



**Verified Carbon
Standard**

GRID CONNECTED WIND ENERGY PROJECT IN TAMIL NADU

Document Prepared by CLP Wind Farms (Theni – Project II) Private
Limited

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The project has been implemented by CLP Wind Farms (Theni – Project II) Private Limited (“CLP”) in the state of Tamil Nadu. The Wind Energy Generators (“WEG”) have been supplied by Vestas Wind Technology India Private Limited (“Vestas”). As per the Supply and Services agreement signed between CLP and Vestas, later is responsible for technology and equipment supply, as well as the operation and maintenance of the WEGs. The Project uses wind energy to generate electricity using 1.65 MW Wind Turbine Generators (WEGs) in the Tamil Nadu state in India. Total 30 numbers 1.65 MW of Vestas make WEGs are installed as part of this Project by CLP. The total capacity of project activity is 49.5 MW. The power generated from this project activity is supplied to the state electricity grid which is a part of Southern regional grid of India *and now* same is now part of integrated Indian grid. The Project is fully commissioned and is supplying electricity to Integrated Indian Grid system.

The Project activity helps to reduce the demand- supply gap in the country and also helps in contributing to the sustainable development by using wind energy as the source of power generation and reduction of GHG emissions.

The first machine under this project activity was commissioned on 25/06/2010 and last machine was commissioned on 02/07/2010.

During this monitoring period the project activity has exported 85,385.95 GWh of net energy to the Southern Grid of India (same is now part of integrated Indian grid). The total emission reductions achieved during the monitoring period from 01/10/2021 to 31/12/2022 (both days inclusive) is 79,803 tCO₂.

The audit history of the project is provided below:

Audit Type	Period	Program	VVB Name	Number of years
Validation and Verification	25/06/2010 – 10/05/2012	VCS	URS VERIFICATION PRIVATE LIMITED	1 year, 10 months
Verification	11/05/2012 – 03/10/2012	VCS	URS VERIFICATION PRIVATE LIMITED	4 months,
Verification	04/10/2012 – 09/06/2016	VCS	Bureau Veritas Certification	3 years, 8 months
Verification	10/06/2016 – 09/10/2017	VCS	LGAI Technological Center	1 year, 4 months

Verification	10/10/2017 - 09/09/2018	VCS	Earthood Services Private Limited	11 months
Verification	10/09/2018 - 24/06/2020	VCS	Earthood Services Private Limited	1 year, 9 months
Validation and Verification	25/06/2020 - 30/09/2021	VCS	LGAI Technological Center	1 year, 3 months
Verification	01/10/2021 - 31/12/2022	VCS	Earthood Services Private Limited	1 year, 3 months
Total				12 years, 6 months

1.2 Sectoral Scope and Project Type

The project activity is considered under “grid-connected electricity generation from renewable sources” (Sectoral Scope) that generates electricity in excess of 15 MW (limit for small scale project). Therefore, as per the scope of the project activity enlisted in the “list of sectoral scopes and related approved baseline and monitoring methodologies”, the project activity is categorized in Scope Number 1. Details of the same are listed below:

Scope Number : 1

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

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

Reference: ACM0002, Version 20

The Project is neither a grouped nor an AFOLU project.

1.3 Project Proponent

Organization name	CLP Wind Farms (Theni – Project II) Private Limited
Contact person	Navneet Kumar
Title	Head – Carbon Offsets
Address	7th Floor, Fulcrum, Sahar Road, Andheri (East), Mumbai – 400099, India
Telephone	+ 91 22 6758 8888
Email	carbon@clpindia.in

1.4 Other Entities Involved in the Project

Organization name	Not Applicable
Role in the Project	Not Applicable
Contact person	Not Applicable
Title	Not Applicable
Address	Not Applicable
Telephone	Not Applicable
Email	Not Applicable

1.5 Project Start Date

25-June-2010, being the date of commissioning of first WEG installed under the project activity

1.6 Project Crediting Period

The crediting period start date is 25/06/2010. The project proponent has chosen a 10 years renewable crediting period. Hence, first crediting period for VCS begins on 25/06/2010 and ends on 24/06/2020 i.e. 10 years. This is the second crediting period of the project activity.

Start date of the crediting period : 25-June-2020

End date of the crediting period : 24-June-2030

Project crediting period : 10 years 0 months (renewable)

The Project Proponent confirms that the Project is also registered under CDM on 04/10/2012 and they will always claim emissions reductions from the Project only in one mechanism for a particular monitoring period to avoid double counting.

1.7 Project Location

Villages:G.Usulampatti, Mottanoothu, Kothapatti, Shanmuga Sundara Puram & Marikundu

District :Theni

State :Tamil Nadu

Host Party :India

The Project is spread across G.Usulampatti, Mottanoothu, Kothapatti, Shanmuga Sundara Puram & Marikundu of Theni district of Tamil Nadu state in India. The nearest airport and railway station are in Madurai city which is located at a distance of approximately 75 km from the project activity site. The coordinates of individual WEGs of this site are as below:

Sr. No.	Loc No.	Village	Taluk	District	HTSC No.	DOC	Longitude (E)	Latitude (N)
1	35	G.Uslampatti	Andipatti	Theni	WEG T 117	02-Jul-2010	77°33'53.78"	9°57'02.06"
2	1131	Mottanuthu	Andipatti	Theni	WEG T 100	25-Jun-2010	77°34'20.08"	9°56'30.83"
3	526	Mottanuthu	Andipatti	Theni	WEG T 95	25-Jun-2010	77°35'02.04"	9°57'07.75"
4	63	Koththapatti	Andipatti	Theni	WEG T 97	25-Jun-2010	77°35'26.08"	9°56'46.16"
5	1050	Mottanuthu	Andipatti	Theni	WEG T 103	25-Jun-2010	77°34'14.52"	9°57'20.06"
6	1422	Shanmugasundarapuram	Andipatti	Theni	WEG T 106	25-Jun-2010	77°33'04.40"	9°59'00.59"
7	1202	Mottanuthu	Andipatti	Theni	WEG T 91	25-Jun-2010	77°34'05.23"	9°55'46.90"
8	763	Mottanuthu	Andipatti	Theni	WEG T 120	02-Jul-2010	77°33'40.54"	9°58'45.28"
9	1064	Mottanuthu	Andipatti	Theni	WEG T 102	25-Jun-2010	77°34'34.83"	9°56'58.04"
10	177	Marikundu	Andipatti	Theni	WEG T 108	25-Jun-2010	77°33'20.37"	9°57'39.66"
11	26	Mottanuthu	Andipatti	Theni	WEG T 122	02-Jul-2010	77°35'19.41"	9°58'53.99"
12	781	Mottanuthu	Andipatti	Theni	WEG T 104	25-Jun-2010	77°34'06.37"	9°58'33.47"
13	64	G.Uslampatti	Andipatti	Theni	WEG T 118	02-Jul-2010	77°33'41.62"	9°56'30.64"
14	185	Marikundu	Andipatti	Theni	WEG T 119	02-Jul-2010	77°33'00.32"	9°57'56.24"
15	645	Mottanuthu	Andipatti	Theni	WEG T 101	25-Jun-2010	77°34'59.71"	9°58'14.94"
16	1087	Mottanuthu	Andipatti	Theni	WEG T 116	02-Jul-2010	77°34'11.23"	9°56'45.05"
17	1143	Mottanuthu	Andipatti	Theni	WEG T 99	25-Jun-2010	77°34'28.19"	9°56'19.93"

Sr. No.	Loc No.	Village	Taluk	District	HTSC No.	DOC	Longitude (E)	Latitude (N)
18	488	Mottanuthu	Andipatti	Theni	WEG T 92	25-Jun-2010	77°34'40.75"	9°56'43.03"
19	473	Mottanuthu	Andipatti	Theni	WEG T 93	25-Jun-2010	77°34'49.98"	9°56'32.52"
20	293	Mottanuthu	Andipatti	Theni	WEG T 114	02-Jul-2010	77°35'06.63"	9°56'50.57"
21	274	Mottanuthu	Andipatti	Theni	WEG T 115	02-Jul-2010	77°35'24.86"	9°57'01.23"
22	542	Mottanuthu	Andipatti	Theni	WEG T 98	25-Jun-2010	77°34'53.27"	9°57'24.12"
23	443	Mottanuthu	Andipatti	Theni	WEG T 94	25-Jun-2010	77°34'59.07"	9°56'20.61"
24	694	Mottanuthu	Andipatti	Theni	WEG T 121	02-Jul-2010	77°34'53.77"	9°58'36.03"
25	1194	Mottanuthu	Andipatti	Theni	WEG T 113	02-Jul-2010	77°34'03.96"	9°56'04.90"
26	197	Mottanuthu	Andipatti	Theni	WEG T 96	25-Jun-2010	77°35'29.19"	9°57'27.12"
27	292	Marikundu	Andipatti	Theni	WEG T 109	25-Jun-2010	77°32'53.88"	9°57'21.68"
28	1165	Mottanuthu	Andipatti	Theni	WEG T 90	25-Jun-2010	77°34'23.87"	9°55'55.31"
29	1149	Shanmugasundarapuram	Andipatti	Theni	WEG T 105	25-Jun-2010	77°33'35.52"	9°59'27.51"
30	195	Marikundu	Andipatti	Theni	WEG T 107	25-Jun-2010	77°32'41.36"	9°57'57.56"

1.8 Title and Reference of Methodology

The approved consolidated baseline and monitoring methodology ACM0002 (Version 2.0, EB105)¹, has been used to determine the baseline emissions and emission reduction due to the project activity. The title of this baseline methodology is “Grid-connected electricity generation from renewable sources”. The other UNFCCC documents referred are as below:

¹ <https://cdm.unfccc.int/methodologies/DB/HF3LP6041YY0JIP1DK6ZRJ09RSCX3S>

- Tool for the demonstration and assessment of additionality (Version 07.0.0) EB 70, Annex 8 (<https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>)
- Tool to calculate the emission factor for an electricity system (Version 7.0, EB 100)
- Guidelines on the assessment of investment analysis (version 05, EB 62)
- Guidelines on demonstration of and assessment of prior consideration of the CDM (Version 04, EB 62)
- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (ver 3.0.1, Annex 47 of EB 66)

1.9 Participation under other GHG Programs

Project is also registered as a separate CDM Project activity. Details of this CDM projects is as follows:

Project Title: Grid Connected Wind Energy Project in Tamil Nadu

UNFCCC Registration Number: 7416²

Crediting period start date: 04/10/2012

Renewal Status: Renewal of crediting period of the CDM has been successfully registered

Duration of 2nd crediting period: 04/10/2019 to 03/10/2026.

Further, the net GHG Emission reductions or removals generated by the project activity will not be used for compliance with an emission trading program or to meet binding limits on GHG Emissions

1.10 Other Forms of Credit and Supply Chain (Scope 3) Emissions

- Emission Trading Programs and Other Binding Limits: The project has not participated in any Emissions Trading Programs. The emission reductions generated for this duration of periodic verification would not be claimed under any other GHG programs
- Other Forms of Environmental Credit: CLP hereby confirms that the project has not sought or received any other GHG related environmental credit and submitted a declaration to DoE that CLP wouldn't claim any form of environmental credit except VCU for the said duration
- Supply Chain (Scope 3) Emissions: The project activity is a registered Wind Power Project. Hence supply chain (scope 3) emissions are not applicable. The project has been exclusively taken up as VCS project and has not been applied for any other form of environmental credit.

² Source: <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v6.pdf>

² HYPERLINK "http://www.cea.nic.in/archives/exec_summary/feb09.pdf" http://www.cea.nic.in/archives/exec_summary/feb09.p

1.11 Sustainable Development Contributions

The National CDM Authority (NCDMA) which is the Designated National Authority (DNA) for the Government of India (GoI) in the Ministry of Environment, Forests and Climate Change (MoEFCC) has stipulated four indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India³. The contribution of this project activity towards in terms of these four indicators is provided below:

1. Social Well Being:

- The project activity has led to the development of supporting infrastructure such as road network etc., in the wind park location, which also provides access to the local population.
- The project activity leads to alleviation of poverty by establishing direct and indirect benefits through employment generation and improved economic activities by strengthening of local grid of the state electricity utility.
- Use of a renewable source of energy reduces the dependence on imported fossil fuels and associated price variation thereby leading increased energy security.

2. Environmental Well Being:

- The project activity involves use of renewable energy source for electricity generation instead of fossil fuel based electricity generation which would have emitted gaseous, liquid and/or solid effluents/wastes.
- Being a renewable resource, using wind energy to generate electricity contributes to resource conservation. Thus the project causes no negative impact on the surrounding environment contributing to environmental well-being.

3. Economic Well Being:

- The project activity requires temporary and permanent, skilled and semi-skilled manpower at the wind park; thus, project activity has created additional employment opportunities.
- The generated electricity is being fed into the Integrated Indian grid through local grid, thereby improving the grid frequency and availability of electricity to the local consumers (villagers & sub-urban habitants) which has provided new opportunities for industries and economic activities to be setup in the area thereby resulting in greater local employment, ultimately leading to overall development.

4. Technological Well Being:

Increased interest in wind energy projects will further push R&D efforts by technology providers to develop more efficient and better machinery in future.

³ http://cdmindia.nic.in/host_approval_criteria.htm

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
Not Applicable	Not Applicable	Not Applicable	Since PP did not monitor SDG activities during current or previous monitoring period, No SDG indicator and its impact has been reported.	Not Applicable	Not Applicable

2 SAFEGUARDS

2.1 No Net Harm

In line with Ministry of Environment Forest and Climate Change, Govt. of India, Environmental Impact Assessment (EIA) is not mandatory for wind energy project. However, as per CLP's internal governance system, EIA is mandatory for all projects. Thus, EIA has been conducted before project installation and found that this project does not have any negative environmental and socio-economic impacts. Thus, this is not applicable for this project activity.

2.2 Local Stakeholder Consultation

The local stakeholder meetings were carried out at site of the project activity and the details of the same can be referred from the registered VCS PD. As a part of continuous feedback from stakeholders, along with the 3rd party O&M contractor, CLP has also appointed independent Asset Managers at every site. These assets managers are responsible for site supervision and continuous day-to-day interaction with the local stakeholders e.g., local villagers, local govt. authorities and others. Based on the local requirements, CLP has initiated several CSR/sustainable development activities in the project catchment area. Further, CLP has also placed a grievance register onsite where-in, the stakeholders can put down their request/complaint/requirements. Same is continuously monitored and appropriate action are also being taken by management. Furthermore, CLP has also placed a notice board on site to communicate any necessary information/updates to local stakeholders. CLP has found this two-way communication with local stakeholders is very effective towards sustainability of the project in long run.

2.3 AFOLU-Specific Safeguards

This section is not applicable for this project activity

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

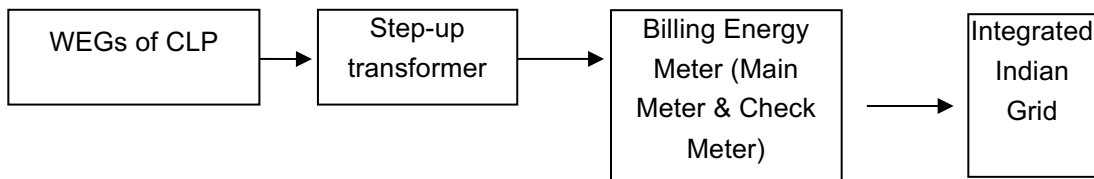
All the WEGs of the Project are commissioned and the Project is fully implemented. The commissioning dates of the individual WEGs have been provided in section 1.7.

Events that may impact the GHG emission reductions or removals and monitoring:

No such events took place during this monitoring period that may impact the GHG emission reductions for the project activity. Regular O&M activities were conducted but barring them the

project activity has been exporting electricity continuously since commissioning. There were neither major breakdowns nor other events for the project activity during the monitoring period that may impact the GHG emission reductions for the project activity.

Monitoring equipment line diagram at project Site is detailed as below: -



3.2 Deviations

2.1.1 Methodology Deviations

There are no deviations related to methodology.

2.1.2 Project Description Deviations

There is no deviation considered during current monitoring period for project activity. However, below deviations were considered during previous monitoring periods:

Following deviation has been considered during first verification of second crediting period of project activity:

During registration, calibration frequency has been considered once in three years. However, in actual practice, state utility conducted the accuracy check of all interface meters once in five years. These meters also tested whenever the energy and other quantities recorded by the meter are abnormal or inconsistent with electrically adjacent meters. Same is in line with para 18.1.b of the notification dated 17/03/2006 published by Central Electricity Board, Govt. of India (www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf). Testing and calibration have been done by state utility which is beyond the control of Project Participant.

Following deviation has been considered during 4th verification in this project activity:

In this project activity, project WEGs are generating electricity at 690 V and then stepped up to 33 kV through 3 phase transformers located near to each WEG and dedicated bi-directional energy meters are also connected to these transformers to monitor the electricity export and import by the WEGs. In accordance with Standards on Installation and Operation of Meters (pg. no 15 of 20) of the notification dated 17/03/2006 published by Central Electricity Board, Govt. of India (www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf), interface meter with 0.5s or better accuracy class needs to be installed if energy meter is connected above 650 volts and up to 33 kV. Thus, during project commissioning state utility has installed energy meters with 0.5s accuracy class as energy meters are connected to grid at 33 kV. However, TNEB (state utility) has decided to upgrade accuracy class of all energy meters from 0.5s to 0.2s. Thus, being a project developer under TNEB jurisdiction, CLP has to replace all interface energy meters at

site and same is beyond the control of CLP. Presently, all main meters have been replaced with 0.2s. Thus, this project activity is now using energy meters with higher accuracy class to monitor export and import of electricity which is more conservative in nature.

The above-mentioned deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology i.e., ACM0002 version 20.

3.3 Grouped Projects

Not Applicable

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF_{grid,OM,y}
Data unit	tCO ₂ e/MWh
Description	Operating Margin emission factor for Integrated Indian grid
Source of data	Referred from CO ₂ Baseline Database for the Indian Power Sector prepared by Central Electricity Authority Version 16.0.
Value applied:	0.9568
Justification of choice of data or description of measurement methods and procedures applied	Calculated it as CEA sourced data 3 years vintage data (2017-18, 2018-19 and 2019-20) and option of ex ante calculation based on Simple Operating Margin Method. Computed once during PDD finalization.
Purpose of Data	To calculate the baseline emission calculation
Comments	Operating margin emission factor is fixed ex-ante throughout the crediting period

Data / Parameter	EF_{grid,BM,y}
Data unit	tCO ₂ e/MWh
Description	Build Margin emission factor for Integrated Indian grid
Source of data	Referred from CO ₂ Baseline Database for the Indian Power Sector prepared by Central Electricity Authority Version 16.0.
Value applied:	0.8682 tCO ₂ e/MWh
Justification of choice of data or description of	Calculated as per CEA sourced data for the year 2019-20. The build margin is calculated in this database as the average emissions

measurement methods and procedures applied	intensity of the 20% most recent capacity additions in the grid based on net generation and option of ex ante calculation. Computed once during PD finalization.
Purpose of Data	To calculate the baseline emission calculation
Comments	Build margin emission factor is fixed ex-ante throughout the crediting period

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ e/MWh
Description	Combined Margin (CM) Emission Factor for Integrated Indian grid
Source of data	Estimated figure based on 75% of OM and 25% of BM values
Value applied:	0.9346 tCO ₂ e/MWh
Justification of choice of data or description of measurement methods and procedures applied	CEA has calculated it as per ACM0002 with 3 years vintage data and option of ex ante calculation based on 75% of OM and 25% of BM values approach. Computed once during PDD finalization.
Purpose of Data	To calculate the baseline emission calculation
Comments	This value is determined and fixed ex-ante.

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{PJ,y}$
Data unit	MWh (Mega-watt hour)
Description	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
Source of data	The electricity supplied to the grid would be taken from the Joint Meter Reading Report carried out at the TNEB meter located near each WEG.
Description of measurement methods and procedures applied	The net electricity supplied to the grid is measured by the main meters (export and import values) installed by TNEB at the metering point near each WEG. The Total Net Electricity supplied to TNEB grid by the project activity is the summation of Net Electricity supplied by individual 30 WEGs of the project activity
Frequency of monitoring/recording	The meter readings at the Metering Point are undertaken every month jointly by the representatives of the State Grid/ TNEB and Vestas representative for the previous month. The meter readings are jointly certified by representatives of the State Grid/ TNEB and

	Vestas. The project proponent has installed Real Time TOD Meters with online reading features at the Metering Point
Value applied:	85,385.95 MWh
Monitoring equipment	The project proponent has installed two identical 0.2s accuracy class Trivector Meters referred as main and check meters. These meters are located at the foot of the turbine on 33kv outgoing feeders. (Metering Point) Reading of the main meter is taken for the billing purpose, while the same is getting cross checked using the check meter. The metering equipments (main and check) are duly approved, tested and sealed by TNEB in the presence of the parties involved (TNEB and Vestas). The meter details and calibration are provided in the appendix-1 of MR.
QA/QC procedures applied	The quantity of net electricity supplied will be cross-verified from the invoice raised to TNEB by the project proponent. The TNEB carries out the calibration, periodical testing, sealing and maintenance of meters in the presence of Vestas representative. The frequency of meter testing is once in 5 years. All meters are tested at the Metering Point.
Purpose of data	Calculation of baseline emissions
Calculation method	Measured Quantity
Comments	The data will be archived for crediting period + 2 years.

4.3 Monitoring Plan

The approved large-scale methodology ACM0002 (Version 20.0.0), stipulates the monitoring of the net electricity generation supplied by the project plant/unit to the grid.

Description of the Monitoring Plan

Each of the 30 WEGs considered in the Project has Main and Check meters installed on the 33 kV outgoing feeder for metering of electricity produced/ consumed by the WEGs Both of these Main and Check meters are identical in terms of technical specification.

The TNEB carries out the calibration, periodical testing, sealing and maintenance of meters in the presence of Vestas representative. The frequency of meter testing is once in 5 years. All meters are tested at the Metering Point.

Metering procedure

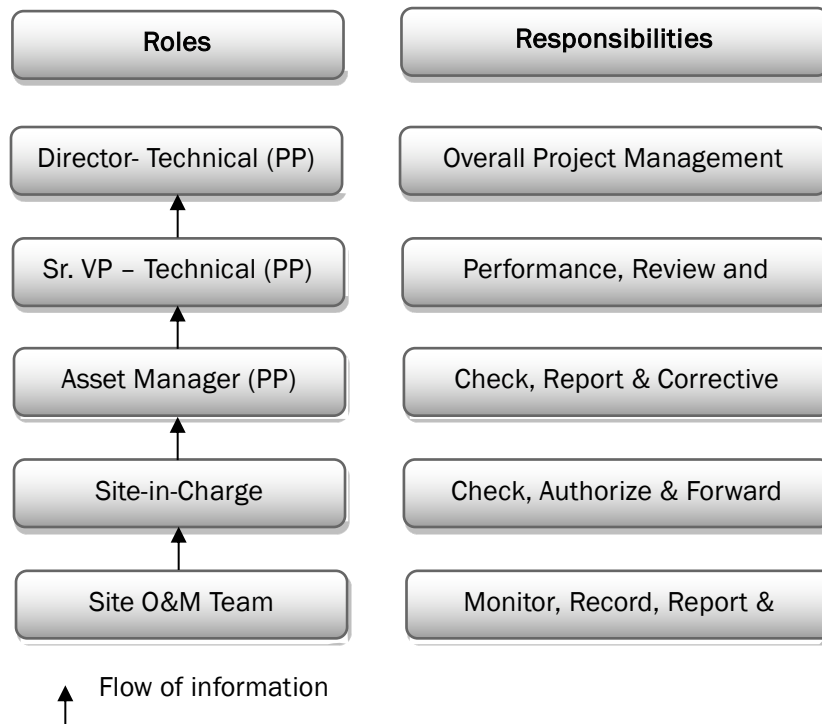
The generated electricity is measured through a two steps procedure wherein the first metering is carried out at the micro-processor-based controller (Local Control System) specially designed to control the WEG. The primary function of the LCS is to ensure that all the components of the

WEG remain fully operational under all conditions. In order to meet this requirement, it is necessary to monitor wind speed, wind direction, temperature, rotational speeds, electricity generated, voltage etc. The LCS display and keyboard enable control of all WEG functions. The electricity generation details are displayed in the LCS. The monitoring of all these wind turbines is done from a common monitoring station as a part of central monitoring system. The system consists of a state-of-the-art controlling and monitoring and well-trained staff personnel of O&M contractor, Vestas, are always present on site to monitor various parameters of power generation and deal with any problems related to generation, transmission or maintenance.

The metering is carried out at TNEB meter located near each WEG. This is the metering point wherein the Joint Meter Reading (JMR) is carried out every month in presence of the representatives of the project proponent & the state electricity utility (TNEB). This JMR is used for calculation of the amount of electricity supplied to the grid against which the utility makes the payment to the project proponent. The JMR gives both the “export” and “import” of the electricity to/ from the national grid. There is a single meter which gives both the export and import values, this metered reading gave value net of line losses (negligible since metering/JMR point is very close to the WEG) and auxiliary consumption. The details of metering equipment, calibrations are provided in Appendix 1.

Organizational structure, responsibilities and competencies

The representatives of Operations and Maintenance contractor (Vestas) record the readings and prepare daily generation reports of all the WEGs. The primary recording of the electricity fed to the electricity grid is being carried out jointly at the TNEB meter located near each WEG. The operations and maintenance structure for the project activity is as follows:



Generating, Recording, Storing, Aggregating, Collating and Reporting of Data:

The meter readings at the Metering Point (main meter and check meter) are undertaken every month jointly by the representatives of the TNEB and Vestas representative for the previous month and it is certified by representatives of TNEB. The reporting structure has been presented in the preceding section. The monthly data is recorded and stored by the project proponent.

Procedures for handling data uncertainty (internal auditing and non-conformities):

- a. In case main meter is faulty- check meter is used to calculate the electricity exported to the grid. Main meter is immediately replaced by a new meter and meter reading from the replaced meter is used thereafter.
- b. In case the check meter is faulty- The check meter is immediately replaced. The emission reduction calculation would not be affected as reading from main meter is used to calculate the net electricity exported to the grid.
- c. In case error is identified during annual accuracy testing- If during the annual tests, the meter is found to be beyond the permissible limits of error, the meter shall be immediately calibrated and replaced, if necessary. The error that is identified in the annual accuracy testing would be applied to all the readings of electricity exported as indicated in the credit note from the state utility from the date of last accuracy testing. Billing for the period thereafter shall be as per the calibrated meter.

The Project Management team of CLP receives the data from both the sources and keeps track of project activity which reduces the carbon emission reductions.

Apportioning of data:

In case the start date of Monitoring period falls in between the monthly Monitoring date, i.e., JMR date, in such case the generation data for the number of days for the monitoring period would be calculated based on the generation ratio as per the controller data. The following generation apportioning procedure will be followed, if the crediting period date of the project activity falls in – between the billing cycles:

Partial days generation of the project activity WEG's at controller of a Month: X

Total generation of the project activity WEG's at controller for the same month: Y

% Generation for partial days of generation (%): $Z = (X/Y) * 100$

Electricity supplied to grid by the WEGs of the project activity as per share certificate for the same month: G^4

Electricity supplied to grid by the WEGs of the project activity for the partial days: $(G \cdot Z / 100)$.

Further, the data would also be required to be apportioned for calculation of yearly Emission reductions in case the JMR is not as per the starting of the month. In such cases apportioning based on the number of days shall be applied.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emissions for the monitoring period are calculated as follows:

$$BE_y = EGP_{J,y} * EF_{grid,CM,y}$$

Thus,

$$\begin{aligned} BE_y &= 85,385.95 * 0.9346 \text{ tCO}_2\text{e} \\ &= 79,803 \text{ tCO}_2\text{e} \end{aligned}$$

5.2 Project Emissions

The project activity involves harnessing of wind energy and its conversion to electricity. Hence according to ACM0002 Version 20.0.0, there will be no project emissions in the project activity $PE_y = 0$

5.3 Leakage

As per ACM0002 Version 20.0.0, no leakage has been considered for the calculation of emission factor.

⁴ The value of G is for the month where billing cycle date does not match with the monitoring period dates (start and/or end date). Both the parameter $EGP_{J,y}$ and G are the net electricity supplied to the grid by the WEGs of the project activity. $EGP_{J,y}$ is the net electricity supplied to the grid for the year/monitoring period. The apportioning procedure will only be used when the billing cycle and monitoring period dates does not match.

5.4 Net GHG Emission Reductions and Removals

According to the approved methodology ACM0002 (Version 20.0.0) Emission Reductions are calculated as

$$ER_y = BE_y - PE_y$$

Where:

ER_y Emission reductions in year y (tCO₂/yr)

BE_y Baseline Emissions in year y (tCO₂/yr)

PE_y Project Emissions in year y (tCO₂/yr)

Thus,

$$ER_y = 79,803.00 - 0 \text{ tCO}_2$$

$$= 79,803.00 \text{ tCO}_2$$

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)
2021 (01/10/2021 to 31/12/2021)	6,783	0.00	0.00	6,783
2022 (01/12/2022 to 31/12/2022)	73,020	0.00	0.00	73,020
Total	79,803	0.00	0.00	79,803

The actual emission reductions achieved during this monitoring period is 43.37 % lower than the estimated value as per registered PD which is due to lower wind availability at site. Wind availability is a natural phenomenon which is beyond the control of CLP.

<u>Ex-ante emissions reduction s/removal s</u>	<u>Achieved emissions reductions /removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
1,41,185	79,803	43.48%	Availability of wind during low wind season is a natural phenomenon which is beyond the control of project proponent. Also, breakdown of wind turbines due to blade failure caused lower generation during current monitoring period.

APPENDIX 1: CALIBRATION DETAILS

HTSC Number	Meter Type	Meter Details				
		Sr. No.	Previous Calibration Date	Latest Calibration Date	Validity	Class
T-90	Main Meter	HPL624813	23-Feb-17	22-02-2023	21-02-2028	0.2s
	Check Meter	HPL624819	22-Feb-17	22-02-2023	21-02-2028	0.2s
T-91	Main Meter	HPL624812	25-Feb-17	22-02-2023	21-02-2028	0.2s
	Check Meter	HPL624817	25-Feb-17	22-02-2023	21-02-2028	0.2s
T-92	Main Meter	HPL624814	24-Feb-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL624978	24-Feb-17	21-02-2023	20-02-2028	0.2s
T-93	Main Meter	HPL624972	24-Feb-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL624976	24-Feb-17	21-02-2023	20-02-2028	0.2s
T-94	Main Meter	HPL624971	24-Feb-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL624975	24-Feb-17	21-02-2023	20-02-2028	0.2s
T-95	Main Meter	HPL624973	25-Feb-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL624977	25-Feb-17	21-02-2023	20-02-2028	0.2s
T-96	Main Meter	HPL624979	22-Feb-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL624980	22-Feb-17	21-02-2023	20-02-2028	0.2s
T-97	Main Meter	HPL624820	22-Feb-17	22-02-2023	20-02-2028	0.2s
	Check Meter	HPL624974	22-Feb-17	22-02-2023	20-02-2028	0.2s
T-98	Main Meter	HPL625141	23-Mar-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL625146	23-Mar-17	21-02-2023	20-02-2028	0.2s
T-99	Main Meter	HPL625144	24-Mar-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL625150	23-Mar-17	21-02-2023	20-02-2028	0.2s
T-100	Main Meter	GENUS 4322544	29-May-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL 3033738	08-Dec-17	21-02-2023	20-02-2028	0.2s
T-101	Main Meter	GENUS 4321972	30-May-17	25-01-2023	24-01-2028	0.2s
	Check Meter	HPL 3033737	08-Dec-17	25-01-2023	24-01-2028	0.2s
T-102	Main Meter	HPL625145	24-Mar-17	20-02-2023	19-02-2028	0.2s
	Check Meter	HPL625149	24-Mar-17	20-02-2023	19-02-2028	0.2s
T-103	Main Meter	23003966	01-Mar-16	10-04-2023	09-04-2028	0.2s
	Check Meter	23003991	01-Mar-16	10-04-2023	09-04-2028	0.2s
T-104	Main Meter	HT2180069	30-May-17	25-01-2023	24-01-2028	0.2s

HTSC Number	Meter Type	Meter Details				
		Sr. No.	Previous Calibration Date	Latest Calibration Date	Validity	Class
	Check Meter	HPL 3033733	08-Dec-17	25-01-2023	24-01-2028	0.2s
T-105	Main Meter	HPL624853	22-Mar-17	25-01-2023	24-01-2028	0.2s
	Check Meter	HPL624860	22-Mar-17	25-01-2023	24-01-2028	0.2s
T-106	Main Meter	HPL624856	22-Mar-17	25-01-2023	24-01-2028	0.2s
	Check Meter	HPL624859	27-Feb-17	25-01-2023	24-01-2028	0.2s
T-107	Main Meter	HPL625142	22-Mar-17	20-02-2023	19-02-2028	0.2s
	Check Meter	HPL625148	23-Mar-17	20-02-2023	19-02-2028	0.2s
T-108	Main Meter	HPL625143	23-Mar-17	20-02-2023	19-02-2028	0.2s
	Check Meter	HPL625147	23-Mar-17	20-02-2023	19-02-2028	0.2s
T-109	Main Meter	HT2180068	27-Feb-17	20-02-2023	19-02-2028	0.2s
	Check Meter	HPL624855	27-Feb-17	20-02-2023	19-02-2028	0.2s
T-113	Main Meter	HPL624811	21-Feb-17	22-02-2023	21-02-2028	0.2s
	Check Meter	HPL624816	21-Feb-17	22-02-2023	21-02-2028	0.2s
T-114	Main Meter	HPL624815	22-Feb-17	21-02-2023	20-02-2028	0.2s
	Check Meter	HPL624818	21-Feb-17	21-02-2023	20-02-2028	0.2s
T-115	Main Meter	HPL625081	23-Feb-17	22-02-2023	21-02-2028	0.2s
	Check Meter	HPL625089	23-Feb-17	22-02-2023	21-02-2028	0.2s
T-116	Main Meter	5840071	29-May-17	25-01-2023	24-01-2028	0.2s
	Check Meter	HPL 3033735	08-Dec-17	25-01-2023	24-01-2028	0.2s
T-117	Main Meter	HPL624741	25-Feb-17	25-01-2023	24-01-2028	0.2s
	Check Meter	HPL624747	25-Feb-17	25-01-2023	24-01-2028	0.2s
T-118	Main Meter	HPL624857	27-Feb-17	20-02-2023	19-02-2028	0.2s
	Check Meter	HPL624858	27-Feb-17	20-02-2023	19-02-2028	0.2s
T-119	Main Meter	HPL624743	25-Feb-17	20-02-2023	19-02-2028	0.2s
	Check Meter	HPL624745	25-Feb-17	20-02-2023	19-02-2028	0.2s
T-120	Main Meter	HPL624748	27-Feb-17	25-01-2023	24-01-2028	0.2s
	Check Meter	HPL624750	25-Feb-17	25-01-2023	24-01-2028	0.2s
T-121	Main Meter	3033734	29-May-17	25-01-2023	24-01-2028	0.2s
	Check Meter	GENUS 4322548	27-Feb-17	25-01-2023	24-01-2028	0.2s
T-122	Main Meter	HT180300	30-May-17	25-01-2023	24-01-2028	0.2s
	Check Meter	HPL 3033748	08-Dec-17	25-01-2023	24-01-2028	0.2s

