



WIND BASED POWER GENERATION BY PANAMA WIND ENERGY GODAWARI PRIVATE LIMITED, PUNE IN THE STATE OF MAHARASHTRA, INDIA



Document Prepared by **VKU Certification Pvt. Ltd.**

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Summary:

M/s VKU Certification Pvt. Ltd. (here after referred as VKU) was commissioned by M/s EKI Energy Services Limited, and has verified the greenhouse gas emission reductions reported for the project activity “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India.” (VCS ID 1523) ¹, covering monitoring period from 01-November-2021 to 31-October-2022 (Inclusive of both start and end dates) with regard to the relevant requirements for VCS activities. The project activity entails the installation of wind energy projects in Maharashtra, India. The project's total installed capacity is 80 MW (40 WTGs× 2 MW) and employs wind energy to generate electricity and then distributes that electricity to the Unified Indian Grid.

This project activity is a greenfield project, meaning that there were no renewable energy-based electricity generation facilities at the site of the project, and the equivalent amount of electricity would have been provided by a grid that was dominated by fossil fuels. This project activity significantly reduces GHG emissions by substituting wind (clean energy) energy for fossil fuels-based electricity.

The objective of the verification is to have an independent review ex-post determination of the monitored reductions in GHG emission reductions, Verification was conducted using VKU's procedures in line with the requirements specified in the VCS program guide version 4.2/4/, VCS standard Version 4.3/5/, VCS validation and verification manual version 3.2/19/, and applying standard auditing techniques. The verification consisted of desk review, on-site assessment and the resolution of outstanding issues and the issuance of the final verification report and certification.

The verification shall ensure that the reported emission reductions are complete and accurate in accordance with applicable VCS requirements in order to be certified.

The GHG emission reductions were calculated on the basis of the approved methodology ACM0002 “Grid Connected Renewable Electricity Generation from renewable sources” Version 16.0/7/ and the monitoring plan included in the registered VCS joint PD & MR /3/ version 02 dated 15- March- 2016.

During this verification, 03 Corrective Action Request (CAR) and 03 Clarification Requests (CLs) were identified related to operation, monitoring and GHG emission reduction calculation of the VCS project activity in relation to all relevant VCS requirements for the project activity and the applied baseline and monitoring methodology, and these CARs and CLs are successfully closed after necessary corrections/clarifications by the client. The same has been discussed in Appendix B of this verification report.

To conclude, it is VKU's opinion that the project activity “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India.” (VCS ID 1523), meets all relevant requirements for VCS standard and guidelines and correctly applies the baseline and monitoring methodology ACM0002 “Grid Connected Renewable Electricity Generation from renewable

¹ <https://registry.verra.org/app/projectDetail/VCS/1523>

sources” Version 16.0/7/. The monitoring system is in place and the emission reductions are calculated without material misstatement. Hence, VKU is able to certify that the emission reductions from the project during the monitoring period from 01-November-2021 to 31-October-2022 (Inclusive of both days) under 1st crediting period from 31-March-2014 to 30-March-2024 (Inclusive of both dates) amount to 75,646 tCO₂e.

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1 INTRODUCTION

1.1 Objective

M/s EKI Energy Services Limited has commissioned M/s VKU Certification Pvt Ltd (hereafter as VKU) to carry out the eighth verification of the project “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India” (VCS ID 1523) project for the monitoring period from 01-November-2021 to 31-October-2022 (Inclusive of both start and end dates).

This report presents the findings of the project’s verification, which was carried out in accordance with the VCS requirements as well as the guidelines established to ensure uniform project operations, monitoring, and reporting.

The purpose of the verification is to have an independent evaluation of a project activity by an accredited validation and verification body against the requirements of the VCS program guide Version 4.2/4/, VCS standard version 4.3/5/ and GHG program applied, on the basis of the registered project document.

This is the eighth verification of first crediting period. The verification is for the period of 12 months(365 days) i.e., from 01-November- 2021 to 31-October-2022 (Inclusive of both start and end days) that falls under the 1st crediting period² from 31-March-2014 to 30-March-2024.

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- All structural characteristics (technology, project equipment, monitoring and metering equipment) of the project are in place, and the project activity has been carried out and operated in accordance with the registered Joint VCS PD & MR /3/;
- The monitoring report/1/ and other supporting documents are complete; the data is collected and preserved in accordance with the monitoring methodology and approved monitoring plan.
- To confirm that the monitoring system is implemented and fully functional to generate Verified Carbon Units (VCUs) without any double counting, and to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

² The first crediting period for the project activity is from 31-March-2014 to 30-March-2024. The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times (As per registered Joint VCS PD-MR, version 02, dated 15-March-2016, VCS standard v4.3).

1.2 Scope and Criteria

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- to verify that reported GHG emission data is sufficiently supported by evidence

The project is assessed against the requirements of VCS standard version 4.3/5/, VCS program guide version 4.2/4/, validation and verification manual version 3.2/19/, as well as any applicable regulations and guidance. VKU has used a rule-based approach (as criteria) in the verification, concentrating on the identification of critical reporting rules and the dependability of project monitoring, based on the recommendations in the most recent versions of the VCS Validation and Verification Manual Version 3.2/19/.

Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

Before being delivered to the client, every version of the verification report underwent an independent internal technical review to ensure that all verification operations had been carried out in conformance with the relevant VKU's procedure and with a **reasonable level of assurance**.

A technical reviewer qualified in accordance with VKU's qualification procedure conducted the technical review. The following individuals are part of the verification team and technical reviewer:

Role/Qualification	Last Name	First Name
VCS Team Leader, VCS Verifier	Ahirwar	Vivek Kumar
Technical Expert (TA 1.2, Wind)	Ahirwar	Vivek Kumar
Validator/Verifier-Trainee	Sharma	Deepali
Project Trainee	Chauhan	Nisha
Technical Reviewer & Technical Expert (TA 1.2, Wind)	Kumar	Sanjay

1.4 Summary Description of the Project

The project activity involves electricity generation by wind electric convertors (renewable source) and supplying the generated electricity to the Indian Grid. The project being a renewable energy generation activity, leads to removal of fossil fuel dominated electricity generation. This is a greenfield project activity i.e., there was no renewable energy-based electricity generation facility in each site of this project and equivalent amount of electricity would have been supplied by fossil-fuel dominated grid – which is pre-project scenario as well as baseline scenario for this project activity. The project activity ensures the reduction of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

The project activity is grid-connected wind energy generation located in various villages of Beed district in Pune in the State of Maharashtra, India. M/s. Panama Wind Energy Godawari Private Limited is the Project Proponent of the project activity. The total capacity of the project activity is 80 (40 WTGs × 2 MW) MW. **The project plant was commissioned on 31-March-2014** and is functioning successfully since then and dates are verified against registered Joint VCS PD & MR/3/ and commissioning certificates/11/.

Project Investors	Project	Project Capacity in AC	Date commissioning	Project location	State
Panama Wind Energy Godawari Private Limited	Wind	80 MW	31-March-2014	Beed District, Pune	Maharashtra

Start date of this project activity is 31-March-2014

As per MR/1/, the electricity generated from the project is supplied to the state grid system which is under the purview of the Unified Indian Grid which is confirmed from registered Joint VCS PD & MR, version 02, dated 15-March-2016/3/ Credit note issued by State electricity Board/8/ and, previous verification report/16/ and interview with PP/22/.

This information was verified during on site assessment and found to be in line with the details provided in the registered Joint VCS PD & MR /3/. The total emission reductions achieved in this monitoring period i.e., from of 01-November- 2021 to 31-October-2022 (first and last days included) is 75,646 tCO2e. The net electricity generated by the project activity that was evacuated to the grid during the current monitoring period (8th monitoring period) of 01-November- 2021 to 31-October-2022 (inclusive of both the dates) is 77,426.94 MWh.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Requirements, i.e., VCS Program Guide version 4.2/4/, VCS standard version 4.3/5/. The GHG emission reductions are on the basis of the approved Baseline and **monitoring methodology ACM0002: "Grid Connected Renewable Electricity Generation from renewable sources" Version 16.0/7/**.

Scope: 01 Energy Industries (renewable- and non-renewable sources) Title: "Grid Connected Renewable Electricity Generation from renewable sources" Version 16.0/7/ During onsite visit/17/ verification team **reviewed 100% data for all the WTGs Modules** involved in this project at site **and hence no sampling is involved**. The verification consisted of the following three phases

- Document review;
- On-site assessment including Interviews and actual project scenario;
- Resolution of any Material Discrepancy and the issuance of the final verification report and certification.

The following sections outline each step in more detail.

2.2 Document Review

The verification of the project is performed by applying the standard auditing techniques to assess the quality of the documents submitted by PP and project documents available³/18/. The verification was performed primarily based on the review of the monitoring report (MR) version 01 dated 01-November-2022 /1/, version 02 dated 19-December-2022 and Version 03 dated 11-January-2023 and Version 04 dated 24-January-2023, the emission reduction calculations spreadsheet version 01 dated 01-November-2022 /1/, version 02 dated 19-December-2022 and Version 03 dated 11-January-2023 and Version 04 dated 24-January-2023 were assessed as part of the verification. In addition, the registered VCS joint PD & MR /3/ in particular the baseline estimations and the monitoring plan for the project was reviewed. The following table lists the documentation that were reviewed during the verification.

/1/	EKI: VCS monitoring report for "Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India."
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³ <https://registry.terra.org/app/projectDetail/VCS/1523>

	Version 1.0 dated 01-November-2022 Version 2.0 dated 19-December-2022 Version 3.0 dated 11-January-2023 Version 4.0 dated 24-January-2023
/2/	EKI: Emission Reduction Calculation Spreadsheet; Version 1.0 dated 01-November-2022 Version 2.0 dated 19-December-2022 Version 3.0 dated 11-January-2023 Version 4.0 dated 24-January-2023
/3/	EKI: Registered joint VCS PD & MR for the project “Wind Power Project By “M/S Panama Wind Energy Godawari Private Limited in Maharashtra” version 2.0 15- March-2016.
/4/	VCS: VCS Program Guide, version 4.2 of 22-June-2022
/5/	VCS: VCS Standard, version 4.3 of 22-June-2022
/6/	VCS: Monitoring report Template VCS Version 4.1
/7/	CDM Executive Board: Baseline and Monitoring Methodology ACM0002 “Grid Connected Renewable Electricity Generation from renewable sources” Version 16.0
/8/	Credit Notes issued by state utility to PP Maharashtra State Electricity Distribution CO. LTD. (MSEDCL) for the current verification period.
/9/	Certificates of Calibration for all the meters belongs to project activity
/10/	Invoice issued by PP to state utility- Maharashtra State Electricity Distribution CO. LTD. (MSEDCL).
/11/	Commissioning certificate of all the WTGs of the project activity issued by state electricity authority
/12/	Power Purchase Agreements signed between Project Proponent and state electricity authority: - M/S Panama wind Energy Private Limited & Maharashtra state electricity distribution company limited for 14 MW (7 WTGs × 2 MW) wind power project dated 9- August- 2017, 18 MW (9 WTGs × 2 MW) wind power project dated 9- August- 2017, 2 MW (1 WTG × 2 MW) wind power project dated 21- March- 2017, 10 MW (5 WTGs × 2 MW) wind power project dated 21- March- 2017, 12 MW (6 WTGs × 2 MW) wind power project dated 21- March- 2017, 24 MW (12 WTGs × 2 MW) wind power project dated 01- August- 2014.
/13/	Letter of declaration dated 19-October-2022 from PP regarding not having created or sought any other form of environmental credit for the same period
/14/	Monthly generation reports issued by O&M contractor
/15/	<u>Central Electricity Authority (Installation and Operation of Meters) Regulations</u>
/16/	LGA Technological Center, S.A. (Applus+ Certification): previous Verification report “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India.” version 3.0 dated 01-June-2022 covering monitoring period of 01- January- 2021 to 31-October-2021
/17/	Site Visit Photographs videos and attendance sheet dated 05-December-2022.
/18/	VERRA: https://registry.terra.org/app/projectDetail/VCS/1523
/19/	Validation and verification manual version 3.2 dated 19-October-2016
/20/	Technical Specifications of WTGs

/21/	Grievance Register present on site
/22/	On site personnel interview dated 05-December-2022
/23/	GPS Google software used for location during onsite visit
/24/	Breakdown details for current verification period
/25/	REC website Renewable Energy Certificate Registry of INDIA https://www.recregistryindia.nic.in/index.php/publics/faqs
/26/	VCS Joint Validation-Verification Report by LGAI Technological Center, S.A. (Applus+ Certification) for- "Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India." version 1.0 dated 17-March-2016
/27/	EIA NOTIFICATION dated 14-September-2006; https://moef.gov.in/wp-content/uploads/2018/03/so1533.pdf
/28/	Ministry of New and Renewable Energy (MNRE) Notification from September 2013; Draft report on use of non-conventional energy resources for Simhastha 2016 (niua.org)
/29/	Letter describing breakdown due to ROW ⁴ issue from 01-November-2021 to 31-March-2022

⁴ For the current project, ROW issues refer to rerouting the transmission lines in the project's nearby area. As per PPA non-availability of transmission lines is categorized as a force majeure event, therefore no generation is accounted.

2.3 Interviews

An on-site inspection has been performed by the assessment team. The site visit involved, interviewing representatives of the PP and O&M contractors personally by assessment team/14/ on **05-December-2022 in Maharashtra** i.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.NO.	Name	Designation	Topic
1.	Nilesh Waghmare	Panama Incharge	Responsibility for Maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment's).
2.	Amar Thackrey	Panama- HR & Admin/ EHS & safety	Data management and Training details, Management Practices
3.	Sandesh Madake	Assistant Engineering	Credit Notes & Invoicing Procedure, Calibration Mechanism, QA/QC

For Local Stakeholders:

S. No.	Name	Category	Topic of Discussion
1	Ganesh Ashok Mahajan	Local Stakeholder	Implementation of Project activity and its impact on the economic, social and
2	Damodhar R. Yewle	Local Stakeholder	

			environmental parameters around the located project activity and on the local people of the area. The ongoing communication procedure and the address of their grievance by the project proponent The employment generation due to project activity implementation.
3	Sachin A. Paul	Local Stakeholder	
4	Nashik N. Deygude	Local Stakeholder	
5.	Patham Asaf T.k	Local Stakeholder	
6.	Paul S.R.	Local Stakeholder	
7.	Datta Pokale	Local Stakeholder	
8.	Laxman S. Paul	Local Stakeholder	

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 telephonic interview coupled with the documentation.

2.4 Site Inspections

An On-site visit was undertaken by the verification team to the project location identified in the MR at different villages of Beed district of Maharashtra state in India on **05-December-2022** to carry out the following;

- A review of the operation and implementation of the registered project activity in accordance with the Joint VCS PD & MR/3/ and VCS MR/1/approved documents;
- An analysis of the information flows used to generate, aggregating and reporting the monitoring parameters;
- Interviews/22/ with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the registered Joint VCS PD & MR /3/;
- 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;
- A check of the monitoring equipment including calibration/9/ performance and observations of monitoring practices against the requirements of the joint VCS PD &

MR/3/, 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

A corrective action request (CAR) is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project participants.
- A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

In summary **03 CLs and 03 CARs** were raised during this verification which were closed successfully and details are given under Appendix B of this report.

2.5.1 Forward Action Requests

This is 8th periodic verification of the project activity and based on the review of the previous verification report/16/ and joint Validation verification report /26/ available on VERRA website/18/, no FAR is pending from previous verification which needs to be closed during the current verification.

2.6 Eligibility for Validation Activities

VKU has not undertaken any validation activities as a part of the verification and does not hold the accreditation for validation of projects under this or any relevant sectoral scope. Hence this section is not applicable for current verification.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is registered under VCS ID 1523. However, Project Proponent has submitted undertaking /13/ that they will not claim same GHG emission reductions from other projects during that period thus ensuring emission reduction generated from the project activity will not be double counted. This was verified further by checking other GHG program registry websites and hence assessment team accepted that the project is not claiming emission reduction from other projects for the current monitoring period.

The project has not applied under any other GHG program which is confirmed through a declaration/13/ submitted by the PP. Simultaneously, Assessment team independently has also checked other GHG Program registry websites and searched for similar projects but could not find any similar project registered on other registry websites hence accepted by the assessment team. Based on both independent assessment and declaration submitted by PP/13/, the assessment team accepted the claim that there will not be double counting from this project activity for this current monitoring period (01-November-2021 to 31-October-2022). Assessment team also checked the REC Mechanism of India which was also verified from the REC website (Renewable Energy Certificate Registry of India) ([Renewable Energy Certificate Registry of INDIA - Registered RE Generator List \(recregistryindia.nic.in\)](#)). Further, ensured through a declaration letter /13/ from PP that they will not be using the energy generation from this project activity during the current monitoring period, under REC mechanism. It was also verified for the International Emissions trading Programs as well. 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://cdm.unfccc.int/>
3. <http://www.goldstandard.org/>
4. <https://verra.org/verra-standards-and-programs/>
5. <https://www.ucarbonregistry.io/>
6. <https://projects.globalcarboncouncil.com/>

Rejection by other GHG programs

The Project is not rejected by other GHG programs. The assessment team independently verified with the following registries and checked projects from the PP matching the same project design and found that no such project either exists or were rejected by the registries. The details of the registries checked are as follows:

1. <http://www.recregistryindia.nic.in/>
2. <http://www.goldstandard.org/>
3. <https://verra.org/verra-standards-and-programs/>
4. <http://cdm.unfccc.int/>
5. <https://www.ucarbonregistry.io/>
6. <https://projects.globalcarboncouncil.com/>

Moreover, a declaration/13/ for the same is checked and found correct by the assessment team.

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period. Also, there were no methodology deviations identified during the previous verification/16/.

3.3 Project Description Deviations

There is no project description deviation identified during the current monitoring period. No deviation was involved in previous verification as well /16/. The assessment team confirms the same by checking the project website⁵

3.4 Grouped Project

As per VCS Joint PD & MR version 02 dated 15-March-2016, the project is not a grouped project. This can further be confirmed as per para 3.5.8 of VCS Standard V4.3. Therefore, this section is not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the onsite audit with PP representative, it was concluded that the project is implemented as per the requirement of the registered joint VCS PD & MR and approved monitoring plan. The total capacity of the project activity is 80 MW (40 WTGs × 2 MW) G 97- 2.0 manufactured by M/s. Gamesa India Limited. During the current monitoring period, it was observed **through breakdown details/24/** mention in appendix 2 of MR version 4 /1/ present on site where it was verified that WTG went through a down time from 01- November- 2021 to 31- March- 2022, there was no generation of electricity from the operation of the project activity during that time due to ROW issue. The plant went through breakdown of 3876 hours 50 minutes during the current monitoring period with a 44% decrease in emission reductions. The breakdown was beyond the control of PP. Other than that, the project underwent continuous operation and only scheduled maintenance as per the manufactures specification which is acceptable to the assessment team as verified during the interview with PP personnel/22/ Panama In-charge/HR & Admin/ EHS&

⁵ <https://registry.terra.org/app/projectDetail/VCS/1523>

Safety /Assistant engineer present at site during onsite visit/17/. This can be further confirmed from the BREAKDOWN DETAILS mentioned in appendix 2 of MR version 4/1/. Moreover, there is no unforeseen incident which can affect the applicability of the methodology and thus the same is acceptable to the assessment team.

During the current monitoring period, the WTGs went through a downtime from 01-November-2021 to 31-March-2022 and the project activity has supplied 77,426.94 MWh of electricity, and thus contributing to 75,646 tCO₂e GHG reductions.

S.No.	Plant Site	Total Hours	Net Operational Hours	Total hours	Breakdown
1.	M/s Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra	8760 Hours	4883 Hours 10 Minutes	3876 hours 50 Minutes	

Plant Breakdown has occurred during the current monitoring period. The breakdown information is listed in appendix 2 of the monitoring report /24/. The overall breakdown length is computed as 3876 hours 50 Minutes for the site. It was confirmed through interviews/22/ with the onsite personnel that the wind power plant was under force majeure, ROW issue due to which the plant was shutdown from 01-November-2021 to 31-March-2022. The ROW issue was beyond the control of PP which was further confirmed through the declaration letter submitted by the PP/29/ which is acceptable to the assessment team. It was further confirmed from credit notes/8/ and invoices/10/ from 01-November-2021 to 31-March-2022 wherein there was no export to the grid.

Project location is confirmed by the assessment team through the GPS Google software/23/. Moreover, assessment team confirm that the latitudes and longitudes as mentioned in the registered VCS joint PD & MR/3/ are correct.

The WTG wise latitudes and longitudes are confirmed below:

Sr. No.	Location No.	Village	Taluka	District	Latitude (D° M' Sec")	Longitude (D° M' Sec")
1.	G01	Mulukwadi	Georai	Beed	N19 11 35.6	E75 43 38.4
2.	G02	Mulukwadi	Georai	Beed	N19 11 12.3	E75 42 57.5
3.	G03	Mulukwadi	Georai	Beed	N19 11 50.0	E75 43 19.7
4.	G04	Mulukwadi	Georai	Beed	N19 11 30.1	E75 43 13.9
5.	G05	Khoipti	Georai	Beed	N19 13 35.5	E75 41 23.4
6.	G06	Mulukwadi	Georai	Beed	N19 11 59.1	E75 43 35.4
7.	G07	Mulukwadi	Georai	Beed	N19 11 20.6	E75 43 40.8

Sr. No.	Location No.	Village	Taluka	District	Latitude (D° M' Sec")	Longitude (D° M' Sec")
8.	G08	Mulukwadi	Georai	Beed	N19 11 59.5	E75 43 07.2
9.	G09	Mulukwadi	Georai	Beed	N19 12 04.9	E75 42 37.4
10.	G10	Mulukwadi	Georai	Beed	N19 12 24.6	E75 43 13.1
11.	G11	Mulukwadi	Georai	Beed	N19 12 38.0	E75 43 18.6
12.	G12	Manmodi	Georai	Beed	N19 12 23.5	E75 42 36.7
13.	G13	Manmodi	Georai	Beed	N19 12 36.0	E75 42 18.5
14.	G14	Manmodi	Georai	Beed	N19 12 50.5	E75 42 24.3
15.	G15	Manmodi	Georai	Beed	N19 12 59.8	E75 42 10.8
16.	G16	Manmodi	Georai	Beed	N19 13 17.1	E75 42 10.1
17.	G17	Manmodi	Georai	Beed	N19 13 22.3	E75 41 58.6
18.	G18	Manmodi	Georai	Beed	N19 13 29.6	E75 42 29.3
19.	G19	Khopti	Georai	Beed	N19 13 41.9	E75 42 19.2
20.	G20	Manyarwadi	Georai	Beed	N19 13 45.5	E75 42 59.5
21.	G21	Khopti	Georai	Beed	N19 14 06.3	E75 41 40.6
22.	G22	Rajpimpri	Georai	Beed	N19 13 54.1	E75 41 27.6
23.	G23	Rajpimpri	Georai	Beed	N19 13 46.6	E75 41 03.1
24.	G24	Rajpimpri	Georai	Beed	N19 13 34.5	E75 40 24.8
25.	G25	Rajpimpri	Georai	Beed	N19 13 23.9	E75 40 11.5
26.	G26	Bangali Pimpla	Georai	Beed	N19 12 40.0	E75 37 28.9
27.	G27	Sindkhed	Georai	Beed	N19 13 09.5	E75 40 21.9
28.	G28	Kombadwadi	Georai	Beed	N19 13 25.4	E75 39 28.6
29.	G29	Kombadwadi	Georai	Beed	N19 13 43.7	E75 39 29.9
30.	G30	Devimpri	Georai	Beed	N19 13 51.7	E75 39 06.1
31.	G31	Kombadwadi	Georai	Beed	N19 13 57.4	E75 39 33.0
32.	G32	Sushi	Georai	Beed	N19 12 16.2	E75 37 44.2
33.	G33	Sushi	Georai	Beed	N19 12 59.5	E75 38 47.3
34.	G34	Sushi	Georai	Beed	N19 13 14.9	E75 38 57.3
35.	G35	Sushi	Georai	Beed	N19 13 12.2	E75 38 26.2
36.	G36	Sushi	Georai	Beed	N19 13 27.1	E75 38 20.9

Sr. No.	Location No.	Village	Taluka	District	Latitude (D° M' Sec")	Longitude (D° M' Sec")
37.	G37	Kumbhejalgaon	Georai	Beed	N19 13 34.4	E75 38 00.3
38.	G38	Sushi	Georai	Beed	N19 12 49.7	E75 38 08.6
39.	G39	Kumbhejalgaon	Georai	Beed	N19 13 04.7	E75 37 53.8
40.	G40	Bangalipimpla	Georai	Beed	N19 12 58.0	E75 37 31.5

Starting date of the operation of the project activity is 31-March-2014 which is the date of commissioning/ commercial operation of the 1st WTG. Assessment team checked the commissioning certificate/11/ and confirmed that the dates of commission for the WTGs are correct. Assessment team also confirm during the onsite audit that there is no change in project design viz., capacity of the WTGs remained the same and the project is implemented as per the description provided in the registered VCS joint PD & MR /3/. This has been further verified from the Joint Validation-Verification report/26/ and previous verification report /16/. Credit Notes/8/ and Invoices/10/ have also been verified which confirm the capacity, implementation and project design of the project activity.

Commissioning dates of WTGs are given below:

S. No.	Machine ID	DOC ⁶	Village	Taluka	District	State
1	G 1	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
2	G 2	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
3	G 3	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
4	G 4	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
5	G 5	06-September-2014	Khopti	Georai	Beed	Maharashtra
6	G 6	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
7	G 7	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
8	G 8	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
9	G 9	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
10	G 10	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
11	G 11	07-October-2014	Mulukwadi	Georai	Beed	Maharashtra
12	G 12	07-October-2014	Manmodi	Georai	Beed	Maharashtra
13	G 13	07-October-2014	Manmodi	Georai	Beed	Maharashtra

⁶ Date Of commissioning

14	G 14	06-September-2014	Manmodi	Georai	Beed	Maharashtra
15	G 15	06-September-2014	Manmodi	Georai	Beed	Maharashtra
16	G 16	07-October-2014	Manmodi	Georai	Beed	Maharashtra
17	G 17	06-September-2014	Manmodi	Georai	Beed	Maharashtra
18	G 18	07-October-2014	Manmodi	Georai	Beed	Maharashtra
19	G 19	07-October-2014	Khopti	Georai	Beed	Maharashtra
20	G 20	07-October-2014	Manyarwadi	Georai	Beed	Maharashtra
21	G 21	05-October-2014	Khopti	Georai	Beed	Maharashtra
22	G 22	06-September-2014	Rajpimpri	Georai	Beed	Maharashtra
23	G 23	06-September-2014	Rajpimpri	Georai	Beed	Maharashtra
24	G 24	31-March-2014	Rajpimpri	Georai	Beed	Maharashtra
25	G 25	31-March-2014	Rajpimpri	Georai	Beed	Maharashtra
26	G 26	25-July-2014	Bangali Pimpla	Georai	Beed	Maharashtra
27	G 27	25-July-2014	Sindkhed	Georai	Beed	Maharashtra
28	G28	25-July-2014	Kombadwadi	Georai	Beed	Maharashtra
29	G 29	31-March-2014	Kombadwadi	Georai	Beed	Maharashtra
30	G 30	31-March-2014	Devimpri	Georai	Beed	Maharashtra
31	G 31	31-March-2014	Kombadwadi	Georai	Beed	Maharashtra
32	G 32	25-July-2014	Sushi	Georai	Beed	Maharashtra
33	G 33	31-March-2014	Sushi	Georai	Beed	Maharashtra
34	G 34	31-March-2014	Sushi	Georai	Beed	Maharashtra
35	G 35	31-March-2014	Sushi	Georai	Beed	Maharashtra
36	G 36	31-March-2014	Sushi	Georai	Beed	Maharashtra
37	G 37	31-March-2014	Kumbhejalgaon	Georai	Beed	Maharashtra
38	G 38	25-July-2014	Sushi	Georai	Beed	Maharashtra
39	G 39	31-March-2014	Kumbhejalgaon	Georai	Beed	Maharashtra
40	G 40	31-March-2014	Bangalipimpla	Georai	Beed	Maharashtra

The technical parameters have been verified with the name plates as well as with the technical specifications of WTGs and also cross checked from the technical manual of the Manufacturer/20/. Assessment team confirms that the technical parameters are consistent with the registered VCS joint PD & MR /3/. The major technical specifications of the WTG are as follows:

The project activity comprises WTG's by Gamesa India Limited G 97

Technical details for Gamesa G 97

1.	Main Data	
	Rated Power	2000 kW
	Rotor Diameter	97 m
	Hub height (including foundation)	Approximately 78.5 m
	Rotational Speed	9.6 to 17.8 rpm
2.	Rotor	
	Swept area	7,390m ²
	Rotor Orientation	Upwind
	Material	fibre glass pre impregnated with epoxy resin + carbon fibre
3.	Gear Box	
	Type of Gear Box housing	One planetary stage / Two parallel shaft stages
	Ratio	1: 106.8
4.	Generator System	
	Generator type	Double Fed Generator
	Power factor	0.95 CAP- 0.95 IND
	Rated voltage	690 V AC (phase to phase)
	Frequency	50 Hz
5.	Tower	
	Tower Height	120 m

The assessment team confirmed through onsite visit/17/ and it was observed that the monitoring plan was implemented as per the registered VCS joint PD & MR /3/ and applied methodology ACM0002, Version 16.0/7/. The organizational role and responsibility as mentioned in the registered VCS joint PD & MR /3/ is followed onsite. Meters are calibrated as per calibration frequency in registered VCS joint PD & MR/3/. All the emergency preparedness as mentioned in the registered VCS joint PD & MR is followed onsite and no discrepancies were found regarding the same.

Assessment team concludes the following:

- a) There are no material discrepancies between project implementation and the project description provided in the registered Joint VCS PD & MR /3/.
- 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 are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/7/.
- d) The GHG emission reductions or removals generated by the project have not been included in any emissions trading program or any other mechanism that includes GHG allowance trading/13/.
- 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/13/
- f) The project is registered under VCS only, However, PP has submitted the declaration stating/13/they will not claim same GHG emission reductions of the project from any other GHG program for the current monitoring period when project is seeking to get GHG emission reduction from VCS. Audit team also checked the REC mechanism which was verified from the REC website Renewable Energy Certificate Registry of India ([Renewable Energy Certificate Registry of INDIA - Registered RE Generator List \(recregistryindia.nic.in\)](http://recregistryindia.nic.in))/25/ and the International Emissions Trading programs as well for confirmation.
- g) The project activity complies 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 which SDG indicator taken by PP are;
 - **7.2 i.e. (Renewable energy share in the total final energy consumption)-** Overall 77,426.94⁷ MWh renewable electricity has been supplied to Indian grid that helps to increase the renewable energy share in the energy mix. As no SDG reporting has been done previously, therefore current and overall project contributions are same.
 - **13.0 i.e. (Total greenhouse gas emissions avoided or removed)-** By supplying 77,426.94 MWh of clean electricity (generated through wind energy) to Indian grid,

⁷ The current and overall project contributions are same because there has never been any prior SDG reporting.

the project avoided release of 75,646 tCO₂e in to the atmosphere during the reporting period.

- **4.4 i.e. (4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill)**- The PP organized 7 trainings for improvement of soft and technical skills along with the technology supplier.

In view of the statements shared as verified above the assessment team is able to conclude that the project has been implemented as described in the project description, All the above stated information was verified by VVB during onsite visit/17/ and onsite personnel interviews /22/.Moreover, it was confirmed through interviews/22/ with the onsite personnel that the wind power plant was under force majeure, ROW issue due to which the plant was shutdown from 01-November-2021 to 31-March-2022. The ROW issue was beyond the control of PP which was further confirmed through the declaration letter submitted by the PP/29/ and is acceptable to the assessment team.

4.2 Safeguards

4.2.1 No Net Harm

Being renewable wind power generation project there are no negative impacts on air, water, soil quality and ambience are envisaged due to the implementation of project activity and no potential negative environmental and socio-economic impacts in current monitoring period, 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 14-September-2006, the wind 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 2013⁸ /28/ also confirms that wind power project activity operations do not result in direct air pollution, noise pollution. Hence verification team confirms that there are no significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity.

In addition, due to the project activity, jobs are created at local level as verified during on-site interview which has improved socio-economic impacts in the project area. Therefore, there is no net harm from the project activity. The project activity helps to strengthen the region's skilled and

⁸ [Draft report on use of non-conventional energy resources for Simhastha 2016 \(niua.org\)](#)

unskilled labour force, as PP also emphasised in MR /1/about the training related to soft and technical skills. The project created job opportunities both during construction and for the duration of operation. This was confirmed during an on-site interviews /22/ and has improved socio-economic impacts in the project region. The project activity increases the employment rate and standard of living for local residents nearby. As a result, the project activity has not caused any net harm.

4.2.2 Local Stakeholder Consultation

The Project is already registered with VCS and registered VCS joint PD & MR; section 2.2 of MR describes the Local Stakeholder Consultation Process as in-line with VCS requirement. Meeting with local stakeholder and continuous grievance is a part of stakeholder engagement. In case of grievances, the nature of probable resolution is discussed with the plant head office and implemented by the site in-charge. When conducting physical meeting, a prior information to concerned authorities, meeting notice, formal telephonic calls are made in order to remind and extract maximum engagement. The participation and feedbacks are logged in an attendance register and feedback registers respectively. The overall responsibility lies with Site Incharge under the supervision from the Head Office team. The responsibilities include invitations, followups, organizing meeting, feedbacks, documentation and successful grievance redressal, if any. The contact information is shared with local stakeholders in case they wish to register any grievance. For the global stakeholders, the suggestion and the grievance can be submitted to ashintre@panamarenewable.com. During the current monitoring period, there were no additional significant objections or comments made by the stakeholders as part of ongoing feedback as verified onsite.

The verification team has interacted with local stakeholders during on-site assessment/22/ and details are summarized in section 2.3 of this report. There was no negative comments or feedback from local stakeholders as recorded by the verification team.

The physical meeting was organized at the time of validation and the information are presented over registered PD. The stakeholders of the project activity were invited to attend the stakeholder meeting on 27-June-2013 through newspaper advertisement (in Lokprasna, dated 20-June-2013). Personal invitations were also sent to the prominent members of the regions in the vicinity. A stakeholder meeting was held at Beed district on 27-June-2013, involving the local stakeholders. The meeting was attended by local villagers, panchayat members and representatives of Panama Wind Energy Godawari Private Limited. The stakeholders were explained about the project activity and the various benefits arising out of the project activity. A discussion was held in which the views of the local stakeholders were addressed.

4.3 AFOLU-Specific Safeguards

As the project comes under the category of NON-AFOLU projects therefore this section does not apply for this verification. Hence Not Applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered joint VCS PD & MR /3/ and involves just one parameter to be monitored $EG_{PJ,y}$ (Quantity of net electricity supplied to the grid in year y) according to the registered monitoring plan mentioned in the monitoring report/1/ and Joint VCS PD & MR/3/. The parameter value is sourced from Credit Notes/8/ and Invoices/10/. Proper calibrated meters of 0.2s accuracy class installed at site regularly monitor the import and export value which is monthly aggregated in credit notes. ER sheet/2/ prepared by PP has been reviewed by assessment team thoroughly by cross checking the values of credit notes and Invoices submitted by PP and found correct including all the formulae and conversions and aggregations.

The expected emission reduction from the project activity for current monitoring period are 1,36,936 tCO_{2e} for the current monitoring period, whereas the actual emission reductions achieved were 75,646 tCO_{2e} which is -44.76% lower than what was anticipated. This is due to the overall time of breakdowns which is quite high therefore there is a large impact on the emission reductions generated during the monitoring period. The lower generation of emission reduction is due to force majeure and ROW issue the WTGs were not operational from the month of 01-November-2021 to 31-March-2022. This was further confirmed from credit notes/8/ and invoices/10/ from 01-November-2021 to 31-March-2022 wherein there was no export to the grid and declaration letter was also verified for the same/29/ and the explanation is also provided in section 4.5 of this verification report.

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/1/. The emission reductions are 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/2/ provided by PP. The verification of each monitoring parameter has been discussed later in section 4.5.

In section 4.5 of this report and section 5.4 of MR /1/ calculations have been stated which can be further compiled in ER/2/ that has been verified by the assessment team from credit notes issued to PP by State utility /8/ & invoices issued by PP to state electricity authority /10/ submitted to assessment team by PP. Hence VKU states that the calculation method and formulae used in calculating baseline emission is in compliance to the methodology used/7/. The calculation method and formulae used in calculating baseline emission is in compliance to the methodology used i.e., ACM0002 Version 16 /7/. 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

During the verification and onsite audit, all relevant documents were checked to assess the correctness and quality of data submitted by the project participants, which are used to determine emission reductions.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

The only monitoring parameter in the project activity is “Quantity of net electricity supplied to the grid in year y, $EG_{PJ,y}$ (MWh). This parameter is monitored through controller reading of each WTG and the reading of bulk energy meters installed at substation.

S.NO.	Plant Site	Evacuation at Plant Site	Installed at	Evacuation at Substation
1.	Beed District, State: Maharashtra	33 kV	Rajpimpri Substation	132 kV

The below tables describe how the parameter $EG_{PJ,y}$, 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	Quantity of net electricity supplied by the project (Wind) plant/unit to the grid during the monitoring period $EG_{PJ,y}$ (MWh)	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Continuous monitoring, hourly measurement and at least monthly recording
		The electricity exported to the grid is determined through controller reading and Bidirectional meters installed at government sub-station-Rajpimpri. The electricity

		exported is measured 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 registered joint VCS PD & MR/3/ and monitoring methodology/7/. This was verified by assessment team during desk review and by Team Leader during onsite visit/17/ and interviews with site personnel./22/
	Monitoring equipment	No monitoring equipment is used as this parameter is calculated. However, the parameters Export and Import values are calculated using measured values, which are continuously monitored and monthly recorded. Tri vector meter Data type: Measured Make: Elster A 1800 Type of meter: Static type meter (Main & Check). Both are Bidirectional meters. Accuracy Class of meter: 0.2s
	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	Yes, the accuracy of the monitoring equipment is 0.2s, which is as per the registered joint VCS PD & MR/3/ and it is consistent as per the PPA/12/.

	standards, or as per the manufacturer's specification?	
	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 which is per registered joint VCS PD & MR/3/. This was assessed by checking the calibration certificate of the energy meters /9/. Thus, the assessment team based on the calibration certificates/9/ states that the accuracy is valid for the entire measuring range. The calibration was carried out by MAHAVITRAN/MSEDCL which is a government agency. The calibration is carried out as per the PPA norms/12/, moreover it is beyond the control of PP. The government agency itself acts as a 3rd party for the PP. Hence, assessment team accepted the calibration certificates/9/ submitted by the PP issued by MAHAVITRAN/MSEDCL which mentioned the accuracy is within the entire measuring range.
	Calibration frequency /interval:	Calibration frequency of the energy meters is once in 5 years.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring	Yes. The calibration frequency is once in 5 years as outlined in the registered VCS joint VCS PD

	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?	& MR /3/ is in accordance with the national standards/15/ i.e. <u>Central Electricity Authority Version 10 dated 03-December-2014</u> . This was also confirmed during interview with onsite personnel /22/, which is in line with VCS Standard version 4.3 /5/ calibrations requirements as well as per the registered monitoring plan.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by state utility-MAHAVITRAN/MSEDDCL which is a government agency as mentioned in joint VCS PD & MR/3/. The calibration is beyond the control of PP. The government agency itself acts as a 3rd party for the PP and it was verified during onsite personnel interviews/22/.
	Is(are) calibration(s) valid for the whole reporting period?	Calibration of energy meters/9/ is valid for whole reporting period for project activity.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. As per the calibration certificates, error variation observed is lesser than the error variation specified. Hence, it is within the measurable range. The calibration is carried out appropriately by MAHAVITRAN/MSEDCL which is a government agency and is as per the registered monitoring plan and VCS VVS standard version 4.3/5/

	How were the values in the monitoring report verified?	Cumulative value of $EG_{P,Y}$ for entire monitoring period is reported in the monitoring report/1/, and monthly values in the ER calculation sheet/2/. The monthly values were verified from the credit notes/8/ issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 77,426.94 MWh.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{P,J,y}$ were further cross checked with the monthly invoices/10/ raised by the PP 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?	On site personnel interview /22/ with the project stakeholder of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable. The desk review of O&M agreement/14/ and register monitoring plan and its implementation in the current monitoring period is done to satisfactorily verify that the system is 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	CL#01, CL#02and CAR#02 were 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 WTGs. 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:

Parameter	Unit	Description	Value
EFgrid,OM,y	tCO2/MWh	Operating Margin CO2 Emission Factor in year y	0.9862 tCO2/MWh is consistent with the registered Joint VCS PD & MR/3/.
EFgrid,BM,y;	tCO2/MWh	Build Margin CO2 Emission Factor in year y	0.9495 tCO2/MWh is consistent with the registered Joint VCS PD & MR /3/.
EFgrid,CM,y	tCO2/MWh	Combined Margin CO2 Emission Factor in year y	0.9770 tCO2/MWh is consistent with the registered Joint VCS PD & MR /3/.

Calibration of meters/9/: 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 site inspection and were found to be satisfactory. Details of meters are provided in below table:

The current meter details for M/s Panama Wind Energy Private Limited are as follows:

WTG ID	Feeder Connectivity	No. of WTGs	Main Meter Sr. No.	Check Meter Sr. No.	Subsequent Calibration	Validity of Calibration
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Location No. - 38,26,32	Feeder No. 1	3	5288748	5288752	21-August-2020	20-August-2025
Location No. - 24,25,29, 30,31		5				
Location No. - 21	Feeder No. 2	1	5288749	5288753	21-August-2020	20-August-2025
Location No. - 5,22,23		3				
Location No. - 33,34,35, 36,37,39, 40		7				
Location No. - 27,28		2				
Location No. - 1,2,3,4,6, 7,8,10,11	Feeder No. 3	9	5288750	5288751	21-August-2020	20-August-2025
Location No. - 9,12,13,1 6,18,19,2 0	Feeder No. 4	7	5288754	5288755	21-August-2020	20-August-2025
Location No. - 17,14,15		3				

The energy meter calibration certificates/9/ are checked and found that the calibration details provided in the MR are correct. From the verification of above table, verification team also confirms that the both (main and check) meter calibrations are valid for the complete monitoring period i.e., from 01-November-2021 to 31-October-2022.

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

Hence it can be concluded that the approach followed by the PP is conservative and in line with the guidelines provided under paragraph 3.4.2 of VVS version 3.2.

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.

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:

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

Where:

BE_y = Baseline Emissions in year y; tCO₂

$EG_{PJ, y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)

$EF_{grid, CM, y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂/MWh)

The baseline emissions for the project activity for the current monitoring period are as follows.

Baseline Emission factor = 0.9770 tCO₂/MWh

Calculation of $EG_{PJ, y}$

Since the project activity is the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where;

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

$$\text{Baseline Emission, } BE_y = 77,426.94 \times 0.9770$$

$$= 75,646 \text{ tCO}_2\text{e (Rounded Down)}$$

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 44.76% lower than the estimated amount of emission reductions as per joint VCS PD & MR /3/, which is due to the force majeure and ROW issue because of which the WTGs were not operational from 01-November-2021 to 31-March-2022. The ROW factor (it is the strip of land immediately below and adjacent to a transmission line) was beyond the control of PP and supporting documents/29/ are also provided by the PP which were verified and accepted by the assessment team. It was further confirmed from credit notes/8/ and invoices/10/ from 01-November-2021 to 31-March-2022 wherein there was no export to the grid. It is because the overall time of breakdowns which is quite high therefore there is large impact on the emission reductions generated during the monitoring period. All the data were made available and have been monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above thus accepted by VVB. This comparison is submitted in the ER sheet along with a justification confirming that this event of lower power generation was an unforeseen situation, ROW issue and also not under the direct control of PP. Since the emission reduction is less than the estimated emission reduction, no further justification is required. Hence, it is acceptable to the VVB.

All the data were made available and have been monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above. VKU is of the opinion that this method of calculation of emission reductions is accurate and results in conservative estimation of emission reduction and is in line with the applicable VCS requirements.

4.6 Non-Permanence Risk Analysis

There is no non-permanence risk that could lead to material errors, omissions or misstatements rating determined by the project proponent for the project activity and no risk was identified in the audit/verification plan hence not applicable.

5 VERIFICATION CONCLUSION

M/s VKU Certification Pvt. Ltd. (hereafter VKU) has performed the eighth verification of the first crediting period (31-March-2014 to 30-March-2024 which is inclusive of both dates) reported for the project activity “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India”, VCS Registry Project ID 1523, for the period 01-November-2021 to 31-October-2022 (Inclusive of both start and end dates), with regard to the relevant requirements for VCS activities. As described in the report from section 1 to 4, VKU has performed the entire verification according to the verification criteria for projects and their GHG emission reductions or removals set out in VCS standard Version 4.3/5/. The project participants of the “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India” project is responsible for:

- The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered VCS joint PD & MR version 2.0 of 15- March-2016/3/.
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

It is the responsibility of VKU to express an independent verification opinion about the project's conformity with the requirements of VCS Standard version 4.3/5/ and GHG program applied, on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment, VKU can confirm that:

- The project has been implemented and operated as per the registered VCS joint PD & MR /3/
- The monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 4.3/5/ requirements;
- The monitoring is in place as per the applied baseline and monitoring methodology;
- The monitoring plan in the registered VCS joint PD & MR /3/ is as per the applied baseline and monitoring methodology.

VKU 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. VKU planned and performed the verification by obtaining evidence and other information and explanations that VKU Certification considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

It is VKU's opinion that the GHG emission reduction stated in the monitoring report version 4.0 of 24-January-2023 for the "Wind Based Power Generation by Panama Wind Energy Godawari Private Limited" in Maharashtra, India for the monitoring period 01-November-2021 to 31-October-2022 (Inclusive of both start and end dates) are fairly stated. The GHG emission reductions are calculated on the basis of approved methodology ACM0002 version 16.0/7/ and the monitoring plan included in the registered VCS joint PD & MR, version 2.0 of 15-March-2016/3/.

Hence VKU is able to certify that the emission reduction from the project during the current monitoring period from 01-November-2021 to 31-October-2022(Inclusive of both start and end dates) amounts to 75,646 tCO₂e.

The following table shows the Net Emission Reduction from 01-November-2021 to 31-October-2022 (Inclusive of both start and end dates) of first crediting period.

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)
01-November-2021 to 31-December-2021	-400	0	0	-400
01-January-2022 to 31-October-2022	76,046	0	0	76,046

Total	75,646	0	0	75,646
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APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MSEDCL	Maharashtra State Electricity Distribution CO. LTD.
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PD	Project Description
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCU	Verified Carbon Unit
VKU	VKU Certification Ltd.
VCS	Verified Carbon Standard
VVS	Validation and Verification Standard
VVB	Validation and verification body

APPENDIX B: AUDIT FINDINGS

Type	Date	13/12/2022
CL#01	Reference	Section of Ver protocol:1.11,4.1,5.4, Appendix 2
Description of the Non-Conformance		
1. In section 1.11 in MR PP is requested to clarify the mention of solar technology as project activity is wind energy based. 2. In section 1.11 in MR PP is requested to justify the training statement providing evidence of technical and soft skills training undertaken during the current monitoring period. 3. In section 4.1 in MR PP is requested to clarify in Section 4.1, whether it should be NEWNE Grid or National Grid. 4. In APPENDIX 2 in MR PP is requested to give supporting evidence of the non-operational hours of WTGs.		
1 st Response from PP	Date	19/12/2022
1. In section 1.11 in MR, mentioned “solar technology” is a typo error. The project activity is wind energy based. The statement has been corrected and is now being submitted to the verification team. 2. In section 1.11 in MR, the Training attendance records are now being submitted to the verification team. 3. In section 4.1 in MR, it is NEWNE grid (Now unified INDIAN grid). 4. In APPENDIX 2 in MR, The Supporting evidence of the non-operational months of WTGs are now being submitted to the verification team.		
1 st Assessment by Audit Team	Status	Open/Closed
Date	06/01/2023	
1. In section 1.11 in MR, Assessment Team verify that PP has mentioned correct technology as project activity in MR. #CLOSED 2. In section 1.11 in MR, Assessment Team verify that PP has provided evidences of technical and soft skills training during current monitoring period. #CLOSED 3. In section 4.1 in MR, Assessment Team verify, PP has not updated throughout the MR that it should be NEWNE grid or National grid. #OPEN 4. In APPENDIX 2 in MR, Assessment Team verify that PP has submitted the supporting documents of non-operational hours of WTGs. #CLOSED		
2 nd Response from PP	Date	09/01/2023
1. In section 4.1 in MR, the “NEWNE grid or National grid” statement has been updated throughout the MR.		

2nd Assessment by Audit Team	Status	Closed	Date	11/01/2023
1. In section 4.1 in MR, Assessment team verified that PP has updated that it is National Grid throughout the MR. #CLOSED CL#01 Closed				

Type	Date	06/01/2023		
CL#02	Reference	Section of /Ver protocol: ER sheet		
Description of the Non-Conformance				
1. In ER sheet, PP is requested to justify the statement with respect to the formula in ER sheet. “The plant did not export electricity from September 2021 to March 2022 but imported electricity during those months. Imported electricity have been adjusted in the month of April 2022 and May 2022”. But Assessment team could not find the adjustment calculations in the month of April 2022 and May 2022.				
1 st Response from PP	Date	11/01/2023		
1. In ER sheet, Now, The ER sheet shows the total imports during the non-generation period (September 2021 to March 2022) and the same values are adjusted from April and May 2022 invoices. Feeder-wise generation is also added to ER sheet. ER sheet is now being provided to the Verification team.				
1 st Assessment by Audit Team	Status	Closed	Date	11/01/2023
1. In ER Sheet, Assessment Team verified, PP has total import during non-generation period are adjusted in month of April and May 2022 invoices. #CLOSED CL#02 Closed				

Type	Date	23/01/2023
CL#03	Reference	Section of /Ver protocol: 1.9 and 1.10 of MR
Description of the Non-Conformance		
1. In Section 1.9 of MR: The link given in the footnote gives the project page in UNFCCC but does not have information regarding the project termination. Please clarify.		

2. In Section 1.10 of MR: As per instructions to fill VCS MR v4.1 PP is requested "provide a list of all and any other programs under which the project is eligible to create another form of GHG-related environment credit". PP is requested to clarify how this section is in line with the requirement of the guidance. 3.In Section 5.4 of MR: PP is requested to expand ROW. PP is requested to clarify. As per registered PD the PLF mentioned is 20%, while the PLF achieved during this MP is 11.05%, which is 44.19% lower than the registered PD. PP is requested to clarify the reasons for the reduction in PLF				
1 st Response from PP		Date	24/01/2023	
1.In Section 1.9 of MR: Section is updated as and the corrected Link has been provided in Revised MR. 2. In Section 1.10 of MR: Section is Updated as per instructions to fill VCS MR v4.1 3. In Section 5.4 of MR: ROW issues are explained in the revised Monitoring period. PLF during the current monitoring period is 11.05%, Same is incorporated in revised MR.				
1 st Assessment by Audit Team	Status	Closed	Date	25/01/2023
1.In Section 1.9 of MR: Assessment team verified that section is updated and the corrected Link has been provided in Revised MR version 4. 2. In Section 1.10 of MR: Assessment team verified that section is Updated as per instructions to fill VCS MR v4.1 3. In Section 5.4 of MR: Assessment team verified ROW issues are explained in the revised Monitoring period. PLF during the current monitoring period is 11.05%, Same is incorporated in revised MR. CL#03 Closed.				

Type	Date	13/12/2022
CAR#01	Reference	Section of /Ver protocol :1.6,1.11, Appendix 1, Appendix 2
Description of the Non-Conformance		

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4. In section 3.1 in MR, Assessment Team verify, PP has elaborated explanation for the implementation status like project capacity, project details of the project activity in an appropriate manner. #CLOSED 5. In Section 5.4 in MR, PP has provided evidence related to “the achieved GHG emission is 44.60 % is lower than the estimated value” verify by the VVB. #CLOSED 6. In APPENDIX 1 in MR, PP has mentioned correct calibration details of feeder 1, feeder 2 and feeder 4 of main and check meters but Sr. No. feeder 3 are not correct asper the submitted supporting documents verified by the assessment team. #OPEN 7. In APPENDIX 2 in MRPP is requested to mention other breakdown occurred in the current monitoring period after 31-March-2022 #OPEN 8. In APPENDIX 2 in MRPP is requested to use constant font, font size. #OPEN				
2 nd Response from PP			Date	09/01/2023
1. In section 1.8 in MR, Franklin Gothic, font size 10.5 as per the latest VCS MR Template version 4.1 now being used throughout the MR. 2. In APPENDIX 1 in MR, the Meter Serial Number of feeder 3 has been now corrected in ER and Revised MR and are now being submitted to the verification team. 3. In APPENDIX 2 in MR, The Breakdown details for the current monitoring period are now being added to the revised Monitoring period. 4. In APPENDIX 2 in MR, Incorrect Font sizes are now being corrected throughout the Monitoring report.				
2 nd Assessment by Audit Team		Status	Closed	Date11/01/2023
1. In section 1.8 in MR, Assessment team verified that font size has been updated. #CLOSED 2. In APPENDIX 1 in MR, Assessment team verified that PP has updated Sr. no's for both main and check meter. #CLOSED 3. In APPENDIX 2 in MR, Assessment team verified that PP has mentioned other breakdown details that occurred in current monitoring period. #CLOSED 4. In APPENDIX 2 in MR, Assessment team verified that font, font size has been updated by PP. #CLOSED				
CAR#01 Closed				

Type	Date	13/12/2022
CAR#02	Reference	Section of /Ver protocol: ER Sheet
Description of the Non-Conformance		
1. In ER sheet PP is requested to show clear WTG wise net export as per Invoice and credit notes for enhanced transparency and cross-verification of data. 2. In ER sheet PP is requested to provide credit notes and invoices of month October 2022 and also mention value in ER sheet.		
1 st Response from PP	Date	19/12/2022

1. In ER sheet, WTG-wise values as per Invoice and credit notes has been added. 2. The ER sheet, credit notes, and invoices for October 2022 are now being submitted to the verification team. Also, ER sheet has been updated.				
1 st Assessment by Audit Team	Status	Open/Closed	Date	06/01/2023
1. In ER sheet, Assessment team could not verify, PP has not presented credit notes and Invoices value in ER sheet in such a way that assessment team was not able to verify value of credit notes with supporting documents of invoices. PP is requested to update ER Sheet in a simpler and transparent manner #OPEN 2. In ER sheet, Assessment Team verify that PP has updated the value of month October 2022 and provided supporting documents of October 2022 invoices but credit notes not submitted for the same month. #OPEN				
2 nd Response from PP			Date	10/01/2023
1. In ER sheet, Feeder wise details are now being added to ER sheet. 2. The ER sheet, credit notes, and invoices for October 2022 are now being submitted to the verification team.				
2 nd Assessment by Audit Team	Status	Closed	Date	11/01/2023
1. In ER Sheet, PP has added Feeder-wise details in ER Sheet verified by Assessment Team. #CLOSED 2. In ER Sheet, Assessment team verified that PP has provided credit notes and Invoices of month October 2022. #CLOSED CAR#02 Closed				

Type	Date	23/01/2023
CAR#03	Reference	Section of /Ver protocol: MR
Description of the Non-Conformance		
1.In Section 2.2 of MR: As per VCS MR v4.1 instructions to fill this section, PP is requested to provide the following details: "The procedures or methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods during which input was sought). The procedures or methods used for documenting the outcomes of the local stakeholder communication. The mechanism for on-going communication with local stakeholders.		

How due account of all and any input received during ongoing communication has been taken. Include details on any updates to the project design or justify why updates are not appropriate."					
2.In Section 3.1 of MR: PP is requested to provide any information that may impact the GHG emission reductions or removals.					
3.In Section 3.2 of MR: The sl no is not as per the MR template. PP is requested to ensure that the template is strictly followed.					
4.In Section 4.3 of MR: The font is not consistent. The grid mentioned in the SLD is not consistent with the project description. PP is requested to clarify.					
5.In Section 5.4 of MR: The monitoring period is not consistent with the rest of the monitoring report. PP is requested to clarify.					
6.In Appendix 2 of MR: Please total the breakdown hours.					
1 st Response from PP				Date	24/01/2023
1.In Section 2.2 of MR: As per VCS MR v4.1 instructions to fill this section, The procedures or methods used for engaging local stakeholders and current monitoring procedure has been incorporated in revised Monitoring Report.					
2.In Section 3.1 of MR: Information regarding the GHG emission reductions or removals are now being incorporated in the revised monitoring Period.					
3.In Section 3.2 of MR: The serial no is now updated as per MR template guidelines.					
4.In Section 4.3 of MR: The font size is being corrected now it is consistent throughout the revised MR. SLD is now been updated in the revised MR.					
5.In Section 5.4 of MR: The monitoring period is being updated now it is consistent throughout the MR					
6.In Appendix 2 of MR: Corrected total breakdown hours are now being mentioned in the revised MR.					
1 st Assessment Team		by Audit	Status	Closed	Date
					25/01/2023
1.In Section 2.2 of MR: Assessment team verified that PP has filled the section as per VCS MR v4.1 instructions, The procedures or methods used for engaging local stakeholders and current monitoring procedure has been incorporated in revised Monitoring Report. #CLOSED					
2.In Section 3.1 of MR: Assessment team verified information regarding the GHG emission reductions or removals have been incorporated in the revised monitoring report. #CLOSED					
3.In Section 3.2 of MR: Assessment team verified the serial no is now updated as per MR template guidelines. #CLOSED					
4.In Section 4.3 of MR: Assessment team verified the font size has been corrected now it is consistent throughout the revised MR. SLD has been been updated in the revised MR. #CLOSED					
5.In Section 5.4 of MR: Assessment team verified the monitoring period which has been updated now and it is consistent throughout the MR. #CLOSED					

6.In Appendix 2 of MR: Assessment team verified corrected total breakdown hours are now being mentioned in the revised MR. #CLOSED

CAR#03 Closed

Type		Date	DD/MM/YYYY	
FAR#01		Reference	Section of /Ver protocol : ER sheet	
Description of the Non-Conformance				
1stResponse from PP		Date	DD/MM/YYYY	
1stAssessment by Audit Team	Status	Closed/OPEN	Date	DD/MM/YYYY

APPENDIX C: COMPETENCE STATEMENT

Team Leader-



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Vivek Kumar Ahirwar
Nationality	Indian
Countries of Experience	India, Madagascar, Thailand, Indonesia, Bangladesh, Nepal, Ghana, Uganda, Kenya etc
Education Qualification	B.E. (Mechanical Engineering) M. Tech (Energy Management)
Year of Experience	10 Years +
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	TA 1.1 - Thermal energy generation and Renewables TA 2.1 - Process GHG Emission Expert TA 6.1 - Solid waste and wastewater TA 6.2 - Manure

Roles

Team Leader	YES
Validator	YES
Verifier	YES
Financial Expert	YES
Technical Reviewer	YES
TA Expert (1.1, 2.1, 6.1, 6.2)	YES

Validator/Verifier-Trainee



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Deepali Sharma
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (Environmental Science) M.Sc. (Environmental Science)
Year of Experience	2 years as Intern
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Team Leader	NO
Validator	NO
Verifier - Trainee	YES
Financial Expert	NO
Technical Reviewer	NO
TA Expert	NO

Project Trainee



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Km Nisha Chauhan
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (BCZ) M.Sc. (Environmental Science)
Year of Experience	NA, Fresher
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Project Trainee	YES
Validator/Verifier Trainee	NO
Validator	NO
Verifier	NO
Team Leader	NO
Technical Reviewer	NO
Local Expert (Country Wise)	NO
TA Expert (X.X)	NO
Financial Expert	NO

Technical Reviewer



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Sanjay Kumar
Nationality	Indian
Countries of Experience	India
Education Qualification	B.E. (Civil Engineering) M. Tech (Environmental Engineering)
Year of Experience	20 Years +
Area of Expertise	Climate Change & Environment Sustainable Development GHG Footprints
Eligible Sectoral Scope	TA 1.1 - Thermal energy generation and Renewables TA 1.2 - Renewables TA 3.1 - Energy Demand TA 6.1 - Construction TA 13.1 - Solid waste and wastewater TA 13.2 - Manure

Roles

Team Leader	YES
Validator	YES
Verifier	YES
Financial Expert	YES
Technical Reviewer	YES
TA Expert (1.1, 1.2, 3.1, 6.1, 13.1, 13.2)	YES