16,972	6,91,502	8,71,656	9,55,478	18,15,962	9,20,446	3,99,307	3,48,397	5,93,898	7,69,447
2016	3,45,715	5,72,783	4,44,566	4,88,174	11,03,157	13,14,233	12,96,937	10,62,781	5,21,941	1,66,504	3,13,462	4,68,902
2017	6,39,684	5,16,226	5,05,081	8,07,145	9,49,844	10,60,339	14,95,932	9,43,121	1,85,617	2,23,311	4,07,408	6,64,927
2018	3,13,005	3,03,489	4,08,757	4,42,298	7,62,357	13,83,692	15,15,307	11,15,387	4,18,881	1,89,822	3,02,600	8,08,412
2019	6,75,950	6,19,623	4,87,771	5,98,044	6,91,236	9,79,152	16,37,757	9,32,746	2,49,015	3,53,109	4,47,677	8,39,839
2020	5,93,078	5,42,344	5,09,304	3,63,904	7,71,180	4,79,267	5,99,382	9,63,976	1,37,077	2,21,845	5,79,301	5,96,878
2021	6,26,492	3,46,277	3,24,130	2,42,584	7,50,691	9,27,383	13,99,446	7,18,560	4,96,538	1,99,054	5,60,271	6,72,269
2022	5,83,265	3,37,777	4,95,141	3,68,207	10,48,302	7,10,983	10,54,004	6,95,120	2,54,061	1,82,154	2,07,421	6,04,215
2023	7,73,993	2,86,731	3,15,444	3,57,042	8,02,298	9,01,350	7,05,273	11,29,307	3,73,743	98,851	3,99,572	6,98,481
2024	4,98,018	4,63,674	4,18,804	3,81,702	8,08,039	7,51,419	8,64,020	9,70,240	1,95,217	82,709	2,75,353	8,24,039
Year-Wise Emission reduction calculation for the project activity												
Year	Total No. of Electricity delivered in kWh		Recommended emission factor tCO2/MWh					Total CoUs generated				
2014	65,26,097		0.9					5,873				
2015	91,49,868		0.9					8,234				
2016	80,99,155		0.9					7,289				
2017	83,98,635		0.9					7,558				
2018	79,64,007		0.9					7,167				
2019	85,11,919		0.9					7,660				
2020	63,57,536		0.9					5,721				
2021	72,63,695		0.9					6,537				
2022	65,40,650		0.9					5,886				
2023	68,42,085		0.9					6,157				
2024	65,33,234		0.757					4,945				
Total CoUs to be issued for the first monitoring period (Year: 2014 to 2024)												73,027