



**Verified Carbon
Standard**

WIND POWER PROJECT IN TAMIL NADU BY GREEN INFRA RENEWABLE ENERGY LIMITED



**INFINITE
SOLUTIONS**

Document Prepared by Infinite Solutions

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable wind energy source. The project involves installation of 249.9 MW wind power project in Tamil Nadu state of India through SPV.

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 707,515 tCO₂e per year, there on displacing 755, MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The details of the SPV for the project and their location of installation are mentioned in the table below:-

Name of Investor	Capacity (MW)	COD	Connection with Grid	State	Usage
Green Infra Renewable Energy Limited	250 MW	08/10/2018	Indian Grid	Tamil Nadu	Sale to State DISCOM

During the Current Monitoring Period from 01/12/2019 to 31/01/2021 (First and last date included), the project activity has supplied 861,428 MWh of electricity, and thus contributing to the GHG reductions 806,985 tCO₂e.

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)

Project Type : I - Renewable Energy Projects

Project Category: Grid-connected electricity generation from renewable sources
ACM0002- Version 19.0¹

The project is not a grouped project activity.

¹ <http://cdm.unfccc.int/methodologies/DB/VJI9AX539D9MLOPXN2AY9UR1N4IYGD>

1.3 Project Proponent

Organization name	Green Infra Renewable Energy Limited
Contact person	Mayank Tyagi
Title	Manager ,Power Sales
Address	5th floor, Tower C, Building No. 8, DLF Cybercity, Gurgaon – 122002 Haryana, India
Telephone	+91 124 3896972
Email	mayank.tyagi@sembcorp.com

1.4 Other Entities Involved in the Project

Organization name	Infinite Solutions
Role in the Project	Project Consultant
Contact person	Mr. Jimmy Sah
Title	Head – Sustainability
Address	214-215 Milinda Manor, Opp. Next Treasure Island, 2 RNT Marg, Indore – 452001, India
Telephone	+91-9644130430
Email	jimmy@infisolutions.org

1.5 Project Start Date

Start date of the project activity is the earliest date of interconnection with the grid i.e., 08/10/2018. This is the date of commissioning of 249.9 MW PV project activity by Green Infra Renewable Energy Limited Pvt Ltd.

The details of the commissioning dates of the individual project activity are mentioned in the section 1.1 of this report.

1.6 Project Crediting Period

Crediting Period Start date: 08/10/2018 Crediting Period End date: 07/10/2028

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.7 Project Location

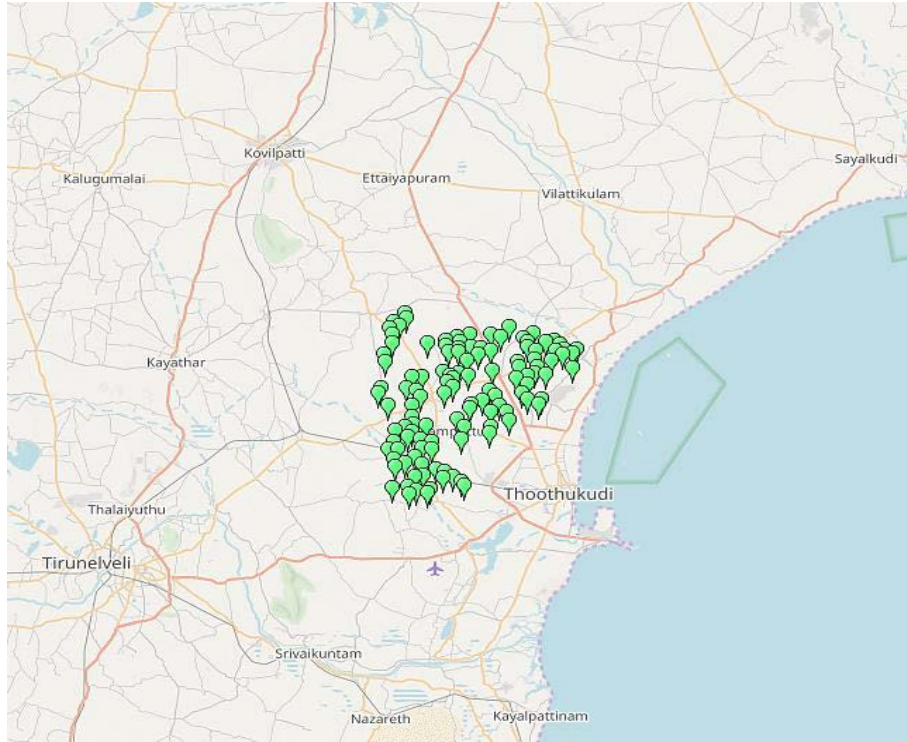
The details of the project locations are mentioned in the table below:

Name of Investor	Project Capacity	Location			
		State	District	Tehsil/Taluka	Village
Green Infra Renewable Energy Limited	249.9 MW	Tamil Nadu	Tuticorin	Tuticorin	Mela Thattaparai

The project locations have been shown in the maps below

The project locations have been shown in the map below





SL. No	Name of Investor	Turbine ID	Latitude N	Longitude E
1.	Green Infra Renewable Energy Limited	KME011	8° 58" 15.31"	77° 59' 24.10"
2.		KME029	8° 59" 03.20"	77° 59' 46.18"
3.		KUM102	8° 58" 03.63"	77° 58' 47.67"
4.		KIIM104	8° 58" 43.08"	77° 59' 47.98"
5.		KUM267	8° 58" 28.14"	77° 59' 01.82"
6.		MAN106	8° 50" 11.63"	77° 59' 17.99"
7.		MANI08	8° 50" 38.04"	77° 59' 05.65"
8.		MMS076	8° 51" 00.39"	77° 59' 53.46"
9.		MNS086	8° 49" 18.40"	77° 59' 42.85"
10.		MNS090	8° 51" 36.58"	77° 59' 42.80"
11.		MMS095	8° 51" 25.17"	77° 59' 11.02"
12.		MMS097	8° 50" 12.85"	77° 58' 43.42"
13.		MNS099	8° 49" 32.77"	77° 59' 01.99"
14.		MMS100	8° 49" 03.33"	77° 59' 07.86"
15.		MMS103	8° 47" 43.39"	77° 59' 52.87"
16.		MMS105	8° 47" 38.79"	77° 59' 01.64"
17.		MMS120	8° 47" 15.50"	77° 59' 57.60"
18.		OTA031	8° 53" 03.28"	77° 58' 43.08"
19.		OTA038	8° 53" 50.31"	77° 58' 08.26"
20.		GTA067	8° 55" 51.51"	77° 58' 32.50"
21.		OTA112	8° 57" 06.12"	77° 59' 00.90"
22.		OTA114	8° 57" 42.21"	77° 58' 57.10"

23.	OTA120	8° 54" 11.14"	77° 58' 58.19"
24.	OTA121	8° 54" 12.12"	77° 59' 47.16"
25.	OTA132	8° 56" 23.64"	77° 58' 28.22"
26.	KME044	8° 56" 55.44"	78° 02' 08.45"
27.	KUM128	8° 57" 05.92"	78° 01' 00.63"
28.	KUM159	8° 57" 17.60"	78° 02' 06.15"
29.	KUM162	8° 55" 56.68"	78° 03' 23.14"
30.	KUM164	8° 56" 47.66"	78° 02' 52.31"
31.	KUM165	8° 57" 12.98"	78° 02' 55.51"
32.	KUM166	8° 57" 29.15"	78° 02' 47.79"
33.	KUM211	8° 57" 42.11"	78° 03' 30.17"
34.	KUM212	8° 56" 36.86"	78° 04' 43.40"
35.	KUM214	8° 56" 51.57"	78° 03' 38.33"
36.	KUM215	8° 56" 21.71"	78° 04' 02.61"
37.	KUM216	8° 56" 46.77"	78° 04' 12.51"
38.	KUM21S	8° 57" 38.28"	78° 04' 45.04"
39.	KUM249	8° 58" 09.48"	78° 05' 48.41"
40.	KUM250	8° 57" 31.54"	78° 05' 22.18"
41.	MAN113	8° 48" 24.99"	78° 00' 17.31"
42.	MNS041	8° 48" 24.29"	78° 02' 30.48"
43.	MNS042	8° 48" 41.57"	78° 02' 03.46"
44.	MNS052	8° 51" 42.92"	78° 01' 00.38"
45.	MMS054	8° 50" 12.27"	78° 01' 18.11"
46.	MMS056	8° 50" 38.03"	78° 01' 18.98"
47.	MMS060	8° 48" 52.30"	78° 01' 34.80"
48.	MMS061	8° 48" 05.85"	78° 03' 00.34"
49.	MMS062	8° 48" 19.66"	78° 01' 57.07"
50.	MMS065	8° 48" 30.51"	78° 00' 49.27"
51.	MMS067	8° 49" 12.16"	78° 00' 44.20"
52.	MMS070	8° 50" 16.07"	78° 00' 41.36"
53.	MMS071	8° 50" 50.66"	78° 00' 40.00"
54.	MMS073	8° 47" 49.58"	78° 03' 10.64"
55.	MMS075	8° 51" 18.96"	78° 00' 08.16"
56.	MMS082	8° 47" 30.43"	78° 00' 22.46"
57.	MMS085	8° 47" 34.29"	78° 01' 11.01"
58.	MMS106	8° 49" 42.79"	78° 00' 19.20"
59.	MMS111	8° 47" 17.83"	78° 01' 01.72"
60.	OTA020	8° 56" 29.86"	78° 02' 51.90"
61.	OTA026	8° 55" 01.46"	78° 02' 22.36"
62.	OTA027	8° 54" 58.93"	78° 03' 27.53"
63.	OTA046	8° 54" 14.91"	78° 02' 32.54"
64.	OTA050	8° 54" 32.46"	78° 02' 14.19"
65.	OTA052	8° 55" 14.21"	78° 01' 57.60"

66.	OTA053	8° 55" 47.24"	78° 02' 33.20"
67.	OTA055	8° 56" 34.17"	78° 02' 17.36"
68.	OTA064	8° 55" 09.64"	78° 02' 52.09"
69.	OTA069	8° 53" 51.50"	78° 02' 00.65"
70.	OTA075	8° 54" 55.49"	78° 00' 45.44"
71.	OTA092	8° 54" 02.36"	78° 00' 23.15"
72.	OTA093	8° 53" 36.66"	78° 00' 37.42"
73.	OTA095	8° 51" 49.15"	78° 00' 13.41"
74.	OTA099	8° 52" 20.10"	78° 00' 08.64"
75.	OTA100	8° 53" 03.66"	78° 00' 10.09"
76.	OTA106	8° 54" 52.06"	78° 00' 08.03"
77.	OTE011	8° 50" 48.54"	78° 03' 02.78"
78.	OTE019	8° 52" 06.30"	78° 02' 46.39"
79.	OTE021	8° 51" 38.16"	78° 03' 09.61"
80.	OTE037	8° 52" 49.71"	78° 03' 30.01"
81.	OTE041	8° 53" 08.90"	78° 03' 34.65"
82.	OTE047	8° 51" 16.05"	78° 04' 41.90"
83.	OTE059	8° 51" 36.88"	78° 04' 47.09"
84.	OTE061	8° 52" 37.51"	78° 04' 43.93"
85.	OTE064	8° 53" 20.02"	78° 04' 16.09"
86.	OTE075	8° 53" 58.22"	78° 04' 39.40"
87.	OTE076	8° 53" 42.89"	78° 04' 57.93"
88.	OTE077	8° 53" 02.86"	78° 05' 15.45"
89.	OTE081	8° 52" 36.62"	78° 05' 41.10"
90.	OTE082	8° 52" 04.65"	78° 05' 50.25"
91.	OTE099	8° 55" 20.34"	78° 04' 52.06"
92.	OTE101	8° 55" 58.58"	78° 06' 55.86"
93.	OTE102	8° 53" 51.10"	78° 06' 31.79"
94.	OTE103	8° 53" 25.35"	78° 06' 53.58"
95.	OTE112	8° 53" 07.12"	78° 07' 33.62"
96.	OTE113	8° 53" 25.30"	78° 07' 42.18"
97.	OTE115	8° 54" 25.20"	78° 06' 55.30"
98.	OTE118	8° 54" 49.74"	78° 06' 15.24"
99.	OTE120	8° 55" 33.93"	78° 06' 22.32"
100.	OTE121	8° 55" 52.05"	78° 06' 19.17"
101.	OTE135	8° 57" 25.98"	78° 06' 40.50"
102.	QTE136	8° 57" 11.87"	78° 06' 53.50"
103.	OTE137	8° 56" 49.55"	78° 06' 52.20"
104.	OTE138	8° 56" 01.68"	78° 07' 18.22"
105.	OTE140	8° 55" 31.48"	78° 07' 28.73"
106.	OTE141	8° 55" 10.22"	78° 07' 16.50"
107.	OTE142	8° 55" 05.97"	78° 07' 56.01"
108.	OTE151	8° 56" 43.08"	78° 09' 03.09"

109.	OTE153	8° 55" 58.45"	78° 08' 19.87"
110.	OTE155	8° 56" 37.34"	78° 07' 24.13"
111.	OTE157	8° 57" 08.58"	78° 07' 56.23"
112.	OTE158	8° 57" 44.31"	78° 07' 12.67"
113.	OTE163	8° 57" 15.35"	78° 08' 29.93"
114.	OTE164	8° 57" 02.20"	78° 08' 49.79"
115.	OTE165	8° 56" 21.97"	78° 08' 58.28"
116.	OTE166	8° 55" 28.72"	78° 09' 30.72"
117.	OTE172	8° 56" 26.94"	78° 09' 32.13"
118.	OTE173	8° 56" 36.76"	78° 08' 31.97"
119.	OTE174	8° 56" 42.84"	78° 09' 47.84"

1.8 Title and Reference of Methodology

Title: Grid-connected electricity generation from renewable sources

Reference: The project activity meets the eligibility criteria of large-scale project, as it is more than 15 MW

Methodology: ACM0002: Grid-connected electricity generation from renewable sources - Version 19.0²

Type I : Energy industries (renewable / non-renewable sources)

Category: Approved Consolidated Methodology (ACM0002)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system³ - Version 07.0 (EB 100, Annex 04)
- Methodological Tool- Tool for the demonstration and assessment of additionality⁴ - Version 07.0.0 (EB 70, Annex 08)

1.9 Participation under other GHG Programs

The project has neither been registered, nor seeking registration under any other GHG programs.

The project is seeking registration only in VCS program.

² <http://cdm.unfccc.int/methodologies/DB/VJI9AX539D9MLOPXN2AY9UR1N4IYGD>

³ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

⁴ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

1.10 Other Forms of Credit

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

However, it can be crosschecked that PP is not claiming REC benefits, the same can be verified with the REC accreditation body of India⁵.

1.11 Sustainable Development

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

- **Social well-being:** The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.
- **Economic well-being:** The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.
- **Technological well-being:** The successful operation of project activity would lead to promotion of wind based power generation and would encourage other entrepreneurs to participate in similar projects
- **Environmental well-being:** Wind being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources, which are on the verge of depletion. Due to its zero emission the Project, activity also helps in avoiding significant amount of GHG emissions.

The project activity will generate power using zero emissions .Wind based power generation that helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.

⁵ https://recregistryindia.nic.in/index.php/general/publics/accredited_regens_pdf

2 SAFEGUARDS

2.1 No Net Harm

The project activity does not involve any major construction activity. It primarily requires the installation of the WTGs, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that wind power project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same⁶.

Thus, there are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity.

2.2 Local Stakeholder Consultation

The project has already been registered under VCS mechanism. The Local stakeholder consultation process was conducted during the validation stage. Hence it is not applicable. There were no negative comments received during the meeting and stakeholders appreciated proactive efforts taken by project proponent towards reducing emissions.

For ongoing communication, the PP has also placed a grievance register onsite where in the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately.

However, there is no negative feedback has been reported within this monitoring period

2.3 AFOLU-Specific Safeguards

Not applicable to this as this is not an AFOLU project activity.

3 IMPLEMENTATION STATUS

⁶ <http://mnre.gov.in/file-manager/UserFiles/report-on-developmental-impacts-of-RE.pdf>

3.1 Implementation Status of the Project Activity

The project activity involves the installation of Wind project. The total installed capacity of the project is 249.9 MW of Wind power project located at Tamil Nadu state in India. Green Infra Renewable Energy Limited promotes the project.

The Project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the project.

In the Pre- project scenario the entire 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.

The project shall result in replacing annual anthropogenic emissions of greenhouse gases (GHG"s) estimated to be approximately 707,515 tCO₂e per year, thereon displacing 755,246.58 MWh/year amount of electricity from the grid over the 10 years crediting period.

The project activity aims to harness wind energy through installation of Wind power project with total installed capacity of 249.9 MW.

Technology Details –

The technical specification for 2.1 MW Suzlon ⁷ make 119 WTG at project site Tamil Nadu is being provided:

WTG Make and Model No.	Suzlon S111-120 – 2.1 MW
Generator Type & Rating	Doubly-Fed Induction generator, 2000 kW
Rotor Diameter	111.8 m
Hub Height	90m
Tower Type & Shape	Steel Tubular
Cut-in-wind speed	3.0 m/s
Rated wind speed	12.5 m/s
Cut-out wind speed	30.0 m/s (3-second average) 21.0 m/s (10-minute average)

3.2 Deviations

2.3.1 Methodology Deviations

No methodology deviation is applied during the monitoring period.

⁷ https://www.suzlon.com/pdf/media_kit/Product_bochure_July_2017.pdf

2.3.2 Project Description Deviations

No deviation has taken place in project description during the monitoring period.

3.3 Grouped Projects

The project is not a grouped project thus this is not applicable.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid, OM, y}
Data unit	tCO ₂ /MWh
Description	Operating margin CO ₂ emission factor for the project electricity system in year y
Source of data	Calculated from CEA database, Version 14, December 2018
Value applied	0.9610
Justification of choice of data or description of measurement methods and procedures applied	Calculated as the last 3 year (2015-16, 2016-17, 2017-18) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 14.0, Dec 2018 published by Central Electricity Authority (CEA), Government of India
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	EF _{grid, BM, y}
Data unit	tCO ₂ /MWh
Description	Build margin CO ₂ emission factor for the project electricity system in year y
Source of data	Calculated from CEA database, Version 14, December 2018
Value applied	0.8644
Justification of choice of data or description of measurement methods and procedures applied	Baseline CO ₂ Emission Database, Version 14.0, May 2018 published by Central Electricity Authority (CEA), Government of India.
Purpose of Data	Calculation of baseline emissions
Comments	The above value is fixed and it is same for the entire crediting period

Data / Parameter	EF _{grid, CM, y}
------------------	---------------------------

Data unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor for the project electricity system in year y
Source of data	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 14.0, Dec 2018 published by Central Electricity Authority (CEA), Government of India
Value applied	0.9368
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of Data	Calculation of baseline emissions
Comments	The above value is fixed and it is same for the entire crediting period

4.2 Data and Parameters Monitored

Data / Parameter	EG _{PJ, y}
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Deviation Settlement Account statement issued by SRPC
Description of measurement methods and procedures to be applied	Data Type: Measured Monitoring equipment: Energy Meters are used for monitoring. Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually Archiving Policy: Paper & Electronic Class of meter: 0.2s. Calibration frequency: One in five years⁸ Electricity exported by the project to the grid at project site switch yard is the actual generation recorded and monitored by the metering system installed at the project site switch yard. The metering system comprises of special energy meters (SEMs) installed at the power station, for each generating units. These are

⁸ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

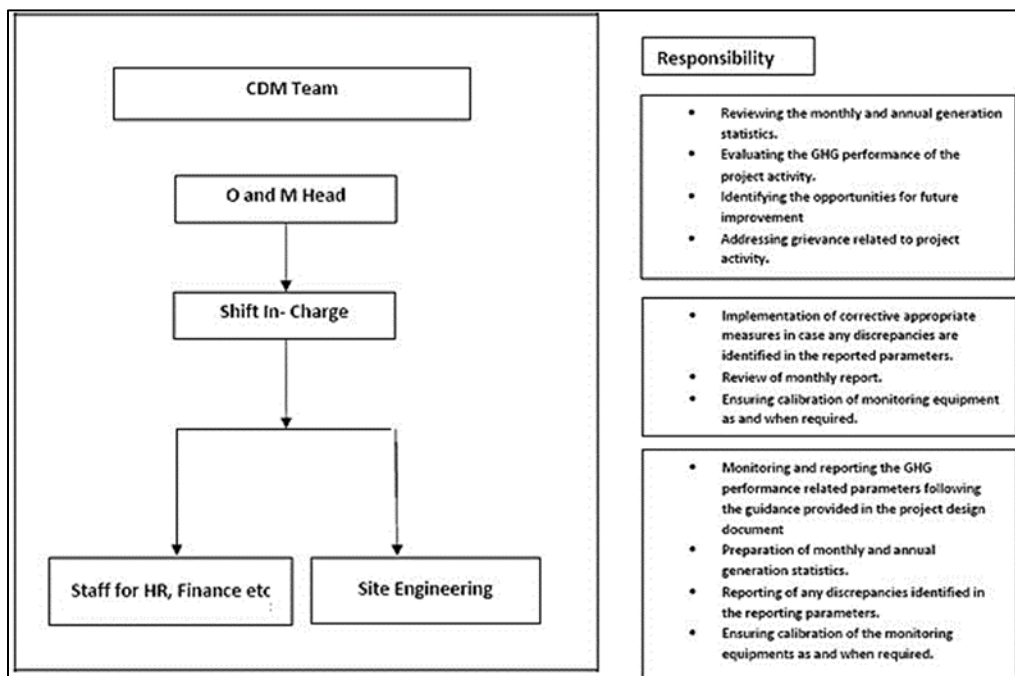
	connected via transmission lines of 220 kV, having its own SEM meter (main meter and check meter). In case, anyone transmission line in not in service than complete load will be shifted to other transmission line which is in operation. The energy meters are special energy meters, which are installed and sealed by the Power Grid Corporation of India Limited in the presence of the representatives of the power producer. The check meter shall be used during the period the main metering system is not in service. This can be crosschecked from the monthly Invoices raised by the PP which is the scheduled power being feed into the grid. The crosscheck mechanism can be referred from the actual ER sheet.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	861,428
Monitoring equipment	Special Energy Meters (SEMs) of 0.2s accuracy class
QA/QC procedures to be applied	The meters is approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years. ⁹ In the absence or delay in the meter calibration, appropriate Guidelines will be applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter. The billing is raised based on substation meters.
Purpose of the data	Calculation of baseline emissions
Calculation method	NA
Comments	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected wind power project being implemented. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

⁹ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity. The team comprises of the following members:



Data Measurement

The electricity supplied or transmitted is sourced from “Deviation Settlement Account document” and is cross checked from “Monthly Generation Reports”. “Deviation Settlement Account document” which are publically available documents issued by the „Southern Regional Power Committee¹⁰. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data collection and archiving

The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

Emergency preparedness

¹⁰ <http://www.srpc.kar.nic.in/html/index.html>

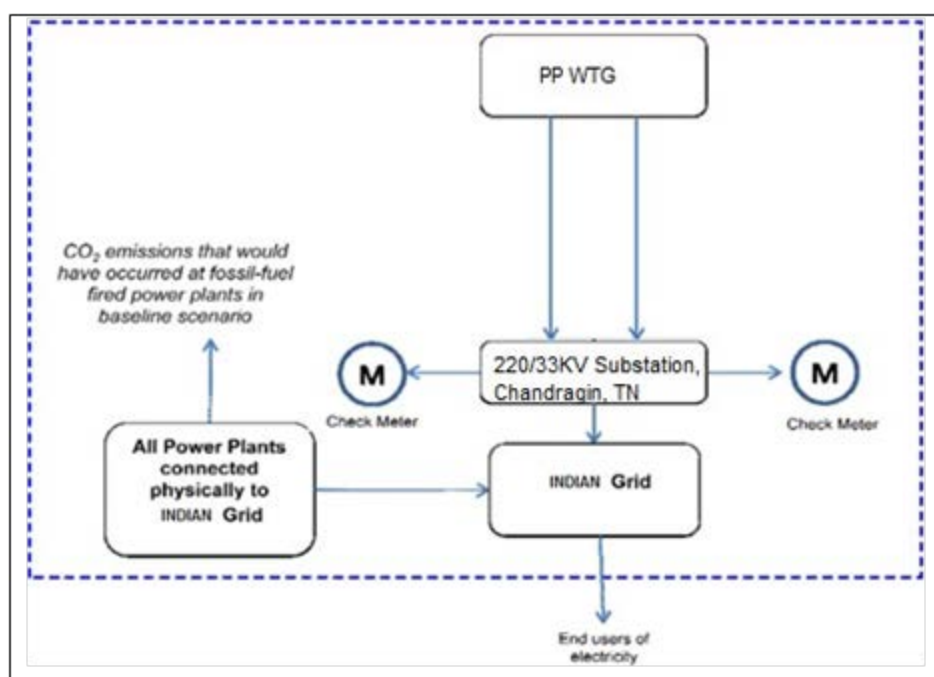
The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Metering Arrangement

Line diagram with metering arrangement for the wind project activity is shown below:



QA/QC procedures

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records will be crosschecked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per the approved consolidated Methodology ACM0002 (Version 19.0) para 42:

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that existing grid- connected power plants and the addition of new grid- connected power plants would have generated all project electricity generation above baseline levels. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (tCO₂/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 CDM project activity in year y (MWh/yr)

$EF_{grid, CM, y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (t CO₂/MWh)

Grid Emission Factor

The GEF is fixed ex-ante in the PD as given below:

Parameter	Value
OM	0.9610
BM	0.8644
CM	0.9368

Therefore,

$$BE_y = 861,428 \times 0.9368$$

$$= 806,985 \text{ tCO}_2\text{e (Round down values)}$$

5.2 Project Emissions

Not Applicable, since project emissions from the wind power project activity is zero as per ACM0002 methodology.

5.3 Leakage

Not Applicable, since leakage emissions from the wind power project activity is zero as per ACM0002 methodology.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01/12 /2019 to 31/12/2019	585,55	0	0	585,55
01/01/2020 to 31/12/2020	697,972	0	0	697,972
01/01/2021 to 31/01/2021	504,58	0	0	504,58
Total	806,985	0	0	806,985

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 829,634 tCO₂e, whereas actual emission reductions achieved are 806,985 tCO₂e, which is approximately 3% lower than the estimated emission reductions. Since the PLF is completely governed by the availability of wind, which is natural phenomenon and PLF is well within the threshold limits of sensitivity analysis during this monitoring period.

APPENDIX 1: Meter Details

Energy billing meter installed at the 220/33KV Substation, Chandragin, Tamil Nadu and all WTGs are connected to the mentioned substation.

Meter Sl. No.	Make	Class	Calibration date	Due date for Calibration
NP3285A (Main Meter)	Secure	0.2 s	25/09/2018	24/09/2023
NP3286A (Check Meter)	Secure	0.2 s	25/09/2018	24/09/2023