GREEN ENERGY PROJECT AT KUTCH BY POWERICA LIMITED

Document Prepared By (Pankaj Kumar- LEAD AUDITOR/ TECHNICAL EXPERT)

LGAI Technological Center S.A.

Ctra. Acceso a la facultad de Medicina, s/n, Campus UAB

E – 08193 Bellaterra (Barcelona) – Spain

Tel: +34 935 672 008

Fax: +34 935 672 001

www.appluscertification.com

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Prepared By	LGAI Technological Center S.A. (Applus+ Certification) Ctra. Acceso a la facultad de Medicina, s/n, Campus UAB E – 08193 Bellaterra (Barcelona) – Spain Tel.:+34 935 672 008 Fax.+34 935 672 001

	www.appluscertification.com
Contact	Tel.:+34 935 672 008 Fax.+34 935 672 001 www.appluscertification.com agustin.calle@applus.com Carla.debat@applus.com
Approved By	Juan Sendin Caballero, BU Managing Director (Applus+ Certification)
Work Carried Out By	Mr. Pankaj Kumar - Lead Auditor/Technical expert

Summary:

Verification purpose: The project activity involves an installation of 12 Wind Turbine Generators (WTG) of total generating capacity of 21.6 MW (12 units of Vestas make V100 WTG). The WTG units are installed in Kutch district in the state of Gujarat.

The purpose of the project activity is to generate energy electricity by the utilization of wind energy and further selling the generated energy to the NEWNE Grid of India. In this process there is no consumption of any fossil fuel and hence it does not lead to any greenhouse gas emissions. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment.

The technology employed by the project activity converts kinetic energy in wind to mechanical energy and mechanical energy to electrical energy using wind turbine generators (WTGs). In this process, there are no greenhouse gas emissions or burning of any fossil fuels. The electricity is generated through sustainable means without causing any negative effect to the environment and therefore the technology is environmentally safe and sound.

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.

The project uses Vestas RRB Technology. The total emission reductions for the current monitoring period i.e. 22/10/2012 to 30/09/2018 (inclusive of both days) are is 285,875 tCO_2e.

This is the second monitoring under VCS and covers the 22/10/2012 to 30/09/2018 (inclusive of both dates). The project activity adopts crediting period of 10 years which can be renewed twice

Start date of crediting period for VCS verification: 14/07/2011 (Date of commissioning of first WTG).

The GHG credits from 22/10/2012 to 30/09/2018 under this monitoring period will be claimed under VCS only. An undertaking from the project participant confirms that project will not claim any other

scheme benefits for the concerned monitoring period.

A risk based approach has been followed to perform this verification activity. In the course of verification, 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.

A deviation for change in calibration frequency has been requested. As per registered CDM PDD, the calibration frequency is once every year, however it has been observed that the calibration of meters is not in control of PP and same is done by state electricity board. The state electricity board does not follow any fixed calibration frequency; hence deviation is requested for change in calibration frequency as once in five years. The new requested calibration frequency of 5 years is as per CEA notification http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pd, page 12 is considered to be in line with the requirement.

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "Powerica Limited" to perform the 2nd periodic verification of the "Wind power project at Tamilnadu by Powerica Limited" 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 12"
- the project's monitoring plan is assessed against "ACM0002, Version 12"
- 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 02 for the project activity
- CDM Project Standard version 02 for the project activity
- CDM Project Cycle Procedure version 02 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 above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM Validation and Verification Standard version 02 for the project activity, review against registered PD and Final Validation report, CDM Project Standard version 02 for the project activity, CDM Project Cycle Procedure version 02 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.

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1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by "Powerica Limited" to perform the 2nd periodic verification of the "Green Energy Project at Kutch by Powerica Limited" 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 12"
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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 02 for the project activity
- CDM Project Standard version 02 for the project activity
- CDM Project Cycle Procedure version 02 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 02 for the project activity, review against registered PD and Final Validation report, CDM Project Standard version 02 for the project activity, CDM Project Cycle Procedure version 02 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

The project activity involves an installation of 12 Wind Turbine Generators (WTG) of total generating capacity of 21.6 MW (12 units of Vestas make V100 WTG). The WTG units are installed at Kutch district in the state of Gujarat.

The purpose of the project activity is to generate energy electricity by the utilization of wind energy and further selling the generated energy to the NEWNE Grid of India. In this process there is no consumption of any fossil fuel and hence it does not lead to any greenhouse gas emissions. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment.

The technology employed by the project activity converts kinetic energy in wind to mechanical energy and mechanical energy to electrical energy using wind turbine generators (WTGs). In this process, there are no greenhouse gas emissions or burning of any fossil fuels. The electricity is generated through sustainable means without causing any negative effect to the environment and therefore the technology is environmentally safe and sound.

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.

The details of the project are mentioned in the table:-

Project Site's Name	Capacity	State	Connection with Grid	Use of Electricity
Jangi & Vandhiya of Kutch, Gujarat, India	12 x 1.80 MW (V100 - Vestas RRB)	Gujarat	NEWNE Grid	Sale to Grid

The technology employed by the project activity converts kinetic energy in wind to mechanical energy and mechanical energy to electrical energy using wind turbine generators (WTGs). In this process, there are no greenhouse gas emissions or burning of any fossil fuels. The electricity is generated through sustainable means without causing any negative effect to the environment and therefore the technology is environmentally safe and sound.

Wind turbines produce electricity by using the natural power of wind to drive a generator. Wind has considerable amount of kinetic energy when blowing at high speeds. When this kinetic energy passes through the blades of the wind turbines, it is converted into mechanical energy and rotates the wind blades. When the wind blades rotate, the connected generator also rotates, thereby producing electricity.

The timeline for Commission of the project activity is also checked by the assessment team. 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 PD. No event observed during the current monitoring period which can alter or deviate from the methodology requirement. The details are as below:

WTG NO	Date of commissioning	Main Meter	Substation
JW27	16/07/2011	GJU61847	Jangi
NM82-04	14/07/2011	GJU61852/ GJU64200	Vandhiya
VW21	19/07/2011	GJU61844	Vandhiya
VW32	16/07/2011	GJU61845	Vandhiya
NM82-03	29/12/2011	GJB64151/ GJU65938	Vandhiya
NM82-06	29/12/2011	GJU64150/ GJU74496	Vandhiya
NM82-07	29/12/2011	GJU64154/GJU74998	Vandhiya
JW09	31/12/2011	GJU64145	Jangi
JW10	31/12/2011	GJU64174	Jangi
JW12	31/12/2011	GJU64152	Jangi
JW13	31/12/2011	GJU64146	Jangi
JW30	31/12/2011	GJU64165	Jangi

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 NEWNE 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 feeder details of the WTGs during the verification site visit and confirm that each WTG is connected to separate feeder.

Assessment team confirms following during the verification site visit:

1. Start date of the project activity is 31/03/2011 as mentioned in the registered CDM PDD, however For VCS, earliest commissioning date is start date of VCS project. Thus for VCS, start date of project activity is 14/07/2011.

2. An undertaking letter has been submitted by PP for 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. PP has given a written declaration that the credit claimed under VCS for the current monitoring period is not claimed under any other GHG mechanism.

3. Assessment team confirms that this is the second monitoring under VCS and covers the activity fixed crediting period of 7 years for the CDM project. Start date of crediting period for VCS verification: 14/07/2011 (Date of commissioning of first WTG). The GHG credits from 22/10/2012 to 30/09/2018 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "Double Counting.

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

Organization name	Powerica Limited
Contact person	Mr. Pradeep Gupta
Title	Head of Wind Energy
Address	601, Dakshina Building, Sector -11, CBD Belapur, Navi Mumbai – 400 016, Maharashtra, 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. Ramkrishna Patil
Title	GM – Operations

Address	Office No. 201, EnKing Embassy, Plot No. 48, Scheme No. 78, Part II, Vijay Nagar INDORE – 452010, India.
Telephone	+91 9096562065
Email	ramkrishna.patil@enkingint.org

6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Emission reduction was calculated on basis of net electricity exported to connected grid and emission factor of grid calculated at the registration, which is fixed for entire crediting period. Every month grid and project representatives take a joint meter reading and a JMR report is issued to PP to raise financial invoice. The emission reduction calculation was checked with help of JMR (Joint Monitoring Report) and invoices for every month of each vintage with in this monitoring period. The total emission reduction is calculated at 285,875. The calculation was found to be correct. The estimated annual emission reduction as per registered CDM PDD was 53,122 per year (365 days), hence the total estimated emission reduction for current monitoring period (2170 days) should be 315,821. Assessment team also compared actual VER with the estimated VER in registered PDD and found that the actual VER is 9% lower than the estimated emission reduction. The current monitoring period involves variation in wind flow and this is nature dependent and not in control of PP. It is to be noted that there is no change in design of project activity as checked by the assessment team during the onsite visit and all the parameters has been monitored as per the Monitoring Plan mentioned in the Registered PD, hence there is no any post registration changes applicable.

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 12. 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 12. The verification was based on the requirements in the CDM Validation and Verification Standard (VVS version 02 for the project activity), CDM project standard version 02 for the project activity, CDM project cycle procedure version 02 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 02 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+ Certification has 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+ 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 pres ented below:

●Lead Auditor (LA).

●Auditor (A) / Auditor in Training (AiT).

●Technical Expert (TE).

●Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be

Covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience

Mr. Pankaj Kumar	LA/TE	YES	YES	NA	YES
Mr. 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 01 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 02 submitted by PP on 25/12/2018 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 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.	Gupta	Abhishek	PP Representative	23/11/2018	Implementation of the project and monitoring. Baseline emission calculation, achieved emission reduction for the monitoring period, monitoring process followed onsite	Mr. Pankaj Kumar
2		Hari	Villager	23/11/2018	Local Stakeholder Consultations	Mr. Pankaj Kumar
3		Raj	Villager	23/11/2018	Local Stakeholder Consultations	Mr. Pankaj Kumar

2.4 Site Inspections

Duration of on-site inspection: 23/11/2018				
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. Assessment team also had a discussion with Local stakeholders and checked grievance register placed onsite as per the continuous improvement measure of PP for the Local villagers.	The detail address of the power plant is as below: The project activity is located in Kutch District in the state of Gujarat, India.	23/11/2018	Mr. Pankaj Kumar

2.5 Resolution of Findings

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues 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 02 submitted by PP on 25/12/2018 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.

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	01	00
Calibration details	00	01	
Monitoring plan	00	00	00
No Net harm assessment	00	01	
Local stakeholder consultation	00	01	
Others (please specify)-Matter related to breakdown details PP declaration – Related to participation in other GHG program for the monitoring period	00	02	00
Total	00	07	00

The list of findings and their 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

The project is registered as CDM project however PP is not claiming emission reduction in CDM for monitoring period under this report. Assessment team checked the registered project section and no monitoring report of this period is submitted for verification. Also, PP has provided a declaration of not claiming emission reduction benefit under any CDM scheme.

3.2 Methodology Deviations

There is no methodology deviation request from the project hence, this section is not applicable for present verification.

3.3 Project Description Deviations

There are one deviation request in the MR.

Deviation 1 -

A deviation for change in calibration frequency has been requested. As per registered CDM PDD, the calibration frequency is once every years, however it has been observed that the calibration of meters is not in control of PP and same is done by state electricity board. The state electricity board does not follow any fixed calibration frequency, hence deviation is requested for change in calibration frequency as once in five years. The new requested calibration frequency of 5 years is as per CEA notification

http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf, page 12 is considered to be in line with the requirement.

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 manufacturer's specification which is acceptable to the assessment team. No events or situations happened during the reported monitoring period that can alter the applicability of the applied methodology as confirmed by the assessment team during the verification site visit. Project is contributing to sustainable development on social, economic, technological and environmental well-being as key indicator developed by MoEFCC in India.

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. WTGs breakdown log sheets is 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.

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 PD is correct.

The technical details are checked by the assessment team during the field visit and also cross checked with manufacturers technical manual and found correct. The manufacturer's details can also be checked from the link *https://en.wind-turbine-models.com/turbines/1002-vestas-v100-1.8* Some of the details are as below:

Parameters	**Value**
Make	Vestas
Model	V-100

Rated Power	1800 KW
Rotor diameter	100 m
Swept area	7850 m^2
Cut in wind speed	4 m/s
Cut out wind speed	20 m/s
No. of Blades	3
Rotor Speed	14.4 rpm
Hub Height	95 m
Generator Type	Asynchronous with wound rotor, slip rings

Assessment team checked the commissioning certificate and confirmed that the date 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 and thus the same is acceptable to the assessment team. All required monitoring equipments and procedures as mentioned in the registered PD are available and implemented in an appropriate manner.

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. No delay in Calibration is observed. 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 04 however is raised for the same. Please refer Appendix 2 of this report for the detail closure of the CAR.

Assessment team would like to clarify that the project is registered under CDM number 7671. The present monitoring period is 22/10/2012 to 30/09/2018 (inclusive of both days) and no credit is claimed from other mechanism in the present monitoring period except from VCS therefore avoiding any double counting. A written declaration is also checked by the assessment team which confirms that PP will not claim any GHG emission for the present monitoring period from any other mechanism.

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 VCS board and the registered PD and registered FVR is used to assess the present 2nd periodic verification. The following web sites were checked to confirm the same:

1. https://www.vcsprojectdatabase.org/#/project_details/1210

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.

One deviation for change in calibration frequency has been requested. As per registered CDM PDD, the calibration frequency is once every year, however it has been observed that the calibration of meters is not in control of PP and same is done by state electricity board. The state electricity board does not follow any fixed calibration frequency, hence deviation is requested for change in calibration frequency as once in five years. The new requested calibration frequency of 5 years is as per CEA notification http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf, page 12 is considered to be in line with the requirement.

It can be confirmed by assessment team that the change in calibration frequency does not have any impact on ER calculations as during monthly reading state electricity board official and PP representative check the meter conditions. Also both party accepts the reading and PP raise the invoice to state electricity board based on monthly JMR reading. Thus financial obligations are involved which ensures that meters are running accurately. Hence in opinion of assessment team this deviation can be approved.
The assessment team observed that the project is in line with the registered PD, FVR and approved methodology other than requested deviation.

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	Baseline emissions are calculated by multiplying the Net electricity exported to the grid with net baseline emission factor, as given in the CDM PDD. BEy = Baseline Emission Factor ($EF_{Grid,CM,y}$) x ($EG_{facility,y}$) Where, BEy = Baseline Emissions (tons/year) $EG_{facility,y}$: Net Electricity exported to grid (MWh) BEy = ($EF_{Grid,CM,y}$) x ($EG_{BL,y}$) =0.9486 tCO_2 / MWh x 301,366 MWh =285,875 tCO_2 (Rounded Down) ER = BEy – PEy ER – Emission Reduction (tCO2/year) BEy - Baseline Emissions (tCO2/year) PEy – Project Emissions (tCO2/year) As project emission is zero, ER = BEy <u>Ex ante Parameters:</u>

	Baseline emission factor is fixed and calculated ex-ante for the project activity as per the registered PD. The Baseline emission factor is calculated in the registered CDM PDD as per ***"Tool to calculate the emission factor for an electricity system", Version 02.1, EB 63 .*** Thus as per the CDM PDD, the calculated Baseline emission factor is EF = 0.9486 tCO_2/MWh The Baseline Emission Factor thus calculated is fixed. Ex-post parameter: **$EG_{facility,y}$**: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh) The net electricity export from each WTG in the wind farm is recorded by an energy meter installed in the sub-station and individual meter at WTG. The loss due to transmission is apportioned to each WTG connected to particular feeder and JMR is issued by to PP. This JMR sheets is used to raise invoices. The primary source of data for the parameter is JMR sheet/form B. The invoices can also be used to cross check the value. All the energy meters of accuracy class 0.2s are under the purview of GETCO.

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 05 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 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 Share certificate statements. Assessment team found that Since metering arrangement, monitoring practice, accuracy class, calibration interval is under control of state electricity board, the PP does not have all calibration certificates available with them. The details of the Calibration is presented in Appendix 5 Assessment team confirms that all the energy meters (both main and check meter) installed at the substation are of accuracy class of 0.5s/0.2s. As per the registered CDM PDD were to be calibrated every year. However, the PP has requested for a deviation to calibrate once in 5 years. The calibration of meters is not in control of PP and same is done by state electricity board. The state electricity board does not follow any fixed calibration frequency. This calibration frequency is as per CEA notification http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf, page

	12. The calibration of the energy meters installed at HT side of the transformer were carried out during MR period 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. Moreover, also as per the Central Pollution Control Board of India notification[1] wind project falls under White Category and are practically non-polluting.

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

SL.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

[1] http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf

		MNRE dated September 2013. This report clearly mentioned that Wind 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 verified 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 verification 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 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 verification 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	Mr. Hari
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. 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	Mr. Raj
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 Powerica Limited to perform the 2nd periodical verification of the "Green Energy Project at Kutch by Powerica Limited"

The management of Powerica 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 12.

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: 22/10/2012 to 30/09/2018 (inclusive of 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)
2012	4,244	0	0	4,244
2013	45,887	0	0	45,887
2014	45,278	0	0	45,278
2015	48,299	0	0	48,299
2016	47,508	0	0	47,508
2017	49,951	0	0	49,951
2018	44,708	0	0	44,708
Total	**285,875**	**0**	**0**	**285,875**

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 WTGs generators from manufacturers	Manufacturer technical specifications	Project participant
4	NA	Registered PD version 01 dated 13/01/2014 https://www.vcsprojectdatabase.org/#/project_details/1210	NA	Project participant
5	NA	Final Verification report (1st periodic)- dated 17/02/2014 https://www.vcsprojectdatabase.org/#/project_details/1210	NA	Project participant
6	NA	Emission Calculation sheet version 01 Emission Calculation sheet version 02	ER sheet Dated 27/11/2018 ER sheet Dated 25/12/2018	Project participant
7	NA	The operational lifetime of the project activity from the manufacturer=(Technical specifications)	Manufacturer technical specifications	Project participant
8	NA	RBI: Reserve Bank of India www.rbi.org.in	Reference link is provided.	Independent Search

		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		
09	NA	Tools/ guidelines used in the project activity ● Tool to calculate the emission factor for an electricity system", Version 02.2.1, EB 63 ● • "Tool for the demonstration and assessment of additionality", Version 06.0.0, EB 66 ● • "Guidelines for the reporting and validation of plant load factors", Version 01, EB 48 ● VCS verification report template version 03	UNFCCC CDM/VCS web site	UNFCCC
10	NA	Share reports/Monthly statement for the complete monitoring period	Share reports/Monthly statement for the complete monitoring period	PP
11	NA	MR version 01 MR version 02	27/11/2018 25/12/2018	PP
12	NA	Invoices for the complete monitoring period	Invoice	PP
13	NA	Break down details of the complete monitoring period	Log sheet	PP

14	NA	Declaration regarding no participation in other GHG program for the concerned monitoring period	Declaration dated	PP

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

CAR ID	01	**Date:** 07/12/2018
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:** 25/12/2018
The project is located in Tamilnadu state and each WTG have separate feeder and separate meter. The WTG details like WTG No, HTSC no, meter serial number are mentioned in revised VCS MR. *The commissioning details are mentioned in revised MR and commissioning certificates are provided to DOE.* The technical specifications of WTGs are mentioned in VCS MR. The project involves Vestas V100, 1.8 MW models. The technical details of this model can be seen from below web link *https://en.wind-turbine-models.com/turbines/1002-vestas-v100-1.8*		
Documentation provided by project participant		

VCS MR version 02 and ER spreadsheet version 02 *Commissioning certificates* *Technical specifications*
DOE assessment **Date:** 08/01/2019
1. Feeder wise WTG information has been provided. 2. Details of implementation such as commissioning date has been provided in MR along with supporting documents 3. Technical details of WTG is now included in MR. Based on above observation this CAR can be closed.

CAR ID	02	**Date:** 07/12/2018
Description of CAR		
The breakdown details of the Wind turbines are missing in the MR. 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:** 25/12/2018
The breakdown details of wind turbines are mentioned in VCS MR. The supporting document is provided.		
Documentation provided by project participant		
VCS MR version 02 and Break down details		

DOE assessment	**Date:** 08/01/2019
Breakdown details has been updated in MR and log books as evidence has been submitted, hence CAR is closed.	

CAR ID	03	**Date:** 07/12/2018
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. For year 2015-16 and 2016-17 actual ER is much higher than estimated and hence needs to provide justification. Also, the cross check mechanism between Invoice and JMR in the ER sheet is missing. The documents towards Emission reduction is not complete and has been provided in very clattered manner. Please provide information in structured manner. Corrective action is sought.		
Project participant response		**Date:** 25/12/2018
The JMR and invoices for complete monitoring period has been provided. The ER sheet is revised. *The comparison of actual VCUs with estimated VCUs are mentioned in ER sheet and VCS MR. This comparison is made for complete monitoring period. The variation in electricity generation is due to variation in PLF which is nature dependent and not in control of PP.* *The cross check mechanism are mentioned in ER sheet based on JMR value and invoice value.* *The complete documents are provided for the project activity.*		
Documentation provided by project participant		

VCS MR version 02 and ER sheet version 02

DOE assessment	**Date:** 08/01/2019

1. JMR sheet for complete period has been provided.
2. Comparative statement of actual VCUs vs estimated VCUs has been presented in revised MR.
3. Crosscheck mechanism are now mentioned in ER sheet.
4. Complete document has now been provided.

Hence CAR is closed now.

CAR ID	04	**Date:** 07/12/2018

Description of CAR
The calibration certificates for the complete monitoring period is missing. The Calibration details are also missing in the MR. Corrective action sought for the same

Project participant response	**Date:** 25/12/2018

The calibration certificates are provided to DOE. The calibration of meters is not in control of PP and same is done by state electricity board. The state electricity board does not follow any fixed calibration frequency, hence deviation is requested for change in calibration frequency as once in five years. This calibration frequency is as per CEA notification http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf, page 12 The change in calibration frequency does not have any impact on ER calculations as during monthly reading state electricity board official and PP representative check the meter conditions. Also both party accepts the reading and PP raise the invoice to state electricity board based on monthly JMR reading. Thus financial obligations are involved which ensures that meters are running accurately. Considering this once in five years calibration frequency, there is no delay in calibration and no any error factor is applicable for the current monitoring period.
Documentation provided by project participant
VCS MR version 02 *Calibration certificates*

DOE assessment	**Date:** 08/01/2019
Now calibration details have been updated in MR and certificates are provided. However, deviation for change in calibration frequency has been requested by the PP. based on the submission of reason and fact verified during site visit and with the consideration that deviation requested does not have any impact on the emission reduction calculation and additionality of the project, it can be accepted and recommended. Hence CAR is closed.	

CAR ID	05	**Date:** 07/12/2018
Description of CAR		

As per section 1.9 of the VCS MR, the project has participated in other GHG program and but 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:** 25/12/2018
PP is not availing the REC benefits for current monitoring period. The PP is not registered as RE Generator and can be viewed at https://recregistryindia.nic.in/index.php/publics/registered_regens *The undertaking of not availing any double accounting of credits for same period. For current monitoring period, PP is availing VCU benefits only.*	
Documentation provided by project participant	
VCS MR version 02 *Undertaking to avoid double accounting*	
DOE assessment	**Date:** 08/01/2019
The project is registered with UN however PP is not claiming any CERs for the VCS monitoring period applied. The same is checked by the assessment team during the interview with PP and also with the declaration provided. PP is also not claiming any REC benefits for the concerned monitoring period. The same is also checked by the assessment team from the official web site of REC. CAR is thus closed.	

CAR ID	06	**Date:** 07/12/2018
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:** 25/12/2018
The project does not involve any potential negative environmental and socio economic impacts and hence this criteria is not applicable to this project activity. Being renewable in nature, the project activity have positive impact and helps for sustainable development.	

Documentation provided by project participant
VCS MR version 02

DOE assessment	**Date:** 08/01/2019
As per the Central Pollution Control Board of India notification wind projects falls under White Category and are practically non-polluting. However, DOE still done the assessment and the result is presented in the concerned section of the FVR. Assessment team found being a renewable project the project has positive impact on environment and also have positive social impact like it helped people getting job in the nearby area. CAR is thus closed.	

CAR ID	07	**Date:** 07/12/2018
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:** 25/12/2018

Local Stakeholder consultation had been carried out during CDM registration of this project activity on 24/12/2009. There were no comments that required follow up action from PP. The PP also placed a grievance register onsite in where the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately. There are no any negative feedback received for the project activity.
Documentation provided by project participant
VCS MR version 02

DOE assessment	**Date:** 08/01/2019
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	Kumar	Pankaj	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. Pankaj Kumar, has done M. Sc in Environment Management from Forest Research Institute and B.Sc. Environment science and water management from A N College. He has more than Ten (10) years of working experience at MITCON/Agrinergy/ Carbon Check /APPLUS certifications under various categories of projects starting from Renewable to waste. He was JI/ CDM Lead Assessor in Carbon Check and was involved in more than 50 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 empanelled with APPLUS certification to carry out GHG audit.
2. Hanshen (Denny) Xue (master's 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
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
RBI	Reserve Bank Of India
PP	Project Participant

APPENDIX 5: CALIBRATION DETAILS OF THE METERS

WTG No	Meter Serial No.	Year 2011	Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
JW27	GJU61847	07/06/2011	12/06/2012	27/06/2013	18/02/2014	18/02/2015	10/02/2016	08/03/2017	09/03/2018
NM04	GJU61852	07/06/2011	12/06/2012	27/06/2013	18/02/2014	18/02/2015	10/02/2016	08/03/2017	-
	GJU64200	-	-	-	-	-	-		07/03/2018
VW21	GJU61844	07/06/2011	12/06/2012	27/06/2013	18/02/2014	18/02/2015	10/02/2016	08/03/2017	14/03/2018
VW32	GJU61845	07/06/2011	12/06/2012	27/06/2013	18/02/2014	18/02/2015	10/02/2016	08/03/2017	14/03/2018
NM03	GJU64151	28/11/2011	25/12/2012		18/02/2014	-	-	-	-
	GJU65938	-	-	-	04/05/2014	18/02/2015	27/02/2016	11/03/2017	07/03/2018
NM06	GJU64150	28/11/2011	25/12/2012		22/02/2014	19/02/2015	27/02/2016	11/03/2017	-
	GJU74496	-	-	-	-	-	-	-	07/03/2018
NM07	GJU64154	28/11/2011	25/12/2012		22/02/2014	19/02/2015	27/02/2016	11/03/2017	-
	GJU74498	-	-	-	-	-	-	-	07/03/2018
JW09	GJU64145	28/11/2011	25/12/2012		22/02/2014	19/02/2015	27/02/2016	11/03/2017	09/03/2018
JW10	GJU64174	28/11/2011	25/12/2012		22/02/2014	19/02/2015	27/02/2016	11/03/2017	09/03/2018
JW12	GJU64152	28/11/2011	25/12/2012		22/02/2014	19/02/2015	27/02/2016	11/03/2017	09/03/2018
JW13	GJU64146	28/11/2011	25/12/2012		22/02/2014	19/02/2015	27/02/2016	11/03/2017	09/03/2018
JW30	GJU64165	28/11/2011	25/12/2012		22/02/2014	19/02/2015	27/02/2016	11/03/2017	09/03/2018

The meter replacement details are as below

- GJU61852 meter is replaced by GJU64200. Meter is replaced on 07/03/2018.

- GJU64151 meter is replaced by GJU65938. Meter is replaced on 04/05/2014. The new meter is calibrated on 04/05/2014.
- GJU64150 meter is replaced by GJU74496. Meter is replaced on 07/03/2018.
- GJU64154 meter is replaced by GJU74498. Meter is replaced on 07/03/2018.

Few WTGs calibration in year 2013 is not available with PP, hence not mentioned above. Also for new meters, earlier years details are not required. Hence kept as blank.

All meters are of Secure Make and 0.2s accuracy class. Considering five years calibration frequency as per CEA notification and as per deviation request, there is no any delay in calibration applicable for the project activity.

PP does not have any calibration details for Vandhiya/Shikarpur substation meters and these are under control of state electricity board. Also state electricity Board did not calibrated the substation meters, hence substation meter details are not mentioned here.

As per registered CDM PDD, the calibration frequency is once in a year. The calibration of meters is not in control of PP and same is done by state electricity board. The state electricity board does not follow any fixed calibration frequency, hence deviation is requested for change in calibration frequency as once in five years. This calibration frequency is as per CEA notification http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf , page 12

Based on once in five-year calibration frequency as per requested deviation, there is no any delay in calibration and no error factor is applicable for current monitoring period

Assessment team found that since metering arrangement, monitoring practice, accuracy class, calibration interval is under control of state electricity board, the PP does not have all calibration certificates available with them.