



**Verified Carbon
Standard**

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



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Summary:

Verification purpose: The current project is 80 MW wind power at Maharashtra state in India, promoted by Panama Wind Energy Godawari Private Limited. The project is registered with VERRA registry with VERRA ID - 1523¹. The project activity generates renewable energy which is exported to Indian Grid. The project has contributed to reduction of GHG emissions by displacing fossil fuel dominated grid-based electricity with renewable energy – wind energy based renewable electricity.

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified carbon units (VCUs).

The scope of the verification is the independent and objective review of the monitoring report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM validation and verification standard for project activities version 03.0/^{6/}, reviewed against registered VCS Joint PD & MR/^{3/} and final joint validation and verification report/^{3/}, VCS program guide version 4.4/^{4/} and VCS standard version 4.5/^{4/}.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR/^{1/}. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VCUs. The verification is not

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

meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The start date of the project activity is 31-March-2014. An undertaking^{/7/} has been submitted by PP for double counting confirming that no GHG reduction will be claimed in any other GHG mechanism for current monitoring period. The project activity has observed continued operation and major breakdown has taken place except routine maintenance/shutdown.

This is the verification and certification for the greenhouse gas (GHG) emission reductions reported from 'Wind Based Power generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India for the monitoring period 01-November-2022 to 31-July-2023 (Inclusive of both days), under the crediting period 31-March -2014 to 30-March-2024. Total emission reductions achieved for the project activity during the current monitoring period are 84,754 tCO₂e. An undertaking from the project participant confirms that project will not claim any other scheme benefits for the concerned monitoring period.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 05 Corrective Action requests (CAR), 01 Clarification Request (CL) and 00 Forward action requests (FARs) were raised and successfully closed. The review of the monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, Remote audit, follow-up interviews with project promoter and project participants have provided VVB with sufficient evidence to verify the fulfilment of the stated criteria of VCS. Remote audit was conducted and all the documents were checked during desk review, VVB ensured that no uncertainties are involved with this verification.

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred to as Applus+ Certification) has been appointed by 'Panama Wind Energy Godawari Private Limited'^{/16/} to perform verification of the "Wind Based Power generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India" under VCS standard, version 4.5^{/4/} and VCS program guide, version 4.4^{/4/}. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and Final Verification report and to ensure a thorough assessment of the project activity against the applicable CDM and VCS requirements. In particular; the project's baseline, monitoring plan is assessed against the applied methodology "ACM0002 version 16.0 – Grid-connected electricity generation from renewable sources." ^{/6/} The project's compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS program guide 4.4^{/4/}, VCS standard, version 4.5^{/4/} and CDM validation and verification standard for project activities, version 3.0^{/6/}.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose.

The verification has been planned and organized to achieve a reasonable level of assurance as per the requirement of VCS. No sampling procedure applied for remote audit or document verifications. The entire documents checked/remote audit verification conducted to arrive at positive verification conclusions.

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1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Hereinafter referred as Applus+ Certification) has been appointed by Panama Wind Energy Godawari Private Limited^{/16/} to perform verification of the project “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India” under VCS standard version 4.5/^{4/} and VCS program guide version 4.4/^{4/}. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and final verification report and to ensure a thorough assessment of the project activity against the applicable CDM and VCS requirements. In particular;

- the project’s baseline and monitoring plan is assessed against applied methodology – ACM0002 (version 16.0) “Grid-connected electricity generation from renewable sources”/^{6/}
- VCS program guide, version 4.4/^{4/} and VCS standard, version 4.5/^{4/}
- The project’s compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria
- CDM validation and verification standard for project activities, version 03.0/^{6/}

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of estimated verified carbon units (VCUs).

1.2 Scope and Criteria

The scope is defined as, an independent and objective review of the Monitoring report (MR) prepared as per the registered VCS Joint PD & MR/^{3/} and registered approved methodology ACM0002 version 16.0/^{6/}. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS guidelines, including the approved baseline and monitoring methodology applied. The verification was based on the requirements in the CDM validation and verification standard for project activities, version 03.0/^{6/}, VCS program guide, version 4.4/^{4/} and VCS standard, version 4.5/^{4/}.

The verification is not meant to provide any consulting towards the project participant. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. There are no material errors, overestimation of emission reduction, omission or misstatement. The verification team has reviewed the documents like commissioning certificate, monthly invoices etc.

1.3 Level of Assurance

The verification has been planned and organized to achieve a reasonable level of assurance as per the requirement of VCS and PP's selection. The entire set of documents have been checked/remote audit verification conducted to arrive at positive verification conclusion.

The verification strategy used by Applus+ Certification is based on an understanding of the risks involved in reporting GHG emission data and the mitigation measures put in place. verification team has verified the monitoring data for all the parameters of the monitoring plan and confirms that the reported emission reductions are free from any type of material errors or misstatements.

1.4 Summary Description of the Project

Panama Wind Energy Godawari Private Limited has installed a wind power project activity consisting of 40 units of WTG model - Gamesa G97- 2 MW WTG/¹⁵/. The project is installed in Maharashtra state of India. Each WTG is of 2 MW capacity. The project activity generates electricity through sustainable means using the wind energy resource and contribute to climate change mitigation efforts. In the absence of the project activity, the electricity thus supplied would have been generated through fossil fuel based thermal power plants. The project activity is a Greenfield project for generation of electrical energy using wind which is a renewable source of energy. Thus, this project actually displaces the electricity grid which is essentially fossil-fuel based.

The Start date of Project activity is 31-March-2014, which is the date of commissioning of the first WTG/¹⁷/. The monitoring period of the project activity is 01-November-2022 to 31-July-2023 which is from the crediting period (31-March-2014 to 30-March-2024).

The total project capacity is 80 MW. The estimated electricity generation of the project activity is 140,160 MWh annually and estimated GHG reductions are 136,936 tCO₂e annually. The total GHG emissions reductions achieved by this project activity in the current monitoring period from 01-November-2022 to 31-July-2023 is 84,754 tCO₂e.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process

The project assessment is based on the Clean Development Mechanism validation and verification standard for project activities, version 03.0/⁶/ and VCS standard 4.5/⁴/ and VCS program guide version 4.4/⁴/ and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out:

- A desk review of the monitoring Report against the registered VCS joint PD & MR/³/;
- Remote audit and interviews with project participant and stakeholders;
- The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. LGAI Technological Center, S.A. (Applus+ Certification) has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from verifying the identified criteria.

Appointment of the assessment team

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

The composition of audit team shall be approved by the LGAI Technological Center S.A. (Applus+ Certification) ensuring that the required skills are covered by the team.

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

- Lead Auditor (LA).
- Observer (Obs)
- Technical Expert (TE)

- Technical Reviewer (TR)

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

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Deepak Pundlik	LA/TE	YES	YES	NA	Yes
Dr. N. Premjit Singh	TR	YES	YES	NA	Yes

The complete list of CVs is included as Appendix 3 of this report.

Document review

The Monitoring report^{1/} submitted by the PP was reviewed against the approved methodology^{6/}, approved registered VCS joint PD& MR ^{03/}, Joint validation and verification report^{03/}, and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information.

Further, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in Appendix 1.

Follow-up interviews

Remote audit was conducted by LGAI Technological Center S.A. (Applus+ Certification) and interviews of project stakeholders were done to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report in the below sections.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR Version 03^{1/} submitted by PP, serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Internal quality control

As final step of a verification of the final documentation including the verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e., each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the PP, the positive verification opinion and relevant documents are submitted to the VCS board through the VCS web-platform.

2.2 Document Review

The Monitoring Report submitted by PP was reviewed against the approved methodology, registered VCS Joint PD & MR^{/3/}, final Joint Validation and Verification report^{/3/} and other relevant documents and criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in appendix 1.

2.3 Interviews

A remote audit was conducted for the project activity on 25-August-2023. The remote audit was conducted as site visit was not mandatory as per the requirements mentioned in the section 4.1.11 to 4.1.14 of the VCS Project standard version 4.5.

All the documents were cross checked to ensure conservative estimation of emission reduction.

During the remote audit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of equipment, generation records, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificates, PPA, JMRs, invoice, calibration certificates etc. were also verified. The local stakeholders that include local residents were interviewed during the remote audit and the process of ongoing communication with them along with any grievance related to project activity was verified with them. The VVB has checked the grievance register^{/10/} submitted by the PP and found that no grievances were registered for the current monitoring period. VVB has also checked the earlier latest monitoring report/verification report and found that no grievance were mentioned which need to be addressed during the current verification. The names of the persons interviewed during remote audit through video conferencing is given below;

No.	Interview			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sintre	Mr. Ashok	PP representative	25-August-2023	Project Implementation, JMR & invoicing procedure, grievance mechanism Management practices, data storage, QA/QC	Mr. Deepak Pundlik
3.	Waghmare	Mr. Nilesh	Site Incharge			
4.	Patil	Mr. Vikash	Local Resident			
5.	Pawar	Mr. Aman	Local Resident		Project operation, its impact on the local area, project's impact on sustainable development, any grievances	
6.	Shinde	Mrs. Supriya	Local Resident			
7.	Sahu	Mr. Vipul	EKI Energy Services Limited			
8.	Ladukar	Mr. Anant	EKI Energy Services Limited			

2.4 Site visit

As per para 4.1.9 VCS standard, version 4.4, a site visit is mandatory in the following conditions during verification:

- 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 current verification is not the first verification, does not involve project baseline reassessment and PP has not claimed any project description deviation which impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

Hence, for the current verification, site visit was not conducted and a remote audit was scheduled and conducted. VVB carried out risk analysis for the remote audit and confirmed that no risk of a material misstatement or nonconformity with the audit criteria is present and hence went ahead with remote audit.

Remote Audit (Video conferencing): 25-August-2023				
No.	Activity performed	Site location	Date	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 whether the monitoring plan as described in the VCS Joint PD & MR is actually practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Maharashtra state of India.	25-August-2023	Mr. Deepak Pundlik

2.5 Resolution of Findings

The objective of this phase of the verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for LGAI Technological Center S.A. (Applus+ Certification)'s positive conclusion on the project design and Monitoring report. The Corrective Action Requests and Clarification Requests raised by LGAI Technological Center S.A. (Applus+ Certification) were resolved during communication between the client and LGAI Technological Center S.A. (Applus+ Certification) to guarantee the transparency of the validation process, the concerns raised and responses given are summarized below in the appendix 2.

The final MR/^{1/} submitted serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main VCS objectives. The two main VCS objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Project Document and Monitoring report	--	--	--
Description of project activity	01	02	--
Application of selected baseline and monitoring methodology and selected standardized baseline			
Applicability of methodology and standardized baseline	--	--	--
Deviation from methodology	--	--	--
Clarification on applicability of methodology, tool and/or standardized baseline	--	--	--
Project boundary	--	--	--
Establishment and description of baseline scenario	--	--	--
Demonstration of additionality	--	--	--
Emission reductions	--	01	--
Calibration details	--	--	--
Monitoring plan	--	01	--
No Net harm assessment	--	01	--
Local stakeholder consultation	--	--	--
Others (please specify)	--	--	--
Total	01	05	00

The list of findings and their resolution is presented in Appendix 2 of this report.

2.5.1 Forward Action Requests

This is 9th verification of the project activity and no FAR was raised from validation, previous verification and during this verification process.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects under this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The Project had applied for the CDM² under the Kyoto protocol which was under validation stage during 2013, however the PP did not continue the CDM validation and existing contract of CDM validation is terminated with VVB. The project completed the validation and continued verification in Verra.

The assessment team checked the link provided and concluded that the project CDM validation was not continued as the project is not registered. Also, as per the MR^{1/} and undertaking^{7/} provided, PP would not consider the credit from any other mechanism for the current monitoring period. The undertaking is provided to confirm that there is no any double accounting for current monitoring period. Further, assessment team confirms that the project activity is not participating in any other form of environmental credits.

The project activity has beneficial effect on the local environment and employment in the nearby region. Clean Electricity generation through Wind technology result in avoidance of consumption of fossil fuels which results in contribution to SDG 7. The emission avoidance through these activities results in contribution to SDG 13. All the workers at site are trained which results in increase of skills, which contributes to SDG 4. Thus, PP want to claim the mentioned SDGs for the project activity. The VVB team has verified the training records^{9/}, Employment records^{9/} and monthly JMRs to verify the indicator. This is a voluntary project activity doesn't contribute to achieving any nationally stated sustainable development priorities. There is no compliance for monitoring and reporting the emission reduction and SDG contribution from the project activity.

²<https://cdm.unfccc.int/Projects/Validation/DB/3EXK45ZD9TYCX75US50980UPIT809D/view.html>

Also, according to the Appendix 3 - the document history mentioned in the VCS Standard Version 4.5 (Latest version), it is clearly mentioned that Project Proponent is required to demonstrate contributions to a minimum of three SDGs, effective immediately for all projects registered on or after 20 January 2023. Since this is the 9th Verification of this project and it is registered before 20 January 2023, detailed assessment is not mandatory.

3.2 Methodology Deviations

The project activity has applied correct methodology which are as per the registered VCS Joint PD & MR/^{3/} and thus no deviation is sought regarding the methodology. The project complies with all the requirement of the methodology and thus deviation to the methodology is not a requirement for the present project activity.

3.3 Project Description Deviations

Following are the deviations taken:

Deviation 01 : The 12 WTGs commissioned on 31-March-2014 for locations G 33, G 34, G 35, G 36, G 37, G 39, G 40 connected to feeder -01 (actual) and G 24, G 25, G 29, G 30, G 31 connected to feeder -02 at the 132/99 kv Rajpimpri Substation in the Georai Taluka of Beed district, However, during the issuance of the commissioning certificates, there was an error in the feeder numbers provided. This mistake was subsequently identified and rectified by the Maharashtra State Electricity Distribution Company Limited on 19-January-2021. PP has provided Feeder shifting letter.

Old and new feeder connectivity with actual WTGs location:

Feeder connectivity Details	Old WTGs connected to feeder as per Commissioning Certificate	New/Actual WTGs connected to feeder as per Credit note and Site practice.
Feeder Number: 01	G24, G25, G29, G30, G31, G38, G26, G32	G33, G34, G35, G36, G37, G39, G40, G26, G32, G38
Feeder Number: 02	G27, G28, G21, G05, G22, G23, G33, G34, G35, G36, G37, G39, G40	G24, G25, G29, G30, G31, G27, G28, G05, G22, G23, G21

The VVB assessment team has checked and verified the Feeder shifting letter/^{19/} provided by the PP and found it acceptable. Also, it was noted that the deviation does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals and the deviations relate only to the criteria and procedures for monitoring or measurement, and do not relate to any other part of the methodology. Deviation does not alter additionality, calculation of emission reduction and the project design. Thus, the nature of this deviation is permanent.

3.4 Grouped Project

The project does not involve any addition of new project activity and thus the project do not fall under grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity, “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India” is registered as a VCS project (VCS Ref No. 1523) applying the methodology ACM0002 - Version 16.0/^{6/}. The WTGs of the project activity are owned by the Project Proponent, i.e. Panama Wind Energy Godawari Private Limited, which was verified from commissioning certificate/^{17/} and the PPA/^{5/} for the project activity.

The total installed capacity of the project is 80 MW; which involves operation of 40 Wind Turbine Generators (WTGs) with capacity of 2 MW each. The technical parameters have been verified with the technical specifications/^{15/} of WTGs.

Assessment team checked and found that the latitude and longitude of the project site mentioned in the registered Joint PD & MR/^{3/} are correct. The detail is as below:

Sr. No.	Location No.	Village	Taluka	District	Latitude (D° M' Sec")	Longitude (D° M' Sec")	Commissioning Dates
1.	G01	Mulukwadi	Georai	Beed	N19 11 35.6	E75 43 38.4	07-October-2014
2.	G02	Mulukwadi	Georai	Beed	N19 11 12.3	E75 42 57.5	07-October-2014
3.	G03	Mulukwadi	Georai	Beed	N19 11 50.0	E75 43 19.7	07-October-2014
4.	G04	Mulukwadi	Georai	Beed	N19 11 30.1	E75 43 13.9	07-October-2014
5.	G05	Khoipti	Georai	Beed	N19 13 35.5	E75 41 23.4	06-September-2014
6.	G06	Mulukwadi	Georai	Beed	N19 11 59.1	E75 43 35.4	07-October-2014
7.	G07	Mulukwadi	Georai	Beed	N19 11 20.6	E75 43 40.8	07-October-2014
8.	G08	Mulukwadi	Georai	Beed	N19 11 59.5	E75 43 07.2	07-October-2014
9.	G09	Mulukwadi	Georai	Beed	N19 12 04.9	E75 42 37.4	07-October-2014
10.	G10	Mulukwadi	Georai	Beed	N19 12 24.6	E75 43 13.1	07-October-2014
11.	G11	Mulukwadi	Georai	Beed	N19 12 38.0	E75 43 18.6	07-October-2014
12.	G12	Manmodi	Georai	Beed	N19 12 23.5	E75 42 36.7	07-October-2014
13.	G13	Manmodi	Georai	Beed	N19 12 36.0	E75 42 18.5	07-October-2014
14.	G14	Manmodi	Georai	Beed	N19 12 50.5	E75 42 24.3	06-September-2014

Sr. No.	Location No.	Village	Taluka	District	Latitude (D° M' Sec")	Longitude (D° M' Sec")	Commissioning Dates
15.	G15	Manmodi	Georai	Beed	N19 12 59.8	E75 42 10.8	06-September-2014
16.	G16	Manmodi	Georai	Beed	N19 13 17.1	E75 42 10.1	07-October-2014
17.	G17	Manmodi	Georai	Beed	N19 13 22.3	E75 41 58.6	06-September-2014
18.	G18	Manmodi	Georai	Beed	N19 13 29.6	E75 42 29.3	07-October-2014
19.	G19	Khoipti	Georai	Beed	N19 13 41.9	E75 42 19.2	07-October-2014
20.	G20	Manyarwadi	Georai	Beed	N19 13 45.5	E75 42 59.5	07-October-2014
21.	G21	Khoipti	Georai	Beed	N19 14 06.3	E75 41 40.6	05-October-2014
22.	G22	Rajpimpri	Georai	Beed	N19 13 54.1	E75 41 27.6	06-September-2014
23.	G23	Rajpimpri	Georai	Beed	N19 13 46.6	E75 41 03.1	06-September-2014
24.	G24	Rajpimpri	Georai	Beed	N19 13 34.5	E75 40 24.8	31-March-2014
25.	G25	Rajpimpri	Georai	Beed	N19 13 23.9	E75 40 11.5	31-March-2014
26.	G26	Bangali Pimpla	Georai	Beed	N19 12 40.0	E75 37 28.9	25-July-2014
27.	G27	Sindkhed	Georai	Beed	N19 13 09.5	E75 40 21.9	25-July-2014
28.	G28	Kombadwadi	Georai	Beed	N19 13 25.4	E75 39 28.6	25-July-2014
29.	G29	Kombadwadi	Georai	Beed	N19 13 43.7	E75 39 29.9	31-March-2014
30.	G30	Devimpri	Georai	Beed	N19 13 51.7	E75 39 06.1	31-March-2014
31.	G31	Kombadwadi	Georai	Beed	N19 13 57.4	E75 39 33.0	31-March-2014
32.	G32	Sushi	Georai	Beed	N19 12 16.2	E75 37 44.2	25-July-2014
33.	G33	Sushi	Georai	Beed	N19 12 59.5	E75 38 47.3	31-March-2014
34.	G34	Sushi	Georai	Beed	N19 13 14.9	E75 38 57.3	31-March-2014
35.	G35	Sushi	Georai	Beed	N19 13 12.2	E75 38 26.2	31-March-2014
36.	G36	Sushi	Georai	Beed	N19 13 27.1	E75 38 20.9	31-March-2014
37.	G37	Kumbhejalgaon	Georai	Beed	N19 13 34.4	E75 38 00.3	31-March-2014
38.	G38	Sushi	Georai	Beed	N19 12 49.7	E75 38 08.6	25-July-2014
39.	G39	Kumbhejalgaon	Georai	Beed	N19 13 04.7	E75 37 53.8	31-March-2014
40.	G40	Bangalipimpla	Georai	Beed	N19 12 58.0	E75 37 31.5	31-March-2014

Assessment team checked the commissioning certificate^{/17/} and confirmed that the dates of Commissioning for the plants are correct.

The technical specification of the project activity is as follows which is confirmed during remote audit based on technical datasheet^{/15/} submitted by PP:

Particulars	Details
Model	Gamesa G97-2.0 MW
Rated Power	2000kW
Diameter	97 m
Swept Area	7,390 m ²
Rotational Speed	9.6 - 17.8 rpm
Design Lifetime	25 years

VVB confirms that there are no material misstatements between project implementation and the project description.

VVB confirms that there are no material misstatements between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology.

VVB checked and confirms that the implemented monitoring plan is complete with respect to required monitoring, including the suitability of the implemented monitoring system (i.e., process and schedule for obtaining, recording, compiling and analysing the monitored data and parameters).

The Project had applied for the CDM³ under the Kyoto protocol which was under validation stage during 2013, however the PP did not continue the CDM validation and existing contract of CDM validation is terminated with VVB. The project completed the validation and continued verification in Verra.

VVB confirms that project has not applied to any other carbon registry except VERRA and has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification.

VVB confirmed that the GHG emission reductions or removals generated by the project have not included in any other emissions trading program or any other mechanism that includes GHG allowance trading.

The current project is not in a supply chain so information with respect to the same is not required.

VVB confirms that the project has implemented the activities that result in the SD contributions described in the monitoring report.

The assessment of the audit history table is as below;

Sr. No.	Activity	Date
1	Contract signing	21-August-2023
2	Remote Audit	25-August-2023
3	Initial findings shared	29-August-2023
4	Preparation of final report for internal review and onward submission	31-August-2023

VVB confirms that the audit history table is accurate.

PP has applied for project description deviations which are approved and are discussed above in section 3.3 of this report.

VVB confirms that overall the project has been implemented as described in the project description.

CL 01, CAR 01 and CAR 05 were raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure.

³<https://cdm.unfccc.int/Projects/Validation/DB/3EXK45ZD9TYCX75US50980UPIT809D/view.html>

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the documents review of VCS MR/^{1/} and grievance register/^{10/} etc. The project is renewable energy project and thus no negative impact observed due to project activity.

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation. The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013⁴. This report clearly mentioned that solar/Wind power project activity operations do not result in direct air pollution, noise pollution. Moreover, also as per the Central Pollution Control Board of India notification⁵ solar/wind project falls under White Category and are practically non-polluting.

CAR 02 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration. The details presented in the registered Joint PDMR were checked and confirmed. For on-going stakeholder’s communication, PP have maintained feedback/complaint register at the site office. All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with VCS Standard, ver. 4.5 and appropriate actions taken time to time by PP.

Assessment team checked the grievance register Photograph/^{10/} provided by PP and found that local stakeholders can anytime lodge their grievances if any in the register over the operational life time of the project. However, during current monitoring period no grievance was received.

4.3 AFOLU-Specific Safeguards

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

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the VCS Joint PD & MR/ ^{3/} . The verification team has checked whether calculations of baseline GHG
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⁴ <https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

⁵ http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf

	emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS Joint PD & MR ^{/3/} .
Findings	CAR 03 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	Baseline Emissions: The baseline Emissions for a given year is calculated by multiplying the energy baseline with the grid emission factor. The grid in this case would be the 'Indian Grid' Formula Used:- $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ Where: BE_y = Baseline emissions in year y (t CO₂/yr) $EG_{PJ,y}$ = 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) $EF_{grid,CM}$ = 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" (t CO₂/MWh) Ex-ante Parameters: $EF_{grid,CM,y}$ = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS Joint PD & MR^{/3/} same is fixed 0.9770 tCO₂/MWh. Verification team found same was used in the ER calculations. $EF_{grid,BM,y}$, $EF_{grid,OM,y}$ were other parameters mentioned as ex-ante fixed parameters. Assessment team checked the values, source of data, choice of data, purpose of the data mentioned in the MR^{/1/} from the registered Joint PD & MR^{/3/} and confirms that the similar approach was considered for the current monitoring period also. The values for these parameters as confirmed based on Joint PD MR are as below: $EF_{grid,BM,y} = 0.9495 \text{ tCO}_2\text{e/MWh}$ $EF_{grid,OM,y} = 0.9862 \text{ tCO}_2\text{e/MWh}$ Ex-post parameters: As per the registered monitoring plan and requirement of the registered methodology following parameters needs to be monitored: $EG_{PJ,y}$ = The verification team has checked the entire monthly JMR reports^{/8/} for net electricity generated & supplied to the grid and crosschecked same with the

invoices raised by PP towards State Utilities for the monitoring period. All values are found correct. All the parameters are monitored and recorded as per the monitoring plan in the registered VCS Joint PD & MR^{3/}. The verification team has crosschecked the revised emission reduction sheet and monitoring report data with the JMR sheet^{8/} and invoice^{8/} and found all the values are matching. During the current monitoring period, the project activity supplied 86,750.29 MWh electricity to the grid.

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

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)

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

$$\begin{aligned} EG_{BL,y} &= \text{Net electricity supplied to the NEWNE regional grid (MWh)} \\ &= 86,750.29 \text{ MWh} \end{aligned}$$

The calculation of baseline emissions is as below,

$$\begin{aligned} BE_y &= EG_{PJ,y} \times EF_{\text{grid},CM,y} \\ BE_y &= 86,750.29 \times 0.9770 \\ &= 84,754 \text{ tCO}_2\text{e (round down values)} \end{aligned}$$

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)
Year 1 (01-Novmeber-2022 to 31-December-2022)	8,075	0	0	8,075
Year 2 (01-January-2023 to 31-July-2023)	76,679	0	0	76,679
Total	84,754	0	0	84,754

PE_y = As per ACM0002 - Version 16.0^{6/}, all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. As the project activity involved wind project emissions (PE_y) are taken as zero.

	Leakage: As per applied methodology ACM0002 - Version 16.0 and VCS Joint PD & MR, Leakage emissions are zero. Hence, $ER_y = BE_y - PE_y$ $= 84,754 - 0$ $= 84,754 \text{ tCO}_2\text{e (round down values)}$ Assessment team confirmed that the GHG emission reductions and removals have been quantified correctly in line with the registered VCS Joint PD & MR^{3/}. Verification team also confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered VCS Joint PD & MR^{3/}.
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4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the Calibration details of the monitoring meters with the calibration certificates ^{11/} .
Findings	CAR 04 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	The metering arrangement is tri-vector bi-directional energy meters of Elster Make; accuracy class 0.2s (main and check) at the State Electricity Board (SEB) substation. For measuring the energy delivered by the project activity, one set of main meters (part of interconnection facilities) and check meters is provided at each of the 4 feeders by the project proponent and respective electricity distribution company (MSEDCL). These meters record several parameters including electricity exported & imported. These electricity meters are being used by state electricity board for JMR (Joint Meter Reading) electricity generation statements^{8/}. During commissioning of the WTGs monitoring meters of accuracy class i.e. 0.2s were installed. The meters are monitored continuously & cumulative readings are taken at the end of the month by joint meter reading procedure. These are sealed by State Utilities to avoid malfunctioning with meter readings. Calibration frequency of the monitoring meters is once in FIVE years. However, Meters are usually calibrated yearly by the meter testing division of the state utility in the presence of O&M Contractor/investor's representatives and State Utilities officials to ensure the working of meter within permissible limits, however, calibration frequency and schedule is under the complete discretion of State Utility and PP do not have control on it. The calculation of net electricity supplied to grid is under purview of state electricity board and PP does not have control on it. Calibration details of the monitoring meters checked with calibration certificates submitted by PP and found that calibration frequency of once in 5 years is complied. Please refer Appendix 5 for details. The break down log^{14/} is checked and there is major breakdown during the monitoring period. Details of Major Breakdown are included in Appendix 6. No sampling procedure applied for monitoring of the data parameter and entire documents were checked by the assessment team to arrive at positive verification conclusions. The monitoring plan is followed at the project site.

	Thus, assessment team concluded that the evidences are sufficient in quantity, and appropriate for the quality, to determine the GHG reductions and removals.
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4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Not applicable	Not applicable	Not applicable	Not applicable

5 VERIFICATION OPINION

The GHG statement is the responsibility of the project proponent, whether the project conforms with the verification criteria for projects and their GHG emission reductions or removals set out in VCS Standard Version 4.5/^{4/}, including any qualifications or modifications, and a description of the reason for qualifications or modifications placed before the conclusion.

VVB confirms that the project has been implemented in accordance with the project description.

Applus+ Certification has been engaged by Panama Wind Energy Godawari Private Limited to perform the 9th periodical verification of the “Wind Based Power Generation by Panama Wind Energy Godawari Private Limited, Pune in the State of Maharashtra, India”.

The management of Panama Wind Energy Godawari Private Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the registered PD and the applied methodology ACM0002 - Version 16.0/^{6/}.

The VCS Standard, version 4.5/^{4/}, VCS Program Guide, version 4.4/^{4/}, and Registration & Issuance Process (version 4.3) were used as the foundation for the verification process.

Our Verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board and VCS program guide and VCS standard/^{4/}. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification team can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in monitoring report is as per the VCS Joint PD & MR/^{3/}
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

- A reasonable level of assurance was achieved during the verification.
- No limitation observed for the present verification

Verification Analysis: The verification strategy used by Applus+ Certification is based on an understanding of the risks involved in reporting GHG emission data and the mitigation measures put in place. In order to provide a reasonable level of assurance that reported GHG emission reductions are accurately stated, Applus+ Certification prepared and carried out the verification by gathering documentation, additional information, and justifications.

The GHG statement is the responsibility of the project proponent and the project conforms with the validation and verification criteria for projects and their GHG emission reductions or removals set out in VCS Standard Version 4.5^{4/}.

VVB declares that the GHG statement verification was conducted in accordance with ISO 14064-3: 2019.

Verification period: From 01-November-2022 to 31-July-2023 (first and last date included).

Verified GHG emission reductions and removals in the above verification period, broken down by calendar year:

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)
Year 1 (01-November-2022 to 31-December-2022)	8,075	0	0	8,075
Year 2 (01-January-2023 to 31-July-2023)	76,679	0	0	76,679
Total	84,754	0	0	84,754

In the year 2022, the achieved emission reduction is notably lower by 64.71% compared to the estimated reduction specified in the registered Project Design Document (PDD) for the corresponding 61-day vintage period. This discrepancy can be attributed to a breakdown. Similarly, for the year 2023, the actual emission reduction is 3.59% lower than the anticipated reduction outlined in the registered VCS joint PD & MR for the corresponding 212-day vintage period. This variance is also due to a breakdown.

Year	Ex-ante emissions reductions /removals	Achieved emissions reductions /removals	Percent difference	Justification for the difference
Year 1 (01-November-2022 to 31-December-2022)	22,885 tCO ₂ e	8,075 tCO ₂ e	-64.71%	This is due to Breakdown of the WTGs. The details of the same are available in Appendix 6 Major Breakdown Details.
Year 2 (01-January-2023 to 31-July-2023)	79,535 tCO ₂ e	76,679 tCO ₂ e	-3.59%	This is due to Breakdown of the WTGs. The details of the same are available in Appendix 6 Major Breakdown Details.
Total	102,420 tCO ₂ e	84,754 tCO ₂ e	-17.25 %	This is due to Breakdown of the WTGs. The details of the same are available in Appendix 6 Major Breakdown Details.

APPENDIX 1: DOCUMENTS REVIEWED DURING VERIFICATION

No.	Author	Title	References to the document	Provider
1.	NA	Monitoring Report, (Initial Version) Monitoring Report, (Final Version)	Version 01, dated 18-August-2023 Version 03 dated 11-September-2023	PP
2.	NA	Emission Reduction sheet (Initial Version) Emission Reduction sheet (Final Version)	Version 01, dated 18-August-2023 Version 02 dated 30-August-2023	PP
3.	NA	Registered VCS Joint PD & MR Joint Validation and Verification report	Version 02 dated 15-March-2016 Version 01, dated 17-March-2016	VERRA
4.	NA	VCS Standard VCS Program guide VCS Validation Verification Manual	Version 4.5 Version 4.4 version 3.2	
5.	NA	Power purchase agreement between PP and Maharashtra State Electricity Distribution Company Limited	Dated 01-August-2014	PP
6.	NA	ACM0002: Grid-connected electricity generation from renewable sources CDM validation and verification standard for project activities	Version 16.0 Version 3.0	UNFCCC

No.	Author	Title	References to the document	Provider
7.	NA	Declaration by PP for No double counting of Emission Reductions	26-July-2023	PP
8.	NA	Electricity daily generation reports for electricity supplied to grid for this monitoring period and invoices raised	For complete monitoring period: 01-November-2022 to 31-July-2023	PP
9.	NA	Supporting documents for creation of local jobs, trainings to local etc.	-	PP
10.	NA	Grievance register	-	PP
11.	NA	Calibration certificate of the energy meters	Dated 25-August-2020	Project participant
12.	NA	Energy meters Photographs	-	PP
13.	NA	Operations & Maintenance Agreement	-	PP
14.	NA	Break down details of the complete monitoring period	Log sheet	Project participant
15.	NA	Technical specifications of wind turbine generators from manufacturers	Manufacturer technical specifications	Project participant
16.	NA	Contract of the project participant with the VVB	Contract document signed between PP and VVB	Project participant
17.	NA	Commissioning certificates of the WTGs implemented in the project site.	NA	Project participant
18.	NA	Calibration certificate of the energy meters	Dated 25-August-2020	Project participant
19.	NA	Letter for WTG Feeder shifting	Dated: 22-January-2021	Project participant

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

Table 1. CL from this verification

CL ID	01	Section no.	4.1	Date: 28-August-2023
Description of CL				
In the submitted MR version 01 dated 18/08/2023, in appendix 1, PP has mentioned the details of WTG connected to Feeders. However, the details are not in line with the 'Line diagram to show the monitoring system' provided in section 4.3. PO to clarify.				
Project participant response				Date: 30-August-2023
The typo error has been identified and is currently being rectified. Additionally, the Single Line Diagram (SLD) is being revised which ensure that all details align with the information presented in the "Line diagram to show the monitoring system" as mentioned in section 4.3.				
Documentation provided by project participant				
Revised Monitoring Report				
WVB assessment				Date: 31-August-2023
In the submitted MR version 02 dated 30-August-2023, PP has now made the information between section 4.3 and appendix 1 consistent. Hence, this CL is closed.				
CL 01 is closed.				

Table 2. CAR from this verification

CAR ID	01	Section no.	4.1	Date: 28-August-2023
Description of CAR				
In the submitted MR version 01 dated 18/08/2023, in the table provided in section 1.1, the total mentioned for the verification period is incorrect. Correction is sought.				

Project participant response	Date: 30-August-2023
Typo error regarding total verification period is now being corrected in section 1.1 and revised monitoring period being submitted to verification team.	
Documentation provided by project participant	
Revised Monitoring Report	
VVB assessment	Date: 31-August-2023
In the submitted MR version 02 dated 30-August-2023, the verification period total is now correct. Hence, this CAR is closed.	
CAR 01 is closed.	

CAR ID	02	Section no.	4.2.1	Date: 28-August-2023
Description of CAR				
In the submitted MR version 01 dated 18/08/2023, in section 2.1, PP to provide weblink of the report mentioned. Correction is sought.				
Project participant response				Date: 30-August-2023
Weblink is being mentioned in the section 2.1 in the revised monitoring report.				
Documentation provided by project participant				
Revised Monitoring Report				
VVB assessment				Date: 31-August-2023
In the submitted MR version 02 dated 30-August-2023, PP has provided weblink for the mentioned report in section 2.1. Hence, this CAR is closed.				
CAR 02 is closed.				

CAR ID	03	Section no.	4.4	Date: 28-August-2023
Description of CAR				
In the submitted MR version 01 dated 18/08/2023, in section 5.4, the formula used for emission reduction is not consistent with the applied methodology version 16 and registered PDD. Correction is sought.				
Project participant response				Date: 30-August-2023

The formula used for emission reduction is being revised and now it is consistent with the applied methodology version 16 and registered PDD. Correction is sought.	
Documentation provided by project participant	
Revised Monitoring Report	
VWB assessment	Date: 31-August-2023
In the submitted MR version 02 dated 30-August-2023, PP has now revised the formula and made it consistent with the applied methodology in section 5.4. Hence, this CAR is closed.	
CAR 03 is closed.	

CAR ID	04	Section no.	4.5	Date: 28-August-2023
Description of CAR				
1. In the submitted MR version 01 dated 18/08/2023, in section 5.4, in table that mentions the percentage difference between the actual and estimated emissions, PP to provide data in vintage year format. Correction is sought. 2. In the submitted MR version 01 dated 18/08/2023 and ER sheet, PP to revise the number format as per the international number format. Correction is sought. 3. In the submitted ER sheet, the number of WTGs connected to Feeders are not in line with the appendix 1 of the submitted MR version 01 dated 18/08/2023. Also, the Feeder name mentioned in the credit note is not in line with the feeder mentioned in the ER sheet and MR. Correction is sought.				
Project participant response				Date: 30-August-2023
1. Vintage wise calculation is now being mentioned under section 5.4 in revised monitoring report. 2. The number format as per the international number format is now being followed in ER sheet and Monitoring report. 3. Feeder details are now being corrected in revised monitoring report and revised ER sheet and the number of WTGs connected to Feeders are now in-line with the appendix 1 of the submitted revised MR. Also, the Feeder name mentioned in the credit note in-line with the feeder mentioned in the ER sheet and MR.				
Documentation provided by project participant				
Revised ER sheet				
Revised Monitoring Report				
VWB assessment				Date: 31-August-2023

1. In the submitted MR version 02 dated 30-August-2023, PP has mentioned the percentage difference between the actual and estimated emissions in section 5.4 vintage year wise. Hence, this part of CAR is closed.
2. In the submitted MR version 02 dated 30-August-2023 and revised ER sheet, PP has revised the number format as per the international number format. Hence, this part of CAR is closed.
3. In the submitted MR version 02 dated 30-August-2023 and revised ER sheet, PP has made the feeder and WTG details consistent. Hence, this part of CAR is closed.

CAR 04 is closed.

CAR ID	05	Section no.	4.1	Date: 28-August-2023
Description of CAR				
In the submitted MR version 01 dated 18/08/2023, the location numbers mentioned in Appendix 1 are not in line with the other sections of the MR and the provided commissioning certificates. Correction is sought.				
Project participant response				Date: 30-August-2023
Typo error is now being revised and now the location numbers mentioned in Appendix 1 are in- line with the other sections of the revised MR and the provided commissioning certificates.				
Documentation provided by project participant				
Revised ER sheet				
Revised Monitoring Report				
VVB assessment				Date: 31-August-2023
In the submitted MR version 02 dated 30-August-2023, PP has made the location number and feeder name consistent between MR and ER sheet. Hence, this CAR is closed.				
CAR 05 is closed.				

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	Remote inspection	Interviews	Verification findings
1.	Lead Auditor/Technical Expert	OR	Pundlik	Deepak	TQC-Outsourced entity	Yes	Yes	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR)	EI	Singh	Dr. N. Premjit	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustín	Applus+ Certification

Short CVs of the Team:

1. **Mr. Deepak Pundlik** has experience in climate change, waste management and environmental management. After completing Masters in Environment Sciences from Pune university, He has worked in waste management field. As a GHG consultant, he handled more than 50 projects under renewable energy, waste management sectors during his stint with companies - MITCON and Thermax Limited. As a GHG auditor, he has validated/verified projects under CDM/VCS/GS and GCC mechanisms from renewable energy, energy demand, waste management sectors.
2. **Dr. N Premjit Singh** has a PhD in Mechanical Engineering (Thesis: Design and development of a square parabolic dish system with a concentrated photovoltaic (CPV) module for

performance improvement) from the Indian Institute of Technology (IIT) Chennai, India, awarded in 2021. M. Tech in Energy Technology, Tezpur University, Napaam, India (2007), and B.Tech in Mechanical Engineering (2005), NERIST, Nirjuli, India. He has extensive experience of about 7 years with DOEs, including UNFCCC CDM and other carbon related schemes (e.g., VCS, GS, GCC), and 5 years + in research projects, renewable energy, and energy audits. In Applus+ since March 2023, he has been the Product Assurance Manager for CDM/VCS/GS4GG/GCC Department to ensure the quality of the performance of different assessments. Coordinate the global team for technical reviews, and identify the training needs for the auditors and technical reviewers to improve the quality of reports. Holds experience as a Lead Auditor, Validator and Verifier for GHG mitigation projects and programmes of activities in Sectoral Scope 1.2 (Renewables), and is qualified as per Applus+ procedures. Dr. N Premjit Singh is based in Gurugram, India. Dr. N Premjit Singh participate as part of the Audit Team as a Technical Reviewer.

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
MSDCL	Maharashtra State Electricity Distribution Company Limited
PP	Project Participant

APPENDIX 5: CALIBRATION DETAILS OF THE METERS

Location: 132 Kv Rajpimpri S/s				Class of Meter: 0.2s		Make & Model: Elster A 1800	
WTG Location ID	Feeder Name	No. of WTGs	Feeder Connectivity	Main Meter Sr. No.	Check Meter Sr. No.	Calibration date	Validity of Calibration
Location No: G33, G34, G35, G36, G37, G39, G40, G26, G32, G38	401	10	Feeder No. 1	5288748	5288752	21-August-2020	20-August-2025
Location No: G24, G25, G29, G30, G31, G27, G28, G05, G22, G23, G21	402	11	Feeder No. 2	5288749	5288753	21-August-2020	20-August-2025
Location No: G1, G2, G3, G4, G6, G7, G8, G10, G11	403	09	Feeder No. 3	5288750	5288751	21-August-2020	20-August-2025
Location No: G14, G15, G17, G9, G12, G13, G16, G18, G19, G20	404	10	Feeder No. 4	5288754	5288755	21-August-2020	20-August-2025

From the above table it was noted that no delay in calibration observed.

APPENDIX 6: MAJOR BREAKDOWN DETAILS

Date	Turbine Number	WTG TOTAL DOWN TIME	STOPPAGE DETAILS
02-November-2022	G 08	23:59:20	Error code: 10007 - Manual stop for yawgear replacement work, IP From 00:00 to 23:59
03-November-2022	G 08	23:59:20	Error code: 10007 - Manual stop for yawgear replacement work, IP From 00:00 to 23:59
03-November-2022	G 38	23:59:20	Error code: 10007 - Manual stop for oil seal replacement work from 00:00 to 23:59
04-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
04-November-2022	G 38	23:59:20	Error code: 10007 - Manual stop for oil seal replacement work from 00:00 to 23:59
05-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
05-November-2022	G 38	23:59:20	Error code: 10007 - Manual stop for oil seal replacement work from 00:00 to 23:59
06-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
07-November-2022	G 03	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
07-November-2022	G 27	23:59:00	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
07-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
08-November-2022	G 03	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
08-November-2022	G 27	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
08-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
08-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
09-November-2022	G 03	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59

09-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
09-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
10-November-2022	G 03	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
10-November-2022	G 05	23:49:20	Error code: 5216 - Grid Voltage Failure From 15:21 to 15:31 & Error code: 5209 - SF6 breaker T connector Failure From 00:00 to 15:21 & 15:31 to 23:59
10-November-2022	G 27	23:49:20	Error code: 5216 - Grid Voltage Failure From 15:21 to 15:31 & Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 15:21 & 15:31 to 23:49
10-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
10-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
11-November-2022	G 03	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
11-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker T connector Failure From 00:00 to 23:59
11-November-2022	G 27	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
11-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
12-November-2022	G 03	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
12-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker T connector Failure From 00:00 to 23:59
12-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
13-November-2022	G 03	23:59:20	Error code:205 - low level hydraulic group refrigeration oil from 00:00 to 23:59
13-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker Failure From 00:00 to 23:59
13-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
14-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker Failure From 00:00 to 23:59
14-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59

15-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker Failure From 00:00 to 23:59
15-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
16-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker Failure From 00:00 to 23:59
16-November-2022	G 19	23:59:20	Error code: 107 - Yawing motor thermal relays from 00:00 to 23:59
16-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
16-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
17-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker Failure From 00:00 to 23:59
17-November-2022	G 19	23:59:20	Error code: 107 - Yawing motor thermal relays from 00:00 to 23:59
17-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
17-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
18-November-2022	G 05	23:59:20	Error code: 5209 - SF6 breaker Failure From 00:00 to 23:59
18-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
18-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
19-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
19-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
20-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
20-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
21-November-2022	G 35	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
21-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
22-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59

23-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
24-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
25-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
26-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
27-November-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
27-November-2022	G 38	23:59:20	Error Code: 205 - Low level hydraulic group refrigeration oil from 00:00 to 23:59
28-November-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
28-November-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59
29-November-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
29-November-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59
30-November-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
30-November-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59
01-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
01-December-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59
02-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
02-December-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59
03-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
03-December-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59
04-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
04-December-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59

05-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
05-December-2022	G 38	23:59:20	Error code: 10007 - manual stop for pitch cylinder replacement work from 00:00 to 23:59
06-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
07-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
08-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
09-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
10-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
11-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
12-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
13-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
14-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
14-December-2022	G 31	23:59:00	Error code: 5238 - Error in phase t of the inverter from 00:00 to 23:59
15-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
15-December-2022	G 31	23:59:00	Error code: 5238 - Error in phase t of the inverter from 00:00 to 23:59
16-December-2022	G 12	23:59:20	Error code: 10007 - manual stop for pitch cylinder oil seal replacement work from 00:00 to 23:59
16-December-2022	G 31	23:59:00	Error code: 5238 - Error in phase t of the inverter from 00:00 to 23:59
14-January-2023	G 38	23:59:00	Error Code: 804 - Difference between 2 blades very high from 00:00 To 23:59
15-January-2023	G 38	23:59:00	Error Code: 804 - Difference between 2 blades very high from 00:00 To 23:59
23- January-2023	G 36	23:22:00	Error code: 5203 - Heating/coolant thermal magnetic failure from 00:37 to 23:59 & Error code: 5216 - Grid Voltage failure from 00:26 to 00:27

13-March-2023	G 40	23:59:00	Error Code: 700 - PLC/Converter Communication Failure From 00:00 To 23:59
14-March-2023	G 40	23:59:00	Error Code: 700 - PLC/Converter Communication Failure From 00:00 To 23:59
15-March-2023	G 11	23:59:00	Error Code: Low level hydraulic group refrigeration oil from 00:00 To 23:59
20-April-2023	G 24	23:59:00	Error code: 803 - low pitch valve in stop mode from 00:00 to 23:59
21-April-2023	G 24	23:59:00	Error code: 803 - low pitch valve in stop mode from 00:00 to 23:59
22-April-2023	G 24	23:59:00	Error code: 803 - low pitch valve in stop mode from 00:00 to 23:59
23-April-2023	G 24	23:59:00	Error code: 803 - low pitch valve in stop mode from 00:00 to 23:59
24-April-2023	G 24	23:59:00	Error code: 803 - low pitch valve in stop mode from 00:00 to 23:59
29-April-2023	G 03	23:59:00	Error Code: 2509 - SF 6 Breaker Tripped (T connector failure) From 00:00 to 23:59
09-May-2023	G 05	23:59:00	Error code:700-PLC/converter communication failure from 00:00 to 23:59
10-May-2023	G 05	23:59:00	Error code:700-PLC/converter communication failure from 00:00 to 23:59
10-May-2023	G 15	23:59:00	Error code :5226-IGBT drive power supply failure 00:00 to 23:59
11-May-2023	G 15	23:59:00	Error code :5226-IGBT drive power supply failure 00:00 to 23:59
15-May-2023	G 24	23:24:00	Error code: 412-Gearbox fan thermal relays from 00:00 to 23:24
18-May-2023	G 05	23:59:00	Error code: 700 - PLC/Converter communication failure from 00:00 to 23:59
21-Jun-2023	G 17	23:59:00	Error code: 2509 - Communication error from 00:00 to 23:59 (software problem)