



WIND POWER PROJECT BY GREEN INFRA WIND POWER GENERATION LIMITED



Document Prepared by (Infinite Solutions)

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Monitoring Period	01-August-2021 to 31-July-2022 (Including both the days)
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The purpose of the project activity is to generate clean electricity by harnessing the renewable wind energy .The project activity involves the installation of 18 Wind Turbine Generators (WTGs) for generating the electricity, aggregated to capacity of 36 MW.

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 79,147 tCO₂e per year, thereon displacing 81,993 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 project and its location of installation are mentioned in the table below: -

Name of the Investor: Green Infra Wind Power Generation Limited					
COD ¹	Cap of each WTG	No of WTGs	MW	Location	Usage
12-August-2016	2 MW	5	10	Harappanahalli Taluk, Davanagere district, Karnataka.	Generated Electricity Supply to Group Captive consumers
21-September-2016	2 MW	3	6		
02-November-2016	2 MW	2	4		
13-January-2017	2 MW	8	16		
	Total	18	36		

Project WTGs technical details has been provided under section 3.1 of the MR.

Thus, project activity generates clean electricity & helps in avoiding the fossil fuel fired electricity generation from the grid electricity mix and thereby reducing the equivalent GHG emissions from the atmosphere.

The total GHG emission reductions or removals generated in this monitoring period (01-August-2021 to 31-July-2022) is 71,325 tCO₂e.

¹ As per Commissioning Certificates.

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.

Methodology : ACM0002: Grid-connected electricity generation from renewable sources - Version 18.1²

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	Green Infra Wind Power Generation Limited
Contact person	Mr. GL Aditya
Title	Assistant Manager
Address	5th floor, Tower C, Building No. 8, DLF Cybercity, Gurgaon – 122002 Haryana, India
Telephone	+91 97393 46313
Email	aditya.l@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
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. 12-August-2016.

1.6 Project Crediting Period

The project chooses a renewable crediting period of 10 years. After 10 years, the crediting period will be renewed twice.

² <https://cdm.unfccc.int/UserManagement/FileStorage/2L9KQXT6HGREJWO84VD0IPYB7U5SMA>

Crediting period start date : 12-August-2016

Crediting period end date : 11-August-2026

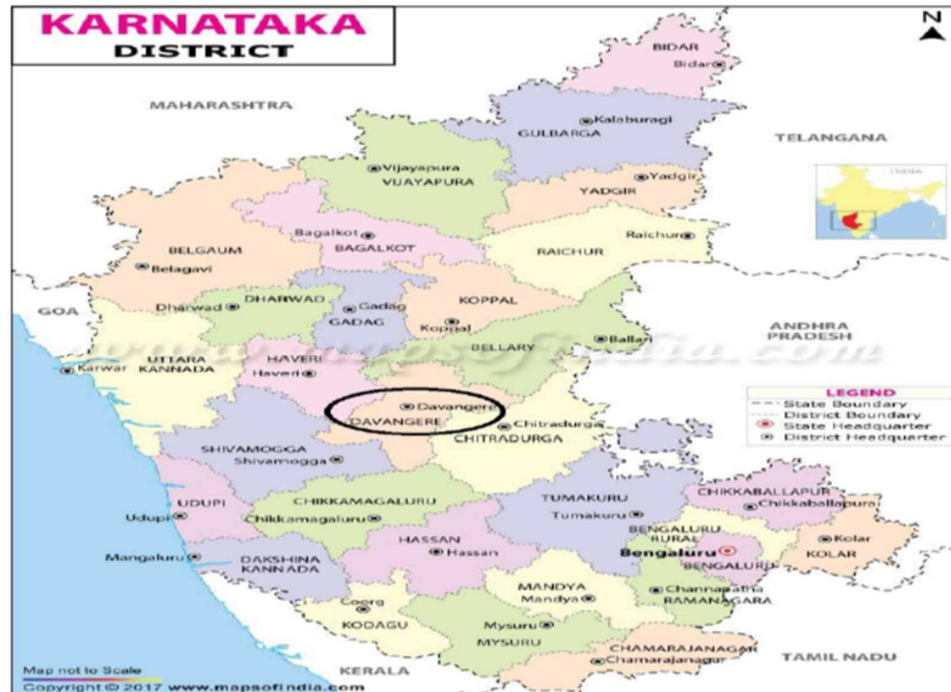
1.7 Project Location

The project activity is located in Karnataka state of India.

Investor Name: Green Infra Wind Power Generation Limited

Capacity	Taluka	District	State
36 MW	Harappanahalli	Davanagere	Karnataka

The project locations have been shown in the map below:



WTG wise Location:

S. No	SCADA Label	Longitude ³	Latitude
1	HRG 01	75° 35' 2.4"N	14° 28' 51.6"E
2	HRG 02	75° 34' 30"N	14° 29' 6"E
3	HRG 03	75° 35' 31.2"N	14° 29' 31.2"E
4	HRG 04	75° 34' 55.2"N	14° 29' 2.4"E
5	HRG 05	75° 34' 30"N	14° 29' 31.2"E

³ Provided by client and cross checked with google earth

6	HRG 06	75 ° 35' 31.2"N	14 ° 29' 27.6"E
7	HRG 07	75 ° 34' 55.2"N	14 ° 29' 56.4"E
8	HRG 08	75 ° 34' 26.4"N	14 ° 29' 27.6"E
9	HRG 09	75 ° 34' 15.6"N	14 ° 29' 31.2"E
10	HRG 10	75 ° 35' 34.8"N	14 ° 29' 6"E
11	HRG 11	75 ° 34' 22.8"N	14 ° 29' 27.6"E
12	HRG 12	75 ° 35' 45.6"N	14 ° 29' 34.8"E
13	HRG 14	75 ° 35' 31.2"N	14 ° 28' 55.2"E
14	HRG 15	75 ° 35' 31.2"N	14 ° 28' 58.8"E
15	HRG 16	75 ° 34' 30"N	14 ° 28' 55.2"E
16	HRG 17	75 ° 35' 6"N	14 ° 28' 55.2"E
17	HRG 18	75 ° 35' 34.8"N	14 ° 29' 34.8"E
18	HRG 19	75 ° 34' 51.6"N	14 ° 29' 31.2"E

1.8 Title and Reference of Methodology

Type : ACM0002,

Title : “Grid-connected electricity generation from renewable sources”

Sectoral Scope : 01

Version : 18.1, Dated: 23-May-2018

EB : 99

Reference: <https://cdm.unfccc.int/methodologies/DB/5725LCHYPYM4I1V8OD9SFYVAMFFWNP>

In line with the applied methodology, following tools and guidelines are referred :

- Tool to calculate the emission factor for an electricity system, Version 6, EB 97 annex 07⁴.
- Tool for the demonstration and assessment of additionality - Version 7, EB 70 Annex 8⁵.

1.9 Participation under other GHG Programs

PP has submitted the undertaking confirming that project has not participated in any other binding and/or non-binding GHG program and any national REC scheme to the VVB Hence, there is no double accounting of emission reduction has happened.

Participation under Other GHG Programs:

The project activity has never participated in any other GHG programs.

⁴ [http://cdm.unfccc.int/methodologies/DB/5725LCHYPYM4I1V8OD9SFYVAMFFWNP](https://cdm.unfccc.int/methodologies/DB/5725LCHYPYM4I1V8OD9SFYVAMFFWNP)

⁵ <http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits:

1) The project proponent is not part of any emission trading program. PP also does not have any binding GHG emission limits. The net GHG emission reductions from the project is not used for compliance with emission trading programs or to meet binding limits on GHG emissions. A letter of this effect from the project proponent shall be submitted to the VVB.

The project activity has not participated under any other GHG programs. A letter of this effect from the project proponent shall be submitted to the validator during verification.

Other Forms of Environmental Credit:

2) The project activity does not result in creation of any other kind of environmental credits. A letter from the project proponent shall be submitted to the validator with an undertaking that the project has not created any other form of environmental credit. PP has not participated in REC mechanism. Hence, not eligible to claim REC benefits.

1.11 Sustainable Development Contributions

The main purpose of this project activity is to generate clean form of electricity through renewable Wind energy source for sale of electricity to the grid. The project activity involves the installation of 18 Wind Turbine Generators (WTGs) for generating the electricity, aggregated to capacity of 36 MW. During the current monitoring period the project generated clean and affordable energy 73,890 MWh through renewable sources through which the project avoided release of 71,325 tCO₂ in to the atmosphere. The project also provided employment to 6 people and 12 trainings.

Hence the project is contributing towards SDG 7, SDG 8 and SDG 13 during the current monitoring period.

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime						
1)	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 73,890 MWh, renewable electricity has supplied to Indian grid during the reported period that helps to increase the renewable energy share in the energy mix.	About 73,890 MWh⁶, renewable electricity has supplied to Indian grid that helps to increase the renewable energy share in the energy mix. The contribution over project from August 2021- July 2022 is as follows- <table><tr><th>S.No</th><th>Monitoring Period</th><th>Contribution</th></tr><tr><td>1.</td><td>01-August-2021 to 31-July-2022</td><td>73,890 MWh</td></tr></table>	S.No	Monitoring Period	Contribution	1.	01-August-2021 to 31-July-2022	73,890 MWh
S.No	Monitoring Period	Contribution									
1.	01-August-2021 to 31-July-2022	73,890 MWh									
2)	8.6	8.6.1 Proportion of youth (aged 15-24) not in education, employment or training	Implemented activities to decrease	The number of people employed are 6. 11 Trainings are provided during current monitoring period	. The contribution over project from August 2021- July 2022 is as follows- <table><tr><th>S.No</th><th>Monitoring Period</th><th>Contribution</th></tr><tr><td>1.</td><td>01-August-2021 to 31-July-2022</td><td>6 jobs and 11 Trainings</td></tr></table>	S.No	Monitoring Period	Contribution	1.	01-August-2021 to 31-July-2022	6 jobs and 11 Trainings
S.No	Monitoring Period	Contribution									
1.	01-August-2021 to 31-July-2022	6 jobs and 11 Trainings									

⁶ <https://registry.terra.org/app/projectDetail/VCS/1776>

3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By supplying 73,890 MWh clean electricity to Indian grid, the project avoided release of 71,325 tCO ₂ e in to the atmosphere during the reporting period.	Prevented the release of 71,325 tCO ₂ e ⁷ into the atmosphere. The contribution over project from August 2021- July 2022 is as follows-		
					S.No	Monitoring Period	Contribution
					1.	01-August-2021 to 31-July-2022	71,325 tCO ₂ e

⁷ <https://registry.terra.org/app/projectDetail/VCS/1776>

2 SAFEGUARDS

2.1 No Net Harm

There is no net harm from the project activity as the wind project does not have any negative environmental and socio-economic impacts.

Further, as per the prevailing Ministry of Environment and Forest laws, the Schedule 1 of MoEF&CC(Government of India) notification dated 14 September (2006)⁸, 38 activities are required to undertake environmental impact assessment studies. Environmental Impact Assessment study is not required for wind mill project as there is no negative environmental impact due to the project activity and wind energy is one of the cleanest sources of energy.

2.2 Local Stakeholder Consultation

Local stakeholder consultation has already done during registration of project activity. The stakeholder consultation meeting was conducted on 10-November-2015 at project site, Karnataka. The consultations were done by identifying the right stakeholders, including, local farmers, villagers, school teachers, government officials, panchayat officials, local NGOs, bv PP.

The representative of Green Infra Wind Power Generation Limited (Project Investor), welcomed the gathering and given a brief about the climate mitigation project activity. Subsequent to the introductory speech, stakeholders were explained about the electricity generation from wind project is an environmental friendly power generation technology contributing to reduction in GHG emissions. They were also explained about the benefits of the wind power projects like, increasing energy availability and improving quality of power and its assistance to the local population by providing employment opportunities to both skilled & unskilled labours.

Also, as a part of continual improvement process, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project. It is appropriate publicly accessible location at which local stakeholders can provide their feedback on the project. This location is also conducive to continuous and regular checks for stakeholder comments. During the current monitoring period, positive feedbacks had been received regarding site

⁸ <http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>

operation. No any grievances received during the current monitoring period; therefore, no any mitigation measures were required.

However, there is no comments received in the current monitoring period.

2.3 AFOLU-Specific Safeguards

This is not applicable to the project activity as for non-AFOLU projects, this section is not required.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity has been successfully commissioned⁹ by project promoters and was registered by VCS Board subsequently (Project ID: Ref No 1776).

The project is a Wind Power project, consists of 18 numbers of WTGs of 2 MW each aggregated to capacity of 36 MW. The generated electricity is delivered to grid for group captive consumer usage.

The project has been operational barring from routine shut down for maintenance of WTGs, no significant incident or downtime has been observed to be taken place during the current monitoring period. So, no events have happened that may impact the GHG emission reductions or removals and monitoring in this monitoring period.

The detailed specifications¹⁰ of the WTGs are as below:

WTG Make and Model No.	Gamesa G114
Generator Type & Rating	Doubly-Fed Asyn, 2000kW
WTG configuration	18 X 2000 kW
Rotor Diameter	114.0 m
Swept Area	10,207.0 m ²
Hub Height	106
Tower Type	Conical Tubular Steel
Cut-in-wind speed	2.5 m/s
Cut-in-wind speed	2.5 m/s
Rated wind speed	10.0 m/s
Cut-out wind speed	25.0 m/s

⁹ Commissioning date has been provided under Section 1.1 of the MR.

¹⁰ <https://en.wind-turbine-models.com/turbines/428-gamesa-g114-2.0mw>

Survival wind speed	60.0 m/s
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The electricity generated by the project is exported to the Indian electricity grid for group captive consumer usage. The project activity displaces an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid.

The project activity has been in operation continuously since its commissioning. There have been no emergencies happened to the monitoring system. There are no events or situation that occurred during the monitoring period which may impact the applicability of the methodology.

Lifetime of the project activity

The lifetime of the project activity is 25 years.

3.2 Deviations

3.2.1 Methodology Deviations

There has been no methodology deviation applied during this monitoring period of the project activity.

3.2.2 Project Description Deviations

Deviation during previous monitoring periods:

Deviation 1:

1. Change from PD: Consideration of Transmission losses in calculating the Net electricity supplied to the grid by the project plant in a given month

Net Electricity (kWh) = Export, kWh – Import, kWh – Transmission losses,

Reason: Currently, Discom has started considering the “Transmission Loss” in JMR. Hence same has been considered and deducted from the Export value to arrive at the Net Electricity delivered from the project activity. This is not under the purview of PP as the State Electricity board is a government entity and solely responsible for the JMR preparation and any changes in the calculation of Net Electricity formulae. PP has no control over it and therefore deducted the transmission losses in line with the JMR prepared by the DISCOM during the current monitoring period.

This deviation was approved in monitoring period of 01-July-2018 to 31-July-2020

Deviation 2:

2. Change from PD: Registered JPD provides the latitude & longitude of Harapanahalli site only, the WTGs wise Latitude & Longitude is provided as well.

S.No	SCADA Label	Longitude	Latitude
1	HRG 01	75° 35' 2.4"N	14° 28' 51.6"E
2	HRG 02	75° 34' 30"N	14° 29' 6"E
3	HRG 03	75° 35' 31.2"N	14° 29' 31.2"E
4	HRG 04	75° 34' 55.2"N	14° 29' 2.4"E
5	HRG 05	75° 34' 30"N	14° 29' 31.2"E
6	HRG 06	75° 35' 31.2"N	14° 29' 27.6"E
7	HRG 07	75° 34' 55.2"N	14° 29' 56.4"E
8	HRG 08	75° 34' 26.4"N	14° 29' 27.6"E
9	HRG 09	75° 34' 15.6"N	14° 29' 31.2"E
10	HRG 10	75° 35' 34.8"N	14° 29' 6"E
11	HRG 11	75° 34' 22.8"N	14° 29' 27.6"E
12	HRG 12	75° 35' 45.6"N	14° 29' 34.8"E
13	HRG 14	75° 35' 31.2"N	14° 28' 55.2"E
14	HRG 15	75° 35' 31.2"N	14° 28' 58.8"E
15	HRG 16	75° 34' 30"N	14° 28' 55.2"E
16	HRG 17	75° 35' 6"N	14° 28' 55.2"E
17	HRG 18	75° 35' 34.8"N	14° 29' 34.8"E
18	HRG 19	75° 34' 51.6"N	14° 29' 31.2"E

Reason: This is to update the information in the JPD with respect to the location of individual WTG along with the Harapanahalli site latitude & Longitude.

The above deviations do not impact the applicability of the methodology, additionally or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology. This deviation was approved in monitoring period of 01-July-2018 to 31-July-2020

Deviation during current monitoring period

Deviation 3

Change in the cross check mechanism –

As the electricity generated is used by the group captive consumers hence, the generation as per JMRs in a financial year can be crosschecked with all the invoices raised during that financial year.

3.3 Grouped Projects

The project is not a grouped project hence this section 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 in year y
Source of data	Central Electricity Authority: Calculated from CEA database, Version 12, May 2017 ¹¹
Value applied	0.9843
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 05” as 3-year generation weighted average using data for the years 2013-14, 2014-15 & 2015-16. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 12, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	Calculation of baseline emissions
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 in year Y
Source of data	Central Electricity Authority: Calculated from CEA database, Version 12, May 2017 ¹²
Value applied	0.9083
Justification of choice of data or description of	Calculated as per “Tool to calculate the emission factor for an electricity system, version 05” as per the latest data available for the most recent year 2015-16.

¹¹ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

¹² http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

measurement methods and procedures applied	The data is obtained from “CO ₂ Baseline Database for Indian Power Sector” version 12, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	Calculation of baseline emissions
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ /MWh
Description	Combined margin CO ₂ emission factor in year y
Source of data	Central Electricity Authority: Calculated from CEA database, Version 12, May 2017 ¹³
Value applied	0.9653
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	This parameter is fixed ex-ante for the entire crediting period.

4.2 Data and Parameters Monitored

Data / Parameter	EG _{PJ,y}
Data unit	MWh/y
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Monthly joint meter reading reports
Description of measurement methods	The Net electricity supplied to the grid is the difference of final value of export and import after deducting Transmission losses in line with the JMR, and same value is considered for ER calculations.

¹³ http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

and procedures to be applied	
Frequency of monitoring/recording	Continuous monitoring with monthly recording
Value monitored	73,890 MWh
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.
QA/QC procedures to be applied	The electricity supplied/exported by the project activity in the JMR report in financial year is cross checked with the yearly (Financial) invoices of sale. The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5¹⁴ years.. In the absence or delay in the meter calibration appropriate Guidelines are 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 from the JMR and the same is considered in the monitoring parameter. The billing is raised based on substation meters.
Purpose of the data	Calculation of Baseline Emissions
Calculation method	Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh – 115% Import, kWh – Transmission losses, Currently, Discom has started considering the “Transmission Loss” in JMR. Hence, same has been considered and deducted from the Export value to arrive at the Net Electricity delivered from the project activity. This is not under the purview of PP as the State Electricity board is a government entity and solely responsible for the Joint Meter Reading preparation and any changes in the calculation of Net Electricity formulae. PP has no control over it and therefore deducted the transmission losses in line with the JMR prepared by the DISCOM during the current monitoring period.

¹⁴ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

	In invoice, the import is calculated as 115% ¹⁵ of import and thus conservative value of considering 115% of import is used for ER calculations.
Comments	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VCU's for this project activity, whichever occurs later.

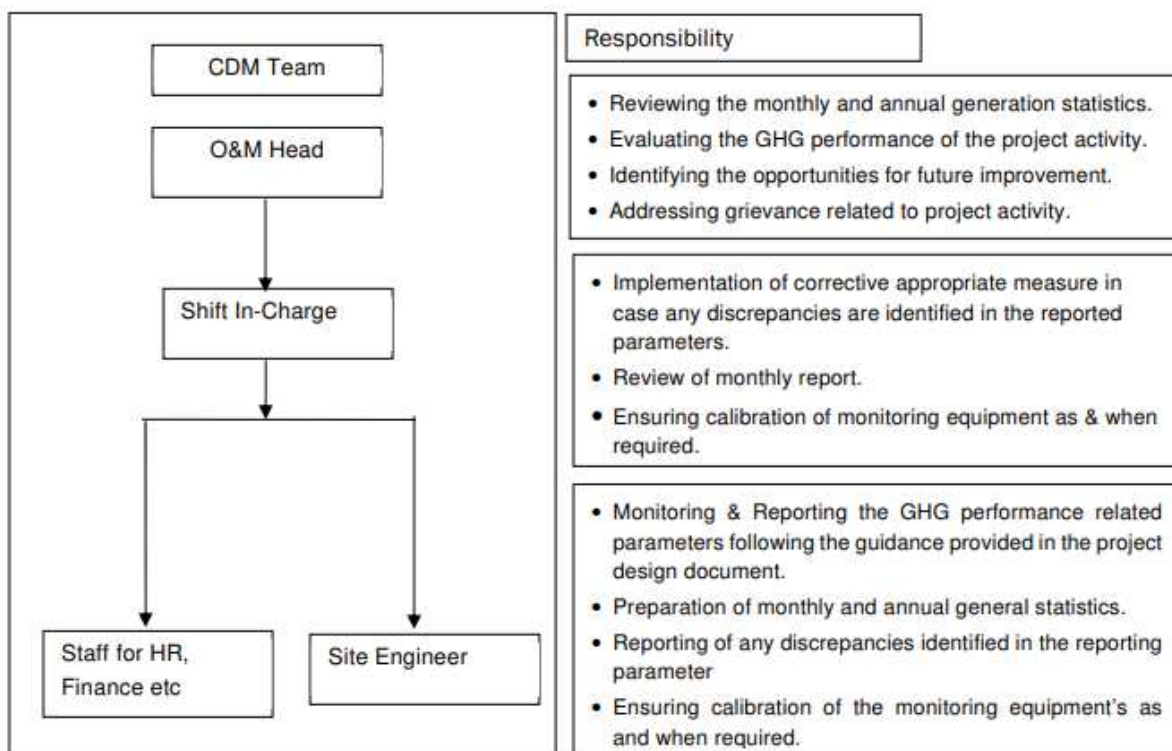
4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for VCS activities and is proposed for grid-connected wind power project being implemented as per methodology ACM0002 Version 18.1. The monitoring plan, which is 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.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP had following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity.

The team comprises of the following members:

¹⁵ <https://indiankanoon.org/doc/45089290/>



Data Measurement

The export and import energy are measured continuously using above mentioned Main and Check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. As the electricity generated is used by the group captive consumers hence, the generation as per JMRs in a financial year can be crosschecked with all the invoices raised during that financial year

Data collection and archiving

Readings from meters are collected in the presence of the plant in-charge. Export and Import data are recorded and stored in logs as well as in electronic form on a daily basis. 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 VCU for the project activity whichever occurs later.

Emergency preparedness

The project activity does 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.

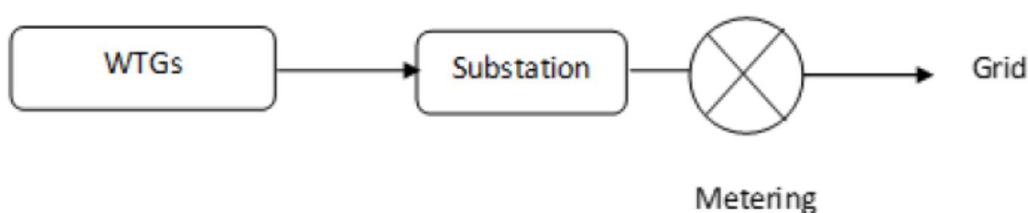
Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff is trained. The plant helpers are trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan. The following trainings are provided during current monitoring period-

S.No	Date	Topic
1	09-July-2022	Ergonomics and manual handling
2	16-June-2022	PTW training
3	30-May-2022	HIRA
4	22-April-2022	Chemical and Dust Hazard
5	24-March-2022	Stress management
6	11-February-2022	SOP review
7	09-February-2022	Lifesaving role
8	31-January-2022	Covid-19 safety
9	29-December-2021	Covid-19 Awareness training
10	29-September-2021	Basic safety while work in PSS, USS line
11	17-August-2021	PPE training

Metering Arrangement

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



The wind plant has their own dedicated metering arrangement at the substation end. The metering arrangement is under control of state electricity board and may change in future.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per methodology ACM0002 Version 18.1:

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

Where,

BE_y = Baseline Emissions in year y (tCO_{2e}/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 VCS 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” (tCO_{2e}/MWh) (i.e, 0.9653 tCO₂/MWh).

and;

$$EG_{PJ,y} = 73,890 \text{ MWh (Round down value)}$$

Here,

$$BE_y = 73,890 \text{ MWh} * 0.9653 \text{ tCO}_2/\text{MWh}$$

$$= 71,325 \text{ tCO}_{2e} \text{ (Round down value)}$$

5.2 Project Emissions

Not Applicable, since emissions from the project activity is zero as per methodology ACM0002 Version 18.1..

5.3 Leakage

Not Applicable, since leakage emissions from the project activity is zero as per methodology ACM0002 Version 18.1 .

5.4 Net GHG Emission Reductions and Removals

As per the applied methodology, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where,

ER_y = Emission Reduction in tCO_{2e}/year

BE_y = Baseline emission in tCO_{2e}/year

PE_y = Project emissions in tCO_{2e}/year

Year	Baseline emissions or removals (tCO _{2e})	Project emissions or removals (tCO _{2e})	Leakage emissions (tCO _{2e})	Net GHG emission reductions or removals (tCO _{2e})
(01-August-2021 to 31-December-2021) 2021	28,234	0	0	28,234
(01-January-2022 to 31-July-2022) 2022	43,091	0	0	43,091
Total	71,325	0	0	71,325

It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for current monitoring period is 79,147 tCO_{2e}, whereas actual emission reductions achieved are 71,325 tCO_{2e}, which is around 10.33 % lower than the estimated emission reductions. This is mainly due to the natural wind resource availability, and thus wind power generation, is characterized by high inter-monthly variation (with the difference of good-wind month, average month, and poor-wind month) and yearly variation (with the difference of good wind year, average year, and poor-wind year).

Hence the difference is attributed to wind uncertainty which is an uncontrolled natural phenomenon.

APPENDIX 1: CALIBRATION DETAILS

Meter and Calibration details of 36 MW Wind project by Green Infra Wind Power Generation Limited:

Feeder No 1		
Meter & Calibration Details:		
Details	Main Meter	Check Meter
Meter Number	16196486	16196494
Make	L&T	L&T
Accuracy	0.2s	0.2s
Last Calibration	06-April-2017	06-April-2017
Due date	05-April-2022	05-April-2022
Latest calibration	15-October-2020	15-October-2020
Due date	14-October-2025	14-October-2025

Feeder No 2		
Meter & Calibration Details:		
Details	Details	Details
Meter Number	16196472	16196478
Make	L&T	L&T
Accuracy	0.2s	0.2s
Last Calibration	06-April-2017	06-April-2017
Due date	05-April-2022	05-April-2022
Latest calibration	15-October-2020	15-October-2020
Due date	14-October-2025	14-October-2025

APPENDIX 2: BREAKDOWN DETAILS

S.No	Date	Location	Time(in hours)	Remark
1.	05-October-2021	HRG 03	14.2	812 Blade position meas. Error(00:00 to 13:12),(13:12 to 14:12)Due to path way issue WTG can't access.
2.	05-October-2021	HRG 12	22.4	205 Low level hydraulic group refrigeration oil(00:00 to 15:24),(15:24 to 22:24)Due to path way issue WTG can't access.
3.	10-October-2021	HRG 08	11.9	2118 BUS error - INTERBUS failure (01:35 to 13:25)
4.	10-December-2021	HRG 05	10.1	60 Month Maintenance work day-2 (09:20 to 19:26).
5.	11-December-2021	HRG 02	10.3	60 Month Maintenance work day -2 (09:20 to 19:30),410:OGS (23:56 to 24:00).
6.	14-December-2021	HRG 10	10.5	60 Month Maintenance work day-2 (09:27 to 19:55).

7.	25-December-2021	HRG 01	14.4	60 Month Maintenance work day-2 (09:35 to 23:59).
8.	18-January-2022	HRG 15	14.4	Generator Bearing Replacement work (09:36 to 24:00).
9.	19-January-2022	HRG 15	24	Generator failure
10.	20-January-2022	HRG 15	17.1	Generator Bearing Replacement work (00:00 to 11:36), Pitch cylinder friction disc Installation (11:36 to 17:06).
11.	25-January-2022	HRG 11	14	Pitch cylinder replacement work (10:00 to 24:00).
12.	26-January-2022	HRG 11	16	Pitch cylinder replacement work (00:00 to 10:00), Pitch cylinder friction disc Installation (10:00 to 16:00).
13.	01-February-2022	HRG 12	12.5	Manual stopped for Generator bearing replacement work (11:30 to 24:00)
14.	02-February-2022	HRG 12	24	Manual stopped for Generator bearing replacement work (00:00 to 24:00)
15.	03-February-2022	HRG 12	21.7	Manual stopped for Generator bearing replacement work (00:00 to 17:27, 18:15 to 21:42)
16.	04-February-2022	HRG 17	11.2	SF6 breaker R Phase Boot failure (12:48 to 24:00)
17.	05-February-2022	HRG 17	15.18	BD: SF6 breaker R Phase Boot failure (00:00 to 15:18)
18.	08 February 2022	HRG 02	11.57	5202 Stator Contactor failure 01:02 to 12:36
19.	20-March-2022	HRG 03	12.18333333	BD: Bus Error Interbus Failure
20.	05-April-2022	HRG 04	22.95	BD Communication failure due to sf6 breaker T-connector failure

21.	05-April-2022	HRG 07	23.63333333	BD Communication failure due to sf6 breaker T-connector failure
22.	06-April-2022	HRG 04	17.2	BD Communication failure due to sf6 breaker T-connector failure
23.	06-April-2022	HRG 07	18.86666667	BD Communication failure due to sf6 breaker T-connector failure
24.	06-April-2022	HRG 11	21.25	BD Communication failure due to sf6 breaker T-connector failure
25.	02-May-2022	HRG 15	10.95	BD Low level hydraulic group refrigeration oil
26.	15-June-2022	HRG 17	14.75	BD coolant of the coolant circuit failure & SD Manual stop for 6 month maintenance work
27.	16-June-2022	HRG 17	17.36666667	coolant of the coolant circuit failure
28.	18-june-2022	HRG 02	10.1	220kv line LC taken for 220kv line maintenance work
29.	27-June-2022	HRG 02	14.21666667	Manual stop for generator DE & NDE bearing replacement work
30.	28-June-2022	HRG 02	24	Manual stop for generator DE & NDE bearing replacement work

APPENDIX 3: EMPLOYEE DETAILS



Green Infra Wind Power Generation Limited
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TO WHOMSOEVER IT MAY CONCERN

Date: 21-07-2022

This declaration is in reference to the VCS Project activity i.e. "WIND POWER PROJECT BY GREEN INFRA WIND POWER GENERATION LIMITED" which is undergoing VCS Verification for the period of 01-Aug-2021 to 31-July-2022. The Project activity involves the installation of Wind Power with the total installed capacity of 36 MW.

Project Investors' Name	Capacity in MW	Connection with grid	State
Green Infra Wind Power Generation Limited	36 MW	Indian Grid	Karnataka

The Project activity employed 6 employee during the monitoring period (01/08/2021 to 31/07/2022). The total employees since commissioning in the project activity is 17 (on role and off role)

For Green Infra Wind Power Generation Limited

Authorized Signatory

 G. L. Aditya
 Authorized Signatory

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