



Monitoring Report (MR)

CARBON OFFSET UNIT (CoU) PROJECT



Title: 8.8 MW Small Scale Wind Energy Project by Engineered Power Resources India (P) Ltd
UCR Project ID# 184
Version 1.0

Date of MR: 05/07/2022
First CoU Issuance Period: 01/01/2014 to 31/12/2021
Monitoring Period: 01/01/2014 to 31/12/2021

Crediting Period: 8 years 0 months



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

Monitoring Report	
Title of the project activity	8.8 MW Small Scale Wind Energy Project by Engineered Power Resources India (P) Ltd
UCR Project Registration Number	184
Version	1
Completion date of the MR	05/07/2022
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 1.0 Duration of this monitoring Period: (first and last days included (01/01/2014 to 31/12/2021)
Project participants	Engineered Power Resources India (P) Ltd (Project Proponent) Aajeeth Innovation LLP (Aggregator)
Host Party	India
Applied methodologies and standardized baselines	Type I (Renewable Energy Projects) UNFCCC Methodology Category AMS I.D.: “Grid connected renewable electricity generation” Ver 18 UCR Protocol Standard Baseline
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources)
Estimated amount of GHG emission reductions for this monitoring period (MR #1)	2014: 10154 CoUs (10154 tCO _{2eq})
	2015: 7582 CoUs (7582 tCO _{2eq})
	2016: 14116 CoUs (14116 tCO _{2eq})
	2017: 15033 CoUs (15033 tCO _{2eq})
	2018: 12216 CoUs (12216 tCO _{2eq})
	2019: 11019 CoUs (11019 tCO _{2eq})
	2020: 11790 CoUs (11790 tCO _{2eq})
2021: 11070 CoUs (11070 tCO _{2eq})	
Total Emission Reductions in 1st Crediting Period:	92980 CoUs (92980 tCO_{2eq})

SECTION A. Description of project activity

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

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

The purpose of the project activity is to utilize renewable wind energy for generation of electricity. The project activity replaces anthropogenic emissions of greenhouse gases (GHG's) into the atmosphere, which is estimated to be approximately **92980 tCO_{2e}** for this monitoring period, by displacing the equivalent amount of electricity generation through the operation of existing fuel mix in the grid comprising mainly fossil fuel based power plants and future capacity expansions connected to the grid.

In the absence of the project activity the equivalent amount of electricity would have been generated from the connected/ new power plants in the Southern grid, which are/ will be predominantly based on fossil fuels. Whereas the electricity generation from operation of wind electric generators (WEGs) is emission free.

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

The project activity titled, **8.8 MW Small Scale Wind Energy Project by Engineered Power Resources India (P) Ltd.** is located in **Villages:** Kasikku Vaithan, Senadamngalam, Kulaiyaneri, **Talukas:** Alangulam, Sankarankovil, Veerakeralampudur, **District:** Tirunelveli, **State:** Tamil Nadu, **Country:** India.

The project activity is a 8.8 MW (2 x 500 KW, 13 x 600 KW) bundle of 15 nos WEGs, of VESTAS RRB make, installed in phases at various locations within the state of Tamil Nadu. The generated electricity from the WEGs is connected to the state electric utility grid, namely Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and is then distributed to captive users in the same state.

The bundled wind power project is an operational activity with continuous reduction of GHGs, currently being applied for voluntary carbon offset units (CoUs) under “Universal Carbon Registry” (UCR).

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

UCR Project ID: 184

Start Date of Crediting Period: 01/01/2014

Project Commissioned: **21/09/2005**

The project activity is promoted by M/S **Engineered Power Resources India (P) Ltd** (EPRIPL, herein after called as project proponent ‘PP’).

The project activity is installation and operation of 15 nos WEGs (2 x 500 KWh, 13 x 600 Kwh).

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	01/01/2014
Carbon credits claimed up to	31/12/2021
Total ERs generated (tCO _{2eq})	92980 tCO _{2eq}
Leakage	0

e) Baseline Scenario>>

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

- *the electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of fossil fuel-based grid-connected power plant and fed into the Southern grid, which is carbon intensive due to use of fossil fuels.*

A.2. Location of project activity>>

Country : India

Villages: Kasikku Vaithan, Senadamngalam and Kulaiyaneri

Talukas: Alangulam, Sankarankovil and Veerakeralampudur

District: Tirunelveli

State: Tamil Nadu

HTSC number	Location	Lat - long
1396	Kasikku Vaithan Village, Nettu Panchayath, Alangulam Taluk, Tirunelveli District, Tamil Nadu, Survey number 38/4	8°56'02"N 77°32'17"E
1464	Kasikku Vaithan Village, Nettu Panchayath, Alangulam Taluk, Tirunelveli District, Tamil Nadu, Survey number 38/1	8°56'09"N 77°32'16"E
2040	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 623/5, 623/6	9°03'22"N 77°24'57"E
2041	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 623/5, 693/6, 699/3A & 699/4	9°03'20"N 77°24'44"E
2181	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, survey number 721/7 & 721/8	9°03'33"N 77°25'00"E
2180	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 708/4B & 708/5	9°03'06"N 77°24'56"E
2179	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 622/1, 622/4, 622/5, 624/4, 629/16	9°03'21"N 77°25'37"E
2473	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 454/13A, 13B, 14A, 14B, 15A & 15B, 454/9B, 9C, 8A & 8B, 454/3.4.5.6.7	8°59'41"N 77°25'08"E
2474	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey number 274/1	9°00'00"N 77°25'21"E
2475	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 422/5 & 422/6	8°59'51"N 77°25'09"E
2476	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey number 427/8	8°59'56"N 77°24'48"E
2519	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 5/5B, 5/5C, 5/6B, 5/7B, 5/7C, 23/3 & 25/1B	9°01'07"N 77°25'12"E
2520	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 405/4, 420/1A, 420/2, 420/4A & 420/4B	9°00'05"N 77°25'08"E
2532	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 41/2A, 41/3	9°01'12"N 77°25'27"E
2533	Kulaiyaneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 40/2, 40/3A, 40/3B & 40/4A	9°01'22"N 77°25'28"E



A.3. Parties and project participants >>

Party (Host)	Participants
India	Project Proponent: Engineered Power Resources India (Pvt) Limited Aggregator: Aajeeth Innovation LLP UCR ID# 356526225 Email: aajeeth@freezingsun.in

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

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

TYPE I - Renewable Energy Projects

CATEGORY- AMS-I.D. - “Grid connected renewable electricity generation”, Version 18.0

This methodology comprises of activities that include the construction and operation of a power plant that uses renewable energy sources and supplies electricity to the grid (Greenfield power plant).

A.5. Crediting period of project activity >>

First CoU Issuance Period: 01/01/2014 to 31/12/2021

Monitoring Period: 01/01/2014 to 31/12/2021

Crediting Period: 8 years 0 months

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

Aajeeth Innovation LLP

UCR ID# 356526225

Email: aajeeth@freezingsun.in

SECTION B. Implementation of project activity

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

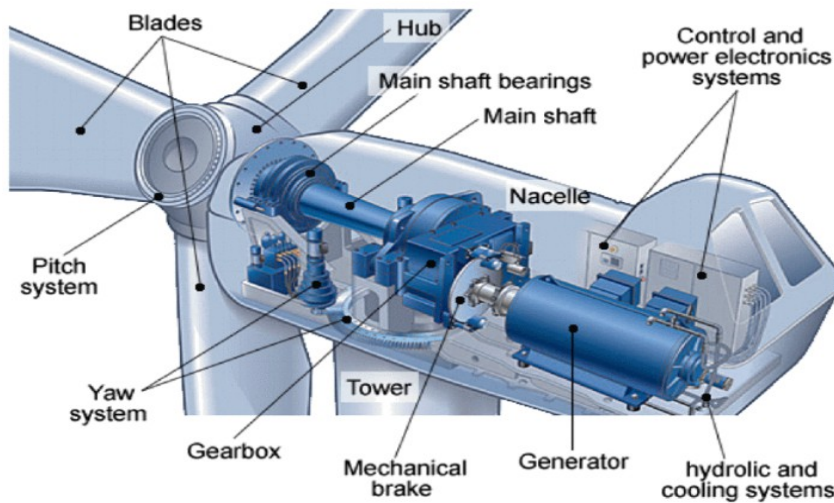
a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

Sl. No.	HTSC number	Location	Commissioning Date	Capacity
1	1396	Kasikku Vaithan Village, Nettu Panchayath, Alangulam Taluk, Tirunelveli District, Tamil Nadu, Survey number 38/4	21/09/2005	500 KW
2	1464	Kasikku Vaithan Village, Nettu Panchayath, Alangulam Taluk, Tirunelveli District, Tamil Nadu, Survey number 38/1	29/09/2005	500 KW
3	2040	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 623/5, 623/6	28/09/2006	600 KW
4	2041	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 623/5, 693/6, 699/3A & 699/4	28/09/2006	600 KW
5	2181	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, survey number 721/7 & 721/8	03/08/2008	600 KW
6	2180	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 708/4B & 708/5	03/08/2008	600 KW
7	2179	Senadamngalam village, Sankarankovil Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 622/1, 622/4, 622/5, 624/4, 629/16	03/08/2008	600 KW
8	2473	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 454/13A, 13B, 14A, 14B, 15A & 15B, 454/9B, 9C, 8A & 8B, 454/3.4.5.6.7	29/09/2007	600 KW
9	2474	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey number 274/1	29/09/2007	600 KW
10	2475	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 422/5 & 422/6	29/09/2007	600 KW
11	2476	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey number 427/8	29/09/2007	600 KW
12	2519	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 5/5B, 5/5C, 5/6B, 5/7B, 5/7C, 23/3 & 25/1B	14/03/2008	600 KW
13	2520	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 405/4, 420/1A, 420/2, 420/4A & 420/4B	14/03/2008	600 KW
14	2532	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 41/2A, 41/3	26/03/2008	600 KW
15	2533	Kulaiyneri village, Veerakeralampudur Taluk, Tirunelveli District, Tamil Nadu, Survey numbers 40/2, 40/3A, 40/3B & 40/4A	26/03/2008	600 KW

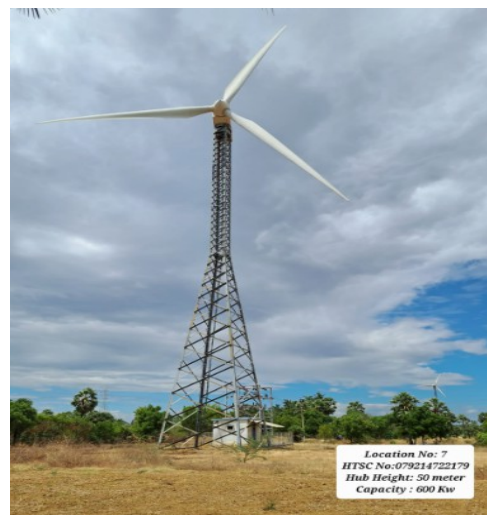
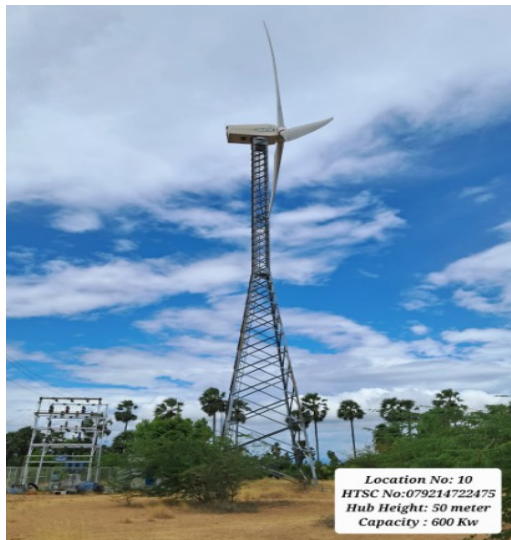
b) For the description of the installed technology(ies), technical process and equipment, include diagrams, where appropriate>>

Project activity harnesses wind as a source of energy production which is environmentally safe and sound technology. There is no GHG emission through project activity. The WEGs confirms to the relevant code of safety and standards mandatory for setting up wind projects. The standard includes Wind Turbine Safety and Design, Noise level and Mechanical Load. Therefore, the technology implemented can be depicted as environmentally safe and sound one.

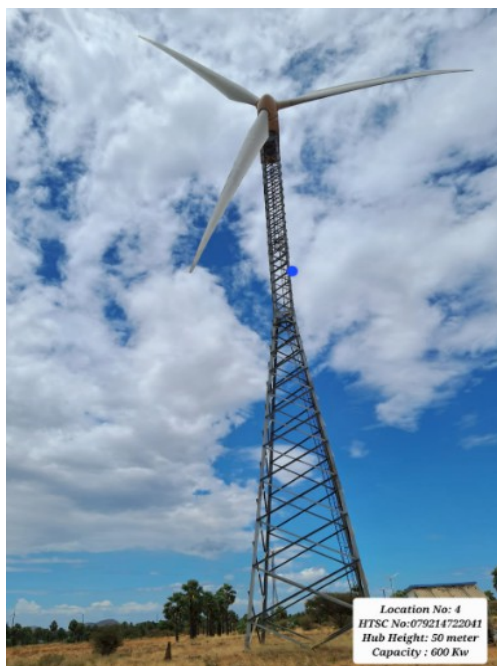
All the machines are Vestas RRB make and have been developed using state of the art technology. In wind energy generation, kinetic energy of wind is converted into mechanical energy and subsequently into electrical energy. Wind has considerable amount of kinetic energy when blowing at high speeds. This kinetic energy when passes through the blades of the WEG is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity. The technology is a clean technology since there are no GHG emissions associated with the electricity generation.











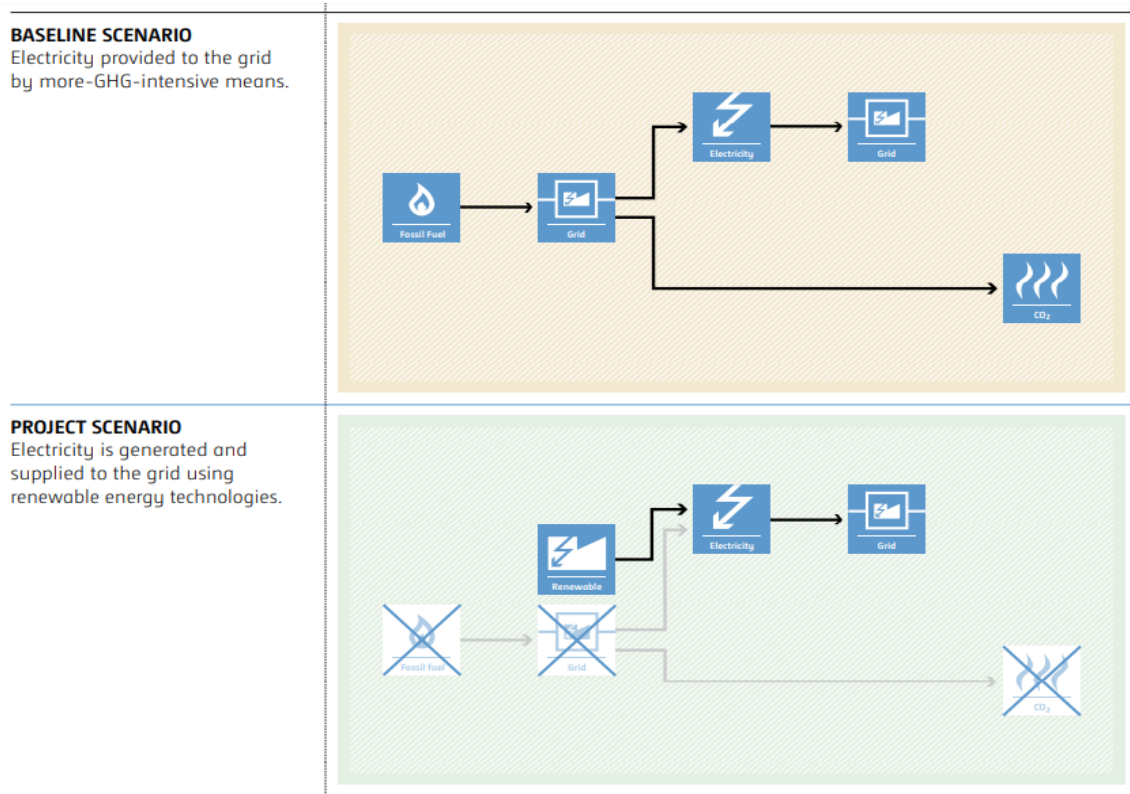
A.2 Do no harm or Impact test of the project activity>>

There are social, environmental, economic and technological benefits which contribute to sustainable development. Rational: As per 'Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)', final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (07/03/2016), it 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.

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

A.3. Baseline Emissions>>



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

- the electricity delivered to the grid by the project activity that would have otherwise been generated by the operation of fossil fuel-based grid-connected power plant and fed into the Southern grid, which is carbon intensive due to use of fossil fuels.

A.4. Debundling>>

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

SECTION B. Application of methodologies and standardized baselines

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

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

TYPE I - Renewable Energy Projects

CATEGORY- AMS-I.D. - “Grid connected renewable electricity generation”, Version 18.0

This methodology comprises of activities that include the construction and operation of a power plant that uses renewable energy sources and supplies electricity to the grid (Greenfield power plant).

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

This project is included within the UCR Standard Positive List of technologies and is within the small-scale CDM thresholds (e.g. installed capacity up to 15 MW). The positive list comprises of: (a) The grid-connected renewable electricity generation technologies of installed capacity up to 15 MW
Project activity involves power generation with capacity 8.8 MW which is less than 15MW.
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 of the UNFCCC CDM Methodology.
The project activity is wind energy power project and not a hydro power project activity.
The project activity does not involve any retrofit measures nor any replacement to existing WEGs.
The project activity is not a combined heat and power (co-generation) system.
No biomass is involved, the project is only a wind energy power project.
The project activity is a voluntary coordinated action. The project activity is a greenfield 8.8 MW Wind Electric Project, i.e., no capacity addition was done to any existing power plant.
The project activity is not a landfill gas, waste gas, wastewater treatment and agro-industries project, and does not recover methane emissions and is not eligible under any relevant Type III category.
The project activity comprises of renewable power/energy generation through wind energy and displaces fossil fuel powered electricity from the regional grid by supplying renewable power to the grid itself. Hence this UNFCCC CDM Methodology is applicable and fulfilled.
The project activity involves the installation of new power plants at listed sites where there was no renewable energy power plant operating prior to implementation of project.

B.3. Applicability of double counting emission reductions >>

There is no double accounting of emission reductions in the project activity due to the following reasons:

1. • Project is uniquely identifiable based on its location coordinates,
2. • Project has dedicated commissioning certificate and connection point,
3. • Project is associated with energy meters which are dedicated to the consumption point for PP.

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

The project boundary encompasses the physical, geographical site of the wind energy power plant, the energy metering equipment and the connected regional electricity grid.

	Source	GHG	Included?	Justification/Explanation
Baseline	Grid-connected electricity	CO ₂	Included	Major source of emission
		CH ₄	Excluded	Excluded for simplification. This is conservative
		N ₂ O	Excluded	Excluded for simplification. This is conservative
Project Activity	Greenfield power project	CO ₂	Excluded	Excluded for simplification. This is conservative
		CH ₄	Excluded	Excluded for simplification. This is conservative
		N ₂ O	Excluded	Excluded for simplification. This is conservative

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)

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

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.

Total Capacity: 8.8 MW

Estimated Annual Emission Reductions: $BE_y = EG_{BL,y} \times EF_{CO_2, GRID,y}$

BE_y = Emission reductions in a year y.

where:

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the UCR project activity in year y (MWh)

$EF_{Grid,CO_2,y}$ = CO₂ emission factor of the grid in year y (t CO₂/MWh) as determined by the UCR Standard.

A "grid emission factor" refers to a CO₂ emission factor (tCO₂/MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO₂/MWh for the 2015-2020 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.

Year	2014	2015	2016	2017	2018	2019	2020	2021
Mwh/yr	11282.937	8425.279	15685.185	16703.919	13573.86	12243.685	13100.779	12300.146
BE/yr	10154.6433	7582.7511	14116.6665	15033.5271	12216.474	11019.3165	11790.7011	11070.131
ER/yr	10154	7582	14116	15033	12216	11019	11790	11070
Total (tCO ₂ eq)	92980							

Calculated Emission Reductions (ER_y) over the crediting period = 92980 CoUs/ (92980 tCO₂eq)

B.6. Prior History>>

The project activity has not been registered or applied for voluntary carbon benefits under any other GHG program and hence there is no double counting issue of CoUs.

B.7. Monitoring period number and duration>>

First CoU Issuance Period: 01/01/2014 to 31/12/2021

Monitoring Period 1.0: 01/01/2014 to 31/12/2021

Crediting Period: 8 years 0 months

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

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

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

There is no change in the start date of crediting period. The start date of crediting under UCR is considered as 01/01/2014 and no GHG emission reduction has been claimed so far under any other voluntary GHG program.

B.10. Monitoring plan>>

Key Data Monitored: • Quantity of net electricity supplied to the grid

1. Monitoring Plan Objective and Organization

PP is the project implementer and monitors the electricity delivered to the electricity grid by the project activity. The data is already archived electronically and is stored since **21/09/2005**.

To ensure that the data is reliable and transparent, the PP has established Quality Assurance and Quality Control (QA&QC) measures to effectively control and manage data reading, recording,

auditing as well as archiving data and all relevant documents. The data is monitored on a daily basis and is submitted to PP on a daily basis.

All the calibration records and the details of the main and check meter readings, including invoice details for the 2014-2021 period will be provided to the UCR verifier during the audit. PP has implemented QA&QC measures to calibrate and ensure the accuracy of metering and safety aspects of the project operation. The metering devices are calibrated and inspected properly and periodically, according to state electricity board's specifications and requirements to ensure accuracy in the readings.

MONTH (KWH)	2014	2015	2016	2017	2018	2019	2020	2021
JANUARY	33401	14981	44639	164598	79091	61034	55900	73180
FEBRUARY	78111	29262	4733	144869	25109	156291	138060	36586
MARCH	79037	36244	93799	129619	78201	158148	69056	113470
APRIL	197769	70505	112029	466943	202691	285078	145013	623911
MAY	299398	109564	422306	1596493	356383	2314567	1448657	1617696
JUNE	2336974	868711	1849418	2993625	2247243	2849830	2645188	2450897
JULY	2900584	1729197	2612478	3092194	1945887	2560735	2195847	2510587
AUGUST	2790801	2695630	2805526	3344440	2630650	2396932	2416232	2697311
SEPTEMBER	1350792	1751965	3378324	2055080	3351525	1471684	2142018	1703056
OCTOBER	1285433	1016335	2651409	1793006	2650679	204009	1942473	460582
NOVEMBER	94763	157452	1391646	1154747	135649	83541	87828	208209
DECEMBER	26423	25920	462049	207391	53153	77309	77523	27897

Data / Parameter:	EGy
Data unit:	MWh (Kwh/1000)
Description:	Quantity of net electricity supplied by the Project Activity to the grid in year y
Source of data:	JMR. Statement of net export of power to the grid issued Monthly by State Electricity Board or any other competent authority as applicable.
Measurement procedures (if any):	To be specified by State Electricity Board
Monitoring frequency:	<p>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.</p> <p>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.</p> <p>Accuracy class of energy meter:As per Power Purchase Agreement (PPA) or relevant National standards amended/modified from time to time.</p> <p>Calibration Frequency: As per the Central Electricity Authority the testing and calibration frequency should be minimum once in five</p>

	years. However, the calibration will be done following the relevant applicable National Guidelines updated from time to time during the operation of the project activity. Entity responsible: Aggregator
QA/QC procedures:	Monitoring frequency: Continuous Measurement frequency: Hourly Recording frequency: Monthly The electricity meter/s record both export and import of electricity from the wind Power plant and the readings with regard to net electricity generated are used for calculation of emission reductions. The net electricity supplied to the grid is cross checked with the monthly invoices. The meter/s are checked for accuracy and the meters will be calibrated as per the procedures of State Electricity Board as per the national or international standards. Measurement results are cross checked with records for sold electricity (i.e. invoice).
Purpose of Data	-Calculation of baseline emissions

Data/Parameter	$EF_{CO_2, GRID, y}$
Data unit	0.9 tCO ₂ /MWh
Description	Fixed Ex-Ante as per the conservative UCR estimate for the Indian grid.
of data Value(s) applied	UCR Standard Protocol As per Standard
Measurement methods and procedures	Fixed
Monitoring frequency	NA
Purpose of data	To estimate baseline emissions