"4.5 MW BUNDLED WIND POWER PROJECT"

Document Prepared By: **LGAI Technological Center, S.A.**(Applus+ Certification)

Project Title	4.5 MW bundled wind power project
Version	02
Report ID	BELL_VCS_VER_8722

Report Title	Verification Report "4.5 MW bundled wind power project"
Client	VVD AND SONS PRIVATE LIMITED
Pages	39
Date of Issue	25- October-2022
Prepared By	LGAI Technological Center, S.A.(Applus+ Certification)

Contact	Campus UAB – Ronda de la Font del Carme, s/n 08193 Bellaterra – Barcelona (Spain) Tel.:+34 93 567 20 08 Fax.:+34 93 567 20 01 www.appluscertification.com agustin.calle@applus.com carla.debat@applus.com
Approved By	LGAI Technological Center S.A. (Applus+ Certification) VVB Technical Manager – Mr. Agustín Calle de Miguel
Work Carried Out By	Lead Auditor &Technical Expert: Vivek Kumar Ahirwar, Technical Reviewer &Technical Expert: Simon Shen

Summary:

LGAI Technological Center, S.A.(Applus+ Certification) has performed the verification of the project "4.5 MW bundled wind power project." VCS ID 305, against VCS Standard Version 4.3. The scope of verification includes confirming the implementation of the monitoring plan of the registered VCS PD (version 1.3) dated 15/09/2009 and the application of the monitoring methodology "Grid Connected Renewable Electricity Generation", AMS I.D, Version 14.

The project activity involves electricity generation by wind farm electric convertors and supplying the generated electricity to the state Grid. The total installed capacity of the project was of 6 numbers of WEGs of 0.75 MW capacity each accounting to a total of 4.5 MW installed in Tirunelveli &Tenkasi taluks of Tirunelveli district, Tamil Nadu.The project being a renewable energy generation activity, it leads to removal of fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

The verification is consisted of three phases: i) desk review of the project; ii) onsite visit and interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted following Applus+ certification internal quality procedures.

During the verification process 05 CARs, 01 CL and 00 FARs were raised. All the findings have been closed satisfactorily and the same has been discussed in Appendix 4.

Applus+ certification confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. The emission reductions from the project activity "4.5 MW bundled wind power project" in India during the period 17-September-2008 to 16-September-2014(including both days) amount to 43,132 tonnes of CO_2e.

CONTENTS

1 INTRODUCTION

1.1 Objective

VVD AND SONS PRIVATE LIMITEDhas contracted LGAI Technological Center, S.A. (Applus+ Certification) to perform the periodic verification of the '4.5 MW bundled wind power project' in India (hereafter called project). This project has already been registered as a VCS project (VCS ID 305). The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the VVB. The verification process shall determine whether the proposed project activity complies with the requirements of latest VCS guidelines, applicability conditions of the selected methodology, relevant host country regulations and guidance issued by the VCS Board.

1.2 Scope and Criteria

The scope of verification is to assess the claims and assumptions made in the VCS monitoring report (MR) against the VCS criteria, including but not limited to, VCS standard, applied methodology and other relevant rules and requirements established for VCS project activities. The verification of this project was based on the registered project description & monitoring report /4/ and supporting documents submitted by the project proponent to the verification team. The documents were reviewed against the following guidance and protocols:

VCS standard Version 4.3, Issued: 19-September-2019; updated: 22-June-2022 /16/

Approved baseline and monitoring methodology AMS I.D, Version 14 "Grid Connected Renewable Electricity Generation"/14/

VCS Program Guide, Version 4.2, dated 22 June 2022 /17/

CDM VVS for project activities version 03.0 /22/

CDM PS for project activities version 03.0 /21/

The Verification is not meant to provide any consulting towards the project participants. However, stated requests for clarification and/or correction actions request may have provided inputs for improvement of the project design.

1.3 Level of Assurance

The verification team verified the complete monitoring data for all the parameters of the monitoring plan and confirms that the reported emission reductions are free from any type of material errors. Therefore, Applus+ certification confirms that the verification is conducted with reasonable level of assurance.

1.4 Summary Description of the Project

The project activity involves electricity generation by wind farm electric convertors and supplying the generated electricity to the state Grid. The project being a renewable energy generation activity, it leads to removal of fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

During the time of registration the total installed capacity of the project was of 6 numbers of WEGs of 0.75 MW capacity each accounting to a total of 4.5 MW installed in Tirunelveli &Tenkasi taluks of Tirunelveli district, Tamil Nadu. The project activity to generate approximately 9.5 Million Units of power every year and thereby resulting in emission reduction of approximately 88,200 tCO2e over the entire crediting period of ten years. The first four WEGs of 0.75 MW capacity turbine are of NEG Micon India Pvt. Ltd make and remaining two WEGs of 0.75 MW capacity are of M/s. Vestas Wind Technology (formerly, NEG Micon India Pvt. Ltd).

The project shall result in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 8,820 tCO2e per year. The emission reductions from the project activity "4.5 MW bundled wind power project" in India during the period 17-September-2008 to 16-September-2014(including both days) amount to 43,132 tonnes of CO_2e.

The project activity was commissioned 1st WEG on 16-March-2006, and is in operation since then. The generated power from this project activity is supplied to the Indian grid & the project participant has signed Power Purchase Agreement (PPA) with TNEB.This information was verified during onsite assessment and found to be in line with the details provided in the registered PD /01/.The emission reductions from the project activity during the period 17-September-2008 to 16-September-2014(including both days) amount to 43,132 tonnes of CO_2e.

2 VERIFICATION PROCESS

The registered VCS project is undergoing periodic verification under VCS, the approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

Verification was conducted using Applus+ Certification procedures in line with the requirements CDM validation and verification standard for project activities, Version 03.0 for the project activity and "VCS standard version 4.3 and program guideline version 4.2" and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed. The project activity does not fall under category "grouped projects", hence any sampling methods not to be employed by the validation/verification body for the verification of GHG emission reductions or removals generated by the project.

Applus+ certification assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board. The validation/verification process consist of the following three phases;

- A desk review of the VCS PD and VCS MR
- Onsite visit and follow up interviews with project stakeholders
- The resolution of outstanding issues and issuance of final report and opinion

2.2 Document Review

The verification is performed primarily as a document review of the approved revised VCS PD, previous MR and Verification report and associated documents as stated in detail in appendix 1 of this document. The assessment is performed by a verification team using a protocol. The cross checks between information provided in the Monitoring report, VCS PD and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations.

2.3 Interviews

The representatives of the PPs and onsite staff of PP were interviewed onsite04-July-2022i.e. personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed are mentioned in the table below:

S N	Name	Organization

1.	Mr. Suresh baria	Associate Manager,PP Representative//VVD AND SONS PRIVATE LIMITED
2.	Ms. Juhi Thakur	Advisor/Consultant// EKI Energy Services Ltd.
3.	Mr. Anil Kumar Nayakallu	Advisor/Consultant// EKI Energy Services Ltd.

The topics covered during interview ranges from general features and implementation of project to technical details of the project like calibration details, monitoring and measuring system and data collection, recording and archiving procedures. The assessment was drawn based on the feedback received during interview coupled with the documentation and onsite observations.

2.4 Site Inspections

As discussed in the above section, physical site inspection was done for the current verification.

A Verification On-site visit was undertaken by the verification team on 19/09/2021to carry out the following;

a. An assessment of the implementation and operation of the registered project activity as per the registered VCS PD and VCS MR;
b. A review of information flows for generating, aggregating and reporting the monitoring parameters;
c. Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PD;
d. A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;
e. A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PD, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline;
f. A review of calculations and assumptions made in determining the GHG data and emission reductions;
g. An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

It is noteworthy that no sampling plan for verification is applied as 100% data is verified for the current monitoring period. Most of the reference document referred by the assessment team (above table) are either issued /endorsed by grid utility (SEB) Indian Grid, a government agency, hence is deemed authentic.

The assessment team has also used documents such as validation report/2.2/ available publicly. Furthermore, the project activity already verified under VCS previously and currently undergoing periodic VCS verification. Hence, based on the information's available through approved documents (VCS verifications), it can be confirmed that project is implemented and being operated as described in the registered PD/1.1/.

The assessment team has verified sufficient appropriate audit evidences, to reduce audit risk to an acceptably low level as requisite to achieve reasonable level of assurance for the current verification.

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and onsite assessment. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and non-conformities, which may be of following types;

CAR (Corrective Action Request) is raised if one of the following occurs:

- Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

During the verification process 05 CARs, 01CL and 00 FARs were raised. All the findings have been closed satisfactorily and the same has been discussed in Appendix 4. All CARs and CLs

raised by the Applus+ certification during verification shall be resolved prior to submitting a request for issuance.

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

All the findings that are raised and communicated to project participant during the verification are included under Appendix 4. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise.

2.5.1 Forward Action Requests

The project activity is undergoing periodic verification under VCS; there were no FARs raised during the validation or previous verification/2.1/.Also during the current verification no FAR is raised.

2.6 Eligibility for Validation Activities

Not applicable, as Applus+ holds the accreditation to perform validation activities in this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity is registered under the VCS only (VCS Project ID 305). The project proponent has provided a self-declaration in this regard which confirms that project proponent will not claim Emission reductions for current monitoring period **17-September-2008 to 16-September-2014(including both days)** under any other GHG program except VCS, hence accepted by the assessment team.

Audit team checked the REC Mechanism database of India and found that the project activity is not accredited / registered under REC mechanism. Further, declaration for the same is checked and found correct by the assessment team. Also assessment team checked the following registries to confirm the same. The details of the registries checked are as follows:

1. https://www.recregistryindia.nic.in/
2. http://www.goldstandard.org/

Rejection by other GHG programs

VVB has crossed check the same through other GHG interfaces and found consistent. A declaration has been submitted by PP to VVB confirming the same. Thus, this was further confirmed through a declaration/14/ submitted by the PP and hence accepted by the assessment team.

The details of the registries checked are as follows:

1. https://www.recregistryindia.nic.in/
2. http://cdm.unfccc.int/
3. http://www.goldstandard.org/
4. https://verra.org/verra-standards-and-programs/

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. Renewable energy certificates are available for trading in the host country However, the same is not availed by the Project Proponent. The undertaking regarding the same is submitted by the PP which is acceptable to the assessment team and assessment team also checked the REC web site (https://recregistryindia.nic.in/) and found the declaration/14/ to be correct.

3.2 Methodology Deviations

There is no methodology deviation identifiedsince project registration and also during the current monitoring period.

3.3 Project Description Deviations

There is no deviation identifiedsince project registration and also during the current monitoring period.

3.4 Grouped Project

This is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the on-site audit with PP representative, it was concluded that the project isimplemented as per the requirement of the registered VCS PD and approved monitoringplan. During the current monitoring period, it was observed through breakdown log sheetrecords onsite that no unforeseen incident/event evolved which can impact the operation ofthe project activity. The project underwent continuous operation and only scheduledmaintenance as per the manufactures specification which is acceptable to the assessmentteam. Moreover, there is no unforeseen incident which can affect the applicability of themethodology and thus the same is acceptable to the assessment team.

Project location is confirmed by the assessment team through Google software. Moreover, assessmentteam confirm that the latitudes and longitudes as mentioned in the registered PDD iscorrect. The WTG wise latitudes and longitudes are confirmed below:

Geographical Location:

HT.SC.No.	Location (Village)	S. F. No.	Latitude	Longitude
1608	Ayan Surandai	474(P) & 510/2	N 8°59'07.3"	E 77°27'01.9"
1690	Achankuttam	201	N 8°57'44.9"	E 77°28'45.0"
2122	SambavarVadakarai	285/3 (P)	N 9°01'00.6"	E 77°24'05.5"
2123	SambavarVadakarai	188/7(P),8, 9(P)	N 9°00'42.6"	E 77°24'16.7"
2227	SambavarVadakarai	200/11,12,13,14,15 ,16B(P)	N 9°01'12.5"	E 77°24'05.2"
2245	Kulayaneri	187/4 (P)&356/1A(P)	N 9°00'30.4"	E 77°26'21.7"

Assessment team checked the commissioning certificate and confirmed that the dates ofCommission for the wind farm are correct. Assessment team also conform during the onsitevisit that there is no change in project design except deviation requested and the project isimplemented as per the description provided in the registered PDD.

The technical parameters have been verified with the name plates as well as with thetechnical specifications of wind farm and also cross checked from the technical manual of theManufactures. Assessment team confirms that the technical parameters are consistent withthe registered VCS PD.The major technical specifications of the WTG are as follows:

Specifications:

Operationalconditions	
Calculatedlifetime	20years
Cutinwindspeed	<3.5m/s
Cutoutwindspeed	25m/s
Maximumrotationalspeed	22/15rpm
Mainspecification	
RotorDiameter	48.2m
NumberofBlades	3
Rotationalspeed(synchronous)	22.2/14.8rpm
Hubheight	55m
Towertype	Conicalmodulartower
Rotorposition	Upwind
Blade	
Bladelength	23.5m
Bladeprofile	NACA63Series

AirBrake	Turn able blade tips,hydraulic
Generator	
NominalPower	750/200kW
RotationalSpeed	1500/1000rpm
YawingSystem	
Yawbearing,type	Ballbearing
Motor	4No's3ΦInductionMotor,0.37kW
Gearingratio	1:2716
Brake	Hydraulicdisc,3pieces
MechanicalBrake	
Type	Discbrake
Position	Outputshaftongearbox
Controlsystem	
Manufacture	-
Type	Microprocessorbased

The assessment team confirmed through onsitevisit with PP representative that there is noproposed or actual change to the project design during this monitoring period. It wasobserved that the monitoring plan was implemented as per the registered VCS PD andapplied methodology AMS I.D, Version 14.0. The organisational role and responsibility asmentioned in the registered VCS PD is followed onsite. Meters are calibrated as percalibration frequency in registered VCS PD. All the emergency preparedness as mentionedin the registered VCS PD is followed onsite and no discrepancies were found regarding thesame.

Assessment team concludes the following:

a) There is no material discrepancies between project implementation and the project description provided in the registered PD/04/.

b) The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analysing the monitored data and parameters) is appropriate.

c) There is no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/08/.

d) The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading/16/.

e) The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification.

f) The project is registered under VCS only.

g) The project activity is comply with indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR.

In view of the information's as verified above the assessment team is able to conclude that the project has been implemented as described in the project description.

4.2 Safeguards

4.2.1 No Net Harm

Being bundled renewable wind farm power generation project there is no negative environmental and socio-economic impacts in fact project activity contributes positively by providing environment friendly power generation leading to sustainable development of the region. Also, the generation of employment supports upliftment of socio-economic status of region.As per the EIA notification dated 14thSeptember 2006, the wind farm power projects are exempted from environmental clearance. Hence, Environmental impact assessment is not required for this project activity.

The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013 also confirms that wind farm power project activity operations do not result in direct air pollution, noise pollution. Hence verification team confirms that 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.

4.2.2 Local Stakeholder Consultation

The Project is already registered with VCS and registered VCS Project Description; sections 6 describe the Local Stakeholder Consultation Process as in-line with VCS requirement.

As a part of continuous feedback from stakeholders, there were no other major comments or protest raised by the stakeholders and they were totally in support for setting up of these kinds of projects in the region.

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, being renewable wind farm power generation project there is no feedback/grievance has been reported within this monitoring period verified from the photos provided by the Project participant.

4.3 AFOLU-Specific Safeguards

Not applicable for this project activity.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered VCS PD/01/ and the monitoring report/04/. The monitoring plan laid in the registered PD is being followed at the site/18/. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/04/.

The emission reductions are purely based on the net electricity generated and exported from the machines. PP has provided all the sufficient data for current monitoring period.

The values of the parameter net electricity generation supplied to the grid by each phase used in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/05/ provided by PP. the verification of each monitoring parameter has been discussed later in section 4.5.

The calculation method and formulae used in calculating baseline emission is in compliance to the methodology used i.e.AMS I.D, Version 14 /09/. Since project activity is a wind farm power project, leakage emission and project emission has been considered as zero.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The below tables describe how the parameter, that is to be measured according to the monitoring plan, has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are met.

<table>
<tr><td>Parameter</td><td>Net Electricity Generatedin MWh,E_{Gen}</td></tr>
<tr><td>Means of verification</td><td>
<table>
<tr><td>Criteria/Requirements</td><td>Assessment/Observation</td></tr>
<tr><td>Measuring /Reading /Recording frequency</td><td>The parameter is calculated and recorded on monthly basis.</td></tr>
</table>
</td></tr>
</table>

		Quantity of net electricity generation supplied by the project plant/unit to the grid in year y, is calculated as: $EG_{Gen} = E_{Exp} - E_{Imp}$ *Where,* E_{Exp}= Electricity Exported E_{Imp}= Electricity Imported
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	No monitoring equipment is used as this parameter is calculated. However the parameter E_{Exp}*and* $E_{Imp}$are continuously monitored, hourly measured and monthly recorded[1].
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used to measure the input values used to calculate EG_{Gen}(i.e.E_{Exp}*and* E_{Imp})is 0.2s, which is as per the registered PD/01/ which is as per the norm defined in the PPA/12/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to	Yes. The accuracy of monitoring equipment's is valid for the

	different measuring ranges?	entire range.
	Calibration frequency /interval:	Calibration frequency of the meters is once in 2 years.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The calibration frequency is once in 2 years as outlined in the registered PD/01/ is in accordance with the national standards/15/.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by an accredited entity.
	Is(are) calibration(s) valid for the whole reporting period?	Calibration of meters is valid for the current monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately.
	How were the values in the monitoring report verified?	Cumulative value of $\mathbf{EG_{Gen}}$for entire monitoring period is reported in the monitoring report/04/, and monthly values in the ER calculation sheet/05/. The monthly values were verified from the credit notes issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was

		verified as 46,298MWh.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of EG_{Gen} were further cross checked with the monthly invoices raised by the PP /07/ to state utility and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#3 &4 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Parameter	ElectricityImported, E_{Imp}

Means of verification	

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The WTGs of the individual project owners at a particular site connect to a cluster meter at the VCB metering yard. Each project owner have exclusive cluster meter at VCB metering yard.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
Monitoring equipment	Energy Meters used for monitoring the generated electricity. The valuesare continuously monitored, hourly measured and monthly recorded[2].
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment is 0.2s, which is as per the registered PD/01/ which is as per the norm defined in the PPA/12/.
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The accuracy of monitoring equipment's is valid for the entire range.

	Calibration frequency /interval:	Calibration frequency of the meters is once in 2 years.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The calibration frequency is once in 2 years as outlined in the registered PD/01/ is in accordance with the national standards/15/.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by an accredited entity.
	Is(are) calibration(s) valid for the whole reporting period?	Calibration of meters is valid for the current monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately.
	How were the values in the monitoring report verified?	Cumulative value of E_{Imp} for entire monitoring period is reported in the monitoring report/04/, and monthly values in the ER calculation sheet/05/. The monthly values were verified from the credit notes issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 372,634 KWh.
	If applicable, has the reported data been cross-checked with	The monthly reported values of E_{Imp} werefurther cross

	other available data?	checked with the monthly invoices raised by the PP /07/ to state utility and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#4 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Parameter	**Electricity Exported,** E_{Exp}	
Means of verification	**Criteria/Requirements**	**Assessment/Observation**
	Measuring /Reading /Recording frequency	The WTGs of the individual project owners at a particular site connect to a cluster meter at the VCB metering yard. Each project owner have exclusive

		cluster meter at VCB metering yard.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD/01/ and monitoring methodology/09/.
	Monitoring equipment	Energy Metersareused for monitoring the Electricity Exported. The valuesare continuously monitored, hourly measured and monthly recorded[3].
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used is 0.2s, which is as per the registered PD/01/ which is as per the norm defined in the PPA/12/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The accuracy of monitoring equipment's is valid for the entire range.
	Calibration frequency /interval:	Calibration frequency of the meters is once in 2 years.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the	Yes. The calibration frequency is once in 2 years as outlined in the registered PD/01/ is in accordance with the national

	frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	standards/15/.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by an accredited entity.
	Is(are) calibration(s) valid for the whole reporting period?	Calibration of meters is valid for the current monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately.
	How were the values in the monitoring report verified?	Cumulative value of E_{Exp} for entire monitoring period is reported in the monitoring report/04/, and monthly values in the ER calculation sheet/05/. The monthly values were verified from the credit notes issued by state utility and found to be consistent.46,671,460 KWh
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of E_{Exp}werefurther cross checked with the monthly invoices raised by the PP /07/ to state utility and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary	Onsite assessment of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable.

	QA/QC processes in place?	
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#4 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the wind farm . Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

Parameters fixed ex ante:

$EF_{OM,}$; tCo_{2e}/MWh: it is the "Generation Weighted Average Operating Margin" emission factor of Indian grid and it was fixed at the time of project registration the mentioned value of 0.9981tCO_{2e}/MWh is consistent with the registered PD/01/.

EF_{BM}; tCO_{2e}/MWh: it is "Build Margin" emission factor of Indian grid and it wasfixed at the time of project registration the mentioned value of 0.7133tCO_{2e}/MWh is consistent with the registered PD/01/.

$EF_{grid,CM,y}$; tCO_{2e}/MWh: it is the "Combined Margin" emission factor of Indiangrid and it wasfixed at the time of project registration the mentioned value of 0.9269tCO_{2e}/MWh is consistent with the registered PD/01/.

Calibration of meters:

During the verification assessment of the project activity, accuracy of all the metering have been checked and found appropriate. The installation and working conditions of the meters were checked during the onsite inspection and were found to be satisfactory. Details of meters are provided in below table:

The current meter details for VVD AND SONS PRIVATE LIMITEDis as follows:

HT SE	Meter No	Meter Make	Accuracy Class	1st Calibration		2nd Calibration		3rd Calibration		4th Calibration	
				Date of calibration	Validity of calibration	Date of calibration	Validity of calibration	Date of calibration	Validity of calibration	Date of calibration	Validity of calibration
1608	21009412	L&T	0.2s	04/09/2008	03/09/2010	30/08/2010	29/08/2012	25/08/2012	23/08/2014	16/08/2014	15/08/2016
1690	HT2170281	EDMI	0.2s	04/09/2008	03/09/2010	30/08/2010	29/08/2012	25/08/2012	23/08/2014	16/08/2014	15/08/2016
2123	HT2170565	EDMI	0.2s	04/09/2008	03/09/2010	30/08/2010	29/08/2012	25/08/2012	23/08/2014	16/08/2014	15/08/2016
2122	HT2170537	EDMI	0.2s	04/09/2008	03/09/2010	30/08/2010	29/08/2012	25/08/2012	23/08/2014	16/08/2014	15/08/2016
2227	HT2160523	L&T	0.2s	04/09/2008	03/09/2010	30/08/2010	29/08/2012	25/08/2012	23/08/2014	16/08/2014	15/08/2016
2245	21009410	EDMI	0.2s	04/09/2008	03/09/2010	30/08/2010	29/08/2012	25/08/2012	23/08/2014	16/08/2014	15/08/2016

The assessment team has verified the monthly credit notes issued by the state utility and confirmed that only the data recorded through main meters is used to calculate net electricity supplied to the grid consequently for ER calculations.

Assessment on delay in calibration:

There is no delay found in in meter calibration as the meter calibration frequency is “Once in two years” and as the meter calibration during the current monitoring period has happened in 2008, 2010, 2012 & 2014as provided above. , the latest calibration report dated 2014 has been provided by the PP and same has been updated in FVR.Hence, the due date for meter calibration is in 2016, which is outside the monitoring period.

The verification team has onsite checked all the meters and confirmed that the meters were working satisfactorily. Also the calibration of meters is completely under preview of state utility and PP has no control over the same as confirmed through interviews of site personnel and PPA signed by the PP with state utility/12/.

Hence it can be concluded that the approach followed by the PP is conservative and in line with the guidelines provided under paragraph 366(a) of VVS version 03.

The registered VCS PD/01/ & MR /04/ and onsite audit observations confirm that the metering equipment are sealed and maintained by the state utility.

In view of the above discussion the assessment team is able to confirm that evidence used to determine the GHG reductions and removals are sufficient and appropriate with respect to quality and quantity.

GHG Calculations

The emission reduction as per the applied methodology equals the baseline emissions (project emissions and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

$BE_y = EG_{Gen} * EF_{Grid, CM, y}$

Where:

BE_y : Baseline emissions in year y (tCO_2/yr)

EG_{Gen} : Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{Grid, CM, y}$: Combined Margin (CM) Emission Factor of Indian Grid (tCO_2/MWh)

Thus, BE_y =46,298*0.9269 tCO_2/MWh

= 43,132tCO_2e (rounded down value)

The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. The actual emission reduction achieved during the current monitoring period are 18.53% lower than the estimated amount of emission reductions at the time of validation, which is due to the high PLF achieved by the project activity during the monitoring period. The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant.Hence the assessment team has concluded the increase in emission reduction of the project activity is justified and acceptable.

All the data were made available and have monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the TG sets installed at site. Monthly values of electricity generated inserted in the ER sheet was verified with the Joint Meter Reading Report and Invoices provided by the project proponent. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors. Therefore, the assessment team confirms that the emission reductions are free from any omissions, misstatement and material errors.

4.6 Non-Permanence Risk Analysis

Not applicable for the project activity. This section is not applicable for non-AFOLU projects.

5 VERIFICATION CONCLUSION

Applus+ certification, contracted by VVD AND SONS PRIVATE LIMITED, has performed the independent verification of the emission reductions for the VCS project activity (VCS ID- 305) "4.5 MW bundled wind power project" in India for the monitoring period 17-September-2008 to 16-September-2014as reported in the Monitoring Report Version 1.3dated 30/08/2022. The VVD AND SONS PRIVATE LIMITED is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity

Applus+ certification commenced the verification on the basis of the baseline and monitoring methodology AMS I.D, Version 14, the monitoring plan contained in the registered VCS PD Version 1.3, dated 15/09/2009and VCS guidelines version 4.2, Monitoring Report Version 1.3dated 30/08/2022 as per the process described under Section 2 of this report.

Applus+ certification verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Applus+ certification planned and performed the verification by obtaining evidence and other information and explanations that Applus+ certification considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 17-September-2008 to 16-September-2014are fairly stated in the Monitoring Report Version 1.3dated 30/08/2022. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology AMS I.D, Version 14, and the VCS standard 4.3.

Verification period: From 17-September-2008 to 16-September-2014(including both days)

Verified GHG Emission reductions and removals in the above verification period:

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)
2008	1,007	0	0	1,007
2009	9,215	0	0	9,215
2010	8,437	0	0	8,437
2011	6,962	0	0	6,962
2012	7,091	0	0	7,091
2013	5,300	0	0	5,300
2014	5,121	0	0	5,121
Total	43,132	0	0	43,132

APPENDIX 1: <REFERENCES>

S.No	Title of Document	Version	Date
1.	Registered VCS PD	1.3	15/09/2009
2.	VCS Validation Report	1	2009-11-18
3.	VCS Monitoring Report	01	08/03/2022
4.	VCS Monitoring Report (Final)	1.3	30/08/2022
5.	ER spread sheet (corresponding to the final monitoring report)	02	30/08/2022
6	Certificates of Calibration for all the meters belongs to project activity	-	17/09/2008 to 16/09/2014
7.	Invoice issued by PP to state DISCOM	-	17/09/2008 to 16/09/2014
8.	Monthly JMR and Credit notes issued by TNEB for the current verification period.	-	17/09/2008 to 16/09/2014
9.	"Grid Connected Renewable Electricity Generation", AMS I.D,	Version 14	-
10.	CEA Database	Version 04	
11.	Commissioning certificate for all the Wind farm of the project activity issued by state electricity authority	-	
12.	Power Purchase Agreements signed between respective Project developer and state electricity authority	-	-
13.	VCS webpage for the project, VCS ID 305; https://registry.verra.org/app/projectDetail/VCS/305	-	Last accessed on 12/09/2022
14.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period	-	15/06/2022
15.	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17/03/2006 No. 502/70/CEA/DP&D Amendments Notified on 26/06/2010 No. 502/6/2009/DP&D/D-I	-	Dated September 2008
16.	VCS Standard	Version 4.3	Issued:19-09-2019 Updated: 22-04-2022

S.No	Title of Document	Version	Date
17.	VCS Program Guide	Version 4.2	22/04/2019
18.	Onsite assessment –interviews of staff personnel, physical inspection of monitoring system	-	04/07/2022
19.	Monthly generation reports issued by O&M contractor	-	17/09/2008 to 16/09/2014
20.	Clean Development Mechanism Validation and Verification Standard for Project Activity (CDM-VVS for PA), as per EB 101, Annex 2	3.0	

APPENDIX 2: <COMPETENCY STATEMENT>

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+ Certification has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+ Certification ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the Onsite-Site Assessment
Vivek Kumar Ahirwar	Lead Auditor (LA) & Technical Expert (TE)	Yes (1)	Yes (1.2)	N/A	Yes	Yes
Simon Shen	Technical Reviewer (TR)	Yes (1)	Yes (1.2)	N/A	N/A	N/A

The curriculum vitae of the VVB's team members are provided below:

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Mater in Technology (Energy Management) from a premier institute, School of Energy& Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India.

Simon Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he

joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Verifier and ISO 9001/14001 Lead Auditor for 3.5 Years.

APPENDIX 3: <ABBREVIATIONS>

ABT	Availability Based Tariff
BEF	Baseline Emission Factor
BM	Build Margin
CAR	Corrective Action Request
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
CMS	Central Monitoring System
CMP	Conference of Parties Serving as Meeting of Parties
CO2	Carbon dioxide
DISCOM	Distribution Company
EB	Executive Board
EPC	Engineering, Procurement and Construction
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Standards Organization
JMR	Joint Meter Reading
kW	Kilowatt
kWh	Kilowatt hour
MFR	Multi-Function Relay
MR	Monitoring Report
MW	Megawatt

MWh	Megawatt-hour
NEWNE	Northern Eastern Western Northern-Eastern
O&M	Operation and Maintenance
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance and Quality Control
Wind farm	Wind farm
TOD	Time of the Day
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units

APPENDIX 4: <FINDINGS OVERVIEW>

Table 1. Remaining FAR from validation and/or previous verification

~~FAR ID~~		~~Section no.~~	~~NA~~	~~Date :DD/MM/YYYY~~
~~Description of FAR~~				
~~N/A~~				
~~Project participant response~~				~~Date :DD/MM/YYYY~~
~~NA~~				
~~Documentation provided by project participant~~				
~~NA~~				
~~VVB assessment~~				~~Date: DD/MM/YYYY~~
~~NA~~				

Table 2. CL from this verification

CL ID	01	Section no.	1.9 & 1.10	Date : 16/07/2022
Description of CL				
PP has not submitted the undertaking letter to support the requirement of section 1.9 and 1.10 of the MR.				
Project participant response				Date : 30/08/2022
The undertaking letter to support the requirement are now submitted to DOE assessment team.				
Documentation provided by project participant				
1. Declaration Letter				
DOE assessment				Date: 12/09/2022
PP has submitted the undertaking letter dated 15/06/2022 and verification has checked the same found as per the requirement. Hence, CL#01 is closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	1.5, B.1	Date 16/07/2022
Description of CAR				

Project participant mentioned the details regarding the technologies used in the project activity but to verify the same, no such document has been provided by the PP (i.e., technical equipment's details, Commissioning certificates, power purchase agreements, O&M agreement etc.) is provided to DOE team. Corrective action is sought for the same. PP is requested to provide the above documents to assessment team.
Project participant response **Date :30/08/2022**
The details of the technologies used in the project activity i.e., Technical Equipment's Details, Commissioning Certificates, Power Purchase Agreements, O&M agreement are now submitted to the DOE assessment team.
Documentation provided by project participant
1. Technical Equipment's Details 2. Commissioning Certificates 3. Power Purchase Agreement 4. O&M agreement
DOE assessment **Date: 12/09/2022**
PP has provided the supporting evidence as per the finding and found in line with the registered PD. Hence, CAR#01 is closed.

CAR ID	02	**Section no.**	E.3	**Date :16/07/2022**
Description of CAR				
The breakdown details of the power plant are provided in the MR. Further, supporting document regarding the breakdown details are not provided to the assessment team. PP is requested to provide the above documents to assessment team.				
Project participant response				**Date :30/08/2022**
The breakdown Details of the Power Plant are now submitted to the DOE assessment Team.				
Documentation provided by project participant				
1.Breakdown Details. 2.Monitoring Report				
DOE assessment				**Date: 12/09/2022**
PP has provided the updated monitoring report along with the breakdown details. Hence, CAR#02 is closed.				

CAR ID	03	Section no.	ER sheet	Date 16/07/2022
Description of CAR				
PP has not provided the JMR & Invoices to cross check the values provided in the MR and ER sheet. Corrective action is raised for the same.				
Project participant response				**Date :30/08/2022**
The Joint Meter Readings along with the Invoices are now submitted to the DOE Assessment team. This data is now relevant with the data submitted in the MR and the ER sheet.				
Documentation provided by project participant				
1. JMR 2. Invoices 3. Monitoring Report 4. ER Sheet				
DOE assessment				**Date: 12/09/2022**
PP has submitted the JMR & Invoices for the entire monitoring period and verification team has check the provided evidence and updated emission reduction sheet and found correct. Hence, CAR #03 is closed.				

CAR ID	04	Section no.	ER sheet	Date 16/07/2022
Description of CAR				
PP has not provided the complete ER sheet, few information is not filled and it's blank. And also apportioning has been shown in the ER sheet. Justification required on the same.				
Project participant response				**Date : 30/08/2022**
The ER sheet is now completely filled and also the details of apportioning is mentioned in the ER Sheet. It is submitted to DOE assessment team.				
Documentation provided by project participant				
1.Revised ER Sheet				
DOE assessment				**Date: 12/09/2022**
PP has submitted the updated emission reduction sheet along with the evidence and found correct also DGR details has been provided to calculate the apportioning for the current monitoring period. Hence, CAR#04 is closed.				

CAR ID	05	Section no.	4.2	Date :16/07/2022

Description of CAR	
The details of monitoring meters and its calibration are provided in the MR. Moreover, Calibration certificates for the monitoring period and error factor has been used for missing period. However, PP has not provided the calibration certificate. Corrective action is raised for the same.	
Project participant response	**Date : 30/08/2022**
Monitoring Meters and their Calibration details are now provided in the revised MR as appendix 1 & the Calibration Certificates attached for DOE assessment. Also, ER Sheet submitted now to the DOE assessment team.	
Documentation provided by project participant	
1. Revised MR 2. Calibration Certificates 3. ER Sheet with calibration details	
DOE assessment	**Date: 12/09/2022**
The calibration certificate has been submitted for entire monitoring period and same has been checked and found correct. Hence, CAR#05 is closed.	

Table 4. FAR from this verification

~~FAR ID~~	~~XX~~	~~Section No.~~	~~XX~~	~~Date :~~
~~Description of FAR~~				
~~NA~~				
~~Project participant response~~				~~Date :~~ ~~DD/MM/YYYY~~
~~NA~~				
~~Documentation provided by project participant~~				
~~NA~~				
~~VVB assessment~~				~~Date:~~ ~~DD/MM/YYYY~~
~~NA~~				