WIND BASED POWER GENERATION BY MYTRAH ENERGY (INDIA) LIMITED (EKIESL-VCS-JANUARY-16-01)

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Summary:

Verification purpose: The purpose of the project activity is to generate electrical energy using renewable energy source (wind) for the purpose of captive utility. The project activity generates electricity using wind potential and converts it into kinetic energy using Wind turbines, which drives the alternators to generate energy. The total installed capacity of the project is 233.1 MW; which involves operation of 156 Wind Turbine Generators (WTGs) with capacity of 0.85 MW each located at Karnataka (112 WTGs) and Andhra Pradesh (44 WTGs) implemented by Mytrah Vayu Krishna Private Limited and 67 Wind Turbine Generator (WTGs) of 1.5 MW implemented by Mytrah Vayu (Manjira) Private Limited Tamil Nadu state in India. These are the subsidiary companies of Mytrah Energy (India) Limited. However the project is promoted by Mytrah Energy (India) Limited, which is also the project proponent in the project activity. The generated electricity is exported to the regional grid system which is under the purview of the Southern grid of India.

The power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. Hence, as per VCS PD, it results in reduction of GHG emissions. GHG emission reductions from the project activity will be 479,448 tons of CO_2e per year and total GHG emission reductions for the chosen 10 year crediting period will be 4,794,480 tons of CO_2e.

The project is registered with VCS with Project ID 1521[1]. Start date of the project activity is the 21/02/2014. The monitoring period for this VCS verification is chosen from 02/04/2016 to 01/05/2018 (including both days) and the project activity achieved **701,051** tCO_2e emission reductions during this monitoring period.

[1] http://vcsprojectdatabase.org/#/project_details/1521

A risk based approach has been followed to perform this verification activity. In the course of verification, 03 Corrective Action request (CAR) and 01 Clarification Requests (CLs) were raised and successfully closed & 01 FAR was raised. 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 *LGAI Technological Center S.A. (Applus+ Certification)* with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

CONTENTS

1 Introduction 5
1.1 Objective 5
1.2 Scope and Criteria 5
1.3 Level of Assurance 6
1.4 Summary Description of the Project 6
2 Verification Process 6
2.1 Method and Criteria 6
2.2 Document Review 10
2.3 Interviews 10
2.4 Site Inspections 10
2.5 Resolution of Findings 10
2.5.1 Forward Action Requests 11
2.6 Eligibility for Validation Activities 11
3 Validation Findings 11
3.1 Participation under Other GHG Programs 11
3.2 Methodology Deviations 11
3.3 Project Description Deviations 11
3.4 Grouped Project 12
4 Verification Findings 13
4.1 Project Implementation Status 13
4.2 Accuracy of GHG Emission Reduction and Removal Calculations 13
4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals 14
4.4 Non-Permanence Risk Analysis 15
5 safeguards 15
5.1 No Net Harm 15
5.2 Local Stakeholder Consultation 15
6 Verification conclusion 16
APPENDIX 1: Documents reviewed or referenced (Verificaton) 17
APPENDIX 2: Clarification requests, corrective action requests (CAR/CL/FAR) 18
APPENDIX 3: Competence of team members and technical reviewers 20
APPENDIX 4: Abbreviations 21
APPENDIx 5: Calibration details of the meters 22

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Applus+ Certification) has been appointed by "Mytrah Energy (India) Limited (subsidiary of Mytrah Vayu Krishna Private Limited and Mytrah Vayu (Manjira) Private Limited)" to perform the 2nd periodic VCS verification of the "Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)" 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 Validation 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 16.0"
- the project's monitoring plan is assessed against "ACM0002 - Version 16.0"
- 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 for project activities Version 01.0
- CDM project standard for project activities Version 01.0
- CDM project cycle procedure for project activities Version 01.0
- VCS standard v3.7
- VCS 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 for project activities Version 01.0, VCS PD Version 02 dated 10/02/2016 and Final Validation report version 01 dated 12/02/2016, CDM project standard for project activities Version 01.0, CDM project cycle procedure for project activities Version 01.0 and VCS guideline and standard version 3.7.

The audit 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 audit 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

The project activity is a grouped project, consisting of 223 Wind Turbine Generators (WTGs) installed in states of Andhra Pradesh, Karnataka and Tamilnadu, India. The intent of the Project Activity is to reduce GHG emission and promote sustainable development by use of renewable energy (Wind) for generation of power by bringing together a number of investors with small power requirements to invest into wind turbines. In the absence of the project activity, the equivalent amount of electricity would have been generated by the power plants connected with the southern grid which is predominantly based on fossil fuel.

The project is registered with VCS with Project ID 1521. Start date of the project activity is the 21/02/2014. The monitoring period for this VCS verification is chosen from 02/04/2016 to 01/05/2018 (including both days) and the project activity achieved **701,051** tCO_2e emission reductions during this 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 16.0. 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 16.0. The verification was based on the requirements in the CDM validation and verification standard for project activities Version 01.0, CDM project standard for project activities Version 01.0, CDM project cycle procedure for project activities Version 01.0 and VCS 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 CDM validation and verification standard for project activities Version 01.0 and VCS standard and 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 audit team, the members of the audit 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. 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 audit team, and the results from validating the identified criteria.

The verification checklist consists of three tables. The different columns in these tables are described in the tables below:

Verification Checklist Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements which the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the draft verification report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is verified. This is to ensure a transparent verification process.

Verification Checklist Table 2: Requirement checklist				
Checklist Question	Reference	Comment	Draft Conclusion	Final Conclusion
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organized in several different sections. Each section is then	Gives reference to documents where the answer to the	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used	Conclusions are presented based on the assessment of the first MR version. This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is	Conclusions are presented in the same manner based on the assessment of the final MR version and further documents including

further sub-divided. The lowest level constitutes a checklist question.	checklist question or item is found.	to explain the conclusions reached.	used when the audit team has identified a need for further clarification. Forward action request to highlight issues related to project implementation that requires review during the further verifications.	assumptions presented in the documentation.

Verification Checklist Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 1&2	Summary of project owner response	Validation/Verification conclusion
If the conclusions from the draft verification are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 1&2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the audit team should be summarized in this section.	This section should summarize the audit team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Appointment of the audit team

Appointment of the audit 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 audit 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 is covered by the audit team.

Selection of Audit team as below:

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Dr. Atul Takarkhede	LA/TE	YES	YES	YES	YES
Mr. Simon Shen	TR	YES	YES	NA	NA

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

Document review

The Monitoring report submitted by the Client was reviewed against the approved methodology, VCS PD Version 02 dated 10/02/2016 and Final Validation report version 01 dated 12/02/2016 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 LGAI Technological Center S.A. (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 in Section 2.3.

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 LGAI Technological Center S.A. (Applus+ Certification)'s positive conclusion on the 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 2 submitted by PP on 07/06/2018 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 audit 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 document 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.	Patel	Yusuf	Site Engineer	22/05/2018 & 23/05/2018	Implementation of the project, monitoring and emission reduction calculations	Dr. Atul Takarkhede
2.	Patil	Sadanand	Site Engineer			
3.	Kumar	Senthil	Site Engineer			
4.	Sahu	Prakash	Project Manager-EKI		monitoring report and emission reduction calculations	
5.	Patil	Ramkrishna	GM-EKI			

2.4 Site Inspections

Duration of on-site inspection: 22/05/2018 & 23/05/2018				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Audit team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Audit team also checked that whether the monitoring plan as described in the PD is actually practised onsite. Also audit team checked any change in host country criteria which may affect the baseline of the project activity.	Tamilnadu, AP & Karnataka, India	22/05/2018 (TN) & 23/05/2018 (AP & Karnataka)	Dr. Atul Takarkhede

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 LGAI Technological Center S.A. (Applus+ Certification)'s positive conclusion on the 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.

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Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	00	00
Description of project activity	00	01	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
- Demonstration of additionality	00	00	00
- Emission reductions	00	02	00
-Calibration details	01	00	01
- Monitoring plan	00	00	00
Others (please specify)	00	00	00
Total	**01**	**03**	**01**

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 VCS verification of the project activity and FAR open from 1st VCS verification. Resolution of the same is presented in Appendix 2 of this report. However, same is open for subsequent verification.

2.6 Eligibility for Validation Activities

This section is not applicable as the project has undergone verification only.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is not applied under any other GHG program like CDM, GS, hence not applicable. Since electricity from 45 MW (30 WTGs of 1.5 MW) of Tamilnadu WTGs is claiming REC credit for this monitoring period, hence equivalent amount of electricity is not claiming VCS credit.

3.2 Methodology Deviations

Not applicable.

3.3 Project Description Deviations

Deviation 1:

For Tamil Nadu Vagarai site WTGs, deviation is applied for not having all calibration certificates with PP.

The metering arrangements, monitoring practices, accuracy class of monitoring meters, calibration schedule is completely under control of State Electricity Board which are owned by respective State Government and PP do not have control or access to it. The PP do not have all calibration certificates available with them as same are not provided by State Utility to PP. Hence error factor is applied for complete monitoring period for Tamil Nadu site WTGs. Maximum permissible error factor has been applied for complete monitoring period as a conservative approach. The current monitoring period is well within the validity period of initial calibrated meters.

The same approach found to be appropriate and conservative, hence accepted by audit team.

Deviation 2:

Due to some administrative issues State Utility, AP has not made available JMR to the PP for the month of March and April 2018 for Burgula, Andhra Pradesh site. Hence, PP couldn't raise invoices also for this months. Hence, due to non-availability of documents, DGR (controller meter reading) values is being considered with a conservative approach as 10% lower values in export values for ER calculations. The actual Export values are maximum 6% lower as compared to last six months DGR values due to transmission losses. This shows that the transmission losses between controller to monitoring meters is less than 6%. For Import, the maximum import value i.e. 34250 kWh for the month October 2017 in this monitoring period has been considered as a conservative approach.

As the approach is conservative and will not lead overestimation of ER value, accepted by audit team.

3.4 Grouped Project

Not applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity, "Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)" was registered as a VCS project on 12/02/2016 applying the methodology ACM0002 - Version 16.0. The WTGs of the project activity are owned by the Project Proponent, i.e. Mytrah Energy (India) Limited (subsidiary of Mytrah Vayu Krishna Private Limited and Mytrah Vayu (Manjira) Private Limited), which was verified from commissioning certificate and the PPA for the project activity.

The proposed project activity involves the installation of Wind Power Projects. The total installed capacity of the project is 233.1 MW; which involves operation of 156 Wind Turbine Generators (WTGs) with capacity of 0.85 MW each located at Karnataka (112 WTGs) and Andhra Pradesh (44 WTGs) implemented by Mytrah Vayu Krishna Private Limited and 67 Wind Turbine Generator (WTGs) of 1.5 MW implemented by Mytrah Vayu (Manjira) Private Limited Tamil Nadu state in India. These are the subsidiary companies of Mytrah Energy (India) Limited. However the project is promoted by Mytrah Energy (India) Limited, which is also the project proponent in the project activity.

The ex-ante fixed grid emission factor of 0.9817 tCO_2/MWh has been used for the baseline emission calculation which is line with the registered VCS PD.

By comparing the actual ER claimed in this monitoring period with the estimate in the registered VCS PD (998,305 tCO_2e for the monitoring period estimated), the actual emission reductions (701,051 tCO_2e for the monitoring period) are lower than by 29.78% what is stated in the registered VCS PD which surely will not lead to the overestimation of VERs.

The audit team confirmed that there is no proposed or actual change to the project design during this monitoring period.

All required equipments and procedures 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, FVR and approved methodology ACM0002 - Version 16.0. The organisational role and responsibility as mentioned in the registered PD is followed onsite. All the monitoring equipment was calibrated as per the specified interval in the registered PD. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same.

Start date of the project activity is 21/02/2014. The audit team observed that the project is in line with the registered PD, FVR, previous verifications and approved methodology. CAR 01 was raised for editorial mistake in VCS declaration provided by PP and was successfully closed by appropriate corrections in Declaration.

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 02 & CAR 03 was raised during the verification. The description of the CAR and its closure is described below in Appendix 2 of this report.
Conclusion	**Ex-ante Parameter:** **$EF_{grid,CM,y}$** = Parameter is fixed ex-ante for the entire crediting period and as per the validated VCS PD same is fixed 0.9817 tCO_2/MWh. Verification team found same was

	used in the ER calculations. **Baseline Emissions:** The baseline Emissions for a given year is calculated by multiplying the energy baseline with the grid emission factor. The grid in this case would be the 'Indian Grid' Formula Used:- **$BE_y = EG_{PJ,\ y} * EF_{grid,\ CM,\ y}$** (1) Where: BE_y: Baseline emissions in year y (tCO_2e/yr) $EG_{PJ,\ y}$: Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr) $EF_{grid,CM,y}$: Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2e/MWh) $EG_{PJ,\ y}$ = The verification team has checked the entire monthly JMR reports for net electricity generated & supplied to the grid and crosschecked same with the invoices raised by PP towards State Utilities for the monitoring period. All values are found correct. All the parameters are monitored and recorded as per the monitoring plan in the registered VCS PD. The verification team has crosschecked the revised emission reduction sheet and monitoring report data with the JMR sheet and invoice and found all the values are matching. PE_y = As per ACM0002 - Version 16.0, all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected. As the project activity involved wind project emissions (PE_y) are taken as zero. Leakage: As per ACM0002 - Version 16.0, Leakage emissions are not considered for the project activity.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the break down log for the monitoring period. During the verification site visit the feeder wise location of the WTGs is also checked. The Calibration details of the monitoring meters are also checked with calibration certificates.
Findings	CL 01 was raised during the verification. The description of the CL and its closure is described below in Appendix 2 of this report.
Conclusion	The metering arrangement is tri-vector bi-directional energy meters of Elster/L&T Make; accuracy class 0.2s (main and check) at the State Electricity Board (SEB) substation. For measuring the energy delivered by the project activity, one set of main meters (part of interconnection facilities) and check meters is provided at each feeders by the project proponent and respective electricity distribution company. 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. During commissioning of the WTGs monitoring meters of accuracy class i.e. 0.2s were installed. The meters are monitored continuously & cumulative readings are taken at the end of the month by joint meter reading procedure. These are sealed by State Utilities to avoid malfunctioning with meter readings. Calibration frequency of the monitoring meters is once in a 5 years. However, Meters are calibrated by the meter testing division of the state utility in the presence of O&M Contractor / investor's representatives and State Utilities officials to ensure the working of meter within permissible limits, however, calibration frequency and schedule is under the complete

	discretion of State Utility and PP do not have control on it. The calculation of net electricity supplied to grid is under purview of state electricity board and PP does not have control on it. Calibration details of the monitoring meters checked with calibration certificates submitted by PP and found that calibration frequency of once in 5 years is complied. However, PP do not have all calibration certificates available with them for Tamil Nadu site WTGs, hence maximum error factor i.e. maximum permissible limit is applied for complete monitoring period for Tamil Nadu site WTGs. In India State Utilities are owned by respective State Government and have their own working practices. Hence the verification team accepted the conservative approach of ER calculations. The break down log is checked and there is no major breakdown during the monitoring period except WTG 49. No unforced error observed.

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	
1.	Not applicable	Not applicable	Not applicable	Not applicable

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 in Air or water quality onsite. Being renewable power source and no environmental emissions involved, Wind projects are exempted from Environmental Impact Assessment (EIA) studies and environmental clearance vide EIA Notification 2006 (SO S.O. 1533 dtd. 14/09/2006[2]) & amendments thereof issued by Ministry of Environment, Forest & Climate Change (MoEFCC).

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 project description form the registered VCS PD. Local persons were given employment in security & maintenance work. Audit team confirmed the same during the verification site visit by interviews of some local persons. Same is presented in below table:

Name	Mr. Suresh
Occupation	Security Guard
Ques: Does project have any adverse impact in the area? Ans: No. There are no any adverse impacts. We are happy due to project implementation. Ques: Have local peoples are given employment? Ans: Yes. Employed in O&M work and unskilled as security & labour work.	

[2] envfor.nic.in/legis/eia/so1533.pdf

6 VERIFICATION CONCLUSION

LGAI Technological Center S.A. (Applus+ Certification) has been engaged by Mytrah Energy (India) Limited (subsidiary of Mytrah Vayu Krishna Private Limited and Mytrah Vayu (Manjira) Private Limited) to perform the 2nd periodical verification of the "Wind Based Power Generation by Mytrah Energy (India) Limited (EKIESL-VCS-January-16-01)"

The Mytrah Energy (India) Limited (subsidiary of Mytrah Vayu Krishna Private Limited and Mytrah Vayu (Manjira) 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 16.0.

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 can confirm that:

- the project is operated as planned and described in the project document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the VCS 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: 02/04/2016 to 01/05/2018 (including both days)

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

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
02/04/2016 to 31/12/2016	326,176	0	0	326,176
01/01/2017 to 31/12/2017	322,223	0	0	322,223
01/01/2018 to 01/05/2018	52,652	0	0	52,652
Total	**701,051**	0	0	**701,051**

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	VCS PD	Version 02 dated 10/02/2016	Project participant
6.	NA	Final Validation report	version 01 dated 12/02/2016	Project participant
7.	NA	Final Monitoring report for 1st verification	Version 04 Dated 25/05/2017	Project participant
8.	NA	Verification Report for 1st verification	Version 01 Dated 26/05/2017	Project participant
9.	NA	Ministry of Environment and forest: www.envfor.nic.in UNFCCC: www.cdm.unfccc.int CEA: Central electricity authority: www.cea.nic.in VCS: Verified Carbon Standard: www.v-c-s.org	Reference link is provided.	Independent Search
10.	NA	Tools/ guidelines used in the project activity • CDM Methodology ACM0002 - Version 16.0 • Tool to determine the remaining lifetime of the project activity in line with Annex 15 EB 50 • Tool to calculate the emission factor for an electricity system - Version 05.0 • Glossary of CDM terms version 07 • VCS verification report template version 03.4	UNFCCC CDM web site	UNFCCC
11.	NA	JMR records for the complete monitoring period	JMR records	Project participant
12.	NA	MR version 1 MR version 2	29/05/2018 07/06/2018	Project participant
13.	NA	Emission Calculation sheet version 01 Emission Calculation sheet version 02	29/05/2018 07/06/2018	Project participant
14.	NA	Invoices for the complete monitoring period	Invoice	Project participant
15.	NA	Break down details of the complete monitoring period	Log sheet	Project participant
16.	NA	Self-Declaration from PP for not participating/claiming other emission reduction programme	Declaration	Project participant

APPENDIX 2: CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS & FARWARD ACTION REQUEST (CL/ CAR/FAR)

VERIFICATION FINDINGS

Project Implementation Status

CAR ID	01	**Section no.**	VCS MR	**Date:** 02/06/2018
Description of CAR				
Editorial mistake in PP name is observed in VCS Declaration provided by PP. PP requested to submit correct version of same.				
Project participant response				**Date:** 07/06/2018
Updated VCS Declaration is being submitted				
Documentation provided by project participant				
VCS Declaration.				
DOE assessment				**Date:** 15/06/2018
PP has submitted corrected VCS Declaration with PP name. CAR closed.				

Accuracy of GHG Emission Reduction and Removal Calculations

CAR ID	02	**Section no.**	4.4 of MR	**Date:** 02/06/2018
Description of CAR				
Information on the factor influencing lower emissions against estimated in VCS PD is missing in section 4.4 of MR. Correction requested.				
Project participant response				**Date:** 07/06/2018
Explanation regarding Lower PLF has been added in section 4.4 of MR				
Documentation provided by project participant				
MR V2				
DOE assessment				**Date:** 15/06/2018
MR has been revised for explanation of lower estimation of ER. CAR closed.				

CAR ID	03	**Section no.**	3.2 of MR	**Date:** 02/06/2018
Description of CAR				
PP requested to submit JMR & invoices for April 2018.				
Project participant response				**Date:** 07/06/2018
For Burgula, Andhra Pradesh site PP currently don't have March and April 2018 JMR due to non-submission of same from State Utility as there are some administrative issues. Hence, PP couldn't raise invoices for these months. Thus, due to non-availability of documents, DGR (controller meter reading) values are being considered with a conservative approach. The actual Export values are maximum 6% lower as compared to last six months DGR values due to transmission losses. This shows that the transmission losses between controller to monitoring meters is less than 6%. For March and April-2018, 10% lower values in export has been considered as a conservative approach. For Import, the maximum import value i.e. 34250 kWh for the month October 2017 in this monitoring period has been considered as a conservative approach. Same is considered as Deviation 02 in MR.				
Documentation provided by project participant				
MR V2				
DOE assessment				**Date:** 15/06/2018
Due to some administrative issues State Utility, AP has not made available JMR to the PP for the month of March and April 2018 for Burgula, Andhra Pradesh site. Hence, PP couldn't raise invoices also for this months. Hence, due to non-availability of documents, DGR (controller meter reading) values is being considered with a conservative approach as 10% lower values in export values for ER calculations. The actual Export values are maximum 6% lower as compared to last six months DGR values due to transmission losses. This shows that the transmission losses between controller to monitoring meters is				

less than 6%. For Import, the maximum import value i.e. 34250 kWh for the month October 2017 in this monitoring period has been considered as a conservative approach. As the approach is conservative and will not lead overestimation of ER value, accepted by audit team.

Quality of Evidence to Determine GHG Emission Reductions and Removals

CL ID	01	**Section no.**	3.3 of MR	**Date:** 02/06/2018
Description of CAR				
FAR form 1 Verification: *For TN WTGs: PP has applied an error of 0.2% (maximum permissible error of the meter) for the whole period due to non-availability of the calibration certificates for some of the WTGs. Thus PP is requested to adjust the VER for the next verification if actual error is more the applied error.* PP requested to clarify status of availability of calibration certificates after end date of first verification.				
Project participant response				**Date: 07/06/2018**
The calibration is under purview of state electricity board and PP do not have any control on it. Thus though state electricity board conducted the calibration of meters, the calibration certificates are not available with PP. PP is following for the same, however till date calibration certificates are not available with PP. PP has requested deviation for the same, and applied error factor conservatively for TN site WTGs for complete monitoring period.				
Documentation provided by project participant				
NA				
DOE assessment				**Date:**
For Tamil Nadu Vagarai site WTGs, deviation is applied for not having all calibration certificates with PP. The metering arrangements, monitoring practices, accuracy class of monitoring meters, calibration schedule is completely under control of State Electricity Board and PP do not have control or access to it. The PP do not have all calibration certificates available with them as same are not provided by State Utility to PP. Hence error factor is applied for complete monitoring period for Tamil Nadu site WTGs. Error factor has been applied for complete monitoring period as a conservative approach. The current monitoring period is well within the validity period of initial calibrated meters. The same approach found to be appropriate and conservative, hence accepted by audit team.				

FAR ID	01	**Section no.**	3.3 of MR	**Date:** 15/04/2018
Description of FAR				
FAR form 1 Verification: *For TN WTGs: PP has applied an error of 0.2% (maximum permissible error of the meter) for the whole period due to non-availability of the calibration certificates for some of the WTGs. Thus PP is requested to adjust the VER for the next verification if actual error is more the applied error.*				
Project participant response				**Date:**
NA				
Documentation provided by project participant				
NA				
DOE assessment				**Date:**
To be checked and verify during next periodic verification.				

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	Takarkhede	Dr. Atul	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	Shen	Simon	LGAI Technological Center S.A. (Applus+ Certification)
2.	Approver	IR	Sendin	Juan	LGAI Technological Center S.A. (Applus+ Certification) B.U. Managing Director

Short CVs of the Team:

1. Dr. Atul Takarkhede counts with 9 years of experience in field of Environmental Auditing, consulting and accreditation. He is an Expert in ISO 9001-14001, CO_2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management Reporting for organizations environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; Conducting Environmental/water Audits; NABET requirements appliance. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. He has Ph.D. (Environmental Science) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical reports related to environmental science.

2. Meng (Simon) Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Assessment team and ISO 9001/14001 Lead Auditor for 3.5 years.

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification request
CM	Combined Margin
CMS	Central Monitoring system
CO_2	Carbon dioxide
CO_2e	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
PP	Project Participant

APPENDIX 5: CALIBRATION DETAILS OF THE METERS

Calibration details for Karnataka site WTGs 95.2 MW (112*0.85 MW WTGs)

Name	Feeder Number	Capacity (MW)	Make	Accuracy Class	Meter Type	Main Meter	Calibration Date
Mytrah Vayu (Krishna) Private Ltd.	Feeder 1 (0.85 *13)	11.05	L & T	0.2 s	Main Meter	13191120	19/12/2014 20/05/2017
					Check Meter	13191121	19/12/2014 20/05/2017
	Feeder 2 (0.85 MW * 20)	17	L & T	0.2 s	Main Meter	13191094	19/12/2014 20/05/2017
					Check Meter	13191095	19/12/2014 20/05/2017
	Feeder 3 (0.85 MW *19)	16.15	L & T	0.2 s	Main Meter	13191100	19/12/2014 20/05/2017
					Check Meter	13191104	19/12/2014 20/05/2017
	Feeder 4 (0.85 MW *21)	17.85	L & T	0.2 s	Main Meter	13191096	19/12/2014 20/05/2017
					Check Meter	13191097	19/12/2014 20/05/2017
	Feeder 5 (0.85 MW *18)	15.3	L & T	0.2 s	Main Meter	13191114	19/12/2014 20/05/2017
					Check Meter	13191122	19/12/2014 20/05/2017
	Feeder 6 (0.85 MW *21)	17.85	L & T	0.2 s	Main Meter	13191159	19/12/2014 20/05/2017
					Check Meter	13191380	19/12/2014 20/05/2017
	Substation		L & T	0.2 s	Main Meter	13194679	24/12/2014 20/05/2017
					Check Meter	13194671	24/12/2014 20/05/2017

Calibration details for Andhra Pradesh site WTGs 37.4 MW (44*0.85 MW WTGs

Name	Capacity (MW)	Make	Accuracy Class	Meter Type	Main Meter	Calibration Date
Mytrah Vayu (Krishna) Private Ltd.	37.4	Elster	0.2 s	Main Meter	16538864	02/03/2015
				Check Meter	16538867	02/03/2015
				Standby Meter	16538885	02/03/2015

Vagarai Tamil Nadu state 100.5 MW (67*1.5 MW WTGs)

Meter Serial Number	Make	Accuracy Class	Calibration Date
14190323	L & T	0.2s	08/02/2014
14190336	L & T	0.2s	07/02/2014
14190338	L & T	0.2s	08/02/2014
14190269	L & T	0.2s	07/02/2014
14190276	L & T	0.2s	07/02/2014
14190279	L & T	0.2s	08/02/2014
14190268	L & T	0.2s	07/02/2014
13197046	L & T	0.2s	04/01/2014
14190320	L & T	0.2s	07/02/2014
14190332	L & T	0.2s	01/02/2014
14190311	L & T	0.2s	31/01/2014
14190287	L & T	0.2s	31/01/2014
14190325	L & T	0.2s	31/01/2014
14190290	L & T	0.2s	30/01/2014
14190306	L & T	0.2s	30/01/2014
14190292	L & T	0.2s	31/01/2014
14190319	L & T	0.2s	31/01/2014
14190257	L & T	0.2s	07/02/2014
14190267	L & T	0.2s	07/02/2014
12091451	L & T	0.2s	16/05/2012
12091458	L & T	0.2s	16/05/2012
12092317	L & T	0.2s	06/07/2012
12091997	L & T	0.2s	10/07/2012
12092309	L & T	0.2s	10/07/2012
12092342	L & T	0.2s	11/07/2012
12092323	L & T	0.2s	06/07/2012
12092345	L & T	0.2s	05/07/2012
12092322	L & T	0.2s	11/07/2012
13197048	L & T	0.2s	04/01/2014
14190312	L & T	0.2s	30/01/2014
14190316	L & T	0.2s	31/01/2014
14190341	L & T	0.2s	11/02/2014
14190273	L & T	0.2s	07/02/2014
14190263	L & T	0.2s	06/02/2014
14190315	L & T	0.2s	08/02/2014
14190278	L & T	0.2s	08/02/2014
14190280	L & T	0.2s	08/02/2014
14190283	L & T	0.2s	30/01/2014
14190249	L & T	0.2s	30/01/2014

Meter Serial Number	Make	Accuracy Class	Calibration Date
14190301	L & T	0.2s	31/01/2014
14190337	L & T	0.2s	30/01/2014
14190313	L & T	0.2s	31/01/2014
14190281	L & T	0.2s	31/01/2014
12092267	L & T	0.2s	11/07/2012
12092331	L & T	0.2s	05/07/2012
12092346	L & T	0.2s	06/07/2012
12092313	L & T	0.2s	11/07/2012
12092314	L & T	0.2s	05/07/2012
12092297	L & T	0.2s	11/07/2012
14190294	L & T	0.2s	31/01/2014
14190299	L & T	0.2s	31/01/2014
14190331	L & T	0.2s	31/01/2014
14190333	L & T	0.2s	31/01/2014