



VASPET-II AND VASPET-III WIND POWER PROJECT, MAHARASHTRA



Document Prepared By (Earthood Services Private Limited)

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Summary:

Earthood Services Private Limited (ESPL) has been contracted by M/s. ReNew Wind Energy (Shivpur) Private Limited to conduct verification of the renewable energy project titled VASPET-II AND VASPET-III WIND POWER PROJECT, MAHARASHTRA with VCS ID- 1404 with regards to the relevant requirements of VCS program guidelines and standard (VCS Standard Version 4.4 and VCS program guide Version 4.3). For verification, relevant UNFCCC requirements for CDM project activities, as well as criteria for consistent project operations, monitoring, and reporting, were used.

The project activity involves installation and operation of a wind power plant of 49.5 MW (cumulative capacity), with 33 number of WTGs each with a capacity of 1.5 MW. The project activity is implementation and operation of new grid-connected wind power project in Sangli district of Maharashtra, India and supplying electricity to the Indian grid. As a result, the project activity reduces GHG emissions that would have been generated by carbon intensive fossil fuel-dominated power grid.

The monitoring period covers under this verification is from 01-July-2022 to 31-December -2022 (First and last date included)

The verification is based on the VCS PD, proof of title, proof of right, additional documents related to baseline and monitoring methodology, as well as the subsequent background investigation, follow-up interviews, and supporting documents provided by the project proponent to the verification team.

During the verification process, a total of 5 findings were raised, which includes 3 Corrective Action Requests (CARs), 2 Clarification Requests (CLs) and 0 Forward Action Requests (FARs) and all were successfully closed. The MR, emissions reduction calculations, and accompanying documents provided are all in compliance with VCS criteria. The verification was completed with a reasonable level of assurance and no uncertainties were found related with the project activity verification.

The review of the project description, monitoring period, and additional documents related to baseline and monitoring methodology; the subsequent background investigation and remote site interviews have provided ESPL with sufficient evidence to validate the fulfillment of the stated criteria. Earthood Services Private Limited (hereafter referred to as ESPL) certifies that the project meets the requirements of the VCS Standard, v4.4 and is in line with all relevant VCS requirements. The monitoring is transparent, adequate, and in accordance with the ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, baseline, and

monitoring methodology. The project implementation in accordance with the registered VCS PD and MR/01/. Our opinion relates to the project's GHG emissions, and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. ESPL issues a positive verification opinion, certifying that the implementation of project has resulted in 42,450 tCO₂e emission reductions during period 01-July-2022 to 31-December -2022.

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1 INTRODUCTION

1.1 Objective

Earthood Services Private Limited (ESPL) has been contracted by M/s. ReNew Wind Energy (Shivpur) Private Limited to conduct verification of the renewable energy project titled 'VASPET-II AND VASPET-III WIND POWER PROJECT, MAHARASHTRA' with VCS ID- 1404 regarding the relevant requirements of VCS program guidelines and standard (VCS Standard Version 4.4 and VCS program guide Version 4.3). The verifiers have reviewed the GHG data collected to date for the monitoring period from 01-July-2022 to 31-December -2022.

The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirements by the VVB. The verification process shall determine whether the proposed project activity complies with the requirement 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 the verification is defined as an impartial and independent assessment of 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 intended to provide any consulting towards the Project Proponent. However, indicated requests for forward and/or corrective actions may provide information for improving project monitoring to reduce GHG emissions. However, stated requested clarification and/ or corrective actions requested may have provided inputs for improvement of the project design.

During the verification, following criteria was adopted:

- a. Review of the project implementation against the registered project description.
- b. Verification of the documents and follow up interviews with the project developers.
- c. Review of the ER Calculation against the approved methodologies.

1.3 Level of Assurance

 Reasonable level of assurance

○ Limited level of assurance

The verification report's level of assurance falls within the Client's reasonable assurance engagements. Reasonable assurance is a high level of assurance in the absence of material misstatements, but it is not absolute.

Reasonable assurance includes accepting the possibility that material misstatements will not be prevented or detected in a timely manner. To obtain reasonable assurance, the auditor must collect enough appropriate audit evidence to reduce audit risk to an acceptably low level. This implies that there is some uncertainty in the use of sampling because a material misstatement may be missed.

Sections 2.3 and 2.4 of this report detail the evidence used to achieve a reasonable level of assurance.

1.4 Summary Description of the Project

The project activity entails the installation of 33 Wind Turbine Generators (WTGs) of ReGen Powertech make, each with a capacity of 1.5 MW, totalling the total generation capacity to be 49.5 MW in Shedyal, Salekeri and Valsang villages of Sangli district, Maharashtra, India. The project activity's objective is to generate cleaner electricity in the region by using wind power and displacing an equal amount of electricity that would have been generated through carbon intensive fossil-fuel based power plant or by addition of new units in the future.

The start date of the project is 03/04/2013, which is the date for the first WTG of the project activity to be commissioned. The commissioning dates of the WTGs are verified against the commissioning certificates/14/. The electricity generated by this project is sold and distributed to the Maharashtra State Electricity Distribution Company Limited [MSEDCL], which is part of India's Northern, Eastern, Western, and North- Eastern regional grid [NEWNE] of India, A long-term Power Purchase Agreement (PPA)/22/ exists between the Project Participant and MSEDCL. The wind turbine works on the lift and drag principle to produce a positive turning force on the shaft, which results in the rotation moment of the shaft. The mechanical power produced by the rotary moment is converted to electricity by using a generator and a gearbox. The WTGs can only convert wind energy into electrical energy and hence, do not use any other type of fuel for the same.

The location of the project was verified using the GPS coordinates/16/ and found consistent with the data provided in the registered PDD/01/. The details of the geographic coordinates are given below:

S. NO.	LOCATION NO.	VILLAGE	GEOGRAPHICAL COORDINATES	
			LONGITUDE	LATITUDE
1	VASP-237	Shedyal	75.349014	17.020735

2	VASP-15	Shedyal	75.325371	17.048208
3	VASP-72	Shedyal	75.335732	17.050913
4	VASP-142	Shedyal	75.334518	17.041018
5	VASP-29	Shedyal	75.318893	17.046827
6	VASP-64	Salekiri	75.309723	17.036627
7	VASP-35	Salekiri	75.311081	17.04476
8	VASP-394	Salekiri	75.305176	17.052109
9	VASP-09	Salekiri	75.312446	17.050634
10	VASP-49	Salekiri	75.303299	17.041645
11	VASP-450	Shedyal	75.315186	17.040342
12	VASP-564	Valsang	75.335457	17.068613
13	VASP-510	Valsang	75.337708	17.057283
14	VASP-637	Valsang	75.349586	17.062027
15	VASP-696	Valsang	75.346336	17.058496
16	VASP-92	Shedyal	75.361488	17.050245
17	VASP-21	Valsang	75.307396	17.058651
18	VASP III 397	Shedyal	75.314384	17.028946
19	VASP III 26	Valsang	75.306488	17.055532
20	VASP III 58	Salekiri	75.304634	17.038271
21	VASP III 525	Valsang	75.33876	17.066185
22	VASP III 384V	Valsang	75.317703	17.07345
23	VASP III 387	Valsang	75.318108	17.077499
24	VASP III 388	Valsang	75.319496	17.084095
25	VASP III 700/1	Valsang	75.343796	17.054434
26	VASP III 689	Valsang	75.355079	17.060282
27	VASP III 355	Shedyal	75.329117	17.0168
28	VASP III 698	Valsang	75.350258	17.055481
29	VASP III 108	Salekiri	75.3041	17.028555
30	VASP III 440	Valsang	75.318535	17.063026
31	VASP III 463	Valsang	75.321266	17.060102
32	VASP III 105	Shedyal	75.356155	17.046394
33	VASP III 424	Shedyal	75.312675	17.024509

The Remote site visit was conducted for the project activity on 06/03/2023 and it was checked that the current monitoring period from 01/07/2022 to 31/12/2022 (including first and last days) involves supply of 44,553.309 MWh of electricity to the grid which was verified through the JMR issued/ 11/ by the MSEDCL and Energy sales invoices/26/, resulting in a total emission reduction of 42,450 tCO₂e/04/ achieved, which is found consistent with the ER sheet/04/.

The project is based on the methodology ACM0002, version 13/08/. The monitoring report/03/ and all the equipment installed on site were confirmed by the verification team. The project activity is currently undergoing the fifth verification of the first crediting period, and the project activity description has also been validated during earlier verifications. The evaluation team can affirm that the project activity is fully functioning and implemented as defined in the registered VCS PD/01/ & MR/03/ after reviewing the documents.

2 VERIFICATION PROCESS

The registered VCS is undergoing fifth verification during its first crediting period 03-04-2013 to 02-04-2023; the approach used to ensure the quality of emission reduction is described in the sections that follow.

2.1 Method and Criteria

The verification approach is divided into two phases.

ESPL completed a strategic review and risk assessment of the project's activities and processes in the first phase to gain a thorough understanding of:

- Activities related to all sources of project emissions and emission reductions, including leakage if applicable.
- Protocols for estimating or quantifying GHG emissions from these sources.
- Collection and handling of data.
- Controls on the collection and handling of data.
- Means of verifying reported data.
- Compilation of the verification report

At the end of this phase, ESPL created a Verification Checklist that describes the verification approach and sampling plan based on the risk assessment of the parameters and the data collection and handling processes for each of those parameters.

ESPL verified the implementation of the monitoring plan and the data presented in the VCS MR/03/ for the period in question in the second phase, using the verification checklist. This included a telephonic interview with project proponent representatives and desk review of the monitoring report. The verification report describes the assessment's findings.

No sampling plan has been adopted by the verification team as all the data related to the wind power plant were presented in the VCS MR/03/ and ER sheet/04/ was reviewed.

2.2 Document Review

The verification is carried out by a document review of the registered VCS PD/01/, previous Monitoring report/02/, previous Verification report/05/, ER calculation sheet/04/ and related documents, as detailed in Appendix 1 of this document. A verification team follows a protocol to conduct the assessment. The assessment team cross checks the information provided in the documents and information from other source other than those used, if available, and conducts independent background investigations. Earthood conducts a desk review as under:

- Review of the data and information presented to verify their completeness.
- Review of the monitoring plan/01/, monitoring methodology/08/, relevant tool/10/, where appropriate, applied standardized baseline, with special focus on measurement frequency, metering equipment quality (including calibration needs) and quality assurance and quality control processes.
- Analysis of data management, the quality assurance and control system in the context of their influence on the generation and reporting of emission reductions.

A list of documents reviewed during this verification are annexed as Appendix I in this report.

2.3 Interviews

A Remote audit was conducted for the project activity on 06/03/2023. As per para 4.1.9 of the VCS Standard, v4.4/07/ “A site visit that includes a visit to facilities and/or project areas shall be conducted at validation. Such a site visit shall be conducted at verification under the following circumstances: 1. The first verification of the project after validation; 2. Verification of project baseline reassessments; and 3. Verifications that assess a project description deviation where the deviation impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario.” The scope of the assessment is the 5th verification (1st CP) of the project activity. Hence, this is not the validation, first verification of the project activity and the verification of the baseline reassessments. Also, the project activity doesn’t have any project description deviation.

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through video conferencing with site personal and consultant (refer the table below) with the PP representative.

The technical details and metering/20/ monitoring arrangement verified through site photographs/24/25/, name plates and calibration certificates/13/ shared by the PP. All the documents were cross-checked to ensure conservative estimation of emission reduction.

During the remote audit, PP representatives were interviewed over the video call to discuss various aspects of the project activity such as implementation of the project activity, monitoring plan, operation and maintenance at the project site, details on calibrations, local stakeholder consultation, grievance mechanism etc. The names of the people interviewed during the remote audit are mentioned below:

No.	Interviewee			Date	Verification team Member	Topics
	Last Name	First Name	Affiliation			
1.	Londhe	Vikas	ReNew Power	06/03/2023	Divij Varshney, Surya Krishna	Monitoring system, ER calculations, Calibration
2.	Bhadhuri	Manali	ReNew Power		Divij Varshney, Surya Krishna	Certificates, Local stakeholder consultation, Grievance

						Redressal, waste disposal facilities, Major breakdown of the WTG.
3.	Wagh	Deepak	ReNew Power		Divij Varshney, Surya Krishna	Project description, technologies implemented, Monitoring system, QA/QC procedures, calibration procedures and details,
4.	More	Girish	ReNew Power		Divij Varshney, Surya Krishna	WTG inspection, speed of the wind turbine, Meter connected to all the feeders, Feeder 1, Feeder 2, Feeder 6 and Feeder 7 was checked and all the main and check meters were checked.
5.	Mali	Ramchandra	ReNew Power		Divij Varshney, Surya Krishna	
6.		Shreeshail	ReNew Power	06/03/2023	Divij Varshney, Surya Krishna	

2.4 Site Visits

The current verification was based on the virtual means/23/ in place of a physical site visit. This was deemed sufficient to confirm the plant operations and other aspects of the project operations. This approach adopted was in accordance to para 4.1.2 of the VCS standard v4.4/7/ *“The validation/verification body shall select samples of data and information to be validated or verified to provide a reasonable level of assurance and to meet the materiality requirements of the specific project.”* The representatives of the PA were interviewed through video call (via Microsoft teams), details of which is included in section 2.3 of this report.

To achieve a reasonable level of assurance, the assessment team has followed the alternative means to substantiate the verification criteria as discussed in the table below:

Requirements	Means of Verification/ source documents	Assessment opinion
Project implementation and operation	The project consists of installation of 33 wind turbines of 1.5 MW each totalling of 49.5 MW capacity installed in the Sangli district, Maharashtra, India, to capture the wind power generated from the rotary action of the turbines and converting into electricity, which is supplied to the Indian grid. Supporting documents: 1. Commissioning certificate /14/ 2. VCS Registered PD/1/ 3. Technical specification of equipment/20/ 4. Photographs and videos of project site /24/ 5. Joint meter reading report/11/ 6. Calibration certificates/13/	The start date of the project activity has been verified through the commissioning certificate/14/ provided by the PP. This is also found to be in compliance with the registered PD/1/. The implementation of the project activity has been verified through VCS PD/01/, photographs of the project site/24/. PP were also interviewed during remote site visit and project sites were visited remotely/23/. The continuous operation of the project activity has been verified through the JMRs/11/ issued by the MSEDCL, the source was found to be reliable and authentic as MSEDCL is a government owned entity of India. The electricity invoices/26/ issued by the PP

	7. Power Purchase Agreement/29/ 8. Energy Invoices/26/	against MSEDCL were used as cross-check. Independent research has been carried out for the project activity to achieve a higher level of assurance about the implementation of project activity. It is evident from the documents that the project is implemented as per registered PD/1/ and could state with “reasonable confidence” that the meters operating at site are exclusive to the project activity.
Monitoring systems and procedures	The approved reports from the validation and the project description could be one of the pieces of evidence for the compliance of the monitoring system. The JMRs/11/ can also act as supportive documents. The technical specification of the meter installed can be verified from the technical description/20/ and the calibration certificates/13/.	The frequency of monitoring of parameters listed under approved monitoring plan is verified through JMRs/11/. The photographs of the monitoring equipment/25/ sent by the PP has been verified and found to be appropriate. The PP were interviewed about the monitoring system and procedures during the RSV/23/. The documents were cross-checked by the VVB and the implementation of the monitoring system and procedure has been verified. VVB based on this assessment both physical and documentary, finds that the monitoring system followed at site within acceptable limits as far as measurement of Energy Generation

Calibration frequency	Calibration certificates of each energy meter/13/ VCS registered PD/1/	Calibration frequency and energy meter specifications has been verified through calibration certificates/13/, VCS PD/1/ and was found consistent. There were no delay in the calibration of the energy meters. The serial numbers of the energy meters were verified through the calibration certificates/13/, photographs of the energy meters/25/ and through remote site visits and found to be in line with the VCS MR/03/. Responsibility of calibration and maintenance of the energy meters is solely under control of MSEDCL, which is body coming under Government of India.
Data and calculations	Monthly JMRs issued by the MSEDCL/11/ Energy Sales Invoices/26/ ER sheet/4/ VCS Registered PD/1/	Monthly values of the monitoring parameters used in the ER calculation are verified through Monthly JMRs/11/ and are found consistent. The values were also cross-checked through the energy sales invoices/26/. Methods, formulae, and emission factor for calculating baseline emissions used in the ER sheet/4/ have been followed in accordance with the VCS PD/1/ and applied methodology/8/.

It is noteworthy that no sampling has been carried for the verification as 100% data is verified for the current monitoring period. The primary reference documents (Joint meter readings/11/, calibration of the Energy Meters /13/, technical specifications of Energy Meters /20/) referred by the assessment team are either issued /endorsed by national grid (Government of India), hence is deemed authentic.

Based on the above assessment it can be concluded that the assessment team has verified sufficient data, to reduce audit risk to an acceptably low level as a requisite to achieve reasonable level of assurance for the current monitoring period.

2.5 Resolution of Findings

The aim of this process is to identify, discuss, and reach a conclusion on issues related to the registered project activity's monitoring, implementation, and operations that could impair the registered project activity's ability to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is based on the desk review and remote interaction with site personnel and PP's representatives. The verification team creates and/or updates a verification protocol (internal document) that records conformities and non-conformities of various types.

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

- Non-compliance with the monitoring plan, methodology, or standardized baseline is discovered during monitoring and reporting and has not been adequately documented by project participants, or the evidence provided to prove conformity is insufficient.
- The project participants have not adequately documented changes to the implementation, operation, and monitoring of the registered project activity.
- Mistakes in applying assumptions, data, or calculations of emission reductions have resulted in an increase in the quantity of emission reductions.
- Modifications to the main indicators of sustainable development.
- The project participants have not addressed issues that were discovered in a FAR during validation that need to be verified during verification or in a prior verification.

Clarification request (CL) is issued when there is insufficient or unclear information to determine whether the applicable VCS requirements have been met. Prior to submitting a request for issuance, all CARs and CLs raised by the ESPL during verification must be rectified.

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

During the present verification, a total of 02 CLs, 03 CARs, and 00 FARs were raised and successfully closed. Appendix 4 contains all the findings that were raised and conveyed to project participants during the verification. This section also includes the project proponent's response and the verification team's evaluation, whether it was closed out or not.

2.5.1 Forward Action Requests

In VCS, the project activity is currently through its fifth verification. During the current monitoring period, no FARs have been raised. In addition, there are no open FARs from previous verification or validation/5/ that are relevant to the present monitoring period.

Appendix 3 of this verification report contains the necessary information.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification since the validation/verification body has not undertaken validation activities as part of the verification.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity is registered under a CDM PoA with CDM Reference number 9416, the reference number of the CPA being 9416 – 0003 with the inclusion of the CPA on 04/08/2014. The web link for the project is added below https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/SODAMYVG9ROKQ146BFWJPT82Z7L3IN/view. Under CDM, no emission reduction are being issued for the CPA, as verified from the CDM project webpage/18/.

The project is registered under the VCS with VCS ID- 1404. PP has provided declaration, stating that the project activity's net GHG emission reductions will not be used to comply with any other emissions trading program or to meet binding GHG emission limits during the same monitoring period. This was confirmed by a declaration/27/ submitted by the PP and thus accepted by the assessment team.

3.2 Methodology Deviations

During the current monitoring period, no methodology deviations have been identified.

3.3 Project Description Deviations

There is no project description deviation identified during the current monitoring period. However, PP has taken a deviation in the previous monitoring period regarding a typo error in the project crediting period. The same has been briefed by the PP in section 3.2.2 of MR.

3.4 Grouped Project

The project is not a grouped project. Hence, not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity involves installation of 33 WTGs, each with a capacity of 1.5 MW (49.5MW total capacity) in the Sangli district of Maharashtra, India. The commissioning date of the first WTGs is 03/04/2013 which was verified against the commissioning certificates/14/. 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.

- There are no material discrepancies between project implementation and project description. This has been verified from the various information like pervious verification report/05/, information available in MR/3/, PPA/22/, calibration certificates of main meter and check meter/14/25/, against the registered VCS PD/1/ as well as the RSV /23/
- The implementation status of the monitoring plan was checked for its completeness, which included the verification of the process and schedule for obtaining, recording, compiling, and analysing the monitored data and parameters. This has been verified from Joint meter readings/11/, Energy sales invoices// along with data in the ER sheet/4/, review of the information provided in the MR/3/, Photographs of project site/24/, review of calibration certificates and calibration frequency for the equipment and it was cross-checked with the project description/1/ for the parameter were adopted by the verification team.
- The material discrepancies if any between the actual monitoring system, the monitoring plan set out in VCS PD/1/ and the applied methodology/8/ were done through the review of the information available in the MR/3/ and it was cross-checked with the VCS PD/1/ and the applied methodology/8/ as well as during the RSV /23/.

- The project activity has been registered under CDM PoA 9416 with CPA ID 9416-0003, same has been discussed in section 3.1 of this report. However, no ERs has been issued under CDM for the respective CPA, which has been verified through the CDM project webpage/18/. PP has also provided a declaration/27/ stating that the project activity's net GHG emission reductions will not be used to comply with any other emissions trading program or to meet binding GHG emission limits during the same monitoring period.
- The declaration certificate/27/ shared by PP, has clearly stated that the project activity has not been registered for any other program. Hence, confirms that it has not received any other form of environmental credits or is doing so during current verification.
- The PP has started the project activity for improving the atmosphere of the surrounding areas by reducing the GHG emissions occurring from their plant, that would otherwise be emitted in the project baseline. The waste created due to the project activity for example, waste oil has been properly disposed to the certified vender, which has been verified through the waste disposal invoices/28/ shared by the PP. The same has been discussed by the during interviews conducted with the site personnel and the PP's representatives in remote site visit

Based on the above, it can be concluded that the verification team has thoroughly checked the project activity's implementation status, and there were no discrepancies found in this regard.

4.2 Safeguards

4.2.1 No Net Harm

Since this project is a grid-connected renewable energy power plant which involves generation of electricity through wind power, it does not have any negative environmental and socio-economic impacts.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation was conducted during the project registration. For ongoing stakeholder's communication, PP have maintained grievance register/29/ at the site office. No negative comments has been envisaged by the project activity for the current monitoring period. Complaint/ suggestion/ feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard/07/ and appropriate actions taken time to time by PP.

Assessment team checked the grievance register provided by the PP and found that local stakeholders can anytime lodge their grievances if any in the register over the operational life time of the project. During current monitoring period no grievance were received. Thus, assessment team is of the opinion that the ongoing stakeholder mechanism is adequate and appropriate.

4.3 AFOLU-Specific Safeguards

This section is Not applicable as this project activity is a non-AFOLU type project activity.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered VCS PD/01/ and the monitoring report/03/. The monitoring plan laid in the registered PD/01/ is being followed at the site. 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/03/.

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 $EG_{\text{facility},y}$ used in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet/04/ provided by PP. The net electricity to the grid ($EG_{\text{facility},y}$) by the project activity measured by state utility on monthly basis through dedicated metering system installed at site and recorded in the monthly credit notes provided to project proponent. Verification team has verified the monthly values of parameter ($EG_{\text{facility},y}$) as reported in the ER sheet/08/ with the source document (credit notes) and no discrepancy is observed, hence it can be confirmed that no manual transposition errors between data sets have been occurred. The monthly Joint meter reading/11/ was issued by Maharashtra State Electricity Distribution Co. Ltd. (MSEDCL), which is a governmental entity of India, hence, source was found to be authentic and reliable. The monthly values has been cross-checked with the energy sales invoices issued against MSEDCL. The verification of each monitoring parameter has been discussed later in section 4.5.

The ex-ante parameter have been calculated at validation stage and remains fixed throughout the crediting period, in accordance with the tool to calculate emission factor for an electricity system and are in line with the reported values in registered PD/01/.

As per ER sheet/04/ submitted by the PP, the net GHG emission reductions achieved during the current certification period i.e. 01/07/2022 to 31/12/2022, which were verified to be as 42,450 tCO₂e.

The calculation of the emission reduction is found to be correct. The calculation method and formulae used in calculating baseline emission, project emission and leakage emission are found to be appropriate and is in compliance to the applied methodology used i.e. ACM0002/08/. 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 ERs generated for the project activity is based on the electricity generation from the wind power. The PP has shared all the relevant evidence against the data related to the monitored parameter. List of all documents reviewed for the current verification has been listed down in appendix I of this report. The values of the parameter, electricity imported and exported has been checked by the assessment team through monthly JMRs/11/ to verify the values reported in the ER sheet/4/ and found to be consistent. Since monthly JMRs are prepared and issued by the MSEDCL, they are found to be a reliable and authentic source.

The monitoring of the project activity is found to be in accordance with the monitoring plan set out in the VCS PD/1/ and monitoring methodology ACM0002/8/. The mechanism is reliable and effective. The verification of ex-ante and monitored parameter has been discussed in this section.

1. Assessment of Data and parameter

The assessment of ex-ante parameter has been carried out as method described in below table.

Ex-ante parameter	Assessment
EF _{grid,Omy} , Operating margin CO ₂ emission factor for grid in the year y (tCO ₂ /MWh)	PP has applied the value of 0.9842 tCO ₂ /MWh, which is in line with the calculation method used in “Tool to calculate emission factor for an electricity system”/10/. It’s an ex-ante value fixed at the time of validation. The value mentioned in the MR/03/ is found to be consistent with the VCS PD/01/.
EF _{grid,Bmy} , Build margin CO ₂ emission factor for grid in the year y (tCO ₂ /MWh)	PP has applied the value of 0.8588 tCO ₂ /MWh, which is line with the calculation method used in “Tool to calculate emission factor for an electricity system”/10/. It’s an ex-ante value fixed at the time of validation. The value mentioned in the MR/3/ is found to be consistent with the VCS PD/1/.
EF _{grid,Cmy} , Combined margin CO ₂ emission factor for grid in the year y (tCO ₂ /MWh)	PP has applied the value of 0.9528 tCO ₂ /MWh, which is line with the calculation method used in “Tool to calculate emission factor for an electricity system”/10/. It’s an ex-ante value fixed at the time of validation. The value mentioned In the MR/3/ is found to be consistent with the VCS PD/1/.

The ex-ante parameters mentioned in the MR are cross-checked with the registered VCS PD/1/ and are found to be consistent.

The assessment of monitored parameter has been carried out as per the method described in below table.

Parameter	eGfacility,y, MWh, Electricity exported to the grid by the project activity in year y	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	Continuous measuring, monthly recording
	Is Measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes, the measuring and reporting frequency is in line with the monitoring plan as set out in VCS PD/1/ and monitoring methodology/8/.
	Monitoring equipment	The energy/electronic meter, connected to four feeders, #01,#02,#06 and #07, is of accuracy class 0.2s/14/ and make elster ALPHA A1800 model no: A1860RALNC-X/25/ and one check meter at feeder #7 is of accuracy class 0.2s, make secure, model premier 100/25/. Each feeder is connected with two meters: one main meter and one check meter. The serial Nos. of the energy meter being 13769363, 02797655, 13813570, 13813547, 13813551, X1350784, 15687854 and 14953662 The same has been verified from the photographs of energy meter/25/ and calibration certificates/13/ shared by the PP.
	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	Yes, The accuracy of the monitoring equipment is 0.2s, which is in accordance with the monitoring plan/1/. This has been verified from the calibration certificates/13/ provided by the PP.

	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 is valid for entire measuring range. The calibration certificates clearly shows that the accuracy level is valid for entire monitoring period/13/.
	Calibration frequency /interval:	As per VCS PD/1/, the calibration frequency is annually which is in-lines with the details provided in MR/3/. No calibration delay has been observed during the current monitoring period and hence, No calibration delay factor has been applied which can be check from the calibration certificates/13/ provided. The calibration certificate/13/ of each of the calibration dates has been checked and the meter is found to be within the stated error range. The calibration details of the energy meters have been stated in appendix IV of this report.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes, the calibration interval is inline with the frequency set out by the PP in the monitoring plan/1/.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	The calibration has been carried out by MSEDCL itself which is the government organisation of India. This has been checked against the calibration certificates/13/ shared by the PP. Since the calibrating agency is a Govt of India agency, the report has been accepted as authentic and reliable.

	How were the values in the monitoring report verified?	The cumulative values of $EG_{\text{facility},y}$ for the entire monitoring period is reported in the MR/3/, and the monthly values are reported in the ER calculation sheet/4/ is 44,553.309 MWh. This value is checked from the monthly JMRs/12/ and cross-checked with monthly energy sales invoices/26/ shared by the PP. The ER /4/ sheet was checked for application of formula, arithmetic consistency, faithful reproduction of data from the JMR, and accordingly accepted to be reliable data with high level of confidence.
	If applicable, has the reported data been cross-checked with other available data?	The monthly values has been cross-checked with the Monthly energy sales invoices/26/ issued against MSEDCL 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 the PP. The joint meter reading is taken by the representative of MSEDCL in the presence of the PP in the form of JMRs. Monthly JMRs issued by MSEDCL provide the value of $EG_{P,j,y}$ that is directly used for emission reduction calculations.
Findings	CL #01, CL #02 and CAR #03 was raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan.	

2. Assessment of Data and calculation of GHG emissions or net removals

i. Calculation of Baseline Emissions

In accordance with the applied methodology ACM0002 v13.0/8/, the baseline emissions are CO₂ emissions from the electricity generation from the fossil fuel fired power plant that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

The baseline emissions are calculated as follows:

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

Where,

BE_y = Baseline emissions in year y (tCO_{2e})

$EG_{PJ,y}$ = 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)

$EF_{grid,CM,y}$ = 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”/10/ (tCO₂/MWh)

As per the applied methodology, the calculation of $EG_{PJ,y}$ is different for Greenfield plants, capacity additions, retrofits, rehabilitations, and replacements. Since the proposed project activity is Greenfield plant, hence,

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

Where,

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

ii. Calculation of Project Emissions

In accordance with the applied methodology/8/, for most renewable power generation project activities, $PE_y = 0$. Since the project activity is a wind and solar energy-based power generation, the project emissions are not applicable to the project activity.

Hence, $PE_y = 0$

iii. Calculation of Leakage Emissions

In accordance with the applied methodology/8/, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of projects in power sector are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing, and transport). These emissions sources are neglected.

Therefore, $LE_y = 0$.

iv. Calculation of net emissions reduction or removal

The emission reduction as per the applied methodology/8/ 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:

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

$$BE_y = (44553.309 \times 0.9528) \text{ tCO}_{2e}$$

$$BE_y = 42,450 \text{ tCO}_{2e} \text{ (Round-down)}$$

In accordance with the applied methodology/8/, emission reductions are calculated as:

$$ER_y = BE_y - PE_y$$

$$ER_y = (42,450 - 0) \text{ tCO}_{2e}$$

$$ER_y = 42,450 \text{ tCO}_{2e}$$

The total emission reduction during the current monitoring period – 07/01/2022 to 12/31/2022 is 42,450 tCO_{2e}.

The assessment team confirms that the appropriate methods and formulae for calculating GHG emission have been followed. The assumptions, emissions factors and default values that were applied in the calculations are justified. The actual emission reduction achieved during the current monitoring period is lesser than the estimated emission reduction as described in the registered VCS PD/01/.

All the data were made available and have monitored as per the required monitoring frequency/01/.

No sampling has been done by the VVB as 100% of the monitored data were verified for the current monitoring period.

4.6 Non-Permanence Risk Analysis

Not applicable for the project activity.

5 VERIFICATION OPINION

Earthood Services Private Limited (ESPL) contracted by ReNew Wind Energy (Shivpur) Private Limited, to conduct an independent verification of emission reductions for the VCS project activity "VASPET-II AND VASPET-III WIND POWER PROJECT, MAHARASHTRA," (VCS ID – 1404), as reported in the Monitoring report version 3.0/03/ dated 21/03/2023. The ReNew Wind Energy (Shivpur) Private Limited oversees data collection and reporting GHG emission reductions from project activity in accordance with the monitoring plan/01/.

It is our responsibility to provide an independent verification statement on the project's reported GHG emission reductions. The verification was started by ESPL using the baseline, ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources” and monitoring approach.

The ESPL verification strategy is based on an understanding of the risks associated with reporting GHG emission data, as well as the controls in place to manage those risks. ESPL prepared and carried out the verification by acquiring evidence as well as additional information and explanations that it deemed essential to provide reasonable certainty that the reported GHG emission reductions are accurate.

The GHG emission reductions provided in the monitoring report version 03/03/ dated 21/03/2023 for the project activity for the period 01/07/2012 to 31/12/2022 (including both dates) are, in our opinion, fairly stated. Based on the approved baseline and monitoring methodology ACM0002 Version 13, EB 75/08/, and the VCS standard version 4.4 /07/, the GHG emission reductions were calculated accurately.

Verification period: 1/07/2022 to 31/12/2022

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)
01-07-2022 to 31-12-2022	42,450	0	0	42,450

Total	42,450	0	0	42,450
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<u>Ex-ante emissions reductions/removals</u>	<u>Achieved emissions reductions/removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
43,192	42,450	-1.72%	The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant.

The actual emission reductions for this monitoring period are 42,450 tCO₂e. Whereas the estimated emission reductions for this monitoring period are 43,192 tCO₂e. Thus, there is a variation of 1.72% (negative) in the total ERs.

Approved By:



Kaviraj Singh

Managing Director

Date: 22/03/2022

APPENDIX I: DOCUMENTS REVIEWED OR REFERRED

No.	Author	Title	Reference to documents	Provider
1.	PP	VCS Project Description	Version 02, dated 14/03/2015	Others
2.	PP	Monitoring Report	Version 01, dated 25/01/2022	PP
3.	PP	Final Monitoring Report	Version 3 dated 21/03/2023	PP
4.	PP	ER spreadsheet	Pertaining to latest MR	PP
5.	Verra	Previous Verification Reports	-	PP
6.	Verra	VCS Program Guide	Version 4.3	Others
7.	Verra	VCS Standard	Version 4.4	Others
8.	CDM	ACM0002 “Grid-connected electricity generation from renewable sources”	Version 13.0	Others
9.	CDM	Tool for the demonstration and assessment of additionality	Version 7.0.0	Others
10.	CDM	Tool to calculate emission factor for an electricity system	Version 4.0	Others
11.	MSEDCL	Joint meter Reading Reports	July 2022 – December 2022	
12.	Verra	VCS Monitoring Report Template v4.2	-	Others
13.	MSEDCL	Calibration Certificates – Main Meter serial no. 13769363, 13813570, 13813551 and 15687854 Check meter serial no. – 02797655, 13813547, X1350784 and 14953662	19-09-2022	PP

14	MSEDCL	Commissioning Certificate	03-04-2013	PP
15	Verra	Program Activity Webpage https://registry.verra.org/app/projectDetail/VCS/1404	-	Others
16	Others	Geo-coordinates	-	Others
17	IPCC	IPCC default values – fifth commitment period	2014	Others
18	PP	CDM Project Webpage	-	Others
19	Google Map	Independently verified	ESPL	Others
20	ReGen	Technical Specifications of WTGs	-	Others
21	Verra	Validation and Verification Manual	Version 3.2, dated 19 October, 2016	Others
22	MSEDCL	Power Purchase Agreement (PPA)	-	PP
23	-	Remote Site Visit	06/03/2023	Others
24	-	Photographs of Project site	-	PP
25	-	Photographs of energy meters	-	PP
26	PP	Energy sales invoices	-	PP
27	PP	Declaration Certificate for no double counting	03/03/2023	PP
28	PP	Waste Disposal Documents	-	PP
29	PP	Grievance Register	-	PP

APPENDIX II: COMPETENCE STATEMENT

Competence Statement	
Name	Divij Varshney

Education	M.Tech. Renewable energy systems B.Tech. Electrical Engineering		
Experience	1.5 years		
Field	Climate Change & Environment / Industry		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Trainee	YES		
Reviewed by	Shifali Guleria, Quality Manager	Date	24/09/2022
Approved by	Deepika Mahala, Technical Manager	Date	24/09/2022

Competence Statement	
Name	Surya Krishna Tangeti
Education	B.Tech – Electrical and Electronics Engineering M.Tech – Renewable Energy Engineering
Experience	2 Years, 5 Months (WinDForce Management Services Pvt. Ltd.)
Field	Renewable Energy Sector
Approved Roles	

Team Leader	NO		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	Yes (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	Yes (TA 1.2)		
Trainee	Yes		
Reviewed by	Shifali Guleria (Quality Manager)	Date	31/05/2022
Approved by	Deepika Mahala (Technical Manager)	Date	31/05/2022

APPENDIX III: FINDING OVERVIEW

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

FAR ID	XX	Section no.	XX	Date : DD/MM/YYYY
Description of FAR				
Project participant response				Date : DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	4.5	Date: 13/02/2023
Description of CL				
As per registered PDD and MR (section 4.2), the frequency of calibration for energy meters should be Annual. In section Appendix II, it has been mentioned that validity of calibration for the energy meters is upto September 2022. PD is requested to clarify is there any delay in calibration beyond the validity of calibration. Request to substantiate the information with documentary evidence.				
Project participant response				Date: 20/02/2023
Calibration details in the MR have been successfully updated as per the latest certificate				
Documentation provided by project participant				
<i>Calibration certificate has been provided.</i>				
DOE assessment				Date: 06/03/2023
VVB has reviewed the updated MR and found that the calibration frequency is in line with the calibration certificates and annual testing reports provided by the PP. The frequency of calibration is now consistent with MR and the validity of the meter calibration has now been revised in accordance with the calibration frequency i.e. annually. Hence, CL 01 is closed.				

CL ID	02	Section no.	4.5	Date : 13/02/2023
Description of CL				
It has been observed that in ER sheet, tab: VASP-49, the energy generation for the month of September 2022 is depicted to be 0 MWh. Please clarify why No electricity is generated in September 2022, PP is requested to substantiate the information.				
Project participant response				Date : 03/03/2023
<i>The generator broke down and therefore no electricity was generated.</i>				
Documentation provided by project participant				
<i>The breakdown details have been shared. Please refer September data for RESV_24.</i>				
DOE assessment				Date: 06/03/2023
The electricity was not generated in the month of September 2022 for the tab 'VASP-49' as there was breakdown of generator. The same was verified from the breakdown details provided by the PP and was found to be appropriate as per the data recorded in the ER sheet. Thus, the justification provided by the PP was found to be correct. Hence, CL 02 is closed.				

Table 3. CAR from this verification

CAR ID	01	Section no.	--	Date: 13/02/2023
Description of CAR				
The latest monitoring report template version available on VERRA website is found to be version 4.2. However, PP has used the monitoring template version 4.1. Therefore, PP is requested to kindly update the MR as per the latest version.				
Project participant response				Date: 03/03/2023
The MR has been updated as per the latest monitoring report template version 4.2				
Documentation provided by project participant				
<i>The updated MR</i>				
DOE assessment				Date: 06/03/2023
The revised MR has been reviewed. PP has now used the latest version of the MR template i.e., 4.2 and it was found to be consistent.				
Hence, CAR 01 is closed.				

CAR ID	02	Section no.	4.1	Date: 06/02/2023
Description of CAR				
Under section 4.3 'Monitoring Plan' of the MR the schematic diagram of project activity has not been provided. PP is requested to update.				
Project participant response				Date: DD/MM/YYYY
<i>Schematic diagram for monitoring plan has been added.</i>				
Documentation provided by project participant				
<i>Updated MR</i>				
DOE assessment				Date: DD/MM/YYYY
The revised MR has been reviewed by the VVB. It has been updated with the required "monitoring plan" in section 4.3 of the MR.				
Hence, CAR 02 is resolved.				

CAR ID	03	Section no.	4.5	Date: 13/02/2023
Description of CAR				

The value observed in the ER sheet for Net Export [kWh], tab: VASP 397, Cell G9 is found to be inconsistency with the value given in document "0246101407_Group_Nov_2022" for WTG VASP 397. PP is requested to take corrective action.

Project participant response

Date: 03/03/2023

The value for Net Export has been corrected as per the JMR

Documentation provided by project participant

Updated ER sheet

DOE assessment

Date: 06/03/2023

The ER has been updated with the correct, Net Export[kWh] value for the tab VASP 397, cell G9. The VVB has also revised the total net export change which happened due to this corrective action.

Hence, CAR 3 is resolved.

Table 4. FAR from this verification

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

APPENDIX IV: CALIBRATION OVERVIEW

Equipment	Serial No.	Date of calibration 2021	Date of calibration 2022	Expected of the Calibration Date	Calibration Validity	Delay in Calibration	Error Detected at Calibration
Main Energy Meter Feeder: #01	13769363		19/09/2022	18/09/2023	1 year	N	None
Check Energy Meter Feeder: #01	02797655		19/09/2022	18/09/2023	1 year	N	None
Main Energy Meter Feeder: #02	13813570		19/09/2022	18/09/2023	1 year	N	None
Check Energy Meter Feeder: #02	13813547		19/09/2022	18/09/2023	1 year	N	None
Main Energy Meter Feeder: #06	13813551		19/09/2022	18/09/2023	1 year	N	None
Check Energy Meter	X1350784		19/09/2022	18/09/2023	1 year	N	None

Feeder: #06							
Main Energy Meter Feeder: #07	15687854		19/09/2022	18/09/2023	1 year	N	None
Check Energy Meter Feeder: #07	14953662		19/09/2022	18/09/2023	1 year	N	None

APPENDIX VI: LIST OF ABBREVIATIONS

SI No	Abbreviation	Expansion
1	%	Percentage
2	&	And
3	(M)	Meridian
4	/	Or
5	'E'	Easting
6	'N'	Northing
7	ACM0002	Approved Consolidated Methodology
8	AFLOU	Agriculture, Forestry and Other Land Use
9	B,Tech	Bachelor of Technology
10	B.E	Bachelor of Engineering

11	BE _y	Baseline Emissions at year y
12	CAR	Corrective Action Request
13	CDM	Clean Development Mechanism
14	CER	Certified Emission Reductions
15	CL	Clarification Request
16	CO ₂	Carbon dioxide
17	CSR	Corporate Social Responsibility
18	DOE	Designated Operational entity
19	Dr	Doctor
20	e.g.,	Example
21	EF _{grid,BMy}	Emission Factor of Grid Build Margin at year y
22	EF _{grid,CM,y}	Emission Factor of Grid Combined Margin at year y
24	EF _{grid,OMy}	Emission Factor of Grid Operating Margin at year y
25	EG _{export,y}	Electricity Generation Export at year y
26	EG _{facility,y}	Electricity Generation of Facility at year y
27	EG _{import,y}	Electricity Generation Import at year y
28	EG _{PJ,y}	Quantity of net electricity supplied to the grid at year y
29	ER	Emission Reduction
30	ESPL	Earthood Services Private Limited
31	FAR	Forward Action Request
32	GHG	Green House Gas
33	Govt	Government
34	GS	Gold Standards

35	ID	Identification
36	IPCC	Intergovernmental Panel on Climate Change
37	JMR	Joint Measurement Readings
38	Km	Kilo meter
39	kV	Kilo Volt
40	LE _y	Leakage Emissions at year y
41	M.E	Master of Engineering
42	M.Tech	Master of Technology
43	MSEDCL	Maharashtra State Electricity Distribution Company Limited