VAJRAKARUR WIND POWER PROJECT IN ANDHRA PRADESH

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Summary:

Verification purpose: M/s Mytrah Vayu (Pennar) private limited has set up 63 MW wind power project at Vajrakarur village in Anathapur district in the state of Andhra Pradesh in India. The project activity comprises of 30 number Wind Turbine Generators (WTG's) with a capacity of 2.1 MW each. Thus, the purpose of the project activity is to generate power from zero emissions wind-based power project and thereby reduce the emissions associated with the grid. The electricity generated by the WTGs are monitored through energy meters connected to a set of WTGs of the PP at the project site. The power (electricity) thus produced by the project activity is transmitted to the Andhra Pradesh electricity grid. The project activity is therefore displacing an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The project proponent plans to avail VCS benefits for the project. The project activity is in line with the sustainable development priorities of the country. The electricity generated from the wind farm will be exported to the NEWNE grid and sold to the state electricity utility, thereby marginally contributing to reducing the energy demand supply gap in the state of Andhra Pradesh.

The project activity helps to reduce the supply demand gap in the state 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. The project uses Suzlon's wind energy technology. The project activity implements S88 model 2.1MW WTGs.The total emission reductions for the current monitoring period i.e. 11/06/2014 to 03/06/2018 (inclusive of both days) are 372,572 tCO_{2e}. The project is registered under Clean Development Mechanism (CDM) of UNFCCC with 10 years crediting period (Reference No: 9650) on 11/06/2013.[1] Crediting period of the project under CDM starts on 11/06/2013 and ends on 10/06/2023.The project has begun generating GHG emission reductions from 31/03/2012. Hence, crediting period for VCS begins on 31/03/2012 and ends on 30/03/2022 considering 10 years fixed crediting period. The project proponent will also not claim GHG emission reductions under two schemes for the same period.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 07 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 and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided DOE with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

[1] https://cdm.unfccc.int/Projects/DB/SGS-UKL1369989385.4/view

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "M/s Mytrah Vayu (Pennar) Pvt Ltd" to perform the 2nd periodic verification of the "Vajrakarur wind power project in Andhra Pradesh" under VCS standard and guideline version 3.7. 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 is assessed against "ACM0002 version 13.0"
- the project's monitoring plan is assessed against "ACM0002 v 13.0"
- the projects 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 guideline and standard version 3.7
- CDM Validation and Verification Standard version 01 for the project activity
- CDM Project Standard version -01 for the project activity
- CDM Project Cycle Procedure version 01 for the project activity
- VCS standard v3.7
- VCS program guideline v3.7

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 emission reductions (VERs).

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 1.1) 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 version 01 for the project activity, review against registered PD and Final Validation report, CDM Project Standard version 01 for the project activity, CDM Project Cycle Procedure version 01 for the project activity and VCS program guideline and standard version 3.7.

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 VERs. 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 site visit or document verifications. The entire documents checked/WTGs verification conducted to arrive at positive verification conclusions.

Table of Contents

CONTENTS

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "M/s Mytrah Vayu (Pennar) Private Limited" to perform the 2nd periodic verification of the "Vajrakarur wind power project in Andhra Pradesh" under VCS standard and guideline version 3.7. 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 is assessed against "ACM0002 version 13.0"
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- the projects 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 guideline and standard version 3.7
- CDM Validation and Verification Standard version 01 for the project activity
- CDM Project Standard version 01 for the project activity
- CDM Project Cycle Procedure version 01 for the project activity
- VCS standard v3.7
- VCS program guideline v3.7

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 emission reductions (VERs).

1.2 Scope and Criteria

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 1.1) 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 version 01 for the project activity, review against registered PD and Final Validation report, CDM Project Standard version 01 for the project activity, CDM Project Cycle Procedure version 01 for the project activity and VCS program guideline and standard version 3.7.

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 VERs. 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.

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. No sampling procedure applied for site visit or document verifications. The entire documents checked/WTGs verification conducted to arrive at positive verification conclusions.

1.4 Summary Description of the Project

M/s Mytrah Vayu (Pennar) Private Limited has set up 63 MW wind power project at Vajrakarur village in Anathapur district in the state of Andhra Pradesh in India. The project activity comprises of 30 number Wind Turbine Generators (WTG's) with a capacity of 2.1 MW each. Thus, the purpose of the project activity is to generate power from zero emissions wind-based power project and thereby reduce the emissions associated with the grid. The electricity generated by the WTGs are monitored through energy meters connected to a set of WTGs of the PP at the project site. The power (electricity) thus produced by the project activity is transmitted to the Andhra Pradesh electricity grid. The project activity is therefore displacing an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The project proponent plans to avail VCS benefits for the project. The project activity is in line with the sustainable development priorities of the country. The electricity generated from the wind farm will be exported to the NEWNE grid and sold to the state electricity utility, thereby marginally contributing to reducing the energy demand supply gap in the state of Andhra Pradesh.

There was no activity at the site prior to implementation of the project activity (Greenfield). The electricity generated by the project is exported to the Indian grid. The project activity will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. Since wind power is Greenhouse Gas (GHG) emissions free, the power generated will prevent the anthropogenic gas emissions generated by fossil fuel based thermal power stations comprising coal, diesel, furnace oil and gas.

Assessment team checked the Commission of all the WTGs via the commissioning Certificates and found correct. The project is implemented as per the description in the registered PDD. No event observed during the current monitoring period which can alter or deviate from the methodology requirement. The details of the commissioning is as below:

S. No.	Location	Zone	Date of Commissioning
1	VAR 010	43 P	29/10/2012
2	VAR 015	43 P	29/10/2012
3	VAR 016	43 P	29/10/2012
4	VAR 018	43 P	18/06/2012
5	VAR 019	43 P	30/10/2012
6	VAR 022	43 P	30/10/2012

S. No.	Location	Zone	Date of Commissioning
7	VAR 023	43 P	18/06/2012
8	VAR 024	43 P	18/06/2012
9	VAR 026	43 P	30/10/2012
10	VAR 027	43 P	30/10/2012
11	VAR 028	43 P	30/10/2012
12	VAR 029	43 P	30/10/2012
13	VAR 030	43 P	30/10/2012
14	VAR 037	43 P	30/10/2012
15	VAR-038	43 P	31/03/2012
16	VAR-039	43 P	31/03/2012
17	VAR-040	43 P	31/03/2012
18	VAR 050	43 P	20/12/2012
19	VAR 051	43 P	20/12/2012
20	VAR 203	43 P	29/10/2012
21	VAR 204	43 P	29/10/2012
22	VAR 205	43P	29/10/2012
23	VAR 208	43P	18/06/2012
24	VAR 209	43P	31/03/2012
25	VAR 216	43P	30/10/2012
26	VAR 217	43P	30/10/2012
27	VAR 300	43P	30/10/2012
28	VK 108	43P	29/10/2012
29	VK 109	43P	29/10/2012
30	VK 110	43P	29/10/2012

Assessment team confirms following during the verification site visit:

1. Start date of the project activity is 31/03/2012 as mentioned in the registered VCS PD. Assessment team checked the commissioning certificates and confirm the same.

2. An undertaking letter has been submitted by PP related to the double counting with any other GHG program. PP also has given a written declaration that project has not claimed other form of GHG credit for the concerned monitoring period. Assessment team also checked that the projects are not registered under the REC mechanism of India and the same can be cross-checked at https://recregistryindia.nic.in. However, the project is registered under CDM mechanism. Nevertheless, PP has given a written declaration that the credits claimed under VCS for the current monitoring period are not claimed under any other GHG mechanism. Hence the assessment team considers there is no risk for double counting as per the given evidences and the traceability of the project issuances in the GHG programs.

3. Project location is confirmed by the assessment team during the site visit. Assessment team also checked with the GPS meter regarding the latitude and longitude of the project site and confirm that the details as mentioned in the registered PDD are correct. The details are as below:

S. No.	Location	Zone	Latitude (N)	Longitude (E)
1	VAR 010	43 P	$15^0$1'7.68"	$77^0$14'37.18"
2	VAR 015	43 P	$15^0$0'7.99"	$77^0$15'14.58"
3	VAR 016	43 P	$15^0$0'27.88"	77^0 16' 1.56"
4	VAR 018	43 P	$15^0$0'4.79"	77^0 15' 44.45"
5	VAR 019	43 P	14^0 59' 52.17"	77^0 16' 1.02"
6	VAR 022	43 P	14^0 59' 6.44"	77^0 15' 44.64"
7	VAR 023	43 P	14^0 58' 56.84"	77^0 15' 55.01"
8	VAR 024	43 P	14^0 59' 23.72"	77^0 16' 35.89"
9	VAR 026	43 P	15^0 0' 43.37"	77^0 16' 46.07"
10	VAR 027	43 P	15^0 0' 16.94"	77^0 17' 36.85"
11	VAR 028	43 P	$15^0$0' 4.62"	77^0 17' 29.05"
12	VAR 029	43 P	14^0 59' 42.71"	77^0 17' 18.65"
13	VAR 030	43 P	14^0 59' 30.30"	77^0 17' 13.80"
14	VAR 037	43 P	14^0 58' 42.71"	77^0 18' 35.17"
15	VAR-038	43 P	14^0 58' 21.07"	77^0 17' 57.63"
16	VAR-039	43 P	140 58' 6.25"	770 17' 56.50"
17	VAR-040	43 P	140 57' 44.42"	770 18' 3.20"
18	VAR 050	43 P	140 59' 58.87"	770 19'4.90"
19	VAR 051	43 P	150 0' 10.25"	770 18' 55.68"
20	VAR 203	43 P	150 1' 6.13"	770 15' 21.67"
21	VAR 204	43 P	150 0' 48.04"	770 15' 22.42"
22	VAR 205	43P	150 0' 2.22"	770 15' 8.52"
23	VAR 208	43P	140 58' 13.90"	770 16' 27.42"
24	VAR 209	43P	140 58' 38.57"	770 17'34.36"
25	VAR 216	43P	150 1' 29.917"	770 16' 26.95"
26	VAR 217	43P	150 1' 16.78"	770 16' 42.34"
27	VAR 300	43P	150 1' 23.81"	770 15' 24.03"
28	VK 108	43P	150 2' 21.62"	770 16' 27.63"
29	VK 109	43P	150 2' 30.00"	770 16' 16.30"
30	VK 110	43P	150 2' 38.23"	770 16' 5.95"

4. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	Mytrah Vayu (Pennar) Private Limited
Contact person	Ms. Mangal jyoti
Title	Deputy Manager
Address	1st Floor, 8001, 8th Floor, Q-City, Nanakramguda, Gachibowli Hyderabad 500032, Telangana, INDIA

Telephone	-
Email	-

5. Assessment team also checked the details of other entity and found correct. The details are as below:

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Mr. Prakash Kr. Sahu
Title	Project Manager
Address	Office No. 201, EnKing Embassy, Plot No. 48, Scheme No. 78, Part II, Vijay Nagar INDORE – 452010, India.
Telephone	+91 99 31 158 863
Email	prakash@enkingint.org

6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VER (372,572 tCO_2e) with the estimated VER (495,408 tCO_2e considering 1454 days of the Current monitoring period) and found that the actual VER is 24.79% lower than the estimated emission reduction which is due to low PLF in the region and this is also affected due the application of apportioning procedure because the monitoring period is not matching with the billing period during the current monitoring period.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Scope: The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology ACM0002 version 13.0. 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 and guideline version 3.7, including the approved baseline and monitoring methodology ACM0002 version 13.0. The verification was based on the requirements in the CDM Validation and Verification Standard (VVS version 01 for the project activity), CDM project standard version 01 for the project activity, CDM project cycle procedure version 01 for the project activity and VCS program guideline and standard version 3.7

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.

Verification Process: The project assessment is based on the "Clean Development Mechanism Validation and Verification Standard version 01 for the project activity and VCS standard and program guideline version 3.7 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:

1. A desk review of the Monitoring report against the registered PD and final validation report;

2. Follow-up interviews with project participant;

3. 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. 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 validating the identified criteria.

Appointment of the assessment team

According to the sectoral scope / technical area and experience in the sectoral or national business environment, Applus+Certificationhas composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of Applus+ Certification.

The composition of audit team shall be approved by the Applus+Certificationensuring 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. Sukanta Das	LA/TE	YES	YES	NA	YES
Mr. Denny Xue	TR	YES	YES	NA	NA

The detail regarding the assessment team is provided below in this report as Appendix 3.

Document review

The Monitoring report version 1 submitted by the PP was reviewed against the approved methodology, registered PD, final validation report 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 site visit is conducted by Applus+ Certification performed interviews, telephone conferences, and physical site inspection with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report.

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 submitted by PP on 26/12/2018 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 details of the documents observed during the verification process are listed below in Appendix 1 of this report

2.3 Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Jyoti	Ms. Mangal	(Deputy Manager)	11/06/2018	Implementation of the project, monitoring and emission reduction calculation	Mr. Sukanta Das
2	Gupta	Lalit	Villager	11/06/2018	Local stakeholder consultation	Mr. Sukanta Das
3	Pandey	Anuroop	Villager	11/06/2018	Local stakeholder consultation	Mr. Sukanta Das

2.4 Site Inspections

Duration of on-site inspection: 11/06/2018				
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.	The project activity is located in Vajrakarur village, Anantapur district of Andhra Pradesh state, India	11/06/2018	Mr. Sukanta Das

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 from validation which need to be clarified for Applus+ Certification's 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 submitted by PP on 26/12/2018 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.

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

2.5.1 Forward Action Requests

This is 2nd periodic verification of the project activity and no FAR raised from previous 1st verification.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

This section is not applicable for present verification.

3.2 Methodology Deviations

This section is not applicable for present verification.

3.3 Project Description Deviations

This section is not applicable for present verification.

3.4 Grouped Project

This is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the verification site visit it was concluded that the project is implemented as per the requirement of the registered PD and Final Validation report. During the current monitoring period it was observed that no unforeseen incident/event evolved which can impact the operation of the project activity. The project undergone continuous operation and only scheduled maintenance is observed as per the manufactures specification which is acceptable to the assessment team.

CAR 01 is however raised regarding details of the Feeder location of the individual project location and CAR 02 is raised for the details of downtime/breakdown records.

Feeder details are provided which is confirmed by the assessment team during the verification site visit and also from the individual joint meter statement by state electricity board (third party, Govt source) in where the feeder details are mentioned. The Feeder details are included in the MR and thus the CAR is closed.

Breakdown log sheets for individual power project i.e. Wind turbines are submitted by PP. There was no breakdown during the monitoring period. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team. CAR 02 is thus closed.

Assessment team also checked the Technical details of the WTGs installed onsite. The same is checked during the onsite visit from the number plate capacity of each WTGs and also cross checked from the technical manual of the Manufactures. The detail is as below:

MODEL	**S88- 2.1 MW[3]**
Operating Data	
Rated power	2.1 MW
Cut-in wind speed	4 m/s
Rated wind speed	14m/s
Cut-out wind speed	25 m/s
50 years gust wind speed	59.5 m/s
Wind Class	IEC-IIA

Rotor	
Diameter	88 m
Swept area	6082 m^2
Generator	
Type	Asynchronous slip ring type induction generator
Frequency	50/60 Hz
Braking System	
Aerodynamic brake	3 independent systems with blade pitching mechanism
Mechanical brake	Hydraulic fail safe disc brake system
Gearbox	
Type	3 stages
Yaw System	
Type	Driven by 3 electrical driven planetary drives
Bearings	Polyamide slide
Tower	
Type	Tubular Tower (4 Sections)

Assessment team checked the commissioning certificate and confirmed that the dates of Commission for the WTGs are correct.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. The project design as mentioned in the registered PD is implemented onsite. All required monitoring equipment and procedures as mentioned in the registered PD are available and implemented in an appropriate manner.

It was observed that the monitoring plan was implemented as per the requirement of the registered PD and Final Validation report. The organisational role and responsibility as mentioned in the registered PD is followed onsite. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same.

It was also observed during the verification process that project is not rejected by any other GHG program around the world. CAR 05 however is raised for the same. Please refer Appendix 2 of this report for the detail closure of the CAR.

The project is registered under CDM mechanism however VERs 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 site visit. 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.

It was also observed during the verification process is that project is not rejected by any other GHG program around the world. The project is registered by CDM/VCS board and the registered PD and registered FVR is used to assess the present verification. The following web sites were checked to confirm the same:

1. https://www.recregistryindia.nic.in/
2. http://cdm.unfccc.int/
3. http://www.goldstandard.org/
4. www.v-c-s.org

Assessment team hereby also confirms from the declaration made by PP the projects are not registered under the REC mechanism of India and the same is cross-checked at https://recregistryindia.nic.in. Moreover, as per state tariff policy the project is not eligible to receive REC benefits as it is selling power to State electricity grid.

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

4.2 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 PD. 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
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	The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the regional grid emission factor. The regional grid in this case would be the 'NEWNE' Formula Used:- $BE_y = EG_{BL,y} * EF_{CO2,grid,y}$ Where BEy= Baseline emission for year 'y' $EG_{BL,y}$ = Quantity of net electricity supplied to the grid during the year y ; and $EF_{CO2e,grid,y}$= Emission factor of the Grid <u>Ex ante Parameters:</u> $EF_{grid,CM,y}$, $EF_{grid,BM,y}$, $EF_{grid,OMsimple,y}$ were 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 from the registered PDD and confirms that the similar approach was considered for the current monitoring period also. The values for $EF_{grid,CM,y}$ = 0.8971 tCO_2/MWh- Assessment team Confirmed that the value is as per the registered PDD $EF_{grid,BM,y}$ = 0.7339 tCO_2/MWh- Assessment team Confirmed that the value is as per the registered PDD

	$EF_{grid,OMsimple,y}$ = 0.9515 tCO_2/MWh- Assessment team Confirmed that the value is as per the registered PDD 1. $EF_{grid,OMsimple,y}$: Operating Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system v03. EF grid, OM, y is computed using the Simple Operating margin CO_2 emission factor. Simple Operating margin CO_2 emission factor is calculated from the weighted average CO_2 emissions per unit net electricity generation of all power plants serving the system, not including low-cost / must-run. This is in agreement with the guidance provided in the Tool to calculate the emission factor for an electricity system. The value is considered from CEA version 07 and registered PDD. Assessment team checked the registered PDD and found that value considered for emission reduction calculation in this present monitoring period is sourced from the registered PDD. Thus, assessment team conclude that the emission reduction calculation for the present monitoring period is conservative and correct. 2. $EF_{grid,BM,y}$: Build Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor" v03. Build margin emission factor is the generation-weighted average emission factor of all power plants m during the most recent year y for which generation data is available. The value is considered from CEA version 07 and registered PDD. Assessment team checked the registered PDD and found that value considered for emission reduction calculation in this present monitoring period is sourced from the registered PDD. Thus, assessment team conclude that the emission reduction calculation for the present monitoring period is conservative and correct. 3. $EF_{grid,CM,y}$: Combined Margin emissions factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system v03. Combined Margin is computed using the official data sources and is in-line with the guidance provided in the tool. The value is considered from CEA version 07 and registered PDD. Assessment team checked the registered PDD and found that value considered for emission reduction calculation in this present monitoring period is sourced from the registered PDD. Thus, assessment team conclude that the emission reduction calculation for the present monitoring period is conservative and correct. The value for $EF_{grid,OMsimple,y}$, $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ were considered from the CO_2 baseline database (Version 07) published by Central Electricity Authority (CEA). The default value as mentioned in the registered PDD and MR are same. The value of combined margin in India is being given by CEA and thus assessment team conclude that the value is correct and appropriate. The default value in turn is used for baseline calculation as per the formula given in the registered PDD for the current monitoring period. <u>Ex-post parameter:</u> As per the registered monitoring plan and requirement of the registered

	methodology following parameters needs to be monitored: **$EG_{pj,y}$**: Net Electricity Supplied to the grid by the project activity The parameter is a sourced from primary source i.e. Joint Meter Reading. The Net Electricity Supplied to the grid is calculated based on export, import and transmission loss. The calculation is done by O&M official and the same is signed by State electricity board official and thus PP has no role in it. The JMR sheets mentions the export, import and transmission loss value. This JMR reports is used for determining the emission reductions and also for the billing and payment of net sale of electricity from the project. The practice is as per the registered PDD and approved methodology. $EG_{PJ,y} = EG_{export,\ y} – EG_{imp}$. Electricity exported by the project activity ($EG_{PJ,y}$) will be used for CER computation. The invoice is than raised by individual PP connected to meter via common feeder to state electricity board. Due to the difference in the start date of the JMR cycle and monitoring period start date, JMR values has been apportionate in order to match with monitoring period as a conservative approach. There is delay in calibration for Phase 1, Phase 4 and Phase 5 WTGs meters at 33 KV metering point and the delayed calibration result is within permissible limit, thus error factor of 0.2s accuracy class is applied for these phase WTGs meters. Also the Invoice values for the particular month thus differ due to the apportioning. The Calculation is checked by the assessment team and found correct and conservative. Whenever JMR billing cycle period and monitoring period are different, hence the export of each WTG is apportioned based on controller data. However complete month import is considered as conservative approach. This approach is followed for first month and last month of monitoring period. The invoices are used for cross check mechanism and is as per the requirement of registered PDD and approved methodology. The meter reading is taken during a fixed billing cycle of every month and representative of electricity board and Operation and maintenance personal onsite present during the process. Assessment team checked all the values of the Net electricity exported to the grid by the project from measured export, import and transmission loss value. The electricity meters are under the custody of the electricity board and calibrated by electricity board as per their standard procedures. The meters are calibrated in line with Indian grid code regulations for such installations. **$EG_{export,y:}$** Electricity exported by project activity to grid after apportioning of transmission losses between 33kV metering point (cluster meter) and 220kV metering point (Bulk metering point) Electricity exported by project activity is calculated using the formula described in registered PD. $EG_{export,\ y} = EG_{pe} * (1- L_{ep}(\%))$ The value of this parameter will be used to obtain value for $EG_{PJ,y.}$ The Value of $EG_{export,y}$ can be cross checked from certified statement given by state utility showing cost of export and import. It may be noted that energy export by the

	project activity will be import by the grid from the project activity and therefore electricity export by the project activity is denoted as import by the grid in the certified statement by the state utility. **EG_{pe}:** Electricity Export recorded at 33kV (JMR at 33kV metering point) cluster points connecting total 30 machines of the project activity. The metering system for the project activity consists of cluster metering system at 33kV metering point. Each Cluster metering point will have one main and one check meter (33kV metering point) with accuracy class of 0.2s. All main and check meters are two-way tri-vector meters capable of recording import and export of electricity and under the control of state electricity utility. All the clusters of the project activity will be exclusively connected to WTGs of the project activity i.e. there will be no WTGs of other project owners that are connected to these clusters. Summation of meter reading for all the clusters (connecting 30 machines) will provide total electricity generated by the project activity (EGpe). This electricity exported (EGpe) will be continuously monitored and recorded monthly. All the main meter and check meters are calibrated by state utility annually. The value of EGpe can be cross-checked from the transmission loss calculation sheet of Suzlon and DISCOM. The value of EGpe will be used for obtaining the $EG_{export,y}$ by using the apportioning formula mentioned in registered PD. **EG_{imp}:** Electricity imported recorded at 33kV (JMR at 33kV metering point) cluster metering points connecting a total of 30 machines of the project activity This value is also monitored at Cluster metering point (33kV metering point) by using same set meters as discussed in above parameter "EGpe". This parameter will be continuously monitored and recorded monthly. The value of EG_{imp} can be cross-check from the transmission loss calculation sheet of Suzlon and DISCOM. **EG*e*:** Electricity export recorded at 220kV meters (main and check) at Suzlon pooling station connecting machines of the project activity and the machines commissioned by other project developers The value of this parameter is monitored at Suzlon pooling sub-station (220kV metering point/Bulk metering point) with one set of main & check meter with accuracy class of 0.2s. This Suzlon pooling sub-station consists of all the WTGs of CDM project activity and non- CDM project activity. This parameter will be continuously monitored and recorded monthly. The energy meters (main & check) is calibrated by state utility annually. The value of EGe will be used for obtaining the Lep by using the formula mentioned in registered PD **L*ep***: Total percentage of transmission loss for export between the metering point at 33kV (sum of all the WEGs connected to Bulk metering point including non-project activity as well as project activity WTG's) metering points and the metering point at 220kV at Suzlon pooling substation. The value of this parameter is calculated based on formula mentioned in registered PD and same was checked and found to be correct and accepted. The calculation is under the purview of State board. The value of Lep will be used for obtaining the $EG_{export,y}$ by using the apportioning formula mentioned in registered PD.

	Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors. $BE_y = EG_{BL,y} * EF_{CO2,grid,y}$ Where: BE_y : Baseline Emissions in year y; tCO_2 $EG_{BL,y}$: Energy baseline in year y; kWh EF_{CO2}: Emission Factor in year y; t CO_2e/kWh As per registered VCS PD, combined margin emission factor is 0.8971 tCO_2 /MWh. Hence the baseline emissions for the project activity for the current monitoring period are as follows. $BE_y = EG_{BL,y} * EF_{CO2} = 415,307.52 * 0.8971 = 372,572\ tCO_{2e}$ The project activity involves in harnessing wind power. So, the emissions from the project are zero. Leakage emission is not applicable as per the requirement of the methodology. As per the applied methodology, emission reductions are calculated as follows: $ER_y = BE_y – PE_y$ = 372,572 tCO_2e (round down values). Where: ER_y Emission reductions in year y (tCO_2e/yr) BE_y Baseline emissions in year y (tCO_2e/yr) PE_y Project emissions in year y (tCO_2e/yr) = 0 Hence, $ER_y = BE_y$

4.3 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.

Findings	CAR 04 was raised during the verification process. The description of the CAR and its closure is described below in Appendix 2 of this report.
Conclusion	The metering arrangement is ABT bi-directional energy meters (main and check) at the State Electricity Board (SEB) substation. 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. Assessment team found that Since metering arrangement, monitoring practice, accuracy class, calibration interval is under control of state electricity board, the PP do not have all calibration certificates available with them. Error factor is than applied for the missed calibration and the approach is conservative and correct. The ER calculation is checked by the assessment team considering the deviation and found correct. Assessment team observed that wherever JMR billing cycle period and monitoring period are different, hence the export of each WTG is apportioned based on controller data. However complete month import is considered as a conservative approach. This approach is followed for the 1st and last month of the monitoring period and thus the same is acceptable to the assessment team. All the applicable checks and cross checks of the monitoring parameters are detailed out in the ER sheet and the same is found correct and acceptable by the assessment team. Assessment team confirms that all the energy meters (both main and check meter) installed at the substation are of accuracy class of 0.2s and are calibrated as per the national standards followed by the electricity board, but they are calibrated at least once in a year. Error factor is applied for the missed calibration period and the same is acceptable to the assessment team. The calibration of the energy meters installed at HT side of the transformer were carried out by Meter and testing division of the electricity board which is 3rd party organization and the same is acceptable to the assessment team. The Meter and testing division of the electricity board is accredited by NABL (National Accreditation Board for Laboratory, Govt of India) to carry out the testing of the meters which is as per the national regulation and thus traceability of the Calibration is also confirmed by the assessment team.

4.4 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	
NA	NA	NA	NA	NA

5 SAFEGUARDS

5.1 No Net Harm

No potential environment or socio-economic matter was found during the site visit. The project is renewable energy project and thus no negative impact observed onsite. CAR 06 is raised during the process and please refer Appendix 2 for the closure of the CAR.

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 2013. This report clearly mentioned that Wind

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.

S.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. This report clearly mentioned that Wind power plant operations do not result in direct air pollution. Adequate measures were taken to mitigate the envisaged impacts like spraying water on the road side to reduce dust level, etc. This was confirmed by the local stakeholders. 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.
3	Soil condition	There are negligible impacts envisaged during operation of the project activity. 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. The top soil excavated during construction, was stockpiled and used for compaction. The roads were not paved and soling was done with excavated earth & rock material, so land disturbance could be minimized. It was also confirmed that, the vegetation done at site helps for soil erosion. The same is confirmed during the stakeholder meetings

		during onsite visit. Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.
4	Biodiversity	During the validation site visit it was observed that the condition of ground vegetation will be gradually improved; No rare species has been found in the around area. The project site is not on the migration route of migratory bird. As Such Wind power plant do not have any obstruction in the path of migratory birds. With the implementation of Project, the greening water will be increased significantly; the biodiversity in the vicinity will be improved with the vegetation improvement. NO negative impact envisaged.
5	Employment Generation	The project activity employed local population as skilled workers as well as security guards which were envisaged during the validation site visit. The personnel employed by the project activity are also provided trainings and exposed to various awareness programs therefore a positive indicator has been accepted.
6	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. Positive impact envisaged. .

5.2 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 technical project description form the registered VCS PD. Assessment team confirmed the same during the verification site visit. However CAR 07 is raised during the verification process. Please refer Appendix 2 for the detail closure of the CAR. Also, as best practice method PP also placed a grievance register onsite to record any grievance from the stakeholders during and after the implementation of the project activity. Assessment team checked the grievance register maintained onsite and no negative comments were observed for the project activity. Local people are happy as the project generated employment opportunities and thus the living standards in and around the vicinity of the project is increased and thus assessment team confirms that local stakeholders have no issue with this project activity after implementation and continuous operation.
The interaction with some of the stakeholders during the site visit are presented below:

Name of the stakeholder	Lalit Gupta
Occupation	Villager
DOE QUESTION: Did PP promised employment opportunity? Answer: Yes, PP told us that employment will be generated and the locals will be given priority. Employment is also generated during the current monitoring period for non-skilled job and the same is checked by the assessment team during onsite visit. DOE also like to conclude that during the site visit it was observed that local people were employed for security and operation related work like water spraying, vegetation improvement and other unskilled work. DOE also found that skilled local persons were also employed by the organization for the operation and maintenance of the power plant.	

Name of the stakeholder	Anuroop Pandey
Occupation	Villager
DOE questions: Did the power plant discharge any harmful pollutants? Answer: NO the plant does not discharge any harmful pollutants. DOE questions: Did the power plant destroy any crop fields? Answer: The plant is implemented in barren land and there were no any fertile land or crop which is damaged.	

6 VERIFICATION CONCLUSION

Applus+ Certification has been engaged by M/s Mytrah Vayu (Pennar) Private Limited to perform the 2nd periodical verification of the "Vajrakarur wind power project in Andhra Pradesh".

The management of M/s Mytrah Vayu (Pennar) 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 VCS PD and the applied methodology ACM0002 version 13.0.

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. 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 PD;
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- The GHG emission reductions are calculated without material misstatements.

Verification period: 11/06/2014 to 03/06/2018 (inclusive of both days).

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

To present the baseline data Vintage wise for emission reduction calculation the apportioning ratio is calculated based on the controller data (Source of data: gross generation value provided by the PP) for period till 31/12 and for the period of 01/01 onwards for the billing cycle where December and January months are covered. This makes the Vintage wise VCUs based on the Calendar years. The calculation is presented in the ER sheet and found correct by the assessment team. The detail of the Factor calculation is presented below table 1 of this report

Table 1: Detail of Vintage Wise emission reduction value

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
11/06/2014 to 31/12/2014	75,811	0	0	75,811
01/01/2015 to 31/12/2015	96,684	0	0	96,684
01/01/2016 to 31/12/2016	94,381	0	0	94,381
01/01/2017 to 31/12/2017	85,561	0	0	85,561
01/01/2018 to 03/06/2018	20,135	0	0	20,135
Total	372,572	0	0	372,572

For Billing Cycle 23-12-2014 to 23-01-2015		
Total controller data for period 23-12-2014 to 23-01-2015	4604250	KWh
Total controller data for period 23-12-2014 to 31-12-2014	1336705	KWh
Apportioing Ratio for for period 23-12-2014 to 31-12-2014	0.2903	

For Billing Cycle 23-12-2015 to 23-01-2016		
Total controller data for period 23-12-2015 to 23-01-2016	5517928	KWh
Total controller data for period 23-12-2015 to 31-12-2015	1601854	KWh
Apportioning Ratio for for period 23-12-2015 to 31-12-2015	0.2903	

For Billing Cycle 03-12-2016 to 03-01-2017		
Total controller data for period 03-12-2016 to 03-01-2017	4176082	KWh
Total controller data for period 03-12-2016 to 31-12-2016	3905054	KWh
Apportioning Ratio for for period 03-12-2016 to 31-12-2016	0.935	

For Billing Cycle 03-12-2017 to 03-01-2018		
Total controller data for period 03-12-2017 to 03-01-2018	4121040	KWh
Total controller data for period 03-12-2017 to 31-12-2017	3853585	KWh
Apportioing Ratio for for period 03-12-2017 to 31-12-2017	0.935	

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED (VERIFICATION)

No.	Author	Title	References to the document	Provider
1	NA	Commissioning certificates of the WTGs implemented in the project site.	NA	Project participant
2	NA	Contract of the project participant with the DOE	Contract document signed between PP and DOE	Project participant
3	NA	Technical specifications of wind turbine generators from manufacturers	Manufacturer technical specifications	Project participant
4	NA	Power Purchase agreement for the project activity	NA	Project participant
5	NA	Registered VCS PD dated 20/04/2014 version 04. Registered CDM PDD dated 23/05/2013 version 02.8 https://www.vcsprojectdatabase.org/#/project_details/1214	NA	Project participant
6	NA	Registered Final Validation report 30/05/2013 version 1.4 Final Verification report (1st periodic)- dated 10/06/2014 version 03 https://www.vcsprojectdatabase.org/#/project_details/1214	NA	Project participant
7	NA	Emission Calculation sheet version 01 Emission Calculation sheet version 02 Emission Calculation Sheet version 03	22/02/2018 13/12/2018 26/12/2018	Project participant
8	NA	The operational lifetime of the project activity from the manufacturer=(Technical	Manufacturer technical specifications	Project participant

		specefications)		
9	NA	RBI: Reserve Bank of India www.rbi.org.in Ministry of Environment and forest: www.envfor.nic.in UNFCCC www.cdm.unfccc.int CEA: Central electricity authority www.cea.nic.in Income tax act 1961 http://law.incometaxindia.gov.in/DIT/ VCS: Verified Carbon Standard www.v-c-s.org	Reference link is provided.	Independent Search
10	NA	Tools/ guidelines used in the project activity • Tool to calculate the emission factor for an electricity system version 03 • Glossary of CDM terms version 07 • VCS verification report template version 03.4	UNFCCC CDM web site VCS Website	UNFCCC VCS
11	NA	JMR records for the complete monitoring period	JMR records	PP
12	NA	MR version 01 MR version 02 MR version 03	22/02/2018 13/12/2018 26/12/2018	PP
13	NA	Invoices for the complete monitoring	Invoice	PP

		period		
14	NA	Break down details of the complete monitoring period	Log sheet	PP
15	NA	Declaration regarding no participation in other GHG program for the concerned monitoring period	Declaration dated 13/12/2018	PP

APPENDIX 2:

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

CAR ID	01	**Date:** 30/06/2018
Description of CAR		
During the site visit and subsequent document review it was observed that the details of feeder wise location of the Wind turbines is missing in the MR. Corrective action is sought in the respective section of the MR. The details implementation of the project activity timeline is missing in the MR. Supporting documents such as Commissioning certificates, Power purchase agreement and O&M agreements are missing. The technical details supporting documents are not submitted to the assessment team. Corrective action is sought for the same.		
Project participant response		**Date:** 13/12/2018
Feeder wise details has been updated in Appendix 1 of MR V2. *Implementation dates of the project activity has been updated in section 1.7 and 2.1 of the MR V2. Supporting documents such as commissioning certificates, power purchase agreement, O&M agreement, JMR, Invoices, Daily generation reports and Calibration reports is being provided with this submission.*		
Documentation provided by project participant		
MR V2, Commissioning Certificates, Power Purchase Agreement, O&M Agreement, JMR, Invoices, Daily generation reports, technical details of WTGs and Calibration reports.		
DOE assessment		**Date:** 26/12/2018

The feeder details are now included in the revised MR version 02 which is as per the onsite practice. The detail of implementation of the project is also included in the revised MR version 02. All the supporting documents like Commissioning Certificates, Power Purchase Agreement, O&M Agreement are checked and found correct by the assessment team. The technical details of the WTGs are cross checked from the manufacturer specification and also checked during the verification site visit. CAR is thus closed. CAR is thus closed.

CAR ID	02	**Date:** 30/06/2018
Description of CAR		
The breakdown details of the Wind turbines are missing in the MR. However, the supporting document regarding the breakdown details are not provided to the assessment team. Corrective action is sought in this regard.		
Project participant response		**Date:** 13/12/2018
Breakdown details of the Wind turbines has been updated in Appendix 2 of the MR V2.		
Documentation provided by project participant		
MR V2 and Breakdown sheet.		
DOE assessment		**Date:** 26/12/2018
The Breakdown details are checked from the log sheets for the complete monitoring period. The power plant undergone scheduled maintenance and breakdown and no unforeseen incident observed during the current monitoring period. CAR is thus closed.		

CAR ID	03	**Date:** 30/06/2018
Description of CAR		
The JMR sheets and Invoice for the complete monitoring period is missing. Emission reduction value is thus reserved and will further be analysis on the submission of the documents. The comparison of actual VER and estimated VER is also missing in the MR. Corrective action is sought.		

Project participant response	**Date:** 13/12/2018
JMR and Invoices for the complete monitoring period is being provided. Emission reduction comparison has been updated in the MR V2.	
Documentation provided by project participant	
JMR, Invoices and MR V2 and ER V2.	
DOE assessment	**Date:** 26/12/2018
The JMR sheets and invoices for the complete monitoring period is checked and found correct. The estimation of ER for the monitoring period is found correct. CAR is thus closed.	

CAR ID	04	**Date:** 30/06/2018
Description of CAR		
The calibration certificates for the complete monitoring period is missing. The details are also missing in the MR. Corrective action sought for the same		
Project participant response		**Date:** 13/12/2018
The feeder wise calibration details is being updated in MR V2. Also year wise calibration details in being provided with this submission.		
Documentation provided by project participant		
Calibration report.		
DOE assessment		**Date:** 26/12/2018
As per the registered PD the Calibration is once in a year. Assessment team checked the Calibration reports and observed that the Calibration frequency was not followed and thus there is calibration delay for project activity considering annual calibration. PP applied error factor for delayed period considering the annual calibration frequency to reduce the emission reductions. The error factor is applied for period from 23/03/2015 to 03/04/2016 and from 03/01/2017 to 03/06/2018 period conservatively. The Calculation is checked and found correct. CAR is thus closed.		

CAR ID	05	**Date:** 30/06/2018
Description of CAR		
As per section 1.9 of the VCS MR, the project is not participated in other GHG program and has not intended to pursue credits from other GHG program for the concerned monitoring period. Supporting documents and details regarding the same is missing in the MR. Also, PP needs to justify whether REC benefits is taken for the present Monitoring period covered under VCS. Corrective action is sought for the same.		
Project participant response		**Date:** 13/12/2018
Section 1.9 of VCS MR has been updated, this project is already registered with UN CDM mechanism having project ID 9342. PP will not claim CERs for this monitoring period. This project is not registered with Indian REC mechanisms, same could be verified from the REC registry India website (https://recregistryindia.nic.in/).		
Documentation provided by project participant		
MR version 02 *Declaration*		
DOE assessment		**Date:** 26/12/2018
The project is registered under UNFCCC project mechanism. The declaration from the PP is checked and found correct. The project is not claiming any benefits from other GHG mechanism for the current monitoring period. CAR is thus closed.		

CAR ID	06	**Date:** 30/06/2018
Description of CAR		
During the document review it is observed that “No net Harm” details are missing in the MR. Moreover, supporting documents are not shared with DOE. Corrective action is sought in this regard in the respective section of the MR.		
Project participant response		**Date:** 13/12/2018
No net harm of the MR has been updated		
Documentation provided by project participant		
MR V2.		

DOE assessment	**Date:** 26/12/2018
The No Net Harm assessment is now updated in revised MR version 02 and found correct. CAR is thus closed.	

CAR ID	07	**Date:** 30/06/2018
Description of CAR		
During the document review it is observed that "Local Stakeholder" consultation details are missing in the MR. Moreover, supporting documents are not shared with DOE. Corrective action is sought in this regard in the respective section of the MR.		
Project participant response		**Date:** 13/12/2018
Local stakeholder section of the MR has been updated.		
Documentation provided by project participant		
MR V2.		
DOE assessment		**Date:** 26/12/2018
The project is now undergoing 2nd Verification and the stakeholders meeting was done at the time of validation. However, as a Continuous measure to improve stakeholder's wellbeing in the nearby area PP has place grievance register onsite to collect any negative or positive feedback from them. Assessment team checked the register and found that no such negative instances were recorded on the contrary local people are happy with the implementation of the project as it has improved their standard of Living and also impacted their livelihood in a positive manner. Local people were also getting Job from the implementation of the project activity which otherwise was not available and basically people were involved in labour work in the agricultural field. The result of the agricultural job is that people are not getting continuous financial support as agriculture here in India is whether specific. However the income is now continuous after getting placement in the projects and people are happy because of the same. CAR is thus 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	Das	Sukanta	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	Xue	Denny	Applus+ Certification
2.	Approver	IR	Sendin	Juan	Applus+ Certification B.U. Managing Director

Short CVs of the Team:

1. Mr. Sukanta DAS, has done M. SC in (Electronics and Photonics) and M. Tech in (Energy technology) from Tezpur Central University/ Indian Institute of technology Bombay in India. He is a certified lead auditor for ISO 14001 EMS LA and ISO 9001 QMS LA from International registry for Certified Auditors (IRCA) and Certified Lean Management practitioner from Quality Council of India (QCI). He has more than Nine (9) years of working experience at TUV NoRD/ Re-consult/CRA/APPLUS certifications under various categories of projects stating from Renewable to waste to supercritical projects. He was JI/ CDM Lead Assessor in TUV NoRD and was involved in more than 100 CDM validation and verifications activities in Gold Standard, VCS, CDM projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1, 13 technical areas 1.2/1.1/13.1. Currently he is associated with True Quality Certifications Private Limited and is empanelled with APPLUS certification to carry out GHG audit.

2. Hanshen (Denny) Xue (Master Degree in Environmental Engineering, Bachelor Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based on Shanghai. He has 1.5 years of work experiences in CDM project development. Before he joined Applus+ LGAI, he has been worked for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

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
CO2	Carbon dioxide
CO2e	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
JMR	Joint Metering reading
RBI	Reserve Bank Of India
PP	Project Participant

APPENDIX 5: CALIBRATION DETAILS OF THE METERS

Meter Arrangement at Transmission line:

WTG ID	Capacity (MW)	33 KV metering point								
		Main Meter	Check Meter	Make	Accuracy Class	Calibration Date	Calibration Date	Calibration Date	Calibration Date	Calibration Delay
VAR 38, VAR39, VAR 40, VAR209, VAR18, VAR 208, VAR 23,VAR 024 (Phase 1 WTGs)	16.8	12091060	12091061	L&T	0.2 s	08/03/2013	06/04/2014	15/03/2016	20/08/2018 Validity -1 year Till 19/08/2019	Yes- Error Factor applied
VAR204, VAR15, VAR16, VAR205, VAR10,VK108, VK09, VK110 (Phase 2 WTGs)	16.8	12091057	12091058	L&T	0.2 s	15/04/2013	13/04/2014	15/03/2016	20/08/2018 Validity -1 year Till 19/08/2019	Yes- Error Factor applied
VAR217, VAR216,VAR26 (Phase 3 WTGs)	6.3	12091064	12091065	L&T	0.2 s	05/07/2013	05/07/2014	15/03/2016	20/08/2018 Validity -1 year Till 19/08/2019	Yes- Error Factor applied

VAR22, VAR29, VAR19 (Phase 4 WTGs)	6.3	12091069	12091070	L&T	0.2 s	08/06/2013	05/07/2014	15/03/2016	20/08/2018 Validity -1 year Till 08/2019	Yes- Error Factor applied
VAR203, VAR300 (Phase 5 WTGs)	4.2	12091085	12091086	L&T	0.2 s	08/06/2013	05/07/2014	15/03/2016	20/08/2018 Validity -1 year Till 19/08/2019	Yes- Error Factor applied
VAR50, VAR51 (Phase 6 WTGs)	4.2	12091075	12091076	L&T	0.2 s	08/06/2013	07/06/2014	15/03/2016	20/08/2018 Validity -1 year Till 19/08/2019	Yes- Error Factor applied
VAR30, VAR28, VAR27 (Phase 7 WTGs)	6.3	12091066	12091072	L&T	0.2 s	07/07/2013	06/07/2014	15/03/2016	20/08/2018 Validity -1 year Till 19/08/2019	Yes- Error Factor applied
VAR 37 (Phase 8 WTGs)	2.1	12091080	12091081	L&T	0.2 s	07/04/2013	06/04/2014	15/03/2016	20/08/2018 Validity -1	Yes- Error Factor applied

									year Till 19/08/2019	

Metering details at pooling station:

220 KV Meter reading at 33/220 KV Pooling station							
Main Meter	**Check Meter**	**Make**	**Accuracy Class**	**Calibration Date**	**Calibration Date**	**Calibration Date**	**Calibration Delay**
5269391	5269392	Elster	0.2s	10/07/2012	08/07/2013	06/07/2014	No

New Main Meter	**New Check Meter**	**Make**	**Accuracy Class**	**Calibration Date**	**Calibration Date**	**Calibration Delay**
XC559940	XC559941	Secure	0.2s	02/02/2016	20/08/2018	Yes - Error Factor applied

The new meters are installed at 33/220 KV pooling station on 23/03/2016 and the new meters were calibrated prior to installation.

There is calibration delay for project activity considering annual calibration. PP applied error factor for delayed period considering the annual calibration frequency to reduce the emission reductions. The error factor is applied for period from 23/03/2015 to 03/04/2016 and from 03/01/2017 to 03/06/2018 period conservatively.