



“BUNDLED WIND ENERGY GENERATION PROJECTS IN GUJARAT, INDIA”



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

Project Title	Bundled wind energy generation projects in Gujarat, India.
Version	01.1
Report ID	GCEES_0220

Report Title	Verification Report “Bundled wind energy generation projects in Gujarat, India.”
Client	Wind World (India) Power Development Pvt. Ltd.
Pages	30
Date of Issue	09/04/2020
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	Juan Sendin Caballero, LGAI Technological Center S.A. (Applus+ Certification) B.U. Managing Director
Work Carried Out By	Lead Auditor & Technical Expert: Vivek Kumar Ahirwar, Technical Reviewer & Technical Expert: Simon Shen

Summary:

LGA Technological Center, S.A. (Applus+ Certification) has performed the verification of the project “Bundled wind energy generation projects in Gujarat, India.” VCS ID 412, against VCS Standard Version 4. The scope of verification includes confirming the implementation of the monitoring plan of the approved VCS PD (version 03) dated 12/04/2017 and the application of the monitoring methodology per ACM 0002 version 17: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”.

The verification is consisted of three phases: i) desk review of the project; ii) follow-up 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 02 CARs, 01 CR 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 “Bundled wind energy generation projects in Gujarat, India.” in India during the period 01/01/2019 to 31/12/2019 (including both days) amount to 81,308 tonnes of CO₂e.

TABLE OF CONTENTS

1. Introduction	5
1.1 Objective	5
1.2 Scope and Criteria	5
1.3 Level of Assurance.....	5
1.4 Summary Description of the Project	5
2. Verification Process.....	7
2.1 Method and Criteria.....	7
2.2 Document Review.....	7
2.3 Interviews.....	7
2.4 Site Inspections.....	8
2.5 Resolution of Findings	9
2.5.1 Forward Action Requests	10
2.6 Eligibility for Validation Activities	10
3. Validation Findings.....	10
3.1 Participation under Other GHG Programs.....	10
3.2 Methodology Deviations.....	10
3.3 Project Description Deviations	10
3.4 Grouped Project.....	10
4. Verification Findings.....	11
4.1 Project Implementation Status.....	11
4.2 Safeguards.....	12
4.2.1 No Net Harm	12
4.2.2 Local Stakeholder Consultation	12
4.3 AFOLU-Specific Safeguards	13
4.4 Accuracy of GHG Emission Reduction and Removal Calculations.....	13
4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals	13
4.6 Non-Permanence Risk Analysis	22
5. Verification conclusion	22
APPENDIX 1: References.....	24

APPENDIX 2: Competency Statement	25
APPENDIX 3: Abbreviations	26
APPENDIX 4: Findings Overview.....	28

1. INTRODUCTION

1.1 Objective

Wind World (India) Power Development Pvt. Ltd. has contracted LGAI Technological Center, S.A. (Applus+ Certification) to perform VCS Verification of the 'Bundled wind energy generation projects in Gujarat, India' in India (hereafter called project). This project has already been registered as a VCS project (VCS ID 412). The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the DOE. 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 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 under consideration is set up to produce clean power from the wind electric converters. The generated electricity is wheeled using the state transmission system for captive consumption. The Project leads to reduced greenhouse gas (GHG) emissions because it displaces electricity from fossil fuel based electricity generation plants. The project is helping in bridging the demand supply gap by using wind as a source of generating electrical energy.

The project activity consists of the 72 machines of WWIL make of 800 KW each and 3 machine of Enercon make of 600 KW, totaling to the capacity of 59.4 MW in the state of Gujarat. The

generated electricity is supplied to the Western regional electricity grid comprising mainly fossil fuel based power plants. The Project considered harnesses renewable resources in the region, thereby displacing non-renewable natural resources thereby ultimately leading to sustainable economic and environmental development. Wind World (India) Limited (hereafter referred as “WWIL”) is the equipment supplier and the operations and maintenance contractor for the Project.

Location of the project was verified through Google Map (<https://www.gps-coordinates.net/>) and found consistent with the data provided in the registered PD /01/. The first machine under the bundled project activity was commissioned on 30 June 2004 and last machine under the bundled project activity was commissioned on 30 September 2006. The same was verified against the VCS PD/01/ and commissioning certificates/12/. This is the First monitoring report of second crediting period associated with the project activity. The period covered in this monitoring report is from 01 January 2019 to 31 Dec 2019 (including first and last day). This information was verified during physical site visit and found to be in line with the details provided in the registered PD /01/.

The total emission reductions achieved under this monitoring period i.e. 01 January 2019 to 31 Dec 2019 (including first and last day) is 81,308 tCO₂e.

2. VERIFICATIONPROCESS

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

2.1 Method and Criteria

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
- Site 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 site visit for the project location, by the assessment team, was conducted on 04/03/2020 and the following stakeholders were interviewed.

S N	Name	Organization
1	Mr. M.M. Jadeja	<i>M/s Wind World (India) Power Development Pvt. Ltd.</i>
2	Mr. A. M. Saiyad	<i>M/s Wind World (India) Power Development Pvt. Ltd.</i>
3	Mr. B.D. Karamaa	<i>M/s Wind World (India) Power Development Pvt. Ltd.</i>
4	Mr. A. N. Dudhreji	<i>M/s Wind World (India) Power Development Pvt. Ltd.</i>

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 on-site observations.

2.4 Site Inspections

A site visit was undertaken by Applus+ Certification team on 04/03/2020 to carry out the following;

- a) An assessment of the implementation and operation of the registered project activity as per the approved revised 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.

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 (CR) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CRs 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 first VCS verification of 2nd crediting period under VCS; there were no FARs raised during the validation or previous verification/03/.

2.6 Eligibility for Validation Activities

Not applicable.

3. VALIDATION FINDINGS

Not applicable.

3.1 Participation under Other GHG Programs

Project has not been applied under any other GHG program or GHG-related environmental credit, including renewable energy certificates, neither part of any Emission Trading Programs and Other Binding Limits during this monitoring period.

The PP has provided declaration to ensure that there will not be any double counting of emission reduction. Also, PP hereby confirms that credits generated in current monitoring period do not form part of any other national or international scheme including Renewable Energy Certificates.

PP also confirms that net GHG emission reductions or removals generated during this monitoring period shall not be used for compliance under any such programs or mechanisms. This was confirmed through a declaration/15/ submitted by the PP and hence accepted by the assessment team.

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period.

3.3 Project Description Deviations

There has not been any Project Description related deviation during the current monitoring period. However, during previous monitoring period, a deviation has been taken on account of delay in meter calibration. The calibration is not in the purview of the Project Participant (PP) and is performed by the GETCO, Testing Division; which is the authorized body for meter testing as per the Wind Energy Purchase Agreement (PPA). The meters are tested, sealed and maintained by GETCO only in the presence of authorized representative of the PP who also signs the results. In the calibration certificates the meters with delayed calibration, the error factors was found to be within permissible limits. However, PP has followed

conservative approach and hence, an error factor equating the maximum permissible limit of error for the meters has been applied for the delayed period falls under the current monitoring period i.e. for the whole month of April 2017 being conservative. (i.e. -1 % as GETCO provides only net energy exported to the grid).

Hence, it can be confirmed from the above explanation that the deviation does not have an impact on the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

3.4 Grouped Project

Not applicable. The project activity is not a grouped project

4. VERIFICATION FINDINGS

4.1 Project Implementation Status

The first machine under the bundled project activity was commissioned on June 2004 and last machine under the bundled project activity was commissioned on September 2006. The project activity consists of 72 machines of Enercon make of 800 kW each and 3 machines of Enercon make of 600 kW totaling to the capacity of 59.4 MW.

The commissioning schedule for all the WEGs under the project activity has been provided in Appendix 2. WWIL operation and maintenance activities are ISO certified and all the events are recorded in the log book available at the project site. There is no any major special events for any of the machines occurred during this monitoring period, which may have impact on the applicability of the methodology as well as emission reduction. As a part of regular maintenance, the machines are stopped for mechanical and electrical maintenance for 16 to 18 hours annually and for visual inspection for 6 to 7 hours quarterly.

The installation and specification of WTGs has been checked with commissioning certificates/12/ and on-site assessment/19/. The commissioning has also been duly validated in the VCS validation report of the project activity/02/. There was no major breakdown or shutdowns during the monitoring period which might affect the applicability of methodology or might cause material errors in emission reductions.

Assessment team concludes the following:

- a) There is no material discrepancies between project implementation and the project description provided in the registered PD/01/.
- 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/09/.
- 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/17/.
- 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/03/.
- f) The project is registered with VCS. The PP has provided declaration to ensure that there will not be any double counting of emission reduction. PP also confirms that net GHG emission reductions or removals generated during the current monitoring period shall not be used for compliance under any such programs or mechanisms.
- g) The project activity is comply with indicators for sustainable development in the interim approval guidelines 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

An EIA study had been conducted through M/s CARE Sustainability Pvt. Ltd. The results of the EIA study show that project activity will not involve any negative environmental impacts, as the WECs are installed for generation of power using wind which is a clean source of energy.

4.2.2 Local Stakeholder Consultation

No comment received during ongoing communication with local stakeholders. The Local Stakeholder Consultation Process was already conducted in-line with requirement during project registration with VCS.

4.3 AFOLU-Specific Safeguards

Not applicable for this verification.

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 VCS MR/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 group captive through the grid by each phase used in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/06/ 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. ACM 0002 version 17 /10/. Since project activity is a wind 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.

Parameter	Net Electricity supplied to the Grid by the Project Activity, EG _y (MWh/yr)	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording	The electricity exported to the grid for sale to captive consumers is measured through energy meters at the WTG metering location

	frequency	on continuous basis and reported monthly.
	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 PD/01/ and monitoring methodology/10/.
	Monitoring equipment	At one location there are 71 WEGs connected to 33kV individual metering point and other location has 04 WEGs connected to 11kV individual metering point at project site. Project activities along with the WEGs of other customers are connected to 33kV and 11kV feeder line at respective WWIL Sub-stations (132kV Bhogat& 66kV Navadra sub-stations)
	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?	All the energy meters are two-way tri-vector meters of accuracy class 0.2s. Accuracy of the monitoring equipment's is in accordance with the monitoring plan as outlined in the PD.
	Is the accuracy valid for the entire measuring range or do different accuracy levels	Yes the accuracy valid for the entire measuring range.

	apply to different measuring ranges?	
	Calibration frequency /interval:	3 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
	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 i.e. by stateutility (GEDA)/07/
	Is(are) calibration(s) valid for the whole reporting period?	Yes valid for the entire current monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes, calibration carried out for a measuring range comparable with the range for which measurements have been carried.
	How were the values in the	Reported values of this parameter have been verified with monthly joint metering

	monitoring report verified?	report/08/ during site visit .Value of this parameter for the current monitoring period is verified as 83,162.20 MWh. Furthermore monthly values of this parameter is reported in the ER calculation sheet/06/ are also verified with the MR/04/ and found to be consistent.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of this parameter were further cross checked with the monthly invoices raised by the PP /09/ 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?	Yes, the adequate QA/QC procedures were implemented by all the stakeholders, namely, the Grid Authority, the PP and the O&M Contractor. The data transfer process for the said parameter is as follows: The monthly Joint meter reading is taken by the representatives of GEDA (State utility) in the presence of WWIL officials.
	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	CR #1 and CAR #2 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/10/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

Parameter	Electricity imported by the power plant during the year y E_{imp} (MWh/Year)	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The electricity imported to the grid is measured through energy meters at the WTG metering location on continuous basis and reported monthly.
	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 PD/01/ and monitoring methodology/10/.
	Monitoring equipment	There is one set of dedicated energy meters (main & check meter) provided for each WTGs owner at 33 kV metering points.
	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?	All the energy meters are two-way tri-vector meters of accuracy class 0.2%/0.5%; 4 out of 5 meters are of 0.5% accuracy class while 1 meter is of 0.2% accuracy class. The details have been provided as below under section "Calibration of meters". Accuracy of the monitoring equipment's is in accordance with the monitoring plan as outlined in the PD.

	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes the accuracy valid for the entire measuring range.	
	Calibration frequency /interval:	5 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	
	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 i.e. by stateutility (GEDA)/07/	
	Is(are) calibration(s) valid for the whole reporting period?	Yes, valid for the entire current monitoring period.	
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes, calibration carried out for a measuring range comparable with the range for which measurements have been carried out.	
	How were the values in the monitoring report verified?	Reported values of this parameter have been verified with monthly joint meter	

		reading report/08/ during site visit .Value of this parameter for the current monitoring period is verified as 233.57 MWh. Furthermore monthly values of this parameter is reported in the ER calculation sheet/06/ are also verified with the MR/04/ and found to be consistent.	
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of this parameter were further cross checked with the monthly invoices raised by the PP /09/ 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?	Yes, the adequate QA/QC procedures were implemented by all the stakeholders, namely, the Grid Authority, the PP and the O&M Contractor. The monthly Joint meter reading is taken by the representatives of GEDA (State utility) in the presence of NSL officials in the form of JMRs.	
	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	CR #1 and CAR #1 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/10/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.
-------------------	--

Parameter fixed ex-ante:

$EF_{grid,OM,y}$; tCO_{2e}/MWh : it is the Operating margin CO₂ emission factor of southern grid fixed at the time of project registration the mentioned value of 0.9941 tCO_{2e}/MWh is consistent with the PD/01/.

$EF_{grid,BM,y}$; tCO_{2e}/MWh : it is the Build margin CO₂ emission factor of southern grid fixed at the time of project registration the mentioned value of 0.9285 tCO_{2e}/MWh is consistent with the PD/01/.

EF_y ; tCO_{2e}/MWh : it is the Combined margin CO₂ emission factor of southern grid fixed at the time of project registration the mentioned value of 0.9777 tCO_{2e}/MWh is consistent with the PD/01/.

Calibration of meters:

Name of WWIL Substation	Meter Serial No	Accuracy Class	2013	Calibration due on	Calibration Dates	Calibration due on
Bhogat	GJB 00486	0.5%	09-Dec-2013	08-Dec-2016	06-April-2017	06-April-2020
	GJU 07452	0.2%	09-Dec-2013	08-Dec-2016	06-April-2017	06-April-2020
Navadra	GJB 00267	0.5%	13-Dec-2013	12-Dec-2016	07-April-2017	07-April-2020
	GJB 00268	0.5%	13-Dec-2013	12-Dec-2016	07-April-2017	07-April-2020
	GJB 00269	0.5%	13-Dec-2013	12-Dec-2016	07-April-2017	07-April-2020

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 on-site inspection and were found to be satisfactory.

The details of monitoring the equipment are involved in the project activity and their calibration details/07/ are mentioned in the table under Section 4.3 of the VCS MR/04/.The energy meters installation dates and calibration dates were verified with respective energy meter replacement and calibration certificate issued by GEDA and also each meter has been physically inspected during the site visit and the meter details are found to be consistent with that observed during the site visit.

The assessment team has verified the monthly joint meter reading report issued by respective state utility and confirmed that only the data recorded through main meters is used to calculate net electricity supplied to the grid by the WTGs belongs to particular developer and consequently for ER calculations. As verified through the calibration certificates, that meters were working satisfactorily during the current monitoring period. The VCS PD/01/ & MR /04/ and site visit observations confirm that the metering equipment are sealed and maintained by the state utility.

In view of the above discussion the assessment team 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:

$$BE_y = EG_y * EF_y$$

Where:

BE_y : Baseline emissions in year y (tCO₂e/yr)

EG_y : Electricity supplied by the project activity to the grid for sale to captive consumers in year y (MWh/yr)

EF_y : Combined Margin (CM) Emission Factor of the grid (tCO₂e/MWh)

$$\text{Thus, } BE_y = EG_y * EF_y$$

Thus, $BE_y = 83,162.20 \text{ MWh} * 0.9777 \text{ tCO}_2\text{e/MWh}$
 $= 81,308 \text{ tCO}_2\text{e}$ (this cumulative of rounded down values from each vintage year as considered as final 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. 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.

However, verification team has observed that the actual ER achieved during the current monitoring period is lower than the estimated ER as per registered PD for the comparable period. This comparison is submitted in the ER sheet along with a justification confirming that this event of lower power generation was an unforeseen situation and also not under the direct control of PP. The verification team has reviewed and verified the facts and supporting provided by PP and able to conclude that justification is valid and such condition is an unforeseen event which is not a regular affair in the project activity, moreover PP does not any direct control on it.

The verification team has assessed the cause of any variation in the actual GHG emission reductions achieved during the current monitoring period. There is decrease of around 10.91 % in the actual emission reductions achieved during the current monitoring period from that stated in the registered VCS PD. This is mainly due to lower plant load factor (PLF) achieved during the current monitoring period.

It is to be noted that PLF is completely governed by the availability of wind, which is natural phenomenon and it is beyond the control of PP. Thus, verification team concludes that this change in ER (which corresponds to change in PLF) does not impact on additionality.

4.6 Non-Permanence Risk Analysis

Not applicable for the project activity.

5. VERIFICATION CONCLUSION

LGAI Technological Center, S.A. (Applus+ Certification), contracted by Wind World (India) Power Development Pvt. Ltd., has performed the independent verification of the emission reductions for the VCS project activity (VCS ID- 412) “Bundled wind energy generation projects in Gujarat, India” in India for the monitoring period 01/01/2019 to 31/12/2019 as reported in the Monitoring Report Version 02 dated 05/03/2020. The Wind World (India) Power Development Pvt. Ltd. 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 ACM 0002 version 17, the monitoring plan contained in the registered PD Version 03 dated 12/04/2017 and VCS guidelines version 4, Monitoring Report Version 02 dated 05/03/2020 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 01/01/2019 to 31/12/2019 are fairly stated in the Monitoring Report Version 02 dated 05/03/2020. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM 0002, Version 17, and the VCS standard.

Verification period: From 01/01/2019 to 31/12/2019 (including both days)

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

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)
2019 (01/01/2019 to 31/12/2019)	81,308	0	0	81,308
Total	81,308	0	0	81,308

APPENDIX 1: REFERENCES

S.No	Title of Document	Version	Date
1.	VCS PD	3.0	12/04/2017
2.	VCS Validation Report	2.0	12/04/2017
3.	Previous VCS Verification report (MP: 01/04/2018 to 31/12/2018)	2.0	18/11/2019
4.	VCS Monitoring Report (Final) (Monitoring period: 01/01/2019 to 31/12/2019)	2.0	05/03/2020
5.	VCS Monitoring Report	1.0	10/02/2020
6.	ER spread sheet (corresponding to the final monitoring report)	1.0	10/02/2020
7.	Certificates of Calibration for all the meters belongs to project activity	-	-
8.	Monthly joint meter reading report issued by state GEDA	-	01/01/2019 to 31/12/2019
9.	Invoice issued by PP to respective state GEDA	-	01/01/2019 to 31/12/2019
10.	ACM 0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".	17.0	-
11.	CEA Database	11	-
12.	Commissioning certificate for all the WTGs of the project activity issued by state electricity authority	-	-
13.	Power Purchase Agreements signed between Project Proponent and state electricity authority	-	-
14.	VCS webpage for the project, VCS ID 412; https://www.vcsprojectdatabase.org/-/project_details/412	-	Last accessed on 09/03/2020
15.	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period	-	-
16.	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17/03/2006 <u>No. 502/70/CEA/DP&D</u> Amendments Notified on 26/06/2010 <u>No. 502/6/2009/DP&D/D-I</u>	-	-
17.	VCS Standard	Version 4	19/09/2019
18.	VCS Program Guide	Version 4	19/09/2019
19.	On site assessment – interviews of staff personnel, photographs, physical inspection of monitoring system	-	15/11/2019

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 On-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 curricula vitae of the DOE'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 Master 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
FAR	Forward Action Request
GHG	Green House Gas
GEDA	Gujarat Energy Development Agency
GETCO	Gujarat Electricity Transmission Corporation Limited
ISO	International Standards Organization
JMR	Joint Meter Reading
kW	Kilowatt
kWh	Kilowatt hour

MR	Monitoring Report
MW	Megawatt
MWh	Megawatt-hour
O&M	Operation and Maintenance
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
QA/QC	Quality Assurance and Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
WEC	Wind Energy Convertor
WTG	Wind Turbine Generator
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	N/A	Section no.	N/A	Date:N/A
Description of FAR				
N/A				
Project participant response				Date:N/A
N/A				
Documentation provided by Project participant				
N/A				
DOE assessment				Date:N/A
N/A				

Table 1. CR from this verification

CR ID	01	Section no.	MR	Date : 04/03/2020
Description of CL				
Please submit the following documents: 1. April 2017 calibration certificates 2. Undertaking from PP as required by section				
Project participant response				Date : 06/03/2020
PP is submitting the required calibration certificates and also the letter of undertaking related to the avoidance of double accounting and other GHG platforms.				
Documentation provided by project participant				
1) Calibration Certificates – April 2017 2) Letter of undertaking				
DOE assessment				Date:09/03/2020
Assessment team confirm that PP has submitted April 2017 calibration certificate and letter of undertaking from PP to avoid double accounting. Hence accepted				
CR#2 Closed				

Table 2. CAR from this verification

CAR ID	01	Section no.	MR	Date : 04/03/2020
Description of CAR				
- PP is requested to correct the font of the text as per the VCS template version 4.0 requirement. - PP is requested to include information in section 1.4 and 1.10 as per the template version 4.0 requirement.				
Project participant response				Date : 06/03/2020
PP has rechecked the font of the texts in the MR document. As per template version 4, title page is prescribed to use Arial or Century Gothic 10.5 point, black, regular (non-italic) font, and table inside the Title Page is already marked with Franklin Gothic; whereas all sections of the MR can be filled using Arial or Franklin Gothic Book 10.5 point, black, regular (non-italic) font. PP has used Arial 10.5 black regular font for all section of the MR, whereas the title page is in Gothic font as prescribed in the format. Thus the font, colour and size used are as per the VCS template version 4.0. PP has revised the section 1.4 and 1.10 of the MR to include details in line with the latest applicable version of the MR template, i.e. version 4.0				
Documentation provided by project participant				
Revised MR, version 02, dated 05/03/2020				
DOE assessment				Date:09/03/2020
Assessment team confirm that fonts are inline with template requirement and PP has updated section 1.4 and 1.10 of the revised monitoring report. Hence accepted				
CAR#1 Closed				

CAR ID	02	Section no.	MR	Date : 04/03/2020
Description of CAR				
PP is requested to correct reference of monitoring equipment in section 4.2 of the monitoring report.				
Project participant response				Date:05/03/2020
The reference of the monitoring equipment motioned under the section 4.2 of the MR has been corrected. The revised MR version is submitted to DOE.				
Documentation provided by project participant				
Revised MR, version 02, dated 05/03/2020				
DOE assessment				Date:09/03/2020
Assessment team confirm that PP has corrected the reference of monitoring equipment in section 4.2 of revised Monitoring report. Which is acceptable.				
CAR#2 Closed				

Table 3. FAR from this verification

FAR ID	N/A	Section No.	N/A	Date: N/A
Description of FAR				
N/A				
Project participant response				Date: N/A
N/A				
Documentation provided by Project participant				
N/A				

DOE assessment	Date: N/A
N/A	