Monitoring Report

CARBON OFFSET UNIT (CoU) PROJECT

Title: Vaayu India Wind Power Project in Gujarat.

Version 1.2

Date 05/07/2025

First CoU Issuance Period: 03 years 06 months 12 days

Monitoring Period: 01/06/2021 to 31/12/2024

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

Monitoring Report	
Title of the project activity	Vaayu India Wind Power Project in Gujarat.
UCR Project Registration Number	500
Version	1.2
Completion date of the MR	05/07/2025
Monitoring period number and duration of this monitoring period	Monitoring Period Number: 01 Monitoring Period Number: 01/06/2021 to 31/12/2024
Project participants	Vaayu India Power Corporation Pvt Ltd
Host Party	INDIA
Applied methodologies and standardized baselines	ACM0002-Consolidated baseline methodology for grid-connected electricity generation from renewable sources - Version 22.0
Sectoral scopes	01 Energy industries (Renewable/Non-renewable Sources)
Actual amount of GHG emission reductions for this monitoring period in the registered PCN	**2021:** 48,845 CoUs (48,845 tCO2eq)
	2022: 76,822 CoUs (76,822 tCO2eq)
	2023: 78,427 CoUs (78,427 tCO2eq)
	2024: 60,067 CoUs (60,067 tCO2eq)
Total:	**2,64,161 CoUs (2,64,161 tCO2eq)**

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 project activity titled "Vaayu India Wind Power Project in Gujarat" is spread across villages Chattar, Narmana, Seth Wadala, Jam Ambardi, Mevasa, Dhun Dhoraji, Sadodar, Bodi, Padavala and Machharda in Jamnagar and Rajkot Districts of Gujarat state in India.

The details of the registered project are as follows:

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

Vaayu (India) Power Corporation Private Limited (VIPCPL) has developed a 51.2 MW wind farm in Gujarat, India, comprising 64 Enercon E-53 Wind Turbine Generators (WTGs), each with a rated capacity of 800 kW. The project involves the supply, erection, commissioning, and operation of these machines, managed by Wind World (India) Limited (WWIL), which serves as the equipment supplier and Operation and Maintenance contractor. The wind farm generates approximately **115,312.44 MWh** of clean electricity annually, which is supplied to the state electricity utility GETCO. Addressing the energy demand-supply gap in Gujarat and supporting the region's sustainable growth.

The primary objective of the project is to produce emission-free, environmentally friendly electricity by harnessing the wind energy potential in the region. By displacing fossil fuel-based power generation, the project reduces estimated greenhouse gas (GHG) emissions by approximately **(92,238 tCO2eq) tonnes of CO2** equivalent (tCO2e) while also mitigating other pollutants such as SOx and NOx. In the absence of this project, the equivalent electricity would have been generated by predominantly fossil fuel-based power plants in the Indian grid, which represents the pre-project scenario.
During the current monitoring period i.e 01/06/2021 to 31/12/2024, the project activity has generated **306,121.25 MWh** of clean electricity and reduced greenhouse gas (GHG) emissions by **2,64,161 tonnes of CO2** equivalent (tCO2eq).

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

The first WEC under the project activity was commissioned on 25/06/2010 and the last WEC under the project activity was commissioned on 04/07/2011. The commissioning date for all the WECs included in the project activity is given on the table below:

Sr. No.	Location No.	WTG-ID No.	Commissioning Date
1	3020	EIL/800/10-11/1826	12/07/2010
2	3021	EIL/800/10-11/1827	12/07/2010
3	3022	EIL/800/10-11/1828	12/07/2010
4	3072	EIL/800/09-10/1738	25/06/2010
5	3073	EIL/800/09-10/1739	25/06/2010

6	3075	EIL/800/09-10/1740	25/06/2010
7	3076	EIL/800/09-10/1741	25/06/2010
8	3088	EIL/800/09-10/1742	25/06/2010
9	62	EIL/800/09-10/1766	27/06/2011
10	63	EIL/800/09-10/1767	27/06/2011
11	64	EIL/800/09-10/1768	04/07/2011
12	539	EIL/800/09-10/1789	14/02/2011
13	540	EIL/800/09-10/1790	14/02/2011
14	541	EIL/800/09-10/1791	14/02/2011
15	543	EIL/800/09-10/1792	18/02/2011
16	544	EIL/800/09-10/1793	14/02/2011
17	545	EIL/800/09-10/1794	18/02/2011
18	546	EIL/800/09-10/1795	18/03/2011
19	547	EIL/800/09-10/1796	18/02/2011
20	548	EIL/800/09-10/1797	18/02/2011
21	903	EIL/800/09-10/1747	04/05/2011
22	904	EIL/800/09-10/1748	04/05/2011
23	905	EIL/800/09-10/1749	04/05/2011
24	906	EIL/800/09-10/1750	05/03/2011
25	907	EIL/800/09-10/1751	05/03/2011
26	908	EIL/800/09-10/1752	05/03/2011
27	909	EIL/800/09-10/1753	05/03/2011
28	910	EIL/800/09-10/1754	05/03/2011
29	912	EIL/800/09-10/1746	14/02/2011
30	926	EIL/800/09-10/1769	10/06/2011
31	927	EIL/800/09-10/1770	10/06/2011
32	928	EIL/800/09-10/1771	10/06/2011
33	929	EIL/800/09-10/1772	10/06/2011
34	931	EIL/800/10-11/1870	10/06/2011
35	932	EIL/800/09-10/1773	10/06/2011
36	933	EIL/800/09-10/1774	10/06/2011
37	934	EIL/800/09-10/1775	10/06/2011
38	935	EIL/800/09-10/1776	10/06/2011
39	936	EIL/800/09-10/1777	27/06/2011
40	937	EIL/800/09-10/1778	27/06/2011
41	938	EIL/800/09-10/1779	27/06/2011
42	939	EIL/800/09-10/1760	24/05/2011
43	941	EIL/800/09-10/1761	24/05/2011
44	942	EIL/800/09-10/1762	24/05/2011
45	943	EIL/800/09-10/1763	24/05/2011
46	944	EIL/800/09-10/1764	24/05/2011

47	945	EIL/800/09-10/1765	24/05/2011
48	947	EIL/800/09-10/1755	06/05/2011
49	948	EIL/800/09-10/1756	06/05/2011
50	950	EIL/800/09-10/1757	06/05/2011
51	951	EIL/800/09-10/1758	06/05/2011
52	952	EIL/800/09-10/1759	06/05/2011
53	958	EIL/800/09-10/1743	04/05/2011
54	959	EIL/800/09-10/1744	04/05/2011
55	960	EIL/800/09-10/1745	04/05/2011
56	992	EIL/800/09-10/1782	18/03/2011
57	993	EIL/800/09-10/1783	18/03/2011
58	994	EIL/800/09-10/1784	18/03/2011
59	995	EIL/800/09-10/1785	18/03/2011
60	996	EIL/800/09-10/1786	18/03/2011
61	997	EIL/800/09-10/1787	18/03/2011
62	1028	EIL/800/09-10/1788	04/05/2011
63	1045	EIL/800/09-10/1780	04/07/2011
64	1046	EIL/800/09-10/1781	04/07/2011

First CoU Issuance Period: 03 years 06 months 12 days

UCR Project ID or Date of Authorization: 500

Start Date of Crediting Period: 01/06/2021 to 31/12/2024

Project Commissioned: 25/06/2010

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	01/06/2021
Carbon credits claimed up to	31/12/2024
Total ERs generated (tCO_{2eq})	**2,64,161 CoUs** tCO2eq
Leakage	0

e) Baseline Scenario>>

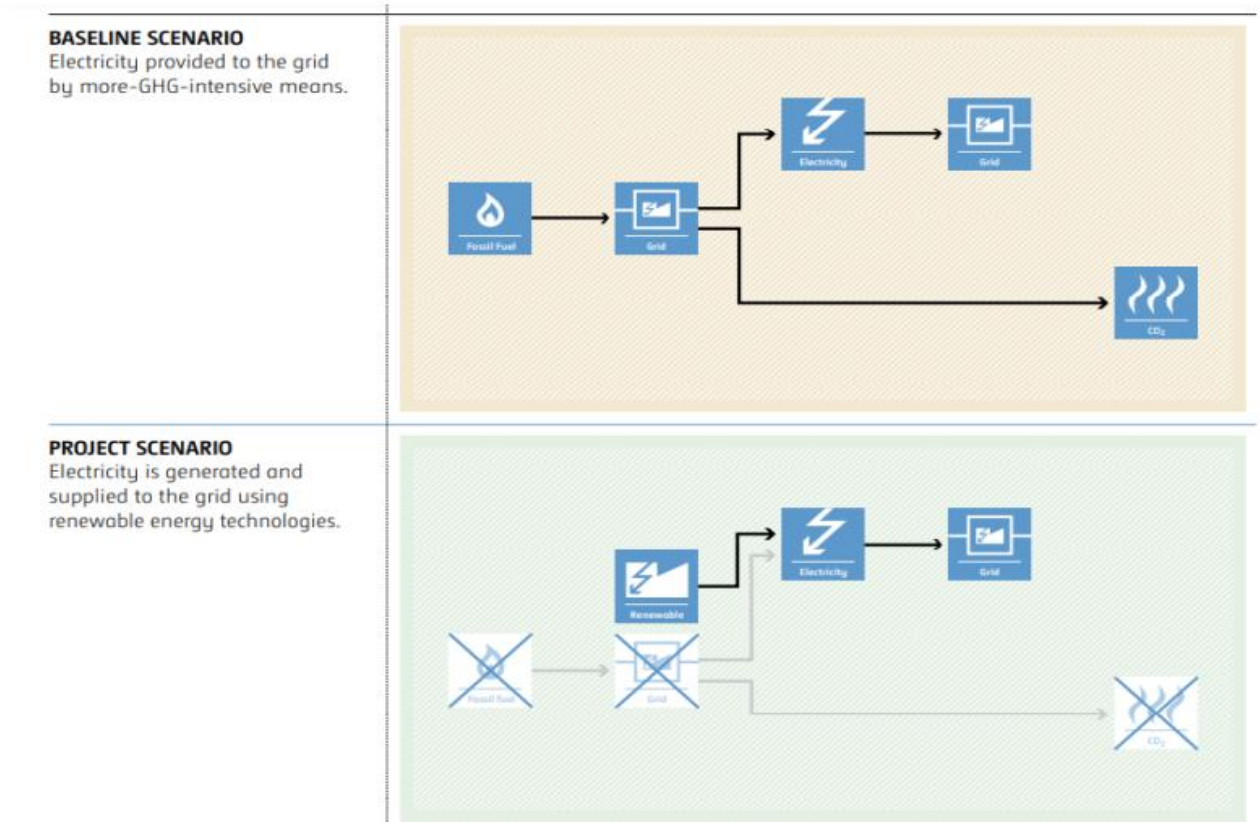
The baseline scenario identified at the PCN stage of the project activity is:

The scenario existing prior to the implementation of the project activity, is electricity delivered to the facility by the project activity that would have otherwise been generated by the operation of grid

connected power plants and by the addition of new generation sources. This is a green field project activity. There was no activity at the site of the project participant prior to the implementation of this project activity. Hence pre-project scenario and baseline scenario are the same.

As per the approved consolidated methodology ACM0002 Version 22.0, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: "If the project activity is the installation of a Greenfield power plant, the baseline scenario is 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 to the grid".

The Schematic diagram showing the baseline scenario:



A.2. Location of project activity>>

The Project is spread across villages Chattar, Narmana, Seth Wadala, Jam Ambardi, Mevasa, Dhun Dhoraji, Sadodar, Bodi, Padavala and Machharda in Jamnagar and Rajkot Districts of Gujarat state in India. The project area extends between latitude 21º 55' and 22 º 08' North and longitude 70 º 05' and 70 º 19' East. Nearest airport and railway station are at Jamnagar city which is located at approximately 60 kms from the project activity site.

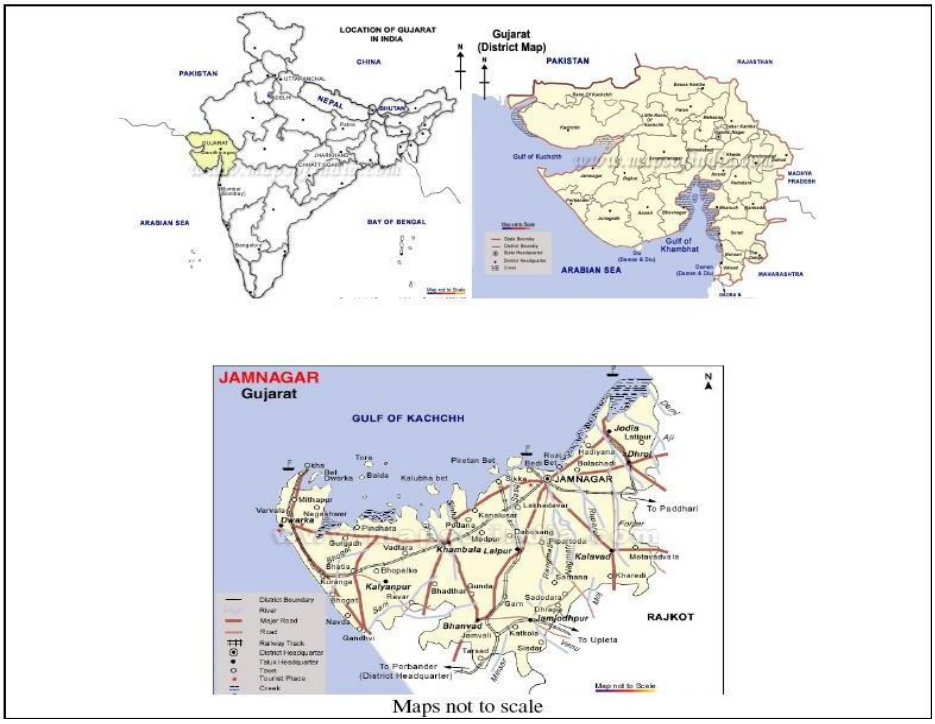
The latitude and longitude details along of each WEGs is provided given below:

Sr. No.	Location No.	WTG-ID No.	Village	Latitude	Longitude
1	3020	EIL/800/10-11/1826	Machharda	N22°06'19.0"	E70°18'45.7"
2	3021	EIL/800/10-11/1827	Machharda	N22°06'23.5"	E70°18'43.7"
3	3022	EIL/800/10-11/1828	Machharda	N22°06'29.7"	E70°18'44.6"
4	3072	EIL/800/09-10/1738	Padavala	N21°57'19.6"	E70°15'05.0"
5	3073	EIL/800/09-10/1739	Padavala	N21°57'14.9"	E70°15'11.7"
6	3075	EIL/800/09-10/1740	Padavala	N21°56'43.1"	E70°15'20.6"
7	3076	EIL/800/09-10/1741	Padavala	N21°55'59.2"	E70°15'33.7"
8	3088	EIL/800/09-10/1742	Padavala	N21°56'19.3"	E70°14'38.0"
9	62	EIL/800/09-10/1766	Chattar	N22°07'40.2"	E70°15'10.7"
10	63	EIL/800/09-10/1767	Chattar	N22°07'46.6"	E70°15'00.6"
11	64	EIL/800/09-10/1768	Chattar	N22°07'53.3"	E70°14'57.1"
12	539	EIL/800/09-10/1789	Seth Wadala	N22°04'46.7"	E70°05'34.3"
13	540	EIL/800/09-10/1790	Seth Wadala	N22°04' 33.3"	E70°05'43.1"
14	541	EIL/800/09-10/1791	Seth Wadala	N22°04'27.4"	E70°05'47.6"
15	543	EIL/800/09-10/1792	Seth Wadala	N22°04'17.3"	E70°05'53.7"
16	544	EIL/800/09-10/1793	Seth Wadala	N22°04'13.5"	E70°06'00.7"
17	545	EIL/800/09-10/1794	Seth Wadala	N22°03'31.5"	E70°05'32.6"
18	546	EIL/800/09-10/1795	Jam Ambardi	N22°03'40.2"	E70°05'31.0"
19	547	EIL/800/09-10/1796	Jam Ambardi	N22°03'45.3"	E70°05'31.9"
20	548	EIL/800/09-10/1797	Jam Ambardi	N22°03'50.7"	E70°05'34.2"
21	903	EIL/800/09-10/1747	Mevasa/Haripar	N22°01'23.0"	E70°15'35.2"
22	904	EIL/800/09-10/1748	Mevasa/Haripar	N22°01'30.2"	E70°15'41.0"
23	905	EIL/800/09-10/1749	Mevasa/Haripar	N22°01'36.6"	E70°15'27.2"
24	906	EIL/800/09-10/1750	Mevasa/Haripar	N22°01'30.7"	E70°14'55.0"
25	907	EIL/800/09-10/1751	Mevasa/ Haripar	N22°01'37.9"	E70°14'56.8"
26	908	EIL/800/09-10/1752	Mevasa/ Haripar	N22°01'44.8"	E70°14'54.1"
27	909	EIL/800/09-10/1753	Mevasa/ Haripar	N22°01'51.2"	E70°14'51.2"
28	910	EIL/800/09-10/1754	Mevasa/ Haripar	N22°01'57.7"	E70°14'55.7"
29	912	EIL/800/09-10/1746	Dhun Dhoraji	N22°02'09.1"	E70°15'04.4"

30	926	EIL/800/09-10/1769	Chattar	N22°06’57.6”	E70°16’33.0”
31	927	EIL/800/09-10/1770	Chattar	N22°06’59.3”	E70°16’23.3”
32	928	EIL/800/09-10/1771	Chattar	N22°07’10.0”	E70°16’16.5”
33	929	EIL/800/09-10/1772	Chattar	N22°07’15.9”	E70°16’11.3”
34	931	EIL/800/10-11/1870	Chattar	N22°07’12.7”	E70°15’23.5”
35	932	EIL/800/09-10/1773	Chattar	N22°07’05.5”	E70°15’27.2”
36	933	EIL/800/09-10/1774	Chattar	N22°06’59.3”	E70°15’31.5”
37	934	EIL/800/09-10/1775	Chattar	N22°06’53.9”	E70°15’27.9”
38	935	EIL/800/09-10/1776	Chattar	N22°06’46.0”	E70°15’22.7”
39	936	EIL/800/09-10/1777	Chattar	N22°06’40.3”	E70°15’25.7”
40	937	EIL/800/09-10/1778	Chattar	N22°06’32.0”	E70°15’23.4”
41	938	EIL/800/09-10/1779	Chattar	N22°06’25.7”	E70°15’22.1”
42	939	EIL/800/09-10/1760	Jamvadi	N22°08’19.5”	E70°19’02.3”
43	941	EIL/800/09-10/1761	Jamvadi	N22°08’07.2”	E70°18’57.8”
44	942	EIL/800/09-10/1762	Jamvadi	N22°08’08.6”	E70°19’30.2”
45	943	EIL/800/09-10/1763	Jamvadi	N22°08’00.9”	E70°19’25.4”
46	944	EIL/800/09-10/1764	Jamvadi	N22°07’53.9”	E70°19’26.0”
47	945	EIL/800/09-10/1765	Jamvadi	N22°07’49.5”	E70°19’31.4”
48	947	EIL/800/09-10/1755	Moti Vavdi	N22°06’04.0”	E70°18’16.9”
49	948	EIL/800/09-10/1756	Moti Vavdi	N22°05’57.0”	E70°18’17.8”
50	950	EIL/800/09-10/1757	Moti Vavdi	N22°05’45.7”	E70°18’21.5”
51	951	EIL/800/09-10/1758	Moti Vavdi	N22°05’38.3”	E70°18’18.4”
52	952	EIL/800/09-10/1759	Moti Vavdi	N22°05’31.6”	E70°18’16.9”
53	958	EIL/800/09-10/1743	Dhun Dhoraji	N22°02’32.4”	E70°16’42.8”
54	959	EIL/800/09-10/1744	Dhun Dhoraji	N22°02’26.2”	E70°16’44.6”
55	960	EIL/800/09-10/1745	Dhun Dhoraji	N22°02’19.0”	E70°16’44.4”
56	992	EIL/800/09-10/1782	Sadodar	N22°03’13.6”	E70°10’37.3”
57	993	EIL/800/09-10/1783	Sadodar	N22°03’09.5”	E70°10’40.0”
58	994	EIL/800/09-10/1784	Sadodar	N22°02’59.6”	E70°10’36.4”
59	995	EIL/800/09-10/1785	Sadodar	N22°02’54.2”	E70°10’33.5”
60	996	EIL/800/09-10/1786	Sadodar	N22°02’47.4”	E70°10’22.2”

61	997	EIL/800/09-10/1787	Sadodar	N22 °02’41.3”	E70 °10’32.4”
62	1028	EIL/800/09-10/1788	Seth Wadala	N22 °03’06.0”	E70 °08’36.9”
63	1045	EIL/800/09-10/1780	Bodi	N22 °08’43.4”	E70 °15’11.4”
64	1046	EIL/800/09-10/1781	Bodi	N22 °08’48.8”	E70 °15’08.5”

MAP



PROJECT ACTIVITY AREA

Chattar, Narmana, Seth Wadala, Jam Ambardi, Mevasa, Dhun Dhoraji, Sadodar, Bodi, Padavala and Machharda in Jamnagar and Rajkot Districts of Gujarat state in India.

A.3. Parties and project participants >>

Party (Host)	Participants
India	Vaayu India Power Corporation Pvt Ltd

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

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

TYPE - Renewable Energy Project

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

A.5. Crediting period of project activity >>

The start date of the **crediting period** under **UCR** is considered from **01/06/2021.**

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

Name: Lokesh Jain
Contact: 9667647537
Email: lokesh.jain@viviidgreen.com
Address: 1001-B, Sri Krishna Complex, New Link Road, Opp. Laxmi Industrial Estate, Andheri West, Maharashtra 400053 ·

SECTION B. Implementation of project activity

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

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

The project activity involves the installation and operation of 64 Wind Energy Converters (WECs), each with a capacity of 800 kW, totaling 51.2 MW. These WECs are fully operational and are supplying electricity to the Gujarat Energy Transmission Corporation (GETCO).

The WECs were commissioned in a phased manner across multiple villages including Chattar, Narmana, Seth Wadala, Jam Ambardi, Mevasa, Dhun Dhoraji, Sadodar, Bodi, Padavala, and Machharda—spread across the Jamnagar and Rajkot districts of Gujarat, India. The first WEC under the project activity was commissioned on 25/06/2010 and the last WEC under the project activity was commissioned on 04/07/2011.

During the current monitoring period, all installed WEGs continue to operate as planned. The electricity generated is consistently fed into the state electricity grid through established interconnections with the state utility, supporting renewable energy generation, contributing to grid stability and displacing equivalent GHG emissions.

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

The 51.2 MW wind power project involves 64 E-53 Wind Energy Converters (WECs), each with an 800-kW capacity, set up by WWIL in India. These wind turbines convert wind energy into electricity using synchronous generators, which are manufactured at WWIL's is spread across villages of Gujarat in Rajkot district. Plant using advanced vacuum impregnation technology for better insulation and durability. The turbines have rotor blades, a nacelle with the generator and control systems, a tower, and a concrete foundation. The electricity generated is fed into the Indian grid through transformers. Without this project, the same amount of electricity would come from fossil fuel-based power plants, which is the baseline scenario. This renewable energy project reduces emissions and supports local manufacturing through technology transfer.

The WEGs generates 3-phase power at 400V, which is stepped up to 33 KV. The project activity can operate in the frequency range of 47.5–51.5 Hz and in the voltage range of 400 V ± 12.5%. The average lifetime of the WEG is around 20 years as per the industry standards.

Turbine model	Enercon (E- 53)
Rated power	800 KW
Rotor diameter	53 m
Hub height	75 m
Turbine Type	Direct driven, horizontal axis wind turbine with variable rotor speed

Power regulation	Independent pitch system for each blade.
Cut in wind speed	2.5 *m/s*
Rated wind speed	12 *m/s*
Cutout Wind speed	28-34 m/s
Extreme Wind Speed	59.5 *m/s*
Rated rotational speed	32 rpm
Operating range rot. speed	12-29 rpm
Orientation	Upwind
No of Blades	3
Blade Material	Glass Fiber Epoxy reinforced
Gear box type	Gear less
Generator type	Synchronous generator
Braking	Aerodynamic
Output Voltage	400 V
Yaw System	Active yawing with 4 electric yaw drives with brake motor
Tower	74 m (concrete)

Main component of the windmill is explained below:

Main Tower:
This is a very tall structure with a door and inside ladder at the bottom. The door is used to enter into the tower for operation and maintenance.

Blades:
The windmills are provided with three blades. The blades are self-supporting in nature made up of Fibre Reinforced Polyester. The blades are mounted on the hub.

Nacelle:
The Nacelle is the one which contains all the major parts of a windmill. The nacelle is made up of thick rugged steel and mounted on a heavy slewing ring. Under normal operating conditions, the nacelle would be facing the upstream wind direction.

Hub:
The Hub is an intermediate assembly between the wing and the main shaft of the wind turbine. Inside the hub, a system to actuate the aerodynamic brake is fitted. The hub is covered with nose cone.

Main Shaft:
The shaft connects the gear box and the hub. Solid high carbon steel bars or cylinders are used as main shaft. The shaft is supported by two bearings.

The E-53 is a medium-capacity wind turbine manufactured by Enercon, with a rated power output of 800 kW. It uses direct-drive (gearless) technology, which increases efficiency and reduces maintenance needs. The cut-in speed is low (3.0 m/s), making it suitable for moderate wind regions, while its cut-out speed is 34 m/s, and it can survive wind speeds up to 59.5 m/s, showing strong design resilience.

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

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

Social benefits:

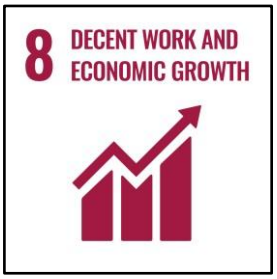
- The project activity will contribute to socio-economic development through improving the infrastructure for road network and other mode of communications in the remote part of the state during both the construction and operational period.
- The project activity will utilize renewable energy source for electricity generation instead of fossil fuel-based electricity generation which would have emitted gaseous, liquid and/or solid effluents/wastes. Thus, the project causes no negative impact on the surrounding environment and contributes to environmental well-being.
- The project activity will contribute towards reduction of the GHG emissions as well as emission of pollutants like SOx, Suspended Particulate Matters (SPMs) etc. by avoiding equivalent amount of power generation from fossil fuel-based power plants.

Environmental benefits:

- Utilizing wind energy instead of burning fossil fuels for electricity generation significantly decreases the emission of harmful pollutants, fostering cleaner air, water, and soil.
- Leveraging wind energy aids in preserving natural resources and minimizing detrimental impacts on the environment, contributing to overall ecological well-being.
- Moreover, harnessing wind energy offers a sustainable alternative to burning fossil fuels, which not only mitigates pollution but also conserves natural habitats and biodiversity, supporting healthier ecosystems and enhancing environmental resilience.

Economic benefits:

- The project will generate electricity utilizing renewable source like wind, thus will increase the contribution of renewable based power generation in the region and will also help in reducing the demand - supply gap of the respective grid.
- The project activity involves substantial amount of investment, thus will contribute towards generation of direct and indirect employment opportunities as per the requirement of the skilled and semi-skilled manpower.
- Use of a renewable source of energy reduces the dependence on imported fossil fuels and associated price variation, thereby leading to increased energy security.

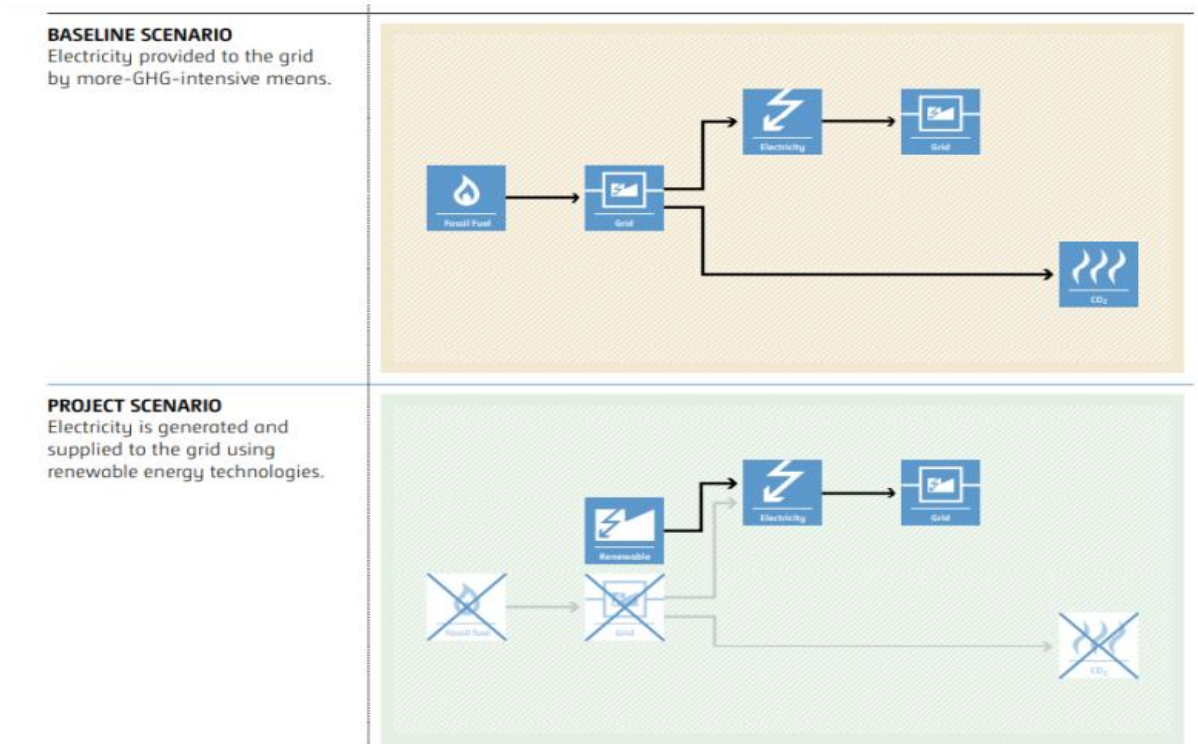
Goal 7 	➢ The project activity will generate clean energy, which with increased share will increase the affordability at a cheaper rate to end user. The project activity will utilize wind energy (renewal resource) to generate power. The project activity will increase the share of renewable resource-based electricity to global mix of energy consumption.
Goal 8 	➢ Decent work and economic growth. This project generates additional employment for skilled and unskilled people, also the project situated in remote area will provide employment opportunities to unskilled people from villages. The training on various aspects including safety, operational issues and developing a skill set will also be provided for employees. ➢ This project will achieve full and productive employment and decent work.
Goal 13 	➢ This 51.2 MW Wind power project meets the SDG 13 goal by saving fossil fuels and producing clean energy. This project is to reduce to **2,64,161 tCO_2** annually. ➢ 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 emissions associated with this project it contributes to the reduction of greenhouse gases (GHG) emissions.

B.3. Baseline Emissions>>

The baseline scenario identified at the PCN stage of the project activity is:
The scenario existing prior to the implementation of the project activity, is electricity delivered to the facility by the project activity that would have otherwise been generated by the operation of grid connected power plants and by the addition of new generation sources. This is a green field project activity. There was no activity at the site of the project participant prior to the implementation of this project activity. Hence pre-project scenario and baseline scenario are the same.

As per the approved consolidated methodology ACM0002 Version 22.0, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: "If the project activity is the installation of a Greenfield power plant, the baseline scenario is 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 to the grid".

The Schematic diagram showing the baseline scenario:



B.4. Debundling>>

This Project is not a debundled 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 - Renewable Energy Projects

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

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

Applicability Criteria.	**Applicability status**
1)This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plant(s)/unit(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s), or (e) Involve a replacement of (an) existing plant(s)/unit(s). (f) Install a Greenfield power plant together with a grid-connected Greenfield pumped storage power plant. The greenfield power plant may be directly connected to the PSP or connected to the PSP through the grid.	The proposed project involves establishing a new grid-connected renewable wind power plant, confirming to the specified criteria.
2) In case the project activity involves the integration of a BESS, the methodology is applicable to grid-connected renewable energy power generation project activities that: (a)Integrate BESS with a Greenfield power plant; (b) Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic1 or wind power plant(s)/unit(s); (c) Integrate a BESS to (an) existing solar photovoltaic or wind power plant(s)/unit(s) without implementing any other changes to the existing plant(s); (d) Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s). (e) Integrate a BESS together with a Greenfield power plant that is operating in coordination with a PSP. The BESS is located at site of the greenfield renewable power plant.	The project entails installing a new grid-connected renewable wind power project without the integration of a Battery Energy Storage System (BESS). Therefore, this condition does not apply to the project activity.
3)The methodology is applicable under the following conditions: (a) Hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started	The proposed project involves installing new wind power plants without integrating a Battery Energy Storage System (BESS). Thus, the mentioned criterion does not apply

commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity; (c) In case of Greenfield project activities applicable under paragraph 7(a) above, the project participants shall demonstrate that the BESS was an integral part of the design of the renewable energy project activity (e.g., by referring to feasibility studies or investment decision documents); (d) The BESS should be charged with electricity generated from the associated renewable energy power plant(s). Only during exigencies2 may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section 5.4.4 below. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant during a monitoring period. During the time periods (e.g., week(s), months(s)) when the BESS consumes more than 2 per cent of the electricity for charging, the project participant shall not be entitled to issuance of the certified emission reductions for the concerned periods of the monitoring period. (e) In case the project activity involves PSP, the PSP shall utilize the electricity generated from the renewable energy power plant(s) that is operating in coordination with the PSP during pumping mode	
4)In case of hydro power plants, one of the following conditions shall apply: a)The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or b)The project activity is implemented in an existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (7) is greater than 4 W/m2; or c)The project activity results in new single or multiple reservoirs and the power density calculate equation (7), is greater than 4 W/m2. d)The project activity is an integrated hydro power project involving multiple reservoirs, where the power density of any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m2, all of the following conditions shall apply. (i)The power density calculated using the total installed	The proposed project involves the installation of wind power plants/units. Hence, the mentioned criterion is not applicable.

capacity of the integrated project, as per equation (8), is greater than 4 W/m2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity. (iii)Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m2 are: a) Lower than or equal to 15 MW; and b) Less than 10 per cent of the total installed capacity of integrated hydro power project.	
5)In the case of integrated hydro power projects, project proponent shall: a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability indifferent seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	The proposed project activity involves the installation of wind power plants/units. Therefore, the mentioned criteria are not applicable.
6) In the case of PSP, the project participants shall demonstrate in the PDD that the project is not using water which would have been used to generate electricity in the baseline.	The proposed project activity involves installing wind power plants/units. Therefore, the specified criteria are not applicable.
7) The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass-fired power plants;	The proposed project activity involves installing wind power plants/units. Therefore, the specified criteria are not applicable.
8) In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is “the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance	The proposed project activity involves installing wind power plants/units. Therefore, the specified criteria are not applicable.

C.3 Applicability of double counting emission reductions >>

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

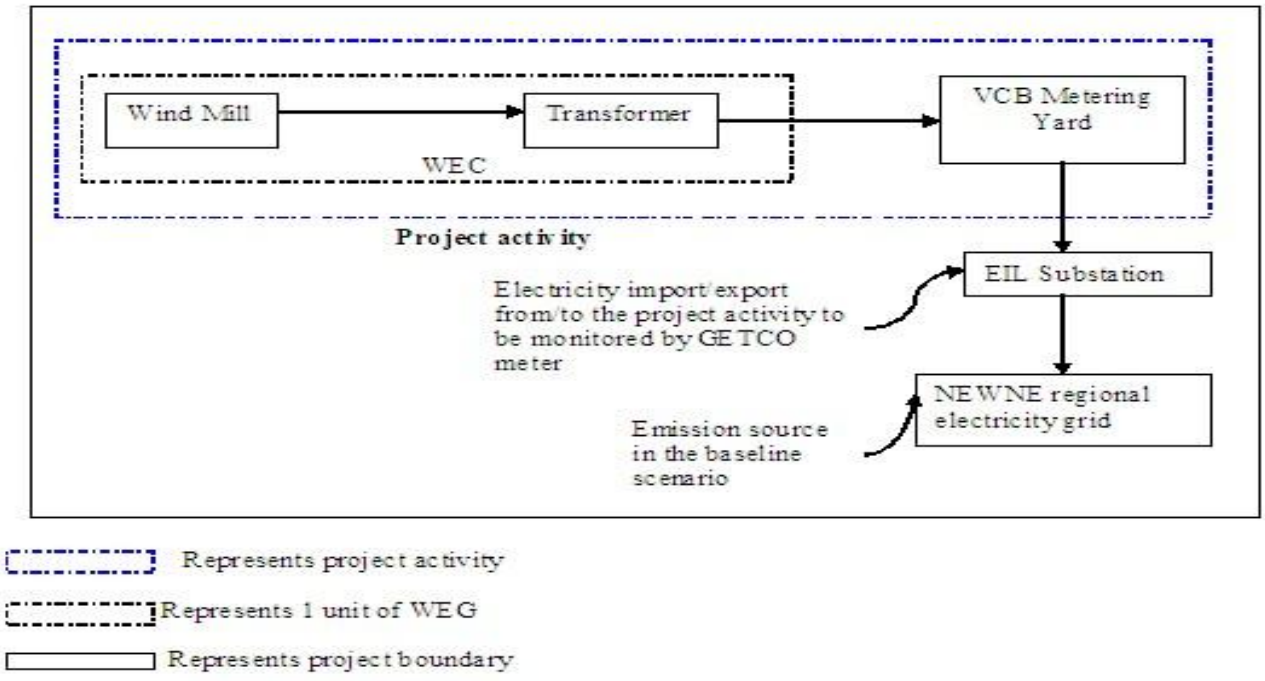
• Project is uniquely identifiable based on its location coordinates,
• Project has dedicated commissioning certificate and connection point,
• Project is associated with energy meters which are dedicated to the consumption point for project developer

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

According to the applicable methodology, the spatial extent of this project activity includes the project site and all the power plants connected physically to the electricity system (grid) that the power project is connected to. Therefore, the project boundary includes all the 64 WECs of VWIL along with the WECs of the other customers connected to the sub-station and the metering points.

The project activity is further connected to the network of state transmission utility which Falls under the network of Indian grid. Thus, the project boundary also includes all the power plants physically connected to the Indian grid.

Project boundary:



The baseline study of the Indian grid shows that the main sources of GHG emissions under the baseline scenario are CO_2 emissions from the conventional power generating systems. Other emissions are that of CH_4 and N_2O but both emissions have been excluded for simplification.

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	Grid connected electricity generation	CO_2	Yes	In the baseline scenario, the electricity would have been sourced from the Indian grid which in turn would be connected to fossil fuel fired power plants which emit CO_2.
		CH_4	No	No methane is expected to be emitted.
		N_2O	No	No nitrous oxide is expected to be emitted.
Project Scenario	Greenfield wind energy conversion system	CO_2	No	The project activity does not emit any emissions.
		CH_4	No	No methane is expected to be emitted.
		N_2O	No	No nitrous oxide is expected to be emitted.

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

As per the approved consolidated methodology ACM0002. version – 22.0, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

"The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise, been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid"

The project activity involves setting up of a new grid connected wind power plant to harness the green power from wind energy. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants. 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.

As per approved consolidated methodology ACM0002, version 22.0, emission reduction is estimated as difference between the baseline emission and project emission after factoring into leakage

Emission reductions are calculated as per methodology ACM0002, Version 22.0 Equation 17:

$$ER_y = BE_y - PE_y \quad \textbf{(Eq. 1)}$$

Where,

ER_y = Emissions reductions in year y (t CO2)

BE_y = Baseline emissions in year y (t CO2)

PEy = Project emissions in year y (t CO2)

Baseline Emissions

The baseline emissions as per methodology ACM0002, Version 22.0, para 57; encompass solely the CO2 emissions stemming from electricity generation in power plants displaced by the project activity. The methodology operates on the assumption that any electricity generation exceeding baseline levels would have originated from established grid-connected power plants and the integration of new grid-connected power plants.

The Baseline emissions as per methodology ACM0002, Version 22.0 Equation 11 in year y can be calculated as follows:

$BE_y = EG_{PJ,y} * EF_{grid,,y}$

Where:

BE_y= Baseline emissions in year *y* (tCO_2/yr)

$EG_{PJ,y}$= Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year *y* (MWh/yr)

$EF_{grid,y}$= Grid Emission factor in year y (tCO_2/MWh)

Since the project activity is the installation of a new grid connected renewable power plant (green field project), hence, $EG_{PJ,y}$ has been calculated as:

$EG_{PJ,y} = EG_{facility,y}$

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year *y* (MWh/yr)

EGfacility,y = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

A "grid emission factor" denotes the CO2 emission factor (measured in tCO2/MWh) associated with each unit of electricity supplied by an electricity system. The UCR suggests employing an emission factor of 0.9[1] from 2013 to 2023 and Emission Factor of 0.757 tCO2/MWh for 2024 as a cautious estimate for Indian projects.

Project Emission:

Regarding project emissions, ACM0002 version 22.0 specifies that only emissions related to fossil fuel combustion, emissions from the operation of geothermal power plants due to the release of non-

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

condensable gases, and emissions from water reservoirs of hydroelectric plants should be taken into account. Since the project involves a wind power project, emissions from renewable energy plants are negligible.
Hence (PEy = 0).

Leakage Emission:

Leakage, as outlined in ACM0002 version 22.0, para 5.6, is considered to be zero as there is no transfer of energy-generating equipment in the project activity.

While the actual emission reduction achieved during the initial crediting period will be submitted during the first monitoring and verification, an ex-ante estimation is provided for reference.

Sr. No.	Year	Capacity	Total EGy, Net Generation	Total EGy, Net Generation	Emission Factor	Baseline Emissions (BE)	Project Emissions (PE)	Emission Reductions
		MW	kWh	MWh	tCO2/ mWh	tCO2e	tCO2e	tCO2e
1	01-06-2021 to 31-12-2021	51.2	54272.457	54.272457	0.9	48845	0	48845
2	01-01-2022 to 31-12-2022		85358.398	85.358398	0.9	76822	0	76822
3	01-01-2023 to 31-12-2023		87141.234	87.141234	0.9	78427	0	78427
4	01-01-2024 to 31-12-2024		79349.161	79.349161	0.757	60067	0	60067
	Total		**306121.25**	**30.612125**		**264161**		**2,64,161**

Total baseline emission reductions (BEy) = 2,64,161 CoUs (2,64,161 tCO2eq)

C.6. Prior History>>

The start date of the crediting period under UCR is considered from 01/06/2021. The project activity is registered under Clean Development Mechanism (CDM) project with registration number 4700[2], as well as Gold Standard (GS) with reference number 3958[3]. The crediting period of this project under CDM & GS is 01/06/2011 to 31/05/2021.

C.7. Monitoring period number and duration >>

First Issuance Period: 03 years 06 months 12 days– 01/06/2021 to 31/12/2024.

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

[2] CDM 4700
[3] GS 3958

The start date of the crediting period under UCR is considered from 01/06/2021.

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>>

Data and Parameters available at validation (ex-post values):

Data/Parameter	$EG_{p,j,y}$
Data unit	MWh
Description	'Certificate for Share of Electricity Generated by Wind farm' prepared & issued by SLDC/GETCO (Gujarat Energy Transmission Corporation
Measurement methods and procedures	- All the cluster meters and sub-station meters (main & check meters) are electronic and two-way (bi-directional) meters that measure both export and import of electricity and provide net electricity exported to the grid. -All the cluster meters and sub-station meters (main & check meters) measure the electricity (export & Import) on continuous basis and are recorded by state utility on monthly basis. Further all the reading of export & import recorded at all the cluster meters and sub-station meters (main & check meter) are available exclusively with GETCO officials and based on these reading, GETCO provides 'Certificate for Share of Electricity Generated by Wind farm' to PP, which provides quantity of net electricity generation supplied by the project activity to the grid In addition to above there is a possibility for the PP to record the values of EGCluster, Export & EGCluster, Import. However, it would be impossible for the PP to collect information of EGCluster, WF, Export & EGCluster, WF, Import.which is exclusively available with GETCO. Thus, even if EGCluster, Export and EGCluster, Import is monitored, it has no value if the values EG Cluster, WF, Export and EG Cluster, WF, Import are not monitored. Hence, only quantity of net electricity generation supplied by the project activity to the grid ($\mathbf{EG_{facility,y}}$) could be monitored by the PP and this value will be sourced from 'Certificate for Share of Electricity Generated by Wind farm' prepared & issued by SLDC/GETCO.

	Data Type: Measured Monitoring equipment: Energy Meters are used for monitoring Archiving Policy: Electronic Calibration frequency: Once in 5 years [4](considered as per provision of CEA India). The net electricity generated by the project activity will be calculated.
Value Applied	2,64,161
Monitoring frequency	Monthly
Purpose of data	For baseline emission calcualtions

Data and Parameters available at validation (ex-ante values):

Data / Parameter:	$EF_{Grid,y}$
Data unit:	tCO2 /MWh
Description:	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 for the 2013 - 2023 years and 0.757 tCO2/MWh for year 2024 as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
Source of data:	UCR CoU Standard Update: 2024 Vintage UCR Indian Grid Emission Factor Announced | by Universal Carbon Registry | Jan, 2025 | Medium
Measurement procedures (if any):	-
Monitoring frequency:	Ex-ante fixed parameter
QA/QC procedures:	For the calculation of Emission Factor of the grid
Any comment:	

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

Appendix 1:

Calibration Clusters Meters					
Meter Sr. No.	**Sub-station**	**Accuracy class**	**Make**	**Calibration Details**	**Calibration Validity**
10059208	Padavala	0.2	L & T	06.02.2023	06.02.2027
10059203	Motivavadi	0.2	L & T	06.02.2023	06.02.2027
GJU60947	Motivavadi	0.2	SECURE	06.02.2023	06.02.2027
GJU61707	Padavala	0.2	SECURE	06.02.2023	06.02.2027
GJU61698	Chhatar	0.2	SECURE	06.02.2023	06.02.2027
GJU61321	Jamvadi	0.2	SECURE	06.02.2023	06.02.2027
GJU61313	Motivavadi	0.2	SECURE	06.02.2023	06.02.2027
GJU61690	Chhatar	0.2	SECURE	06.02.2023	06.02.2027
GJU61699	Vavadi	0.2	SECURE	07.02.2023	07.02.2027
GJU61322	Narmana	0.2	SECURE	07.02.2023	07.02.2027
GJU61696	Laloi	0.2	SECURE	07.02.2023	07.02.2027
GJU61310	Narmana	0.2	SECURE	07.02.2023	07.02.2027
GJU61701	Sadodar	0.2	SECURE	07.02.2023	07.02.2027
GJU61693	Sadodar	0.2	SECURE	07.02.2023	07.02.2027
GJU61692	Sadodar	0.2	SECURE	07.02.2023	07.02.2027
GJU61691	Sadodar	0.2	SECURE	07.02.2023	07.02.2027
GJU69943	Sadodar	0.2	SECURE	07.02.2023	07.02.2027

Sr no	**Meter type**	**No of wtgs**	**Mtr sr no**	**Sub-station**	**Accuracy**	**Make**	**Calibration date**	**Calibration validity**
1	ss main line 2	GJ-2459A	550055076	Sadodar	0.2	L &T	16.06.2021	17.06.2025
2	ss main line 1	GJ-2458A	550055076	Sadodar	0.2	L &T	16.06.2021	17.06.2025