



Bundled Wind Power Project by Sembcorp Green Infra Limited in India



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Summary:

Verification purpose: The project undertaken by by Sembcorp Green Infra Limited. The project activity is to generate clean electricity by harnessing renewable wind energy. The project activity involves the installation of 56 Wind Turbine Generators (WTGs) for generating the electricity having aggregated capacity of 95.5 MW renewable electricity supplied to Indian grid. This is a greenfield bundled project activity consists of 3 individual projects namely Project 1 promoted by Green Infra Wind Energy Limited with capacity 22MW at Amreli/Rajkot, Gujarat, Project 2 promoted by Green Infra Wind Energy Limited with capacity 24 MW at Surendra Nagar, Gujarat and Project 3 promoted by Green Infra Wind Solutions Limited with capacity 49.5 MW at Kurnool, Andhra Pradesh. The project was registered with VCS1 on 08-May-2019. 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.

Start date of the project activity is 02-March-2017. An undertaking 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. Project activity undergoes continued operation and no major breakdown had taken place except routine maintenance/shutdown.

This is verification and certification for the greenhouse gas (GHG) emission reductions reported from ‘Bundled Wind Power Project by Sembcorp Green Infra Limited in India’ for the monitoring period 01-August-2021 to 31-July-2022 (Inclusive of both days), under the crediting period 02-March-2017 to 02-March-2027. The total emission reductions achieved for the project activity during the monitoring period has been 188,886 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), 00 Clarification Requests (CLs) and 00 Forward action requests (FARs) were raised and successfully closed. The review of the Monitoring report and additional documents related to baseline

¹ <https://registry.terra.org/app/projectDetail/VCS/1856>

and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided VVB with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred to as Applus+ Certification) has been appointed by “Sembcorp Green Infra Limited ” to perform the verification of the “Bundled Wind Power Project by Sembcorp Green Infra Limited in India” under VCS standard 4.3 and project guide version 4.2. 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 proposed 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 19.0 – Grid-connected electricity generation from renewable sources”. 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 4.2 and standard, version 4.3

- CDM Validation and Verification Standard for project activities, version 03.0
- CDM Project Standard for project activities, version 03.0
- VCS standard version 4.3
- VCS program guide version 4.2

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 the project activities, version 03.0, review against registered VCS-PD and Final Validation report, CDM Project Standard for project activities, version 03.0 and VCS program guide, version 4.2 and standard version 4.3.

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. 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 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 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/plant verification conducted to arrive at positive verification conclusions.

CONTENTS

1. Introduction.....	6
1.1 Objective.....	6
1.2 Scope and Criteria	6
1.3 Level of Assurance.....	7
1.4 Summary Description of the Project	7
2. Verification Process	8
2.1 Method and Criteria.....	8
2.2 Document Review	10
2.3 Interviews.....	10
2.4 Site Inspections.....	11
2.5 Resolution of Findings	12
1.1.1 Forward Action Requests.....	13
2.6 Eligibility for Validation Activities	13
3. Validation Findings	13
3.1 Participation under Other GHG Programs	13
3.2 Methodology Deviations.....	14
3.3 Project Description Deviations.....	14
3.4 Grouped Project	15
4. NVerification Findings	15
4.1 Project Implementation Status	15
4.2 Safeguards	22
4.2.1 No Net Harm	22
4.2.2 Local Stakeholder Consultation.....	24
4.3 AFOLU-Specific Safeguards	24
4.4 Accuracy of GHG Emission Reduction and Removal Calculations	24
4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals	29
4.6 Non-Permanence Risk Analysis.....	31
5. Verification conclusion.....	31

APPENDIX 1: DOCUMENTS REVIEWED DURING VERIFICATION	33
APPENDIX 2: corrective action requests, Clarification requests AND FORWARD action requests(CAR/CL/FAR)	35
APPENDIX 3: Competence of team members and technical reviewers.....	39
APPENDIX 4: Abbreviations.....	41
APPENDIX 5: Calibration details	42

1. INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Hereinafter referred as Applus+ Certification) has been appointed by Sembcorp Green Infra Limited to perform the verification of the project entitled “Bundled Wind Power Project by Sembcorp Green Infra Limited in India” under VCS standard version 4.3 and program guide version 4.2. 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 proposed project activity against the applicable CDM and VCS requirements. In particular; the project's baseline and monitoring plan is assessed against applied methodologies –

- ACM0002 (version 19.0) “Grid-connected electricity generation from renewable sources”
- 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, version 4.2 and standard version 4.3.
- CDM Validation and Verification Standard for project activities, version 03.0
- CDM Project Standard for project activities, version 03.0

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-PD and registered approved methodologies ACM0002 version 19.0. 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 standard, version 4.3 and VCS Program guide version 4.2, including the approved baseline and monitoring methodologies applied. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 03.0, CDM Project Standard for project activities, version 03.0 and VCS program guide, version 4.2 and standard version 4.3.

The verification is not 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. 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 ER, omission or misstatement. The verification team has reviewed all the documents like commissioning certificate, Energy generation records, fuel records 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. The entire documents checked/ remote audit verification conducted to arrive at positive verification conclusions.

1.4 Summary Description of the Project

The project activity involves the installation of 56 Wind Turbine Generators (WTGs) for generating the electricity having aggregated capacity of 95.5 MW renewable electricity supplied to Indian grid. This is a greenfield bundled project activity consists of 3 individual projects namely Project 1 promoted by Green Infra Wind Energy Limited with capacity 22MW at Amreli/Rajkot, Gujarat, Project 2 promoted by Green Infra Wind Energy Limited with capacity 24 MW at Surendra Nagar, Gujarat and Project 3 promoted by Green Infra Wind Solutions Limited with capacity 49.5 MW at Kurnool, Andhra Pradesh.

The project activity helps to reduce the supply demand gap in the states and also helps in contributing to the sustainable development by using wind energy as the source of power generation and reduction of GHG Emissions. In the project site, there are other wind projects owned by other customers connected to the same substation. There is an apportioning procedure which is approved by the state nodal agency for apportioning the electricity to each and every customer.

During the Current Monitoring Period from 01-August-2021 to 31-July-2022 (First and last date included) the project activity has supplied 199,355 MWh of electricity, and thus contributing to the GHG reductions 188,886 tCO_{2e}.

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 and VCS standard 4.3 and VS program guide, version 4.2 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 PD;
- Follow-up interviews with project participant;
- 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).
- Auditor (A) / Auditor in Training (AiT)
- Technical Expert (TE)
- Technical Reviewer (TR)

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

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Mr. Pankaj Kumar	LA/TE	YES	YES	NA	YES
Mr. Anil Söyler	TR	YES	YES	NA	NA

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

Document review

The Monitoring Report version 3 submitted by the PP was reviewed against the approved methodology, registered VCS PD, final validation report, subsequent monitoring reports and other relevant 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.

Follow-up interviews

A remote audit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, telephone conferences with project stakeholders 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 05 submitted by PP on 09-November-2022 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 final 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 project owners, the positive verification opinion and relevant documents are submitted to the VCS secretariat through the VCS web-platform.

2.2 Document Review

The details of the document observed during the verification process are listed below in appendix 1 of this report.

2.3 Interviews

A remote audit was conducted for the project activity on 16-August-2022. Remote audit was conducted due to ongoing COVID-19 pandemic situation in the entire country of India. Taking into account the rules of relevant national and local authorities (local to the DOE offices as well as to locality of the remote audits), World Health Organization (WHO) recommendations, policies of the VVB and other relevant travel restrictions and guidance (for example, a requirement to self-isolate upon return). Moreover, The VCS Program does not explicitly mandate remote audits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (per Section 4.1.2 of the VCS Standard, version 4.3).

The VVB has taken alternative measures to reach reasonable level of assurance and conducted remote audit through Skype/Telephone with site personal & consultant (refer section 2.3) with the PP representative. This is also in line with the COVID-19 travel guidance for projects of VERRA.

Technical details & metering/monitoring arrangement verified through onsite photographs/name plates and calibration certificates shared by PP. 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 WTGs, 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, Joint Meter readings, invoices, calibration certificates etc. were also verified. The names of the persons interviewed during remote audit through skype & telephonic interview is given below;

Organization	Name of Persons/Designation	Topics discussed	Team Member
Infinite Solutions	Mr. G L Aditya	Project activity implementation, Operation, Calibration, O&M practices, Energy Generation Records etc. LSC mechanism, Mechanical maintenance, Electrical maintenance, Project description, Invoicing practices	Mr. Pankaj Kumar
Infinite Solutions	Ms. Nitya Sharma	MR, ER calculations etc.	
Local stakeholder, Gujarat	Mr. Amit Rajodia	Project activity implementation, Operation, Observations and Grievances, Project description, Sustainable Development practices	
Local stakeholder, Gujarat	Mr. Rajesh Agarwal		
Local stakeholder, Andhra Pradesh	Mr. Ramlingam Raju		
Local stakeholder, Andhra Pradesh	Mr. Sadagopalan Jeuri		

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's, the generation, recording, and monitoring of the data and the error accountability were discussed. Various documents like the Joint Meter Readings, invoices, on-site Photographs includes Wind Turbine Generator nos., meter specifications, were verified on skype video call to establish the current status and the implementation of the Project Activity.

Local stakeholders were questioned about the project operation, its impact on the local area, project's impact on sustainable development in the region and their grievances, if any. No grievances were recorded by the interviewed stakeholders.

2.4 Site Inspections

Remote Audit: 16-August-2022

No.	Activity performed on-site	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 PD is actually practised onsite. Also assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Remote audit (Through Skype)	16-August-2022	Mr. Pankaj Kumar

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 communications between the Client and LGAI Technological Center S.A. (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 05 submitted by project proponent on 09-November-2022 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.

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	01	00
Description of project activity	00	00	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
- Applicability of methodology and standardized baseline	00	00	00
- Deviation from methodology	00	00	00
- Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Demonstration of additionality	00	00	00
Emission reductions	00	01	00
Calibration details	00	01	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	01	00
Others (please specify)- - Regarding double counting Declaration - ER Sheet - Supporting documents	00	01	00
Total	00	05	00

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

1.1.1 Forward Action Requests

VVB has verified that no FAR was raised from previous verifications, during validation or/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 activity is registered under VCS (<https://registry.verra.org/app/projectDetail/VCS/1856>) with renewable crediting period of 10 years crediting period from 02-March-2017 to 01-March-2027.

As per the MR and undertaking provided, PP would not consider the credit monetization 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. VVB has checked the project databases of CDM, GS4GG, GCC and Indian REC mechanism to confirm that the project is not registered with other GHG program and confirmed the same.

3.2 Methodology Deviations

The project activity has applied correct methodology which are as per the registered CDM PDD 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

Deviation during previous monitoring period:

Deviation 1:

1. Typo Error Correction in Reporting the Make of Energy Meters for project 1.

Reason: The Make of Energy Meters for the project 1 is “EDMI” but inadvertently reported as Secure. Hence, PP is correcting the typo error in reporting the “Make” of Energy meters. Please refer Appendix-1 for details of Energy Meters.

The above deviations do not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in compliance with the applied methodology. This deviation was approved in monitoring period of 01-January-2019 to 31-July-2020

Deviation during current monitoring period

Deviation 2

Data Adjustment in case of monitoring period different from billing period.

As per the billing cycle of state electricity authority, the JMRs are generated on 2nd of every month (2nd to 1st of next month). The current monitoring cycle is from 01-August-2021 to 31-July-2022 thus the start and end date are not matching with the billing cycle start and end dates. As the billing cycle differs from monitoring period, the net electricity exported to the grid would be calculated as follows:

$$D = (A/B) * C$$

Where:

A = Difference of number of days which are not matching of billing period and monitoring period.

B = Number of days of the billing period/ month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month.

VVB confirmed that the calculated value after apportioning is used for calculation of emission reductions during the monitoring period. Based on the above procedure, the Monthly Certificate for Share of Electricity Generated provided to the project participant. VVB verified and confirms that the detail procedure of monitoring is illustrated is for the sake of understanding only. For

the preparation of monitoring report during periodic verifications, only the net electricity generation value mentioned in monthly wind energy certificates directly used for emission reduction calculation. No other parameters as explained above used and presented in the monitoring report. Hence, VVB concludes that this deviation does not have any impact on conservativeness of ER value calculated for the current monitoring period.

3.4 Grouped Project

4. NAVERIFICATION FINDINGS

4.1 Project Implementation Status

During the remote audit, it was concluded that the project is implemented as per VCS PD and this is verified from the commissioning certificates, statutory clearances submitted. During the current monitoring period it was observed that no unforeseen situation evolved which can impact the operation of the project activity. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team.

Project location is confirmed by the assessment team through interview with PP during remote audit and assessment of monitoring report. Assessment team also checked the technical details of the project site containing latitude and longitude of the project site and confirmed that the details as mentioned in the registered VCS PD are correct.

Project 1: The below table provides details of location of individual WTGs (Latitude and Longitude in Degree Minutes Seconds format) of the project

S. No	WTG No	Village	Taluka	District	Latitude	Longitude
1	RJ9-T-094	Kalasar	Jasdan	Rajkot	N21° 56' 50.532"	E71° 16' 0.516"
2	RJ9-T-099	Lilapur	Jasdan	Rajkot	N21° 50' 39.84"	E71° 26' 37.068"
3	RJ9-T-076	Godladhar	Jasdan	Rajkot	N22° 3' 8.928"	E71° 19' 26.724"
4	RJ9-T-096	Kalasar	Jasdan	Rajkot	N 21° 50' 53.088"	E71° 25' 45.732"
5	RJ9-T-078	Godladhar	Jasdan	Rajkot	N22° 6' 47.772"	E71° 19' 7.464"
6	RJ9-T-095	Kalasar	Jasdan	Rajkot	N21° 53' 26.7"	E71° 11' 18.348"
7	RJ9-T-039	Hirana	Lathi	Amreli	N22° 6' 58.212"	E71° 19' 7.32"
8	RJ9-T-013	Miya Khijadiya	Babra	Amreli	N22° 6' 33.696"	E71° 19' 1.524"
9	RJ8-T-073	Sukavada	Babra	Amreli	N22° 6' 6.408"	E71° 17' 8.916"
10	RJ9-T-040	Hirana	Lathi	Amreli	N22° 3' 17.82"	E71° 20' 44.196"
11	RJ-9T-075	Ambaradi	Jasdan	Rajkot	N22° 1' 50.232"	E71° 22' 26.04"

Project 2: The below table provides details of location of individual WTGs (Latitude and Longitude in Degree Minutes Seconds format) of the project

S. No	WTG No	Village	Taluka	District	Latitude	Longitude
1	SDL-T-30	Jepur (Ranipat)	Muli	Surendranager	N22° 42' 57.348"	E71° 13' 19.668"
2	SDL-T-33	Jepur (Ranipat)	Muli	Surendranager	N22° 43' 48.468"	E71° 13' 38.604"
3	SDL-T-38	Jepur (Ranipat)	Muli	Surendranager	N22° 43' 52.788"	E71° 12' 33.624"
4	SDL-T-168	Vadadhra	Muli	Surendranager	N22° 45' 16.74"	E71° 18' 1.332"
5	SDL-T-169	Vadadhra	Muli	Surendranager	N22° 45' 25.092"	E71° 17' 39.552"
6	SDL-T-170	Vadadhra	Muli	Surendranager	N22° 45' 43.38"	E71° 17' 32.496"
7	SDL-T-171	Vadadhra	Muli	Surendranager	N22° 45' 53.352"	E71° 16' 59.304"
8	SDL-T-172	Vadadhra	Muli	Surendranager	N22° 45' 4.824"	E71° 17' 23.244"
9	SDL-T-98	Asundrali	Muli	Surendranager	N22° 40' 27.372"	E71° 17' 32.028"
10	SDL-T-99	Asundrali	Muli	Surendranager	N22° 40' 19.488"	E71° 17' 40.992"
11	SDL-T-95	Palasa	Muli	Surendranager	N22° 37' 53.868"	E71° 19' 55.02"
12	SDL-T-96	Palasa	Muli	Surendranager	N22° 38' 7.836"	E71° 19' 41.232"

Project 3: The below table provides details of location of individual WTGs (Latitude and Longitude in Degree Minutes Seconds format) of the project

S. No	WTG No	Village	Taluka	District	Latitude	Longitude
1	GISKK-01	Gundlakonda	Pattikonda	Kurnool	N15° 30' 56.484"	E77° 37' 1.02"
2	GISKK-02	Gundlakonda	Pattikonda	Kurnool	N15° 31' 4.908"	E77° 37'
3	GISKK-03	Gundlakonda	Pattikonda	Kurnool	N15° 31' 15.456"	E77° 36' 47.952"
4	GISKK-04	Gundlakonda	Pattikonda	Kurnool	N15° 31' 39.396"	E77° 35'
5	GISKK-05	Kunkanuru	Pattikonda	Kurnool	N15° 31' 42.996"	E77° 36'

6	GISKK-06	Kunkanuru	Pattikonda	Kurnool	N15° 32' 57.768"	E77° 36'
7	GISKK-07	Jilledubudakala	Pattikonda	Kurnool	N15° 31' 45.732"	E77° 37'
8	GISKK-08	Gundlakonda	Pattikonda	Kurnool	N15° 31' 51.492"	E77° 36'
9	GISKK-09	Devanakonda	Pattikonda	Kurnool	N15° 31' 51.564"	E77° 35'
10	GISKK-10	Jilledubudakala	Pattikonda	Kurnool	N15° 32' 8.412"	E77° 38'
11	GISKK-11	Jilledubudakala	Pattikonda	Kurnool	N15° 32' 41.676"	E77° 37' 44.184"
12	GISKK-12	Kunkanuru	Pattikonda	Kurnool	N15° 31' 59.844"	E77° 36'
13	GISKK-13	Kunkanuru	Pattikonda	Kurnool	N15° 32' 9.528"	E77° 36'
14	GISKK-14	Jilledubudak	Pattikonda	Kurnool	N15° 32' 23.172"	E77° 38'
15	GISKK-15	Jilledubudak	Pattikonda	Kurnool	N15° 32' 51.144"	E77° 37'
16	GISKK-16	Jilledubudak	Pattikonda	Kurnool	N15° 31' 55.128"	E77° 37'
17	GISKK-17	Kunkanuru	Pattikonda	Kurnool	N15° 32' 19.536"	E77° 36'
18	GISKK-18	Jilledubudak	Pattikonda	Kurnool	N15° 32' 33.756"	E77° 38'
19	GISKK-19	Jilledubudak	Pattikonda	Kurnool	N15° 32' 6.936"	E77° 37'
20	GISKK-20	Kunkanuru	Pattikonda	Kurnool	N15° 32' 28.284"	E77° 36'
21	GISKK-21	Jilledubudak	Pattikonda	Kurnool	N15° 32' 32.856"	E77° 37'
22	GISKK-22	Kunkanuru	Pattikonda	Kurnool	N15° 32' 35.052"	E77° 35'
23	GISKK-23	Kunkanuru	Pattikonda	Kurnool	N15° 37' 35.364"	E77° 35'
24	GISKK-24	Jilledubudak	Pattikonda	Kurnool	N15° 32' 24.324"	E77° 37'
25	GISKK-25	Jilledubudak	Pattikonda	Kurnool	N15° 33' 21.996"	E77° 39'
26	GISKK-26	Jilledubudak	Pattikonda	Kurnool	N15° 32' 24.36"	E77° 37'
27	GISKK-27	Jilledubudak	Pattikonda	Kurnool	N15° 32' 58.344"	E77° 37'
28	GISKK-28	Jilledubudak	Pattikonda	Kurnool	N15° 32' 56.112"	E77° 38'
29	GISKK-29	Kappatralla	Pattikonda	Kurnool	N15° 34' 26.688"	E77° 37'
30	GISKK-30	Kappatralla	Pattikonda	Kurnool	N15° 34' 38.244"	E77° 37'
31	GISKK-31	Jilledubudak	Pattikonda	Kurnool	N15° 33' 37.404"	E77° 38'
32	GISKK-32	Jilledubudak	Pattikonda	Kurnool	N15° 34' 8.292"	E77° 37'
33	GISKK-33	Kappatralla	Pattikonda	Kurnool	N15° 34' 19.092"	E77° 37'

The technical specification of the WTG is as follows:

Project 1: In the Project 1, 11 numbers of 2000 kW INOX make wind turbine (DF 100 model) are installed. The technical specifications of the DF100 wind turbine are given below which were confirmed against technical datasheet submitted:

INOX DF100	
Power	
Rated power:	2,000.0 kW
Flexible power ratings:	-
Cut-in wind speed:	3.0 m/s
Rated wind speed:	11.0 m/s
Cut-out wind speed:	20.0 m/s
Survival wind speed:	52.5 m/s

Wind zone (DIBt):	-
Wind class (IEC):	IIIb
Rotor	
Diameter:	100.0 m
Swept area:	7,894.0 m ²
Number of blades:	3
Rotor speed, max:	15.7 U/min
Tipspeed:	82 m/s
Type:	-
Material:	Epoxy glass fibre
Manufacturer:	-
Power density 1:	253.4 W/m ²
Power density 2:	3.9 m ² /kW
Gear box	
Type:	spur/planetary
Stages:	3
Ratio:	0.121527778
Manufacturer:	-
Generator	
Type:	doubly fed induction
Number:	1
Speed, max:	1,800.0 U/min
Voltage:	690.0 V
Grid connection:	IGBT
Grid frequency:	50.0 Hz
Hersteller:	-
Tower	
Hub height:	80/92 m
Shape:	conical
Corrosion protection:	painted
Manufacturer:	-

Project 2: In the Project 2, 12 numbers of 2000 kW INOX make wind turbine (DF 113 model) are installed. The technical specifications of the DF113 wind turbine are given below which were confirmed against technical datasheet submitted:

INOX DF113	
Power	
Rated power:	2,000.0 kW
Flexible power ratings:	-
Cut-in wind speed:	3.0 m/s
Rated wind speed:	11.0 m/s
Cut-out wind speed:	20.0 m/s
Survival wind speed:	52.5 m/s
Wind zone (DIBt):	-
Wind class (IEC):	IIIb
Rotor	
Diameter:	113.0 m
Swept area:	7,894.0 m ²

Number of blades:	3
Rotor speed, max:	15.7 U/min
Tipspeed:	82 m/s
Type:	-
Material:	Epoxy glass fibre
Manufacturer:	-
Power density 1:	253.4 W/m ²
Power density 2:	3.9 m ² /kW
Gear box	
Type:	spur/planetary
Stages:	3
Ratio:	0.121527778
Manufacturer:	-
Generator	
Type:	doubly fed induction
Number:	1
Speed, max:	1,800.0 U/min
Voltage:	690.0 V
Grid connection:	IGBT
Grid frequency:	50.0 Hz
Hersteller:	-
Tower	
Hub height:	80/92 m
Type:	steel tube
Shape:	conical
Corrosion protection:	painted
Manufacturer:	-

Project 3: In the Project 3, 33 numbers of 1500 kW ReGen make wind turbine (V87 model) are installed. The technical specifications of the V87 wind turbine are given below which were confirmed against technical datasheet submitted:

POWER	
Rated power	1500 kW
Cut-in wind speed (10 min. mean)	3 m/s
Rated Wind Speed (10 min. mean)	approx 12.5 m/s
Cut-out wind speed (10 min. mean)	22 m/s
Survival wind speed	52.5 m/s
Generator	Variable Speed, Multi-pole Synchronous with Permanent Magnet Excitation
ROTOR	
Diameter	87
Swept area	5325 sq.m
Speed range (variable)	9 to 17.3 rpm
TOWER AND FOUNDATION	

Hub height	85 m
Design	Tubular, Four sections
Foundation type	Floating foundation
CONTROL AND SAFETY SYSTEMS	
Control of output	Pitch Regulation
Speed control	Variable, Micro-controller based
Low Voltage Ride Through (LVRT)	3 seconds
Primary brake system	Aerodynamic Brake, Single Pitch Control/triple redundant
Pitch System	Electromechanical, Maintenance Free Toothed Belt Drive (Patented)
Remote Monitoring	VPN, Visualization via web-browser
TYPE CLASSES	
Wind turbine type class	GL III A

The start date of the project is 02-March-2017. This is the date, the first WTG was commissioned which is in line with VCS Standard version 4.3.

The assessment team confirmed through interview with O & M personnel during remote audit that there are no changes into the project design during this monitoring period. It was found that the monitoring plan was implemented as per the requirement of the VCS PD & approved monitoring Plan and applied methodology. The organisational role and responsibility as mentioned in the registered VCS PD is followed onsite. The calibration of energy meter is carried out as per the required frequency mentioned in the VCS PD. A delay was observed for the 3 months in the re-calibration and PP has applied maximum permissible error for the generation in this period as the delayed calibration certificate confirms that no error was present in the energy meters. All the emergency preparedness as mentioned in the registered VCS PD is followed onsite and no discrepancies were found regarding the same.

The Project participant contribution from the project activity towards sustainable development in accordance to host country:

As confirmed during the remote audit, the project displaces electricity produced in fossil fuel based power plants, by using clean renewable source to generate electricity and thereby contributes to sustainable development through reduction in greenhouse gas (GHG) emissions. It has also been confirmed that the project implementation has led in contribution to SDG 7.2, SDG 8.6.1 and SDG 13.0 (as stated in section 1.11 of the submitted MR). The project supplies clean, affordable and renewable energy (199,355 MWh net electricity under the current monitoring period from 01-August-2021 to 31-July-2022) without reliance on fossil fuels for generation of electricity to meet the growing demands in the region. The generated electricity avoided release of 188,886 tCO₂ in to the atmosphere. The project has created job opportunities through Operation and Maintenance (O & M) work for WTGs and has employed total 38 nos. for O & M work, The employment is of full-time purpose. During the current monitoring period (01-August-2021 to 31-July-2022) the PP has hired 3 employees and provide 91 training sessions. The electricity generation has been confirmed through submitted JMR and invoices which were

cross checked and based on these values PP has calculated emission reduction. Thus, VVB confirms that the values for SDG 7.2 and 13 are appropriate. For SDG 8.6, PP has submitted employment records and training program reports which were checked and the values were confirmed. PP has also submitted a declaration regarding the employment that 3 people were hired during current monitoring period. VVB has verified with the help of employment records that the employee hired were unemployed and between age group of 15 to 24.

The project is not involved in any other form of GHG emission program and VCUs generated from this verification will not be used for other trading program to avoid any kind of double counting. The same is confirmed by the PP during the verification remote audit and submitted declaration by the PP. Assessment team also conducted independent review regarding the same and found that the statement of the PP is accurate and project is not involved in any other kind of GHG trading for the present verifications/monitoring period.

The assessment team observed that the project is in line with the registered VCS PD and applied methodology and thus no clarification/deviation is sought.

Assessment team confirms following during the verification remote audit:

1. Start date of the project is 02-March-2017.
2. An undertaking letter has been submitted by PP for no double counting with any other GHG program. PP also has given a written declaration that project will not claim other form of GHG credit for the concerned monitoring period.
3. Assessment team confirms that this is monitoring under VCS and covers the activity from 01-August-2021 to 31-July-2022 (inclusive of both dates). VCS crediting period is of 10 years with 02-March-2017 as the start date and crediting period end date as 01-March-2027.
4. GHG credits from 01-August-2021 to 31-July-2022 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "Double Counting".
5. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	<i>Infinite Solutions</i>
Contact person	<i>Mr. Jimmy Sah</i>
Title	<i>Project Consultant</i>
Address	<i>214-215 Milinda Manor, Opp. Next Treasure Island, 2 RNT Marchg, Indore 452001</i>
Telephone	<i>+919644130430</i>

Email	jimmy@infisolutions.org
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6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VCU with the estimated VCU and found that the actual VCU are 188,886 tCO₂e which are 1.11% lower than the estimated emission reductions i.e. 191,006 tCO₂e during this monitoring period.

Finding: CAR 01, 02, 03, 04 and 05 were raised and successfully closed. Please refer Appendix 4 for more information.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the discussion with PP during remote audit. The project is renewable energy project and thus no negative impact observed onsite as confirmed by PP during remote audit.

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 Ministry of New & Renewable Energy, Government of India (MNRE)² dated September 2013 clearly mentioned that wind-based power project activity operations do not result in direct air pollution, noise pollution.

However, assessment team still conducted the No net harm assessment for some of the parameters and the result is described below:

Sr. No.	Indicator	Assessment team opinion
1	Air quality	The project generates clean energy which replaces the fossil fuel intensive electricity generation. Also report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013 clearly mentioned that wind plant operations do not result in direct air pollution.

² [Draft report on use of non-conventional energy resources for Simhastha 2016 \(niua.org\)](#)

Sr. No.	Indicator	Assessment team opinion
		Therefore, it is validated that mitigation measures were robustly implemented on ground for air quality issues project will have a positive impact on air quality.
2	Soil condition	There are negligible impacts envisaged during operation of the project activity being wind power-based power project. For mitigating the impacts during construction, various mitigation measures were taken which is validated from the plant records of PP and the interview with local villagers. It was also confirmed that, the vegetation planted at project site helps to reduce soil erosion. The same is confirmed during the discussion with stakeholders during remote audit. Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.
3	Biodiversity	During the verification remote audit, it was observed that the condition of ground vegetation is good and no rare species is found in the around area. The project site is not on the migration route of migratory bird nor is the project affecting aquatic life. With the implementation of Project, the green cover has increased at the Project site; the biodiversity in the vicinity will be improved with the vegetation improvement.
4	Employment Generation	The project activity employed local population as skilled workers as well as security guards. The personnel employed by the project activity are also provided trainings and exposed to various awareness programs therefore a positive indicator has been accepted.
5	Livelihood of the poor	The project is associated with infrastructure development like roads in the nearby areas and promoting economic activities like grants to local school and communities' temples etc. Also, project employed local villagers as guards for the security of power project.

4.2.2 Local Stakeholder Consultation

All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. There was no change in project description from the registered VCS PD. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, ver. 4.3 and appropriate actions taken time to time by PP. Assessment team confirmed the same during the remote audit and document review i. e. grievance register. The document review confirmed that no grievances were recorded during current monitoring period.

4.3 AFOLU-Specific Safeguards

Not applicable

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 MR. The verification team has checked whether calculations of baseline GHG 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 PD and MR.								
Findings	No findings raised								
Conclusion	<i>Baseline emission: The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the grid emission factor of the grid.</i> <i>Formula Used: -</i> $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ Where; BE_y=Baseline emission in tCO₂e $EG_{PJ,y} = EG_{facility,y}$ = net quantity of electricity generation as a result of the project activity $EF_{grid,CM,y}$ = CO₂ emission factor for the electricity displaced due to the project activity during the year y in tCO₂/MWh <i>Ex-ante parameters:</i> <table><tr><th>Parameter</th><th>Description</th><th>Source/Justification</th></tr><tr><td>$EF_{grid,OM,y}$ tCO₂/MWh</td><td>Operating margin CO₂ emission factor in year y</td><td>Calculated using “Tool to calculate the emission factor for an electricity system” using data from Central Electricity Authority of India’s (CEA) “Baseline Carbon Dioxide Emission Database Version 13”. The operating margin emission factor is a 3-year generation weighted average</td></tr></table>			Parameter	Description	Source/Justification	$EF_{grid,OM,y}$ tCO ₂ /MWh	Operating margin CO ₂ emission factor in year y	Calculated using “Tool to calculate the emission factor for an electricity system” using data from Central Electricity Authority of India’s (CEA) “Baseline Carbon Dioxide Emission Database Version 13”. The operating margin emission factor is a 3-year generation weighted average
Parameter	Description	Source/Justification							
$EF_{grid,OM,y}$ tCO ₂ /MWh	Operating margin CO ₂ emission factor in year y	Calculated using “Tool to calculate the emission factor for an electricity system” using data from Central Electricity Authority of India’s (CEA) “Baseline Carbon Dioxide Emission Database Version 13”. The operating margin emission factor is a 3-year generation weighted average							

			(2014-17). The operating Margin is calculated ex ante and fixed during the crediting period. The value 0.9726 is used for the calculation of the Baseline Emission and is found to be consistent with the registered PD.
	$EF_{grid,BM,y}$ tCO ₂ /MWh	Build margin CO ₂ emission factor in year y	Calculated using “Tool to calculate the emission factor for an electricity system” using data from Central Electricity Authority of India’s (CEA) “Baseline Carbon Dioxide Emission Database Version 13”. The value is calculated ex-ante as most recent build margin provided by the CEA Central Electricity Authority: CO ₂ Emission Database CEA. The value 0.8723 is used for the calculation of the Baseline Emission and is found to be consistent with the registered PD.
	$EF_{grid,CM,y}$ tCO ₂ /MWh	Combined margin CO ₂ emission factor in year y	Combined margin emission factor has been calculated by the Central Electricity Authority in accordance with CDM methodology: ACM0002 and tool to calculate the emission factor for an electricity system. The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO ₂ emission factor in year y (tCO ₂ /MWh) $EF_{grid,OM,y}$ = Operating margin CO ₂ emission factor in year y (tCO ₂ /MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25% The value 0.9475 is used for the calculation of the Baseline Emission and is found to be consistent with the registered PD.
Monitored Parameter:			
	Parameter	Description	Source/Justification
	$EG_{facility,y}$	Quantity of net electricity exported to the grid during the year y	The parameters monitored ex-post involves net electricity supplied to the grid (calculated from electricity exported and imported) to the INDIAN grid by the project activity. As per the PD & MR, Joint Energy Meter Reading Report is the source of data during verification.

			The VVB uses the same source for verification of emission reductions. In accordance with the methodology requirement, net electricity supplied by the project activity is obtained from Joint Energy Meter Reading Report issued by State electricity authority which provide input values (apportioned export and apportioned Import), used for calculation of $EG_{facility,y}$ by the project activity and forms the basis for emission reduction calculation. The $EG_{facility,y}$ is calculated as per the below procedure Project 1 & 2: - Joint monthly meter reading shall be taken from pooling substation (PSS) meter by representative of GEDA/GETCO and O&M team/service provider (on behalf of individual wind mill owners). Let the total generation recorded for particular month is 'X' units in sub-station meter. - Joint daily meter reading shall be taken at Local Meter (transformer yard meter of each WTG) by representative of GEDA/GETCO on a monthly basis. Let us assume total approved generation recorded for particular month is 'Y1' units. - Similarly, joint meter reading for other wind farm owners connected to the sub-station shall also be taken. Let the generation of individual owner recorded for particular month are 'Y2, Y3, Yn' units. - The GEDA/GETCO apportions 'X' to individual wind farm owners using following formula and issues monthly certificates. Net units calculated for billing = $X * Y_i / \sum Y_n$ - For PP, net units calculated for billing = $X * Y_1 / \sum Y_n$ The net electricity generated by the project owners is being provided by GETCO in the share certificate of electricity generated. The value of the net electricity generated by the project activity has been taken directly by the project proponent from the share certificate provided by GETCO for calculation of emission reductions. The share
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		certificate provides the value of export and import by the project. Calculation of $EG_{\text{facility},y}$: Net Electricity = Export – Import Project 3: Joint monthly meter reading is taken at the Pooling substation (PSS) meters by representative of DISCOM and O&M team/service provider (on behalf of the project proponent). It must be noted here that the meter readings as mentioned above shall be calculated as the product of meter multiplication factor and the difference of the current and previous meter readings. Currently, the PSS has only the project WTGs and hence there is no need to calculate transmission losses. (Net Electricity = Export – Import) However, in future if there are other WTGs connected to the same feeder in PSS with the project WTGs then O&M contractor shall be responsible for calculation of net electricity and arriving at transmission loss. The value is 199,355 MWh.
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The verification team has checked the entire monthly Energy generation records applicable for the monitoring period as per the project activity applied for verifications and found the monitoring parameter is monitored and recorded as per the monitoring plan in the registered PD. The net electricity supplied by project activity to grid is calculated by subtracting total electricity imported by project from grid from total electricity delivered by project to grid.

The verification team has crosschecked the emission reduction sheet and monitoring report data with the energy generation reports and found all the values are matching.

The calculation of baseline emissions is as below,

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

$$BE_y = 199,355 \times 0.9475$$

$$BE_y = 188,886 \text{ tCO}_2\text{e (round down values)}$$

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions or removals (tCO ₂ e)	Net GHG emissions or removals (tCO ₂ e)
2021 (01-August-2021 to 31-December-2021)	67,153	0	0	67,153
2022 (01-January-2022 to 31-July-2022)	121,733	0	0	121,733
Total	188,886	0	0	188,886

Project emissions: The project activity involves in harnessing wind power. Hence, in line with the applied methodology- ACM0002, Version 19.0, project emissions are zero.

Leakage emissions: The project activity involves in harnessing wind power. Hence, in line with the applied methodology – ACM0002,Version 19.0, leakage emissions are zero.

Thus, Emission Reductions are:

	The emission reductions (ER_y) by the Project activity during a given year y is the difference between baseline emissions (BE_y), project activity emissions (PE_y) and leakage, as follows $ER_y = BE_y - PE_y - LE_y$ $= 188,886 - 0 - 0$ $= 188,886 \text{ tCO}_2\text{e}$ VVB confirmed that GHG reductions and removals have been quantified correctly and in line with monitoring procedure in PD and applied methodology.
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4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the shutdown/break down log for the monitoring period. During the verification of remote audit, the energy meters are also checked. The Calibration details of the monitoring meters are also checked with calibration certificates.
Findings	CAR 04 was raised and successfully closed. Please refer Appendix 4 for more information.
Conclusion	Electricity export to the grid and import from the grid is metered by main and check tri-vector energy meters. The main meter reading is taken jointly on a fixed day of every month for the preceding month at the delivery point and signed by the representatives of state utility and O&M personnel. In the event of failure of main meter, the check meter will be used in monitoring the electricity data. The O&M contractor is experienced in the monitoring system and is managing O&M of numerous other wind projects. The validation team therefore is of the opinion that the project participant through the O&M agency is capable of implementing the monitoring plan in the context of the project activity. Calibration of all the meters is done by state electricity board officials as per the industry standards. However, the calibration will be done once in 5 years for all the bundled project activities. The energy meter recording the export and import from the grid at substation is under the control and supervision of state electricity board officials. Similarly O&M contractor is responsible for monitoring of the generation data at CMS. PP has submitted calibration records for the complete monitoring period and the details are mentioned in the appendix 5. It was observed that for Project 2 location, calibration is delayed by 2 months hence,

	maximum permissible error of 0.2% is applied in month of February 2022, March 2022 and April 2022. The latest calibration report submitted was checked to confirm that no error is identified during the calibration and hence application of 0.2s as an error factor is accepted which is in line with para 366 (a) of CDM VVS version 03.0. It is reported that the data will be kept for 2 years following the end of the crediting period or till the last issuance of VCUs for the project activity whichever occurs later. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the site visit. Based on the submitted documents and verification during the remote audit, VVB confirmed that the value of net electricity exported to the grid as used in emission reduction calculation is correct. It is reported that the data will be kept for 2 years following the end of the crediting period or till the last issuance of VCUs for the project activity whichever occurs later. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the remote audit. Remote audit and interview with site personnel also confirms that the operational and organizational chart as mentioned in registered PD is as per the site practice and thus assessment team confirms that the details are correct. The shutdown / break down reports are checked and found that the plant undergone scheduled maintenance and break down. Assessment team checked the routine maintenance log book and confirmed that it does not have any impact on project design and monitoring procedures. No unforced error/major breakdowns observed. Assessment team confirmed that data/ information used for determining GHG reductions and removals were sufficient in quantity and of appropriate quality.
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	Calibration certificates of meters/ QA/QC procedure checked and found to be appropriate.
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4.6 Non-Permanence Risk Analysis

This section is not applicable as this Non AFOLU project

5. VERIFICATION CONCLUSION

Applus+ Certification has been engaged by Infinite Solutions to perform the 4th verification of the “Bundled Wind Power Project by Sembcorp Green Infra Limited in India”

The management of the project participant/owner is responsible for the preparation of the GHG emissions data and the reported/estimated GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the PD and MR and the approved methodology – ACM0002, version 19.0.

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 Standard version 4.3. 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 can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology – ACM0002, version 19.0;
- the monitoring process in Monitoring Report is as per the PD
- 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 period: From 01-August-2021 to 31-July-2022 (first and last date included).

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-August-2021 to 31-December-2021	67,153	0	0	67,153
01-January-2022 to 31-July-2022	121,733	0	0	121,733
Total	188,886	0	0	188,886

The estimated emission reduction achieved from the project activity for the current monitoring period is 191,006 tCO₂e, whereas actual emission reductions achieved are 188,886 tCO₂e, which is 1.11% lower than estimated emission reductions. As actual VCUs are lower than estimated value for the MP which is due to climatic factors affecting wind power generation, VVB confirmed the value is conservative and acceptable.

APPENDIX I: DOCUMENTS REVIEWED DURING VERIFICATION

No.	Author	Title	References to the document	Provider
1.	NA	Monitoring Reports	Version 01, dated 27-July-2022 (Initial) Version 02, dated 17-August-2022 Version 03 dated 01-September-2022 Version 04, dated 16-September-2022 Version 05, dated 09-November-2022(final)	PP
2.	NA	Emission Reduction sheet, Initial version Emission Reduction sheet, Final Version	Version 01 dated 27-July-2022 Version 02, dated 16-September-2022	PP
3.	NA	Registered VCS Joint PD and MR Joint Validation and Verification report	Version 02 dated 01-March-2019 Version 02 dated 01-March-2019	VERRA
4.	Infinite Solutions Earthood Infinite Solutions Earthood	2 nd monitoring report (01-January-2019 to 31-July-2020) Verification report 3 rd monitoring report (01-August-2020 to 31-July-2021) Verification report	Version 04 dated 04-November-2020 Version 02 dated 10-November-2020 Version 02 dated 06-September-2021 Version 02 dated 17-September-2021	VERRA
5.	NA	VCS Standard VCS Programme guide VCS Validation Verification Manual	Version 4.3 Version 4.2 Version 3.2	VERRA
6.	NA	Technical specifications of WTGs / photographs of turbines, electricity meters etc.		PP

No.	Author	Title	References to the document	Provider
		Single line diagram and meter locations / Layout		
7.	NA	Power purchase agreement for the WTGs		PP
8.	State DISCOMs	Commissioning Certificates for the WTGs installed		PP
9.	NA	ACM0002: Grid-connected electricity generation from renewable sources	Version 19.0	UNFCCC
10.	NA	Remote audit for verification of measuring and monitoring procedure, • Video recordings & snapshots of the project site/equipment's • Interviews and data/log review	Dated 16-August-2022	PP
11.	State DISCOMs and PP	Joint Meter Readings and Invoices raised for the complete monitoring period		PP
12.	DISCOM	Calibration certificates		PP
13.	PP	Grievance register		PP
14.	PP	Employment and training records		PP
15.	PP	Organization structure/chart		PP
16.	PP	Declaration of No Double Counting	Dated 21-07-2022	PP
17.	MNRE	Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects	https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf	MNRE

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

Summary of findings	CAR	CL	FAR
	05	00	00

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

FAR ID	Section no.	Date :
Description of FAR		
Project participant response		Date :
Documentation provided by project participant		
DOE assessment		Date:

Table 2. CL from this verification

CL ID	Section no.	Date: 17-August-2022
Description of CL		
NA		
Project participant response		Date: DD-Month-2022
NA.		
Documentation provided by project participant		
NA		
DOE assessment		Date: DD-Month-2022
NA		

Table 3. CAR from this verification

CAR ID	Section no.	Date: 17-August-2022
Description of CAR		

During review of monitoring report following inconsistencies observed:

1. PP is requested to submit the MR inline with latest MR Template guidelines, Version 4.1. Thus, corrective action sought
2. Section 1.1, of monitoring report is found not inline with the VCS MR template v 4.1. Thus, corrective action sought.
3. PP requested to submit copies of technical specifications of WTGs, PPA, O&M agreement, & Breakdown sheet of the project activity. Kindly submit.
4. PP is requested to reframe the language of throughout the MR as the project activity is implemented and contributing towards sustainable development. Corrective action sought.
5. PP has mentioned commissioning date of project activity in section 1.1 of monitoring report, however to verify the same, supporting documents is missing. PP is requested to submit it to assessment team. Kindly submit.

Project participant response

Date: 17-August-2022

1. Revised MR Version 2.0 is inline with latest MR Template guidelines, Version 4.1,
2. Section 1.1 is made inline with the VCS MR template v 4.1 in revised MR Version 2.0,
3. technical specifications of WTGs, PPA, O&M agreement, & Breakdown sheet of the project activity is submitted herewith.
4. The language is reframed in Revised MR Version 2.0
5. Commissioning certificate is submitted herewith

Documentation provided by project participant

- 1 Revised MR version 2.0
- 2 Technical specification
- 3 PPA
- 4 O and M agreement
- 5 Breakdown sheet

DOE assessment

Date: 25-August-2022

PP has now submitted the latest MR in line with MR Template guidelines Version 4.1 and hence this part of CAR is closed.

PP has made section 1.1 of the monitoring report inline with VCS MR template Version 4.1 and hence this part of CAR is closed

PP has submitted the technical details of WTGs, PPA, O&M agreements, and breakdown sheets for the said project based on the assessment of the same documents submitted are found appropriate and are accepted by the assessment team hence this part of CAR is closed

PP has reframed the language throughout the MR and hence this part of CAR is closed

PP has mentioned the commissioning date of project activity in section 1.1 of the monitoring report, and is crosschecked and verified with supporting documents such as commissioning certificates hence this part of CAR is closed

CAR is closed

CAR ID	02	Section no.	4.1	Date: 17-August-2022
Description of CAR				
PP is requested to submit an undertaking for no double accounting for current monitoring period and for project activity is participated in other GHG program other than VCS.				
Project participant response				Date: 17-August-2022
No double counting declaration is submitted herewith				
Documentation provided by project participant				
No double counting declaration				
DOE assessment				Date: 25-August-2022

PP has submitted the no double counting declaration to the assessment team and is found appropriate by the assessment team hence this part of CAR is closed
CAR is closed

CAR ID	03	Section no.	4.2.2	Date: 17-August-2022
Description of CAR				
PP requested to submit records for ongoing local stakeholder consultation including grievance register etc. to assessment team.				
Project participant response				Date: 17-August-2022
<i>Grievance register is submitted herewith</i>				
Documentation provided by project participant				
<i>Grievance register</i>				
DOE assessment				Date: 25-August-2022
PP has submitted the grievance register to the assessment team and based on the assessment of the same it is found that no adverse comments are received from the local stakeholders which need to be addressed hence this part of CAR is closed CAR is closed				

CAR ID	04	Section no.	4.4	Date: 17-August-2022
Description of CAR				
1. The value of Data/Parameter EG_{facility,y} is found inconsistent throughout the monitoring report. Thus, corrective action sought. Moreover, PP is requested to submit all supporting documents for all the monitoring parameters and monitored values of the project activity to assessment team. 2. The value of actual emission reductions achieved during the current monitoring period is found inconsistent throughout the MR. Thus, corrective action sought. 3. PP has provided the ER sheet to the assessment team. However, the value of difference in emission reduction mentioned in the MR are not consistent with the ER Sheet. Thus, corrective action sought.				
Project participant response				Date: 17-August-2022
1. EG_{facility,y} is made consistent throughout the revised monitoring report version 2.0 2. Emission reduction is made consistent in the revised MR version 2.0 3. This has been corrected in revised MR Version 2.0				
Documentation provided by project participant				
<i>Revised MR Version 2.0</i>				
DOE assessment				Date: 25-August-2022
PP has now corrected the value for Data/Parameter EG_{facility,y} in the monitoring report hence this part of CAR is closed PP has now submitted all the documents for all the monitoring parameters and all the monitored values of the project activity and are crosschecked and confirmed by the assessment team hence this part of CAR is closed The value of emissions reductions achieved during the current monitoring period is now found consistent throughout the monitoring report hence this part of CAR is closed The monitoring report and ER sheet now consist of the same value for emission reductions hence this part of CAR is closed CAR is closed				

Quality of Evidence to Determine GHG Emission Reductions and Removals

CAR ID	05	Section no.	4.5	Date:	17-August-2022
Description of CAR					
In order to verify the calibration details mentioned in Appendix-1, of MR Version 1, Dated 27-July-2022, PP is requested to submit the copies of calibration certificates covering complete monitoring period to the assessment team. Moreover, Delay in Calibration is observed in Project- 2 (Gujarat) by 2 months hence, error factor of 0.2s is to be applied in month of February 2022, March 2022 and April 2022 as per the conservative approach.					
Project participant response			Date: 17-August-2022		
Calibration reports are submitted herewith for assessment. As the Calibration is delayed by 2 months hence, error factor of 0.2s is applied in month of February 2022, March 2022 and April 2022.					
Documentation provided by project participant					
Revised ER sheet Revised MR Version 2.0 Calibration certificate					
DOE assessment			Date: 25-August-2022		
PP has now submitted all the calibration certificates and which are crosschecked by the assessment team and found as the details provided in the monitoring report are not in line with the calibration certificate specifically for meter nos GJ-3057-A, GJ-3058-A, GJ3819A, GJ3820A and its validity mentioned in MR and in the actual certificates, hence PP needs to apply error factor of 0.2s for the month of July 2022 as well, as a conservative approach, hence this part of CAR is open PP has now applied the error factor of 0.2s for the months of February, March, and April 2022 as a conservative approach and applied the corrected values in ER sheet hence this part of CAR is closed CAR is open					
Project participant response			Date: 01-September-2022		
As per the registered VCS PD , the calibration frequency is of 5 years. The calibration is done by state utility and PP has no control over it. Hence the calibration due date is in compliance with VCS PD.					
Documentation provided by project participant					
Revised MR Version 2.0					
DOE assessment			Date: 01-September-2022		
PP has submitted the updated MR, hence this CAR is closed. CAR 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	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	Kumar	Pankaj	TQC-Outsourced entity	Yes	No	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	Söyler	Anil	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

Short CVs of the Team:

- Mr. Pankaj Kumar** has done M. Sc in Environment Management from Forest Research Institute, Dehradun and B. Sc. (Hons.) in Environment & Water Management from Magadh University, Bihar, India. He has also done Post Graduate Diploma in Environmental Law from NLSIU, Bangalore. He has more than 12 years of working experience in GHG Assessments and has participated during his career in Agencies and DOEs like MITCON, Agrinergy, Carbon Check and is empanelled with Applus+ Certification since 2015 for the performance of CDM/VCS/GS project assessments. He has extensive experience in the Renewable, Waste Management and Energy Demand Scopes of UNFCCC CDM and has done more than 100 Validations and Verifications of Pas and PoAs as Lead Auditor, Technical Expert and Technical Reviewer, mainly in Asia, Africa, USA, Asia Pacific and Americas under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He is an experienced, qualified

and result oriented Environment and climate change professional having 16 yrs. Of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Climate finance, adaptation planning, capacity building, validation and verification of GHG project. He can also provide technical support for environmental investigative, remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing. Mr. Pankaj Kumar is based in Patna, India.

2. **Mr. Anil Söyler** has done Bsc. In Environmental Engineering. He has completed his Bachelor degree in Middle East Technical University, Turkey. He has more than 15 years of professional experience in environmental management, monitoring and auditing, waste and waste water management, environmental and social impact assessment, GHG emission report and projects' validation and verification, environmental reports, team and client relationship management and quality management systems and has been involved in the validation/verification services of more than 100 GHG emission reduction projects in total. He has also been involved in both national and international projects supported by IFC, World Bank and EBRD. Mr. Anil Söyler is based in Turkey.

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
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
DISCOM	State Electricity Distribution Company
DNA	Designated National Authority
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GEDA	Gujarat Electricity Development Authority
GETCO	Gujarat Electricity Transmission Company Limited
GWP	Global Warming Potential
MNRE	Ministry of New and Renewable Resources
PP	Project Participant
VVB	Validation and Verification body
VCU	Verified Carbon Unit
WTG	Wind Turbine Generator

APPENDIX 5: CALIBRATION DETAILS

Project wise - Meter & Calibration Details:

Project 1:		
Meter & Calibration Details:		
Details	Line 1	Line 2
Meter Number	GJ-3057-A	GJ-3058-A
Make	EDMI	EDMI
Accuracy	0.2s	0.2s
Location	33kV/220 kV Sukhpur Substation	33kV/220 kV Sukhpur Substation
Previous Calibration	20-February-2017	20-February-2017
Validity Date	19-February-2022	19-February-2022
Calibration date	22-November-2021	22-November-2021
Validity Date	21-November-2026	21-November-2026

Project 2:		
Meter & Calibration Details:		
Details	Line 1	Line 2
Meter Number	GJ3819A	GJ3820A
Make	Secure	Secure
Accuracy	0.2s	0.2s
Location	33kV/220kV Sadla (Inox) Substation	33kV/220 kV Sadla (Inox) Substation
Previous	25- February -2017	25- February -2017
Validity Date	24- February -2022	24- February -2022
Calibration date	22-April-2022	22-April-2022
Validity Date	21-April-2026	21-April-2026

Calibration is delayed by 2 months hence, error factor of 0.2s is applied in month of February 2022, March 2022 and April 2022.

Project 3:		
Meter & Calibration Details:		
Details	Line 1	Line 2
Meter Number	APX01475	APX01476
Make	Secure	Secure
Accuracy	0.2s	0.2s
Location	33 kV/220 kV Karidikonda Pooling Substation	33 kV/220 kV Karidikonda Pooling Substation
Previous Calibration	31-March-2017	31-March-2017
Validity Date	30-March-2022	30-March-2022
Calibration date	16-November-2021	16-November-2021
Validity Date	15-November-2026	15-November-2026