VERIFICATION REPORT FOR “WIND POWER PROJECT AT RAJKOT, GUJARAT”

Document Prepared By Earthood Services Private Limited

Project Title	Wind Power Project at Rajkot, Gujarat
Version	01
Report ID	VCS.VER.23.30

Report Title	Verification report for wind Project at Rajkot, Gujarat
Client	ReNew Power Private Limited
Pages	35
Date of Issue	09/03/2023
Prepared By	Earthood Services Private Limited

Contact	Emaar Digital Greens, Tower-B, Unit no.- 1203-1205, 12th Floor, Sector-61, Gurgaon- 122011, India Tel: +91 124 4204599 Website: www.earthood.in Email: info@earthood.in
Approved By	Dr. Kaviraj Singh
Work Carried Out By	Divij Varshney – Team Leader Surya Krishna - Local Expert and Technical Expert (TA 1.2) Ashish Yadav – Trainee Verifier Deepika Mahala – Technical Reviewer and Expert to TR

Summary:

Earthood Services Private limited (hereafter referred to as ESPL) has been contracted by ReNew Power Private Limited to conduct the verification of the project – "Wind Power Project at Rajkot, Gujarat", (VCS ID-1045) with regards to the relevant requirements of VCS programme guidelines and standard (VCS standard version 4.4)/05/ & VCS program guide version 4.3/06/). Relevant requirements of the UNFCCC for CDM project activities/18/, as well as criteria for consistent project operations, monitoring and reporting has been applied for verification.

The monitoring period covered under this verification is from 01/07/2022 to 31/12/2022 (both dates included)

The verification includes confirming the implementation of the monitoring plan of the registered VCS PD (VCS ID 1045)/01/ and the application of the monitored methodology is as per ACM0002.- "Grid-connected renewable electricity generation from renewable sources" (Version-20.0)/08/

The project activity involves electricity generation by wind power project of 25.2MW wind farm in the Rajkot district, Gujarat, India and supplying the electricity to the regional electricity grid. The project being a renewable energy generation activity results in reduction of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

A risk-based approach has been followed to perform this verification and there are no uncertainties associated with this verification. During the current verification, a total of 03 Corrective Action request (CARs), 00 Forward Action request (FARs) and 00 Clarification request (CLs) were raised and successfully closed.

The review of the project description, monitoring report, and additional documents related to baseline and monitoring methodology; the subsequent background investigation and, on-site

interviews have provided ESPL with sufficient evidence to validate the fulfillment of the stated criteria. ESPL confirms that the project is implemented in accordance with the registered VCS PD/01/ and MR/02/. The monitoring system is in place and the emission reductions are calculated without material misstatements. 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. Based on the information seen and evaluated we confirm that the emission reductions from the project activity, 'Wind Power Project at Rajkot Gujarat' during the period 01/07/2022 to 31/12/2022 amounts to 15,539 tons of CO_{2e}.

1 INTRODUCTION

1.1 Objective

Earthood Services Private Limited (ESPL) has been contracted by ReNew Power Private Limited to undertake the verification of the renewable energy project titled "Wind Power Project at Rajkot, Gujarat" (VCS ID-1045). The verifiers have reviewed the GHG data collected to date for the monitoring period from 01/07/2022 to 31/12/2022 covered in this verification.

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 regulationsand guidance issued by the VCS Board.

1.2 Scope and Criteria

The scope of this verification is to assess the claims and assumptions made in the VCS monitoring report/02/ against the VCS criteria, including but not limited to, VCS standard, V4.4/05/, applied methodology/08/ and other relevant rules and requirements established for VCS project activities. The verification is not meant to provide any consulting towards the project participants. However,stated requested for clarification and/or correction 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 level of assurance of the verification report falls under reasonable assurance engagement as selected by the client. Reasonable assurance is a high level of assurance regarding material misstatement, but not an absolute one.

Reasonable assurance includes the understanding that there is a remote likelihood that material misstatements will not be prevented or detected on a timely basis. To achieve reasonable assurance, the auditor needs to obtain sufficient appropriate audit evidence to reduce audit risk toan acceptably low level. This means that there is some uncertainty arising from the use of sampling, since it is possible that a material misstatement will be missed.

The evidence used to achieve a reasonable level of assurance is specified in section 2.3 and 2.4 of this report.

1.4 Summary Description of the Project

The VCS project activity titled 'Wind Power Project at Rajkot, Gujrat' (VCS ID 1045) is wind power project of 25.2 MW developed by ReNEW Wind Energy (Rajkot) Private Limited (RNWERPL) in the Godladhar, Madhavipur, Kalasar, Devpara and Madava Villages of Rajkot district of Gujarat, India.

The project activity consists of 12 Suzlon make wind turbines of 2.1MW each totalling the total generation capacity to 25.2 MW, which has been verified from the comissioning certificate/21/ and Power Purchase agreement/22/ shared by the PP. The aim of the project is to generate cleaner electricity using wind power project and displacing the amount of electricity generated that would have been generated through carbon intensive fossil fuel based power plant or by addition of new units in the future. The electricity generated through PA is supplied to the regional electricity grid which is also part of NEWNE grid of India. 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 on-site audit for the project activity was conducted on 24/02/2023 and it was checked that the current monitoring period from 01/07/2022 to 31/12/2022 (Including first and last day) involves supply of 16,700.16MWh of electricity to the grid which was verified through share certificates/09/ and Energy sales invoices/23/, resulting in a total emission reductions of 15,539 tCO2e which was found to be consistent with the ER sheet/03/.

The start date of the project activity is 29/03/2012 which is date of commissioning of the first WTG under the project activity verified through the comissioning certificates/21/. The second crediting period of the project is from 29/03/2022 to 28/03/2032, the same is verified using the registered PD/01/, previous validation and verification report/04/ and the on-site audit conducted on 24/02/2023/10/. Location of the wind turbines in the project activity was verified through Google maps/24/ and has been checked during the on-site visit and found to be consistent with the data provided in the registered VCS PD/01/.

The project is based on the methodology ACM0002, version 20.0, ‘‘Grid- Connected renewable electricity generation from renewable sources/08/. The project activity is undergoing Second verification of second crediting period and description of the verification was also verified in the previous verification report/04/.

Based on the assessment of the documents, and the on-site audit, the assessment team is able to confirm that the project activity is fully functional and implemented as described in the registered VCS PD/01/ and MR/02/.

2 VERIFICATION PROCESS

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

2.1 Method and Criteria

The verification approach consists of two phases:

In the first phase, ESPL completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leaking if relevant.
- Protocols used to estimate or measure 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 produced a Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

In the second phase, ESPL verified the implementation of the monitoring plan and the data presented in VCS MR/02/ for the period in question. This involves on-site interviews of project proponent representative’s and a desk review of the Monitoring Report. This verification report describes the findings of this assessment.

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/02/ and ER sheet/03/ was reviewed.

2.2 Document Review

The verification is performed primarily as a document review of the registered VCS PD/01/ & MR/02/, previous verification report/04/. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the information provided in the documents and information from source other than those used, if available, and also conducts independent background investigations. Earthood conducts a desk review as under:

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan, the monitoring methodology/08/ including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;

An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emissions reduction.

2.3 Interviews

The VVB conducted on-site audit on 24/02/2023 i.e., the representatives of the PP were interviewed on-site/10/, 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	Organization	Topic covered	Team Member
1.	Mr. Nirav Kakadiya	RENew (Site Incharge)	Project description technologies implemented, Monitoring system, QA/QC procedures, calibration procedures and details, Local Stakeholder consultation, CSR activities, major shutdown in plants, data recording and management, trainings imparted	Divij Varshney
2.	Mr. Rahul Aglawey	Suzlon (Safety Incharge)		Divij Varshney

During the on-site visit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning dates of meter, the generation, recording, and monitoring of the data and the error accountability were discussed. Various documents like JMR sheet, invoices slip etc. were also verified at the site/09/.

Several photographs were also clicked at the site to capture the name plate data, meter specifications, key technical specification of the major equipment like panel, inverter and meter to establish the current status and implementation of the project activity.

2.4 Site Visits

As discussed in the above section, physical site inspection is done for the current verification. Following are the details that were verified during the on-site visit of the project:

On- site audit Date – 24/02/2023			
S.no	**Activity Performed On-site**	**Site Location**	**Team Member**
1.	- Assessment team checked the implementation of the project - Baseline emission, Emission reduction calculation, - technical description of the project and monitoring. Assessment team also checked that weather the monitoring plan as described in PD is practiced on - site.	Parveda district Gujarat (on-site audit).	Divij Varshney

A site visit was undertaken by the assessment team on 24/02/2023 to carry out the following:

- An assessment of the implementation and operation of the registered project activity as per registered PD or any approved revised PD/01/ and MR/02/;
- A review of information flow of generation, aggregating and reporting the monitoring parameter.
- Interview with relevant personnel to determine whether the operational and data collection procedure is implemented in accordance with the monitoring plan in the PD.
- A cross- check between information provided in the monitoring report and data from other sources such as JMR sheet, invoices slips, PPA agreement etc;/09/
- A check of the monitoring equipment including calibration performance and observation of monitoring practices against the requirement of the PD/01/, the applied methodology including applicable tool and where applicable, the applied standardized baseline.
- A review of calculation and assumptions made in determining the GHG data and emission reductions.
- An identification of quality control and quality assurance procedure in place to prevent or identify and correct any errors or emission in the reported monitoring parameters.

It is noteworthy that no sampling plan based on the above assessment it can be concluded that the assessment team has verified sufficient appropriate audit evidence, to reduce audit risk to an acceptably low level as requisite to achieve reasonable level of assurance for the current verification.

2.5 Resolution of Findings

The objective of the step is to identify, discuss, and conclude on the issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and onsite assessment/10/. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and nonconformities, which may be of following types: CAR (Corrective Action Request) is raised if one of the following occurs:

a) Non-compliance with the monitoring plan, the applied methodology/08/ or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence providedto prove conformity is insufficient.
b) Modifications to the implementation, operation and monitoring of the registered project activity/01/ has not been sufficiently documented by the project participants.
c) Mistakes have been made in applying assumptions, data or calculations ofemission reductions that will impact the quantity of emission reductions.
d) Changes to the key sustainable development indicators.
e) Issues identified in a FAR during validation to be verified during verification or previous verification(s)/04/ have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable requirements have been met. All CARs and CLs raised by the Earthood during verification shall be resolved prior to submitting a request for issuance.

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

The total of 00 CLs and 03 CAR were raised in the current verification. No FAR was raised. All the findings that are raised and communicated to project participant during the verification are included under Appendix 3. The section also includes the responses by the project participantsand an assessment by the verification team if it was closed out or otherwise.

2.5.1 Forward Action Requests

The project activity is undergoing Fourth verification. No FAR are raised in the current monitoring period. There are no open FARs from previous verification or validation/04/ processes which have any impact on current verification.

Details of which can be checked from appendix 3 of this verification report.

2.6 Eligibility for Validation Activities

This part is not applicable for present verification, as ESPL holds the accreditation for the validation of project under this sectoral scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity is CDM registered project, reference number- 8095. The web link for the project is added below https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1352364786.6/view. With the registration of the project on 09/11/2012. Under CDM, emission reduction are being issued from 15/11/2012 to 30/06/2015, as verified from the CDM project webpage/18/.

The project is also registered under VCS (VCS ID- 1045). The ERs issued under VCS program are from 01/07/2015 to 30/06/2022.

The PP has submitted the declaration/07/ which states that the net GHG emission reductions generated by the project activity will not be used for compliance with any other emissions trading program or to meet binding limits on GHG emissions for the same monitoring period.

3.2 Methodology Deviations

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

3.3 Project Description Deviations

There is no deviation in the project description during the current monitoring period. However, a project description deviations has been accepted in the previous monitoring period. The same has been breifed by the PP in section 3.2.2 of MR.

3.4 Grouped Project

This is not applicable, as this is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Since, this is the second verification of second crediting period, the commissioning, capacity, project implementation, grid connectivity, and technical specifications have been checked during the previous monitoring period and validation/04/.

This proposed wind power project will reduce the GHG emissions generated by the current generation energy mix in India's Power Grid, which is dominated by carbon intensive fossil fuel-based grid

connected power plants. The Power generated through the proposed project activity will be supplied to the state utility under a long-term power purchase agreement, as verified using the PPA/22/, registered PD/01/ and previous joint validation and verification report/04/.

The start date of project activity is 29/03/2012, which is also the date of actual commercial operation of the project activity as verified from the comissioning certificates/21/. This is the second verification of second crediting period for the project activity from 01/07/2022 to 31/12/2022 (Including first and last day). The second crediting period of the project activity is from 29/03/2022 to 28/03/2032. The project has delivered 16700.16 MWh of electricity to the national grid which has resulted in the reduction of 15,539 tCO_2e as verified from the Emission reduction calculation sheet submitted/03/. The assessment team conducted on-site audit/10/ and during the on- site audit the interviews of the PP representatives, other personnel on the site were conducted to verify the details regarding the status of project implementation for the monitoring plan from 01/07/2022 to 31/12/2022. It has also been verified as per the methodology used, ACM0002 version 20.0- 'Grid- connected renewable electricity generation from renewable sources'/08/, that the calculations for the GHG emission reductions are done in accordance with the aforesaid methodology.

The technical specification of the project activity equipment's was verified during the on-site audit of the project activity and all the equipment's installed on-site were found to be consistent with the details mentioned under monitoring report/02/. The current status of the project activity is verified through generation data for project investors and WTGS and hence it is confirmed that the project is fully functioning.

The assessment team has reviewed the monthly share certificates/09/, previous verification report/04/ and confirmed that the WTGs are connected to 33/66 kV Parveda substation (currently manged by Suzlon). All the WTGs connected at the Parveda substation are from the project activity. There are no other WTGs from different entities connected at teh substation. Hence, in order to calculate the net electricity exported to the grid by the WTGs of the project activity, the state electricity utility issues a monthly JMR based on the ABT meters installed at parveda substation that has been correctly described in section 4.3 of the MR/02/ and in the PD/01/. This was also verified by interviewing the staff on site during the on- site audit.

It is verified that share certificates are issued by state utility/09/ and the PP has no role in this calculation. The required monitoring system have been installed and are operational. The meters comply with appropriate quality standards applicable for the technology. The accuracy class of the meters installed for the project activity was verified against the registered VCS PD/01/ and VCS MR/02/.

The Project has been registered in VCS (VCS ID 1045) and CDM (Ref. no 8095) program. The ERs generated are being claimed in the VCS program from 01/07/2015, this has been verified through CDM project webpage/13/, VCS project webpage and searching other registries like GS, GCC etc. Also, the PP has also shared a declaration certificate/07/ stating the same.

4.1.1 Monitoring Procedure:

The WTGs are connected to two feeders; 7 wind turbines are connected to feeder 1 and 5 wind turbines are connected to feeder 2. Main meter, check meter and ABT meter are located at the 33/66 kV Parveda

sub station which is eventually connected to 220 kV Kamlapur GSS through a double circuit line of 66 kV. The ABT meter located at the Parveda substation are used for billing purposes as verified from the share certificates issued by state utility, GETCO/09/ and on-site interviews/10/.

Values of the parameter "Quantity of net electricity supplied to the grid in year y" i.e., $EG_{Facility\ y}$ is directly sourced from the monthly Share certificates issued by GETCO/09/ that indicates the share of electricity for project activity received at the respective state utility substation. The measurement results are cross checked with records of invoices raised by the PP/23/ and it is in line with applied methodology. Thus, this parameter is considered for the emission reduction calculations/03/.

The net electricity supplied to the grid by project activity is being measured continuously by energy meters located at the pooling substations and recorded on monthly basis. This is in line with the methodology and is accepted.

Assessment team concludes the following:

- There are no material discrepancies between project implementation and the project description provided in the registered PD/01/
- 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.
- There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/08/.
- The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading/07/.
- The GHG emission reduction or removals generated by the project activity has not received or sought any other form of environmental credits or is doing so during current verification.

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

CAR#01 was raised for completeness and appropriate used of the latest version of MR template. The CAR was resolved subsequently.

4.2 Safeguards

4.2.1 No Net Harm

The project activity does not involve any negative environmental or socio-economic impacts.

There is no negative impact to any socio-economic conditions of the region due to the project activity. This project activity does not involve any negative environmental or socio -economic impacts, as the project activity involves generation of power using wind energy which is a clean source of energy. Hence no mitigation measures are required.

4.2.2 Local Stakeholder Consultation

The project was first registered under CDM program wherein the LSC was conducted by the project propoenent, details can be found in CDM PDD/18/. The project proponent has kept a grievance register/19/ for continuous stakeholder interactions have been provided to the local stakeholders to lodge their complaints, the detail description of the same can be found in section 2.2 of MR. During the current monitoring no grievances were recieved from the local stakeholders between the period 01/07/2022 to 31/12/2022. the same has been verified from the on-site visit/10/,. Thus, the assessment team has concluded that the ongoing stakeholder communication under the local stakeholder consultation has been properly implemented.

4.3 AFOLU-Specific Safeguards

Since the project is non-AFLOU project, hence not applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The calculations for the emission reductions are found to be correct. The details of the reported and the verified values of all the parameter are listed in section 4.5 of this report.

This data has been verified as described in section 4.5 below. The formulae & method used to calculate the baseline emissions, project emissions and leakage are appropriate and in line with the approved methodology ACM0002 version 20.0/08/.

The PP has calculated the grid emission factor as per the combined margin approach described in the 'Tool to calculate the emission factor for an electricity system', version 07.0, EB 100, Annex 04/15/.

The grid emission factor has been calculated as the weighted average of OM & BM; and has been fixed ex-ante for the entire crediting period. The OM and BM have been obtained from a publicly available source i.e., "CO_2 Baseline Database for Indian Power sector", version 17 /17/ published by Central Electricity Authority, Ministry of Power, and Government of India in October 2021/14/.

The OM and BM have been calculated to be 0.9522 tCO_2/MWh and 0.8653 tCO_2/MWh respectively. The combined margin has been calculated to be 0.9305 tCO_2/MWh.

Formula used to calculate Emission reduction:

$ERy = BEy - PEy$

Where,

ERy = Emission Emissions in year y (t CO_2e/yr)

PEy = Project Emissions in year y (t CO_2e/yr)

BEy = Baseline Emission in year (t CO_2e/yr)

LEy = Leakage emissions in year y (t CO_2e/yr)

For calculation of baseline emissions:

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

Where,

BE_y = Baseline Emissions in year y (t CO_{2e}/yr)

$EG_{PJ,\ y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y

(tCO_2/MWh)

Baseline Emission (BEy) = 16,700.16 * 0.9305 (tCO_2/MWh)

= 15,539 tCO_2.

The emission reduction as

$ERy = BE_y - PE_y - LE_y$

$PE_y = 0$

$LE_y = 0$

Thus, $ER_y = BE_y$

ER_y= 15,539 tCO_2

As per ER sheet/03/ submitted by the PP, the net emission reduction achived during the current verification i.e. from 01/07/2022 to 31/12/2022 was verified to be 15,539 tCO_2e. The calculation method and formulae used for calculating baseline emission, project emission and leakage emission are in compliance with the applied methodology ACM0002/08/.

The assessment team is able to confirm that the GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology/08/.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

All the data recorded are in compliance with the registered VCS PD/01/ and Monitoring Report/02/. The assessment team has checked the monthly share certificates for electricity generated and supplied by project activity/04/ for the current monitoring period to verify the values of monitoringparameters reported in ER calculation sheet/03/ and found to be consistent. Since certificates areprepared and issued by state utility based on the monthly joint meter readings by PP and stateagency and also used for commercial invoice purpose, they are found to be reliable and authentic. The monitoring of the project activity is found to be in accordance with the monitoring methodologydescribed in ACM0002 Version 20.0/08/. The monitoring mechanism is effective and reliable. During the on-site audit, personnel involved at various levels of the operation of the project activity have been interviewed to confirm that the plant personnel are conscious of the importance of themonitoring activities.

The meters comply with appropriate quality standards applicable for the used technology. The accuracy class of the meters installed for the project activity was verified through the registered VCS PD/01/, MR/02/, and calibration certificates/11/ are found to be consistent.

The following parameter has been verified for current monitoring period:

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

Means of verification	Criteria/ Requirements	Assessment/ Observation
	Measuring/Reading/Recording frequency	This parameter is measured by the energy meters and continuously recorded and reported on monthly basis.
	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 outlined in the registered PD/01/ and monitoring methodology/08/.
	Monitoring equipment	The meters of 0.2s (active) and 0.5s(reactive) and make Larsen & Turbo is used. The serial number of the meters being GJ-1045-A & GJ-1046-A (calibration details of the meter is provided separately in this section under the heading "calibration of meters")
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	All the energy meters are of accuracy class 0.2s(active) and 0.5s(reactive). Accuracy of the monitoring equipment's is in accordance with the monitoring plan as outlined in the registered PD. /01/ This has been verified from the calibration certificates/11/ provided by the PP.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, the accuracy of the monitoring equipment is valid for entire monitoring range. The calibration certificates clearly shows that the accuracy level is valid for entire monitoring period/11/.
	Calibration frequency /interval:	The meters are calibrated every 3 years which is done in line with the procedures mentioned in the PD, During the current monitoring period, calibration was performed as per the details provided below in this section of the report. There is no delay reported in this monitoring period. The calibration certificates/11/ of each of the calibration has been checked and the meter is found to be within its error range.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency	Yes, calibration interval in lines with the frequency stated in the Joint PD & MR/01/.

	of calibration, is the selected frequency in accordance with the local/national standards, pending until the findings are closed or as per the manufacturer's specifications?	The meters has been calibrated once during the current monitoring period. The calibration dates of the both the meters are 05/01/2022. The due date of the next calibration will be 04/01/2025. There is no delay reported in this monitoring period.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	The meter testing and checking procedures are solely within the purview of GETCO (Gujarat Energy Transmission Corporation Limited). This has been verified from the PPA/22/ and the calibration certificate/11/ shared by the PP.
	How the values in the monitoring report verified?	The cumulative values of $EG_{facility}$ for the entire monitoring period is reported in the MR/02/, and the monthly values are reported in the ER calculation sheet/03/ is 16,700.16 MWh. This value is derived from the difference in electricity exported by the PA to the grid and electricity imported from the grid, The value in the monitoring report and ER calculation sheet were verified from the share certificates/09/ and the invoices provided by the PP/23/.
	Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibration is valid for the entire monitoring period.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of EGy were further cross- checked with share certificates issued by state utility/09/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data ensure correct transfer of data and reporting of emission reduction management QA/QC processes are 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?	There was no delay in calibration observed during the current monitoring period.
Findings	No findings were raised.	
Conclusion	The parameter has been monitored appropriately in accordance with the registered monitoring plan/02/ and applied methodology/08/. The monitored data was recorded consistently as per the approved frequency in monitoring plan. Since 100% data has been monitored and verified, the verification team can ascertain that the values used for calculation of emission reduction are free from material errors.	

Parameters fixed ex ante:-

$EF_{grid,OM,y}$: The parameter is described as operating margin CO_2 emission factor of NEWNE Electricity Grid and is measured in unit tCO_{2e}/MWh. The value provided in MR i.e., 0.9522 has been verified from Joint PD & MR/01/ and CO_2 Baseline Database for Indian Power Sector by Central Electricity Authority/14/ and is found to be consistent. The value applied in the ER sheet calculation sheet/03/ has also been verified and found to be appropriate.

$EF_{grid,BM,y}$: The parameter is described as build margin CO_2 emission factor of NEWNE Electricity Grid which is measured in units tCO_{2e}/MWh. The value provided in MR i.e., 0.8653 has been verified from Joint PD & MR/01/ and CO2 Baseline Database for Indian Power Sector by Central Electricity Authority/14/ and is found to be consistent. The value applied in the ER sheet calculation sheet/03/ has also been verified and found to be appropriate.

$EF_{grid,CM,y}$: The parameter is described as combined margin CO2 emission factor of NEWNE Electricity Grid which is measured in units tCO_{2e}/MWh. The value provided in MR i.e., 0.9305 has been verified from Joint PD & MR/01/ and is found to be consistent. The value applied in the ER sheet calculation sheet/03/ has also been verified and found to be appropriate.

W_{OM}: The parameter is described as Weightage of operating margin emissions factor. The source of the value is from the Tool 07: Tool to calculate the emission factor for an electricity system/15/. The value provided in MR i.e. 0.75 has been verified from Joint PD & MR/01/ and is found to be consistent. The value applied in the ER sheet calculation sheet/03/ has also been verified and found to be appropriate.

W_{BM}: The parameter is described as Weightage of operating margin emissions factor. The source of the value is from the Tool 07: Tool to calculate the emission factor for an electricity system/15/. The value provided in MR i.e. 0.25 has been verified from Joint PD & MR/01/ and is found to be consistent. The value applied in the ER sheet calculation sheet/03/ has also been verified and found to be appropriate.

Calibration of meters:

The energy meters installed at sub-station is of accuracy class 0.2s(active) and 0.5s (Reactive) as verified through the calibration certificates/11/. The installation of the meters was checked through Calibration certificates and through on-site visit conducted on 24/02/2023/10/. Details of the meters are provided below table:

Substation meter details:

Meter Serial No.	Sub-Station	Make and Accuracy class	Date of previous calibration	Date of latest calibration	Remark
GJ-1045-A	66 KV PARVEDA-KAMALAPURS/S ABT	Larsen &Tourbo 0.2s (Active) 0.5s (Reactive)	31-January-2018	05-January-2022	There is delay of 1year in pervious verification period.However, there is no delay in calibration during this verification period, which has been verified

	METER Line 1 Parveda				through the calibration certificates/11/.
GJ-1046-A	66 KV PARVEDA-KAMALAP URS/S ABT METER Line 2 Parveda	Larsen &Tourbo 0.2s (Active) 0.5s (Reactive)	31-January-2018	05-January-2022	There is delay of 1year in pervious verification period.However, there is no delay in calibration during this verification period, which has been verified through the calibration certificates/11/.

The details of monitoring equipment involved in the project activity and their calibration details/11/ are mentioned in the table under Appendix-1 of the VCS MR/02/. The monitoring equipment for each feeder consists of a main meter, check meter and ABT meter. The ABT meters installed at site is used for billing purposes. The stipulated calibration frequency is once in 3 years as per the registered monitoring plan.

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

GHG Calculations:

Calculation of Baseline Emissions

In accordance with the applied methodology ACM0002/08/, the 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 baseline emissions are calculated as follows:

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

Where,

BE_y = Baseline Emissions in year y (t CO_{2e}/yr)

$EG_{PJ,\ y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = CO_2 emission factor of the grid in year y (t CO_2/yr)

As per the paragraph 40 of the applied methodology/08/, the calculation of EGPJ,y is different for Greenfield plants, capacity additions, retrofits, rehabilitations, and replacements. Since the proposed project activity is Greenfield plant, hence as per the paragraph 41 of ACM0002, Version 20.0/08/.

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

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)

Calculation of Project Emissions

As per the paragraph 31 of the applied methodology/08/, for most renewable power generation project activities, PEy = 0. Since the project activity is a wind energy-based power generation, the project emissions are not applicable to the project activity.

Hence, PEy = 0

Calculation of Leakage Emissions

As per para 53 of the applied methodology/08/, no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects 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, LEy = 0.

Calculation of Net Emission Reduction or Removals

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:

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

$BE_y = 16,700.16$ (MWh) * 0.9305 (tCO_2e/ MWh)

$BE_y = 15,539\ tCO_2e$ (Rounded down to nerest integer value)

As per para 54 of the applied methodology/08/, emission reductions are calcuated as:

ERy = BEy – PEy

Where,

ERy = Baseline Emissions in year y (t CO_2e/yr)

PEy = Project Emissions in year y (t CO_2e/yr)

$ER_y = 15,539 – 0$

$ER_y = 15,539\ tCO_2e$

The total emission reduction during the current monitoring period – 01/07/2022 to 31/12/2022 is 15,539 tCO_2e.

The verification team confirms that appropriate methods and formulae for calculating GHG 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 34.75% lower than the estimated amount of emission reduction as determined in the registered VCS PD/01/ which is due to the low PLF achieved by the project activity during the monitoring period. The generation depends on wind availability and other climatic conditions which is acceptable as it is not in control of project participant.

All the data were made available and have monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emissions calculations is described above.

4.6 Non-Permanence Risk Analysis

Not applicable for the project activity.

5 VERIFICATION OPINION

Earthood Services Private Limited (ESPL) contracted by ReNew Power Private Limited, to perform the independent verification of the emission reductions for the VCS project activity 'Wind Power Project at Rajkot, Gujarat' (VCS ID- 1045) in India for the monitoring period 01/07/2022 to 31/12/2022 (Including first and last day)as reported in monitoring report version 2.0 dated 15/02/2023 /02/. The Renew Wind Energy (Rajkot) Private Limited (RNWERPL) is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emission reduction from the project activity.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity. ESPL commenced the verification on the basis of the baseline and monitoring methodology ACM0002 Version 20.0/08/, the monitoring plan contained in the VCS Joint PD/01/ & MR/02/.

ESPL 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. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated. In our opinion the GHG emissions reductions reported for the project activity for the period 01/07/2022 to 31/12/2022 are fairly stated in the Monitoring Report/02/. The GHG emissionreductions were calculated correctly based on the approved baseline and monitoring methodology ACM002 Version 20.0/08/ and VCS standard version 4.4/05/.

Verification period: From 01/07/2022 to 31/12/2022 (Including first and last day).

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

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
01/07/2022 – 31/12/2022	15,539	0	0	15,539

Total	15,539	0	0	15,539

Ex-ante emissions reductions /removals	Achieved emissions reductions /removals	Percent difference	Justification for the difference
23,816	15,539	34.75%	The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant. The lower generation during the current verification period is due to certain natural conditions and it doesn't breach the additionality of the project. Hence, it is acceptable.

The actual emission reductions for this monitoring period are 15,539 tCO2e. Whereas the estimated emission reductions for this monitoring period are 23,816 tCO2e. Thus, there is a variation of 34.75% (negative) in the total ERs.

Approved By:

Kaviraj Singh

Managing Director

Earthood Services Private Limited

Date: 10/03/2022

Place: Gurgaon, Haryana

APPENDIX I: DOCUMENT REFERENCES

S. No.	Title of documents	Version	Date
1.	Registered PD https://registry.verra.org/app/projectDetail/VCS/1045	02	18/05/2013
2.	Monitoring Report	2.0	15/02/2023
3.	ER sheet	1.1	15/02/2023
4.	Previous Verification Reports for the project activity Availableat Verra registry for project activity page: https://registry.verra.org/app/projectDetail/VCS/1045	2.0	20/08/2022
5.	VCS standard https://verra.org/wp-content/uploads/2022/06/VCS-Standard_v4.4.pdf	4.4	
6.	VCS program guide https://verra.org/wp-content/uploads/2022/06/VCS-Program-Guide-v4.3.pdf	4.3	
7.	Letter of declaration from PP regarding not having created or sought any other form of environmental credits for the same period	-	-
8.	Approved Methodology ACM0002 Ver.-20.0 –‘‘Grid-connected renewable electricity generation from renewable sources”. https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG	20.0	-
9.	Monthly JMR and share certificates		-
10.	On-site audit and interviews conducted for the project monitoring period		24/02/2023

11.	Calibration certificates for all the meters		05/01/2022
12.	Operations shutdown details	-	-
13.	VCS webpage for the project, VCS ID 1045; https://registry.verra.org/app/projectDetail/VCS/1045		
14.	Central electricity Authority (CEA) guidelines for energy/ electricity meter testing https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf		2020
15.	Tool to calculate the emission factor for an electricity system	02.2.1, EB 63	
16.	Tool for the demonstrations and assessment of additionality	5.2, EB 39	
17.	Baseline carbon dioxide Emission Database by CEA	6	01/03/2011
18	CDM web page link for project activity, Project 8095 https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1352364786.6/view		
19	Stakeholder's consultation		-
20	Validation Reports for the project activity Available at Verra registry for project activity page: https://registry.verra.org/app/projectDetail/VCS/1045	-	-
21	Commissioning Certificates		29/03/2012
22	Power Purchase Agreement		01/02/2020
23	Energy Invoices	-	-

24	Google earth	-	Last accessed on 30/01/2023

APPENDIX II: ABBREVIATIONS

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

MR	Monitoring Report
GETCO	Gujarat Energy Transmission Corporation Limited
GUVNL	Gujarat Urja Vikas Nigam Limited
MW	Megawatt
MWh	Megawatt-hour
NEWNE	Northern Eastern Western Northern-Eastern
O&M	Operation and Maintenance
PD	Project Description
PLF	Plant Load Factor
PP	Project Proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance and Quality Control
TOD	Time of the Day
UNFCCC	United Nations Framework Convention on Climate Change
WEC	Wind Energy Convertor
WEG	Wind Energy Generator
WTG	Wind Turbine Generator
WWIL	Wind World (India) Ltd.
WWWRDPL	Wind World Wind Resource Development Private Limited
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units

APPENDIX III: FINDINGS OVERVIEW

Table 1. Remaining FAR from validation and/or previous 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

Table 2. CAR from this verification

CAR ID	01	Section no.	MR	Date: 10/02/2023
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: 24/02/2023
The Monitoring Report is updated as per latest available version 4.2.				
Documentation provided by project participant				
Revised Monitoring Report				
DOE assessment				Date: 01/03/2023
VVB has confirmed that PP has updated the MR and revised as per latest version 4.2. Hence, CAR#01 is closed.				

CAR ID	02	Section no.		Date: 10/02/2023
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: 24/02/2023
Monitoring plan is made inline with Joint PD&MR dated 17/08/2022				
Documentation provided by project participant				

DOE assessment	Date: 01/03/2023
VVB has confirmed that the monitoring plan is inline with the joint PD&MR dated 17/08/2022 and schematic diagram is given under section 3.1. Hence, CAR#02 is closed.	

CAR ID	03	Section no.	1.3	Date: 10/02/2023
Description of CAR				
The details of the project proponent provided in section 1.3 of MR is found to be inconsistent with the section 1.5 of Joint PD&MR, dated 17/08/2022. PP is requested to take corrective action.				
Project participant response				Date: DD/MM/YYYY
The details of the project proponent is made inline with section 1.5 of Joint PD&MR dated 17/08/2022				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: DD/MM/YYYY
VVB has confirmed that PP has now update the MR and now it is consistent with the section 1.5 of joint PD&MR. Hence, CAR#03 is closed.				

Table 3. CL from this verification

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

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: COMPETENCY STATEMENTS

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

Competence Statement	
Name	Ashish Yadav
Education	M.Sc Environmental Sciences B.Sc Biotechnology
Experience	1 Year
Field	Wastewater treatment
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	20/09/2022
Approved by	Deepika Mahala (Technical Manager)	Date	20/09/2022

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	Yes (VM)		
Validator	Yes (VM)		
Verifier	Yes (VM)		
Methodology Expert	NO		
Local expert	Yes (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Reviewed by	Shifali Guleria, Quality Manager	**Date**	24/09/2022
Approved by	Deepika Mahala, Technical Manager	**Date**	24/09/2022

Competence Statement	
Name	Deepika Mahala

Country	India		
Education	M. Sc. (Environment Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G, AMS-II.C		
Local expert	YES (India, Bangladesh)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2 & TA 3.1)		
Reviewed by	Shifali Guleria (QM)	**Date**	28/04/2022
Approved by	Kaviraj Singh (MD)	**Date**	28/04/2022