Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: 4.2 MW Wind power project in Gujarat by Shabnam Petrofils Pvt. Ltd.

Version 1.0

Date 19/02/2022

First CoU Issuance Period: 06 years 09 months

Monitoring Period: 15/04/2015 to 31/12/2021

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

Monitoring Report	
Title of the project activity	4.2 MW Wind power project in Gujarat by Shabnam Petrofils Pvt. Ltd.
UCR Project Registration Number	053
Version	1.0
Completion date of the MR	19/02/2022
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Duration of this monitoring Period: (first and last days included (15/04/2015 to 31/12/2021)
Project participants	Creduce Technologies Private Limited (Representator) Shabnam Petrofils Pvt. Ltd. (Project Proponent)
Host Party	India
Applied methodologies and standardized baselines	Applied Baseline Methodology: AMS-I. D: "Grid connected renewable electricity generation", version 18
Sectoral scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of GHG emission reductions for this monitoring period in the registered PCN	2015: 3,214 CoUs (3,214 tCO2eq)
	2016: 8,280 CoUs (8,280 tCO2eq)
	2017: 9,277 CoUs (9,277 tCO2eq)
	2018: 7,762 CoUs (7,762 tCO2eq)
	2019: 8,970 CoUs (8,970 tCO2eq)
	2020: 6,910 CoUs (6,910 tCO2eq)
	2021: 7,790 CoUs (7,790 tCO2eq)
Total:	52,202 CoUs (52,202 tCO2eq)

SECTION A. Description of project activity

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

The proposed project activity with title under UCR "4.2 MW Wind power project in Gujarat by Shabnam Petrofils Pvt. Ltd. in Gujarat", is a grid connected renewable power generation activity which incorporates installation and operation of 2 Wind Turbine Generators (WTGs) having capacity of 2100 kW each with aggregated installed capacity of 4.2 MW. Both WTGs are manufactured and supplied by Suzlon Energy Limited and the WTGs are installed at Porbandar and Kutch districts of Gujarat, India. The project is an operational activity with continuous reduction of GHG, currently being applied under "Universal Carbon Registry" (UCR).

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

The project activity aims to harness kinetic energy of wind (renewable source) to generate electricity. The net generated electricity from the project activity is being wheeled to manufacturing facility of PP in Gujarat through NEWNE grid as per wheeling agreement signed between Dakshin Gujarat Vij Company Limited (DGVCL) and PP.
In pre-project scenario the PP was importing the required electricity from the state utility i.e., DGVCL (is a part of regional grid, earlier known as NEWNE grid) to meet its captive requirement of electrical energy. Currently, NEWNE grid is connected to large numbers of fossil fuel-based power plants. Hence, project activity is displacing the gross electricity generation i.e., 58,002 MWh from the NEWNE grid, which otherwise would have been imported from the NEWNE grid.
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.**

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

The project activity involves installation and operation of Wind Turbine Generator (WTGs) in two phases having capacity of 2100 kW each which are manufactured and supplied by Suzlon Energy Limited. The average life time of the generator is around 20 years as per the equipment supplier specification.
Wind is used to produce electricity using the kinetic energy created by air in motion. 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 the description of 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. **Rotar 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 withstand all the loads generated by the blades.

5. **Main Shaft:** It is a piece of metal in the form of a tube which 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 gearbox 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.

c) 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: 053

Commissioning Date of the project Phase-I (Porbandar)	:	15/04/2015
Start Date of Crediting Period Phase-I (Porbandar)	:	15/04/2015
Commissioning Date of the project Phase-II (Kutch)	:	29/03/2016
Start Date of Crediting Period Phase -II (Kutch)	:	29/03/2016

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	15/04/2015
Carbon credits claimed up to	31/12/2021
Total ERs generated (tCO_{2eq})	52,202 tCO2eq
Leakage	0

e) 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".

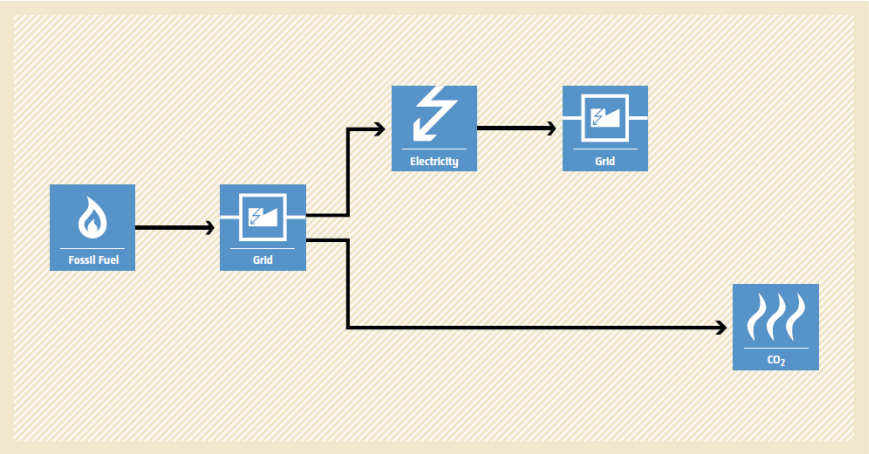


Figure 1 Baseline Scenario

A.2. Location of project activity>>

Country : India
State : Gujarat

WTG ID No. SEL/2100/2014-2015/3542
District : Porbandar
Village : Ratdi

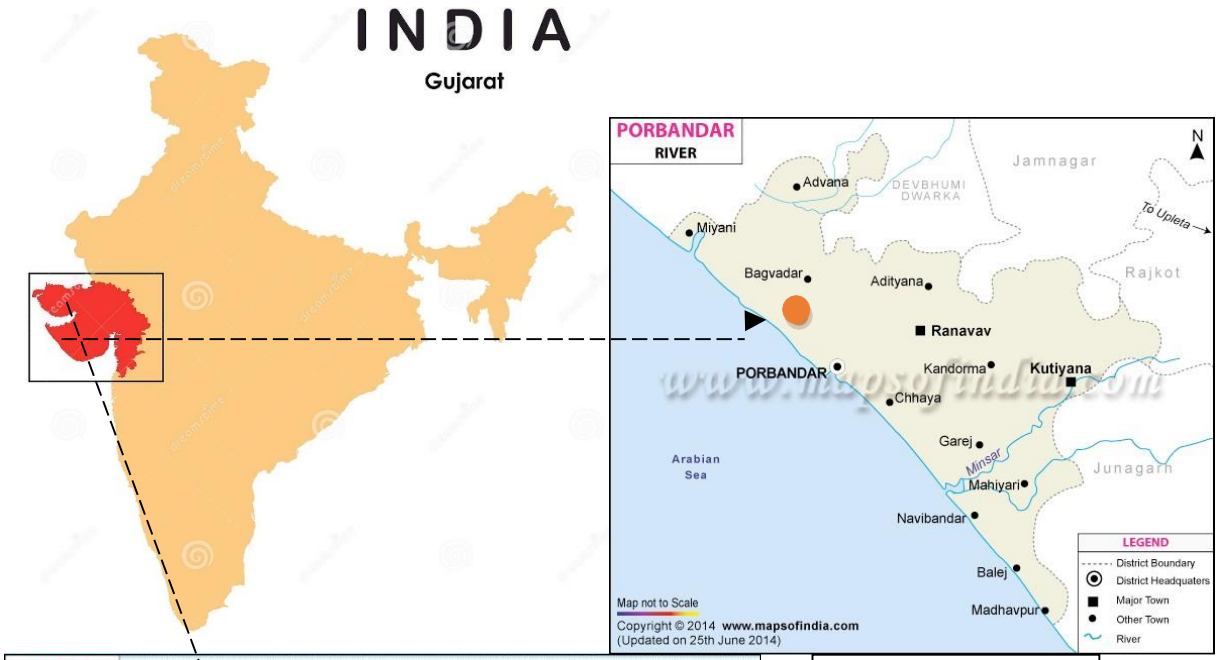
WTG ID No. SEL/2100/2015-16/3756
District : Kutch
Village : Sukhpar

The project location is situated at village-Ratdi, District-Porbandar and village-Sukhpar (Sayndh), District-Kutch in the state of Gujarat. The nearest airport is in Ahmedabad. 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 geographic co-ordinate of Ratdi project locations is 21°44'29.3"N 69°30'03.2"E.

The geographic co-ordinate of Sukhpar project locations is 23°24'38.1"N 68°43'06.4"E.

The representative location map is included below:



Project Location-1

Project Location-2

A.3. Parties and project participants >>

Party (Host)	Participants
India	**Creduce Technologies Private Limited (Representator)** Contact person: Shailendra Singh Rao Mobile: +91 9016850742, 9601378723 Address: 2-O-13,14 Housing Board Colony, Banswara, Rajasthan - 327001, India. **Shabnam Petrofils Private Limited (Developer)** Address: 412, Jolly Plaza, Opp. Athwagate Police Chowky, Surat, Gujarat–395003, India.

A.4. References to 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", version 18

A.5. Crediting period of project activity >>

Start Date of Crediting Period (Phase -I) Porbandar : 15/04/2015 (6 Years and 9 Months)

Start Date of Crediting Period (Phase -II) Kutch : 29/03/2016 (5 years and 10 Months)

Length of the crediting period corresponding to this monitoring period: 06 years 09 months i.e., 15/04/2015 to 31/12/2021 for both projects (Both the dates are inclusive).

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

Name : Shailendra Singh Rao
Contact No : +91 9016850742, 9601378723
E-Mail : shailendra@creduce.tech

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 consists of 2 WTGs with capacity of 2.1 MW each installed in two phases. Wind Turbine which is installed at Ratdi village (WTG ID No. SEL/2100/2014-2015/3542) was commissioned on 15/04/2015 and Wind Turbine which is installed at Sukhpar village (WTG ID No. SEL/2100/2015-16/3756) was commissioned on 29/03/2016 by Gujarat Energy Development Agency (GEDA), Government of Gujarat. The project generates clean energy by utilizing the kinetic energy of flowing wind.

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

Wind Turbines are manufactured and supplied by Suzlon Energy Limited with an aggregate installed capacity of 4.2 MW. The connectivity of all the WTGs is to a Central Monitoring Station (CMS) through high-speed WLAN modem or fibre optic cable which helps in providing real time status of the turbine at CMS with easy GUI (Graphical User Interface) and ability to monitor the functioning of the turbine from CMS. The life time of the WTG is 20 years as per manufacturer specifications.

Technical details of the machines installed are explained below:

Parameter	S97-90M (WTG ID No. SEL/2100/14-15/3542) Installed at Porbandar	
Operating Data	Wind Class	IEC IIIA
	Rated Power	2,100kw
	Cut-in Wind Speed	3.5 m/s
	Rated Wind Speed	11 m/s
	Cut-out Wind Speed	20 m/s
Rotor	Rotor Diameter	97 m
	Swept Area	7,386 m^2
Generator	Frequency	50 / 60 Hz
	Type	Asynchronous 3 phase induction generator with slip ring operated with rotor circuit inverter system (DFIG)
Tower	hub Height	90 m
	Type	Tubular Steel Tower / Hybrid Lattice - tubular
Blade	Suzlon Make	SB47

Parameter	S97-120M (WTG ID No. SEL/2100/2015-16/3756) Installed at Kutch	
Operating Data	Wind Class	IEC IIIA
	Rated Power	2,100kw
	Cut-in Wind Speed	3.5 m/s
	Rated Wind Speed	11 m/s
	Cut-out Wind Speed	20 m/s
Rotor	Rotor Diameter	97 m
	Swept Area	7,386 m^2
	Frequency	50 / 60 Hz
	Type	Asynchronous 3 phase induction generator with slip ring operated with rotor circuit inverter system (DFIG)
	hub Height	120 m
	Type	Tubular Steel Tower / Hybrid Lattice - tubular
	Suzlon Make	SB47

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

Indian economy is highly dependent on “Coal” as fuel to generate energy and for production processes. Thermal power plants are the major consumers of coal in India and yet the basic electricity needs of a large section of population are not being met. This results in excessive demands for electricity and places immense stress on the environment.
Changing coal consumption patterns will require a multi-pronged strategy focusing on demand, reducing wastage of energy and the optimum use of renewable energy (RE) sources. This project is a greenfield activity where grid power is the baseline. The renewable power generation is gradually contributing to the share of clean & green power in the grid; however, grid emission factor is still on higher side which defines grid as distinct baseline.
The Government of India has stipulated following indicators for sustainable development in the interim approval guide lines for such projects which are contributing to GHG mitigations. The Ministry of Environment, Forests & Climate Change, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. It has been envisaged that the project shall contribute to sustainable development using the following ways:

Social well-being: The project would help in generating direct and indirect employment benefits accruing out of ancillary units for manufacturing towers for erection of the Wind Turbine Generator and for maintenance during operation of the project activity. It will lead to development of infrastructure around the project area in terms of improved road network etc. and will also directly contribute to the development of renewable infrastructure in the region.
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 reduction GHG emissions. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

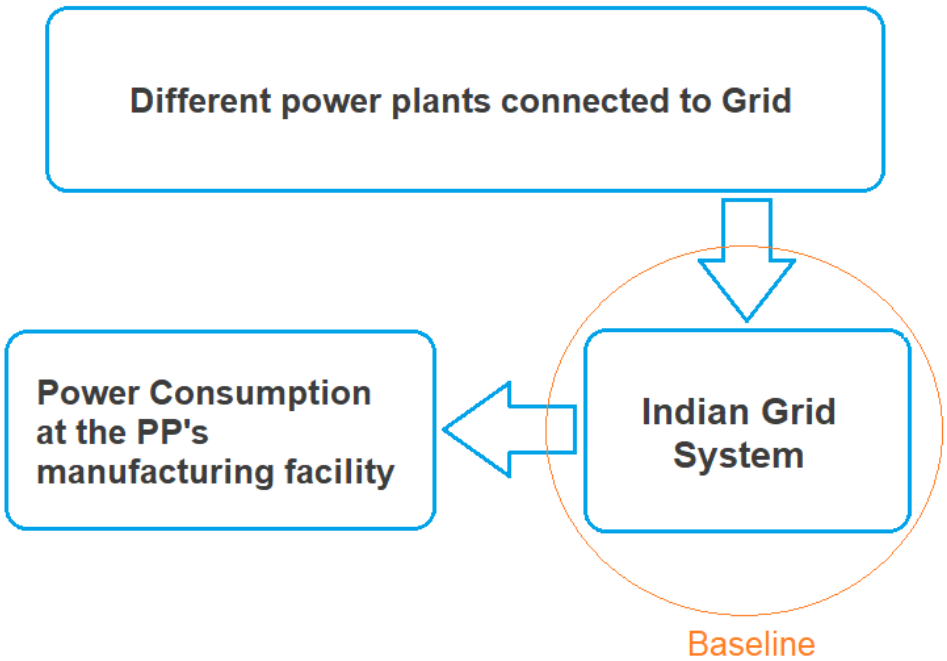
Economic well-being: Being a renewable resource, using Wind energy to generate electricity contributes to conservation precious natural resources. The project contributes to the economic sustainability through promotion of decentralization of economic power, leading to diversification of the national 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 setup in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Technological well-being: The project activity leads to the promotion of 2.1 MW Wind Turbine Generators into 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 increasing energy availability and improving quality of power under the service area. Hence, the project leads to technological well-being.

B.3. Baseline Emissions>>

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

Baseline Scenario:



Thus, this project activity was a voluntary investment which replaced 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 Project Proponent hopes that carbon revenues from 2015-2021 accumulated as a result of carbon credits generated

will help repay the loans and help in the continued maintenance of this project activity.

B.4. Debundling>>

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

Applied Baseline Methodology: AMS-I.D: "Grid connected renewable electricity generation", version 18

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

The project activity involves generation of grid connected electricity from the construction and operation of a new Wind power-based project and to use for captive purpose via grid interface by wheeling through state electricity board i.e., Dakshin Gujarat Vij Company Limited (DGVCL) under the Power Purchase Agreement (PPA) signed between the Project Proponent (PP) and the utility.
The project activity has installed 2 WTGs of capacity 2.1 MW each 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, Wind, 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 electricity grid (Indian Grid system). Thus, the project activity meets this applicability conditions.
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); or Involve a replacement of (an) existing plant(s).	The Project activity involves the installation of new WTGs 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).

3. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: (a) The project activity is implemented in existing reservoir, with no change in the volume of the reservoir; or (b) The project activity is implemented in existing reservoir, where the volume of the reservoir(s) is increased and the power density as per definitions given in the project emissions section, is greater than 4 W/m^2 . (c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, (e) is greater than 4 W/m2	As the project activity is a Wind Turbine Generator, this criterion is not relevant for the project activity.
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 rated capacity of the project activity is 2 X 2.1 MW with no provision of Co-firing fossil fuel. Hence, meeting with this criterion.
5. 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.
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.	There is no other existing renewable energy power generation facility at the project site. Therefore, this criterion is not applicable.
7. 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.

8. In the case of landfill gas, waste gas, waste water treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid, then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS I. C.: Thermal energy production with or without electricity" shall be explored.	This is not relevant to the project activity as the project involves only Wind power generating units.
9. In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Not biomass is involved, the project is only a wind power project and thus the criterion is not applicable to this project activity.

C.3 Applicability of double counting emission reductions >>

The project was not applied under any other GHG mechanism. Hence 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 Generators and the Indian grid system.

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	**CO_2**	**Yes**	**CO2 emissions from electricity generation in fossil fuel fired power plants**
		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	No CO_2 emissions are emitted from the project
		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

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

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 Turbine Generator to harness the green power from Wind energy and use it for personal requirement (captive consumption). 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 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. Also, for the vintage 2021, the combined margin emission factor calculated from CEA database in India results into same emission factors as that of the default value. Hence, the same emission factor has been considered to calculate the emission reduction.

Net GHG Emission Reductions and Removals

$ERy = BEy – PEy – LEy$

Where:

ER_y = Emission reductions in year y (tCO_2/y)
BE_y = Baseline Emissions in year y ($t CO_2/y$)
PE_y = Project emissions in year y (tCO_2/y)
LE_y = Leakage emissions in year y (tCO_2/y)

Baseline Emissions

Baseline emissions include only CO_2 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 this project activity in year y (MWh).

$EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO_2/MWh has been considered, this is conservative as compared to the combined margin grid emission factor which can be derived from Database of Central Electricity Authority (CEA), India. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Hence, BEy = 58,002 x 0.9 = 52,202 tCO2eq

Project Emissions

As per paragraph 39 of AMS-I.D. (version 18, dated 28/11/2014), for most renewable energy project activities emission is zero.

Hence, PEy = 0

Leakage Emissions

As per paragraph 42 of AMS-I.D. version-18, all projects other than Biomass projects have zero leakage.

Hence, LEy= 0

Total Emission reduction by the project for the current monitoring period is calculated as below:

Hence, ERy= 52,202 – 0 – 0 = 52,202 CoUs

C.6. Prior History>>

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

C.7. Monitoring period number and duration>>

First Monitoring Period: 06 years 09 months
15/04/2015to 31/12/2021 (inclusive of both dates)

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

Crediting period start date is 15/04/2015.

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

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

C.10. Monitoring plan>>

The project activity essentially involves generation of electricity from wind, the employed Wind Turbine Generator can only convert Wind energy into electrical energy and cannot 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).

Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of this project activity in year y.
Source of data Value(s) applied	Wind Energy Certificates issued by GETCO
Procedures	The Net electricity generation by the Wind Turbine Generator is recorded by the Energy meter installed at the substation. At the end of every month, Wind Energy Certificates are issued by GETCO for each substation which indicates the total monthly electricity exported to the grid.
Monitoring frequency	Monthly
Purpose of data	To estimate Baseline Emission

ANNEXURE I (Emission Reduction Calculation)

4.2 MW Wind Power Project by M/S Sabnam Petrofils

Month - Wise Aggregated Energy Delivered (WTG 3542 + WTG 3756) to Grid (in MWh)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2015	0	0	0	100.997	299.270	453.813	961.668	520.374	182.883	211.076	366.909	474.313
2016	325.066	348.389	565.896	715.377	1152.284	1240.576	1609.560	1179.125	777.966	359.643	414.357	511.471
2017	792.303	754.918	647.080	833.550	1038.952	1082.930	1559.455	1120.513	393.552	399.675	664.603	1020.188
2018	454.875	460.309	599.970	519.507	850.404	1298.988	1339.363	901.339	647.002	323.873	477.273	751.073
2019	701.940	732.846	708.977	708.275	860.718	1068.237	1728.881	904.100	404.004	379.787	696.380	1071.988
2020	819.246	666.965	647.920	551.375	824.946	521.396	758.649	851.821	254.258	336.206	646.059	798.554
2021	970.233	387.508	423.933	434.776	853.856	1156.425	1528.883	930.124	589.887	294.066	506.583	579.201

Year-Wise Emission reduction calculation for the project activity

Year	Total No. of Electricity delivered in MWh	Recommended emission factor tCO2/MWh	Total CoUs generated
2015	3,572	0.9	3,214
2016	9,200	0.9	8,280
2017	10,308	0.9	9,277
2018	8,624	0.9	7,762
2019	9,966	0.9	8,970
2020	7,677	0.9	6,910
2021	8,655	0.9	7,790
Total	58,002	0.9	52,202
Total CoUs to be issued for the first monitoring period (Year: 2015 to 2021)			52,202