Wind Power Project in Gujarat

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Summary:

Verification purpose: LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed/2/ by "Mytrah Energy (India) Limited" to perform 6th verification (01-June-2021 to 05-Aug-2021) of the "Wind Power Project in Gujarat" (VCS ID 1990)/4/. The main purpose of this verification activity is to have an independent third party for the assessment of the project design, monitoring report to ensure a thorough assessment of the project activity against the applicable VCS requirements.

The purpose of the project activities to generate energy electricity by the utilization of wind energy and further selling the generated energy to the Indian grid. The power (electricity) thus produced by the project activity would be transmitted to Indian electricity grid. Therefore, the project activity is displacing an equivalent amount of electricity which would have been otherwise generated in fossil fuel dominant electricity grid.

Mytrah Energy (India) Limited (formerly Caparo Energy (India) Limited[1]) has completed 25.20 MW wind power project at in Rajkot District and Surendranagar districts in Gujarat India. The project activity comprises of 12 Wind Turbine Generators (WTGs) with a capacity of 2.1 MW each. The project activity involves WTGs having S88 model of make Suzlon Energy Limited (SEL).

The Project Activity was commissioned in phase-wise manner and 1st set of WTGs were commissioned on 06-August-2011.)/01/. The monitoring period for this VCS verification is 01-June-2021 to 05-August-2021 (including both days) and the project activity achieved 11,867 tCO_2e emission reductions during this monitoring period thereon displaced 12,455 MWh amount of electricity from the generation-mix of power plants connected to the Indian Grid, which is mainly dominated by thermal/fossil fuel-based power plant.

The scope of the verification is the independent and objective review of the Monitoring Report (MR)/6/. The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM validation and verification standard for project activities, version 03.0/15/, review against registered VCS PD /5/ and Final Validation report, CDM validation and verification standard for project activities, version 03.0/14/, VCS program guide version 4.2/9/ and VCS Standard Version 4.3/9/

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) were raised and successfully closed. No FAR was raised during this verification. 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.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VCUs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

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

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for document verifications. The entire documents checked/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 "Mytrah Energy (India) Limited" to perform periodic verification of the "Wind Power Project in Gujarat" under VCS Project guide, version 4.2 and VCS standard, version 4.3. 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 12.3.0 /16/
- The project's monitoring plan is assessed against "ACM0002, version 12.3.0 /16/
- 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 program guide, version 4.2 and VCS standard, version 4.3
- CDM validation and verification standard for project activities, Version 03.0/14/
- VCS program guide version 4.2/9/
- VCS standard version 4.3/9/

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

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR)/6/ prepared as per the registered CDM PDD/4/ and VCS PD/5/ and registered approved methodology ACM0002, version 12.3.0 /16/. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard, version 4.3 and programme guide, version 4.2, including the approved baseline and monitoring methodology ACM0002, version 12.3.0. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 03.0 and VCS program guide version 4.2 and VCS Standard Version 4.3.

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction

calculation spread sheet. It follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of ER, omission or misstatement. Verification team conducted remote audit to verify metering/monitoring arrangement. The verification team has reviewed all the documents like commissioning certificates/1/, technical specification/17/, O&M practices/8/, Share Certificates /10/, invoices/10/, grievance register/13/ etc.

1.3 Level of Assurance

Applus + Certification has planned and performed the verification by obtaining evidence and other information and explanations that assessment team considers necessary to give reasonable assurance that reported estimated GHG emission reductions are fairly stated. All documentary evidences were checked, a remote audit was conducted to verify metering/monitoring arrangement to arrive at a verification conclusion by the assessment team.

In our opinion, the estimated GHG emissions reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, version 12.3.0 and the VCS Standard, version 4.3.

1.4 Summary Description of the Project

The project activity is a wind-based power generation project. The project activity involves installation of 12 number Wind Turbine Generators (WTG's) of 2.1 MW each, which makes total capacity of project activity of 25.20 MW installed in Rajkot and Surendranagar districts of Gujarat State, India. The Project activity is promoted by Mytrah Energy (India) Limited. The monitoring period this VCS verification covered from 01-June-2021 to 05-August-2021 (inclusive of both dates) and the project activity achieved 11,867 tCO_2e emission reductions during this monitoring period. The start date of the Project Activity is 06-August-2011 as 1st set of WTGs were commissioned on this date. Assessment team checked commissioning status of the project activity with the commissioning Certificates and found correct. The project is implemented as per the description in the registered VCS PD/5/. PP has applied for 3 deviations of permanent type (2 approved in the earlier verifications and 1 in current monitoring period) in the project description. The project shutdown/breakdown details were checked. No event observed during the current monitoring period which can alter or deviate from the methodology requirement.

2. VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on the "CDM validation and verification standard for project activities, Version 03.0, VCS standard, version 4.3, VCS program guide version 4.2 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of

the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

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

1. A desk review of the Monitoring report/06/ against the registered CDM PDD and VCS PD and final validation report/4/5/;
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 busin ess 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 presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).
- Technical Reviewer (TR).

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

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

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

Document review

The Monitoring report version 01/06/ submitted by the PP was reviewed against the approved methodology/16/, approved registered CDM PDD/4/ and VCS PD/05/, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information.

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

Follow-up interviews

A remote audit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, telephone conferences with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report in the below sections.

Resolution of Clarification and Corrective Action Request

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

The final MR version 03/06/ submitted by PP, serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Internal quality control

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

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

2.2 Document Review

The verification was performed as an audit where the project description, monitoring report and other supporting documents were reviewed, cross checked and compared with identified and stated requirements. The details of the document reviewed during the verification process are listed below in Appendix 1 of this report.

2.3 Interviews

A remote audit was conducted for the project activity on 06-July-2022. Remote audit was conducted due to ongoing COVID-19 pandemic situation in the entire country of India. Taking into account the prevalent conditions of COVID-19 pandemic, VVB decided to skip the onsite visit to avoid any potential health risks. Moreover, The VCS Program does not explicitly mandate remote audits as part of the validation and verification process, only that VVBs must achieve a reasonable level of assurance on all validations and verifications (as per Section 4.1.2 of the VCS Standard, version 4.3)

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

Technical details & metering/monitoring arrangement verified through onsite photographs/name plates and calibration certificates shared by PP. All the documents were cross checked to ensure conservative estimation of emission reduction.

During the remote audit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of equipments, generation records, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificates, PPA, Plant records, Energy Generation Record sheets, invoice, calibration certificates etc. were also verified. The names of the persons interviewed during remote audit through video conferencing is given below;

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Kurre	Ramesh	Mytrah Energy (India) Limited	06-July-2022	Project Implementation, JMR & invoicing procedure, calibration, grievance mechanism, Management practices, data storage, QA/QC	Mr. Pankaj Kumar
2.	Kumar	Shiva	Villager			
3.	Kumar	Sanjay	Villager			

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
4.	Sharma	Nitya	Infinite Environmental Solutions LLP		GHG calculations, MR and ER preparation, Data collection, data storage, QA/QC	

2.4 Site Inspections

Remote Audit (Video Conferencing): 06-July-2022				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Village – Bhadlai, Rajkot district and Village – Sakhpar, Surendranagar district, Gujarat	06-July-2022	Mr. Pankaj Kumar

2.5 Resolution of Findings

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

The final MR version 03/06/ submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document and Monitoring report	00	01	00
Description of project activity	00	02	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	00
Monitoring plan	00	01	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	01	00
Others (please specify	00	00	00
Total	**00**	**07**	**00**

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

2.5.1 Forward Action Requests

No FAR is raised during current verification and was not raised from validation and previous verifications.

2.6 Eligibility for Validation Activities

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

3. VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The PP has participated under CDM mechanism of UNFCCC with the UN Project reference ID 8823[2] with fixed crediting period as 26-December-2012 to 25-December-2022. The project proponent has not claimed any GHG credits under CDM mechanism during current monitoring period. The undertaking is provided to confirm that there is no any double accounting for current monitoring period.

[2] https://cdm.unfccc.int/Projects/DB/SGS-UKL1355741006.12/view

Assessment team confirms that PP is eligible to participate under VCS program.

3.2 Methodology Deviations

This section is not applicable for present verification as no methodology deviation sought during this verification and also in the earlier verifications by project participant.

3.3 Project Description Deviations

PP had applied for below deviations which was requested and accepted during earlier verifications and one (1) deviation is applied for during current monitoring period. The details of the deviations are as follows:

Deviation 1-

The VCS registered PD mentioned three monitoring parameters like net electricity supplied to grid ($EG_{PJ,y}$), electricity export ($E_{,exp}$) by project and electricity import ($E_{,imp}$) by project and net electricity is difference of export and import. Since PP have only one parameter data available i.e., data of net electricity supplied to grid through share certificate issued by state electricity board, hence only single parameter of net electricity supplied to grid is considered for this project activity. This does not have any impact on emission reductions. The deviation which is of permanent nature is already approved during the verification period of 02-January-2014 to 31- May-2018 and have no impacts on the applicability of the methodology, additionality or the appropriateness of baseline scenario.

Deviation 2-

PP has also requested for deviation regarding some minor changes in technical specifications of WTGs from the registered VCS PD. The details of the same is mentioned below: -

MODEL	S88 - 2.1MW
Operating Data	
Rotational Speed	15 to 17.7 rpm
Generator	
Type	Induction generator with slip rings, variable Rotor
Gearbox	
Type	3 stages (One planetary & Two helical)
Ratio	1:98.8 (±0.5%)
Nominal load	2,310 kW
Yaw System	
Type	Electric motors with brake, gearbox & pinion
Bearings	Friction bearing with gear rim

The above change are checked from the technical document and therefore deviation is sought for the same from the registered PD. This deviation of permanent nature is approved during the verification period of 01-April-2020 to 31-May-2021 and have no impacts on the applicability of the methodology, additionality or the appropriateness of baseline scenario.

Deviation 3 -
The crediting period under VCS for the project activity is 06-August-2011 to 05-August-2021. The share certificate for wind energy generated provided by GETCO is for the period of one month and hence it is available for the month of August, 2021 as 01-August-2021 to 31-August-2021. To calculate energy generation for the period of 01-August-2021 to 05-August-2021, PP has applied for deviation.

Data Adjustment in case of monitoring period different from billing period: In case the dates of a particular monitoring period do not match with the dates of the billing period, the net electricity exported to the grid would be calculated as follows:

D = (A/B)*C

Where:

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

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

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

The calculated value after apportioning would be used for calculation of emission reductions during that period. Based on the above procedure, the Monthly Certificate for Share of Electricity Generated shall be provided to the project participant. This is to be noted that the detail procedure of monitoring is illustrated here for the sake of understanding; for the preparation of monitoring report during periodic verifications, only the net electricity generation value mentioned in monthly wind energy certificates shall be directly used for emission reduction calculation. No other parameters as explained above shall be used and presented in the monitoring report.

For net electricity generation Daily Generation Records (DGR) value is not considered, as the DGR value is measured at WTG end not at the substation, hence the value will be higher[3]. The JMR value is used for apportioning for as per the above-mentioned formula.

[3] This is confirmed based on actual data for the current monitoring period as depicted in the ER sheet for current MP

This deviation is of permanent nature and has no impacts on the applicability of the methodology, additionality or the appropriateness of baseline scenario and is accepted by VVB.

3.4 Grouped Project

This is not a grouped project. Thus, this section is not applicable.

4. VERIFICATION FINDINGS

4.1 Project Implementation Status

During the remote audit, it was concluded that the project is implemented as per CDM PDD/VCS PD and this is verified from the commissioning certificates, Power purchase agreement (PPA) submitted. During the current monitoring period it was observed that no unforeseen situation evolved which can impact the operation of the project activity. The same was verified through the shutdown/breakdown details/15/ of the project activity submitted. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team.

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

The project activity is located in Rajkot and Surendranagar districts of Gujarat State, India. The geo-coordinates of location of the project activity are as follows:

Sr. No	Location No.	Village and Tehsil	District	Latitude	Longitude	Model	H
1	JSD 038	Bhadlai	Rajkot	22° 11' 41.9"	71° 05' 44.4"	S88	80 m
2	JSD 041	Dahisra	Rajkot	22° 11' 41.4"	71° 08' 7.5"	S88	80 m
3	JSD 042	Dahisra	Rajkot	22° 11' 31.3"	71° 08' 28.3"	S88	80 m
4	MAH013	Bhojpari	Surendranagar	22° 17' 48.5"	71° 10' 15.8"	S88	80 m
5	MAH014	Bhojpari	Surendranagar	22° 17' 1.3"	71° 10' 19.1"	S88	80 m
6	MAH015	Bhojpari	Surendranagar	22° 16' 46.2"	71° 10' 21.3"	S88	80 m

7	MAH016	Chobari	Surendranagar	22° 15' 39.8"	71° 11' 42.3"	S88	80 m
8	MAH018	Chobari	Surendranagar	22° 15' 29.2"	71° 11' 27.5"	S88	80 m
9	MAH021	Tajpar	Surendranagar	22° 14' 53.6"	71° 10' 39.8"	S88	80 m
10	MAH022	Sakhpar	Surendranagar	22° 14' 56.6"	71° 11' 13"	S88	80 m
11	MAH041	Bhojpari	Surendranagar	22° 17' 27.5"	71° 10' 9.9"	S88	80 m
12	MDW 021	Kabran	Surendranagar	22° 17' 48.0"	71° 08' 24.1"	S88	80 m

The commissioning schedule/1/ of the respective WEGs are as follows:

Sr. No	Location No.	WEG No.	Village and Tehsil	Date of Commissioning
1	JSD 038	SEL/2100/11-12/2216	Bhadlai	01-October-2011
2	JSD 041	SEL/2100/11-12/2217	Dahisra	28-September-2011
3	JSD 042	SEL/2100/11-12/2218	Dahisra	28-September-2011
4	MAH013	SEL/2100/11-12/2211	Bhojpari	10-August-2011
5	MAH014	SEL/2100/11-12/2213	Bhojpari	06-August-2011
6	MAH015	SEL/2100/11-12/2214	Bhojpari	06-August-2011
7	MAH016	SEL/2100/11-12/2207	Chobari	12-August-2011
8	MAH018	SEL/2100/11-12/2208	Chobari	31-August-2011
9	MAH021	SEL/2100/11-12/2209	Tajpar	31-August-2011
10	MAH022	SEL/2100/11-12/2210	Sakhpar	31-August-2011
11	MAH041	SEL/2100/11-12/2212	Bhojpari	06-August-2011
12	MDW21	SEL/2100/11-12/2215	Kabran	06-August-2011

The start date of the project is 06-August-2011 which is the first date of commissioning of the first WTG of the plant.

Verification team confirmed from the registered VCS PD /5/ and from previous verification reports/20/ that the location of the project activity including the coordinates is same as mentioned in the registered VCS PD/5/.

Assessment team checked the commissioning certificates/1/ and confirmed that the dates of commissioning for the WTGs are correct. Assessment team also conformed during interview with the PPs representatives that there is no change in project design and the project is implemented as per the description provided in the VCS PD.

The project boundary includes the electricity generation equipment at the project site, substation and Indian grid.

Assessment team also checked, the technical details/17/ of WTGs installed, during remote audit from documents submitted by PP and previous verification reports. The same is cross checked from the photographs of WTGs, sub-station metering locations etc./18/ submitted by PP & also cross checked from the technical details from Manufacturer.

Technical Specification of the WTGs is as follows:

MODEL	S 88 - 2.1 MW
Operating Data	
Rated power	2.1 MW
Cut-in wind speed	4 m/s
Rated wind speed	14 m/s
Cut-out wind speed	25 m/s
50 years gust wind speed	59.5 m.s
Hub height	79 m (Foundation top equal to ground level)
Wind Class	IEC – IIA
Rotational Speed	15 to 17.7 rpm
Rotor	
Pitch system	Pitch regulated, electrical
Diameter	88 m
Swept area	6082 m^2
Blade material type	Epoxy bounded fiber glass
Generator	
Type	Induction generator with slip rings, variable
Rated power	2100 kW
Rated voltage	690/600 V
Frequency	50/60 Hz
Protection	IP 54, IP 23 for slip ring unit
Cooling system	Air cooled
Braking System	
Aerodynamic brake	3 independent systems with blade pitching
Mechanical brake	Hydraulic fail-safe disc brake system
Gearbox	
Type	3 stages (One planetary & Two helical)
Ratio	1:98.8 (±0.5%)
Nominal load	2,310 kW
Yaw System	
Type	Electric motors with brake, gearbox & pinion
Bearings	Friction bearing with gear rim
Tower	
Type	Tubular Tower (4 sections)
Corrosion protection	Epoxy/ PU coated

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 equipment's 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 VCS PD is followed onsite confirmed during remote audit. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same. Meters are calibrated as per calibration frequency in registered PD. All the emergency preparedness as mentioned in the registered PD is followed onsite and no discrepancies were found regarding the same. Thus, completeness of the monitoring plan confirmed and there are no any material discrepancies between the actual monitoring system and the plan provided in the registered PD.

CAR 01 and 06 were raised for the inconsistency with respect to MR template guidelines and CAR 02 was raised for supporting evidences for No-Double counting and closed successfully after proper response of PP.

Assessment team confirms following during the verification Onsite Inspection:

1. Start date of the project activity is 06-August-2011 as mentioned in the registered VCS PD.
2. An undertaking letter dated 07-June-2022 has been submitted by PP for no double counting with any other GHG program. 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/11/.
3. Assessment team confirms that this verification is under VCS and covers the activity from 01-June-2021 to 05-August-2021 (inclusive of both dates). The project activity adopts crediting period of fixed 10-year period. The project start date for this project is 06-August-2011. This is the day on which the first WTG was commissioned.

   The GHG credits from 01-June-2021 to 05-August-2021 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "No Double Counting"/11/.
4. Assessment team checked and found that the Project proponent of the project activity mentioned in Section 1.3 of monitoring report is correct/5//6/
5. Assessment team also checked the details of other entity mentioned in Section 1.4 of monitoring report and found correct.
6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VCUs with the estimated VCUs and found that the actual VCUs are 11,867 tCO_2e which is 35.98% higher than the estimated emission reductions i. e. 8,727 tCO_2e. The observed PLF achieved is 31.20% during the current monitoring period as compared to the PLF in the registered project description (22.95%) leading to higher emission reductions. The higher PLF is affecting the additionality of the project. More details about the same are provided below in section 4.4.

Sustainable development indicators

As a part of regional development efforts associated with the project, PP has supported many education, health & infrastructure related needs for local people. These are funded from the revenue generated from the operation of the project activity. In the absence of project activity, there would be no revenue generated from the project and hence the activity would have not occurred in the absence of the project activity.

Thus, the project activity contributes to the sustainable development of the country.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the documents review of CDM PDD and VCS PD and grievance register/13/ etc. The project is renewable energy project and thus no negative impact observed due to project activity.

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation. The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013[4] mentions that solar/Wind power project activity operations do not result in direct air pollution, noise pollution. Moreover, also as per the Central Pollution Control Board of India notification[5] solar/wind project falls under White Category and are practically non-polluting. Assessment team checked and found this appropriate.

4.2.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration. For on-going stakeholder's communication, PP have maintained grievance register/13/ at the site office. All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, version 4.3 and appropriate actions taken time to time by PP.

Assessment team checked the grievance register provided by PP and found that local stakeholders can anytime lodge their grievances if any in the register over the operational life time of the project. During current monitoring period, no grievance was received. Thus, assessment team is of the opinion that the ongoing stakeholder mechanism is adequate and appropriate. 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.

4.3 AFOLU-Specific Safeguards

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

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the CDM PDD/4/
Findings	CAR 04 and CAR 07 were raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	As per the registered PD and applied methodology, Formula used to calculate

[4] https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf

[5] https://cpcb.nic.in/openpdffile.php?id=TGF0ZXN0RmlsZS9MYXRlc3RfMTE4X0ZpbmFsX0RpcmVjdGlvbnMucGRm

	achieved emission reduction is as follow; $ER_y = BEy – PEy – LEy$ As per registered PDD, the build margin and operating margin CO_2 emission factor of Indian grid is taken from Central Electricity Authority:CO_2 Emission Database CEA CO_2 Baseline database Version 07. Thus, $EF_{grid,OMsimple,y} = 0.9842\ tCO_2/MWh$ $EF_{grid,BM,Y} = 0.8588\ tCO_2/MWh$ & $EF_{grid,CM,y} = 0.9528\ tCO_2/MWh$ The baseline emissions are calculated as below, $BE_y = EG_{facility,y} * EF_{grid,CM,y}$ Where; BE_y : Baseline Emissions in year y (tCO_2e) $EG_{facility,y}$: 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) $EF_{grid,CM,y}$: Emission Factor in year y; t CO_2e/kWh **Monitored Parameters** $EG_{PJ,y}$ = Quantity of net electricity exported to the grid during the year y. The value monitored is 12,455 MWh. The net electricity supplied to grid is cross checked with share certificate issued by GETCO and invoices/sales record to confirm the consistency and found ok. The verification team has checked the entire monthly Energy generation records applicable for the monitoring period as per the project activity applied for verification and found the monitoring parameter is monitored and recorded as per the monitoring plan in the registered CDM PDD. The net electricity supplied by project activity to grid is calculated using total electricity supplied by the wind farm and calculation of sharing for electricity by individual developer from that wind farm. This calculation is carried out based on Main meter, check meter and ABT meter at the sub-station. Calibration certificates/12/ were checked to confirm that the energy meters are of 0.2s accuracy class which is in line with registered CDM PDD / VCS PD. The verification team has reviewed the emission reduction sheet and monitoring report data with the energy generation reports and found all the values are consistent. Since the monitoring period is not matching with the billing period, PP has apportioned energy generation value. The calculation method provided

as a part of deviation in MR section 3.2 was checked and found appropriate.

The calculation of baseline emissions is as below,

$BE_y = EG_{facility,y} * EF_{CO2}$

$=12,455 * 0.9528 = 11,867\ tCO_2e$ (round down value)

Project emissions:

As the project activity involves in harnessing wind power. So, the emission from the project are zero.

Leakage Emission

The project activity is a Greenfield wind power project and there is no technology transfer with respect to this project activity. Hence the Leakage emissions for the project are zero.

Hence, net GHG reduction and removals

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO2e)
01-June-2021 to 05-August-2021	11,867	0	0	11,867
Total	**11,867**	**0**	**0**	**11,867**

VVB confirmed that GHG reductions and removals have been quantified correctly and in line with monitoring procedure in CDM PDD/VCS PD and applied methodology.

The estimated emission reduction achieved from the project activity for the current monitoring period is 8,727 tCO_2e based on the number of days covered during the current monitoring period which comes out to be 66 days. Whereas the actual emission reductions achieved during the current monitoring period are 11,867 tCO_2e. The actual VCUs are 35.98% higher than the estimated VCUs. The actual PLF observed for current monitoring period is 31.20% which is 56% higher than the estimated PLF i. e. 22.95% as per registered CDM PDD. Assessment team noted that the current MP is part of high wind window due to onset of monsoon leading to higher PLF and more generation. The earlier verification reports were referred to observe the average PLF observed and the data is as below:

Sr. No.	Monitoring Period	ER achieved	PLF (%)
1	06-August-2011 to 25-December-2012	66,495	22.71%
2	26-December-2022 to 01-January-2014	48,266	20.10%

	3	02-January-2014 to 31-May-2018	211,372	21.80%
	4	01-June-2018 to 31-March-2020	84,173	18.07%
	5	01-April-2020 to 31-May-2021	44,356	22.52%

The above data shows that, from 1st MP to the latest one, PLF has never cross the estimated PLF value mentioned in the registered CDM PDD. Moreover, the data verified during 4th and 5th verification confirm that with monitoring period of an year or more, the PLF remains below 22.5%. Thus, based on the data and assessment team's local expertise, assessment team has found this acceptable and confirm that this will not have an impact on additionality in a long run.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the Calibration details of the monitoring meters with the calibration certificates.
Findings	CAR 05 was raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	Assessment team has checked calibration certificates and found that meters are calibrated and calibration is valid for current monitoring period. The calibration frequency mentioned in registered CDM PDD/VCS PD is 3 years however, the concerned authority has carried out calibration earlier which is acceptable. Meters are calibrated as per the standard procedures and documents for the same are maintained throughout. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the remote audit. Remote audit and interview with site personnel also confirms that the operational and organizational chart as mentioned in registered CDM PDD is as per the site practice and thus assessment team confirms that the details are correct. The shutdown / break down reports/15/ are checked and found that the plant undergone scheduled maintenance and break down. Assessment team checked the routine maintenance log book/15/ and confirmed that it does not have any impact on project design and monitoring procedures. No unforced error observed. Assessment team confirmed that data/ information used for determining GHG reductions and removals were sufficient in quantity and of appropriate quality. Calibration certificates of meters/ QA/QC procedure checked and found to be appropriate.

4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
NA	NA	NA	NA	NA

5. VERIFICATION CONCLUSION

Applus+ Certification has been engaged/02/ by Mytrah Energy (India) Limited to perform the 6th verification (01-June-2021 to 05-Aug-2021) of the "Wind Power Project in Gujarat".

The project participants are 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 CDM PDD and VCS PD and the applied methodology ACM0002, version 12.3.0 /16/

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. Further, 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 document verifications. The entire documents checked/remote audit verification conducted to arrive at positive verification conclusions. 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 CDM PDD/VCS PD /4//5/;
- 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.
- A Reasonable Level of assurance was achieved as planned, during verification process.
- Verification period: 01-June-2021 to 05-August-2021 (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)
01-June-2021 to 05-August-2021	11,867	0	0	11,867
Total	**11,867**	0	0	**11,867**

APPENDIX 1: DOCUMENTS REVIEWED OR REFERENCED

No.	Author	Title	References to the document	Provider
1.	State Utility	Commissioning certificates of all WTGs.	Commissioning of the wind power project	PP
2.	Applus	Contract of the project participant with the DOE. Ref. No. A+SH_SYST_TQC_VCS_VER_15422	18-June-2022	PP
3.	NA	The operational lifetime of the project activity from the manufacturer (Technical specifications)	Manufacturer technical specifications	PP
4.	NA	Registered CDM PDD and validation report	https://cdm.unfccc.int/Projects/DB/SGS-UKL1355741006.12/view	PP
5.	NA	Registered VCS PD and validation report	https://registry.verra.org/app/projectDetail/VCS/1190	PP
6.	NA	Initial Monitoring report Version 01 Final Monitoring report Version 03	06-June-2022 19-July-2022	PP
7.	NA	Emission reduction sheet version 01 Final Emission reduction sheet version 02	06-June-2022 19-July-2022	PP
8.	PP	O & M Agreement	-	PP
9.	NA	Tools/ guidelines used in the project activity • Glossary of CDM terms version 07 • VCS standard Version 4.3 • VCS Program Guide 4.2 • VCS verification report template version 4.1 • Tool to calculate emission factor, version 7.0		UNFCCC & VERRA
10.	State Utility for share certificates, PP for invoice	Share certificates and Invoices for complete monitoring period from 01-June-2021 to 05-August-2021.		PP
11.	PP	Declaration regarding no participation in other GHG program for the concerned monitoring period	07-June-2022	PP

No.	Author	Title	References to the document	Provider
12.	NA	Calibration details of the project activity undergoing verification	Calibration certificates	PP
13.	NA	Grievance Register maintained at site	-	PP
14.	UNFCCC	CDM validation and verification standard for project activities, Version 03.0	-	UNFCCC
15.	PP	Shutdown details for the Project Activity Maintenance log book	-	PP
16.	UNFCCC	CDM methodology ACM0002	version 12.3.0	UNFCCC
17.	Suzlon	Technical datasheet for WTG		PP
18.	PP	Photographs of WTGs, Energy meters		PP
19.	PP	Power Purchase Agreement (PPA) between /s Caparo Energy (India) Limited (presently known as M/s Mytrah Energy (India) Limited (MEIL) and Gujarat Urja Vikas Nigam Limited dated 03-August-2011, valid for 25 years.	-	PP
20.	VERRA	Previous verification reports	https://registry.verra.org/app/projectDetail/VCS/1190	VERRA
21.	PP	Report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” MNRE dated September 2013		
22.	Suzlon	Training records		PP
23.	Suzlon	Single Line diagram		PP
24.	PP	Organizational structure/chart		PP

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

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

FAR ID	XX	**Section no.**		**Date :** DD-Month-YYYY
Description of FAR				
There is no FAR from the validation/previous verification of the project activity				
Project participant response				**Date :** DD-Month-YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				**Date:** DD-Month-YYYY
NA				

Table 2. CL from this verification

~~**CL ID**~~		~~**Section no.**~~		~~**Date:** DD-Month-YYYY~~
~~**Description of CL**~~				
~~NA~~				
~~**Project participant response**~~				~~**Date:** DD-Month-YYYY~~
~~NA.~~				
~~**Documentation provided by project participant**~~				
~~NA~~				
~~**DOE assessment**~~				~~**Date:** DD Month YYYY~~
~~NA~~				

Table 3. CAR from this verification:

CAR ID	01	**Section no.**	4.1	**Date:** 06-July-2022
Description of CAR				
During review of monitoring report following inconsistencies observed: 1. PP requested to submit copies of technical specifications of WTGs, O&M agreement, PPA of the project activity. Kindly submit. 2. PP has mentioned commissioning date of project activity in section 1.7 of monitoring report, however to verify the same, supporting documents is missing. PP is requested to submit it to assessment team. Kindly submit.				
Project participant response				**Date:** 06-July-2022

1. The technical specifications, O and M agreement and PPA are submitted herewith. 2. Commissioning certificates are submitted herewith
Documentation provided by project participant
1. Technical specification 2. O and M agreement 3. PPA 4. Commissioning certificate
DOE assessment **Date:** 19/07/2022
1. PP has submitted copies of WTG technical specifications, O&M agreement and PPA. The details mentioned in the VCS MR were cross checked with the documents and found appropriate. Hence this part of CAR is closed. 2. Based on copy of commissioning certificate submitted, the commissioning date is checked and confirmed. Hence this part of CAR is closed. **CAR is closed.**

CAR ID	02	**Section no.**	4.1	**Date: 06**-July-2022
Description of CAR				
PP is requested to submit an undertaking for no double accounting for current monitoring period and for project activity is participated in other GHG program other than VCS.				
Project participant response				**Date:** DD-Month-2022
Declaration of NO double counting of credits is submitted herewith				
Documentation provided by project participant				
No double counting declaration				
DOE assessment				**Date:** 19-July-2022
PP has now submitted undertaking dated 07-June-2022 which confirms that no double accounting for current monitoring period for the project activity and current project has not participated in other GHG program other than VCS. This is found appropriate and hence this **CAR is closed**.				

CAR ID	03	**Section no.**	4.2.2	**Date:** 06-July-2022
Description of CAR				
PP requested to submit records for ongoing local stakeholder consultation including grievance register etc. to assessment team.				
Project participant response				**Date:** 06-July-2022
Grievance register is submitted herewith				
Documentation provided by project participant				
Grievance register				
DOE assessment				**Date:** 19-July-2022
PP has submitted grievance register for the current monitoring period and it is confirmed that no grievances were recorded by the stakeholders. Hence this **CAR is closed**.				

CAR ID	04	Section no.	4.4	Date: 06-July-2022
Description of CAR				
PP is requested to submit all supporting documents for all the monitoring parameters and monitored values of the project activity to assessment team.				
Project participant response				**Date:** 06-July-2022
JMR and Invoices are submitted herewith				
Documentation provided by project participant				
1. JMR 2. Invoices				
DOE assessment				**Date:** 19-July-2022
PP has submitted Share certificates and invoices for the current monitoring period. It is observed PP has apportioned electricity for the month of August, 21. However, the apportioning procedure is not mentioned in the MR. **CAR is OPEN**				
Project participant response				**Date:** 19-July-2022
The apportioning procedure is mentioned in the revised MR Version 03 to match the monitoring period.				
Documentation provided by project participant				
Revised MR Version 3.0 Revised ER sheet				
DOE assessment				**Date:** 19-July-2022
The revised MR version 03 was checked to confirm that apportioning procedure mentioned is appropriate. Hence this **CAR is closed.**				

CAR ID	05	Section no.	4.5	Date: 06-July-2022
Description of CAR				
In order to verify the calibration details mentioned in Appendix 1 of MR Version 1, Dated 06-June-2022, PP is requested to submit the copies of calibration certificates covering complete monitoring period to the assessment team.				
Project participant response				**Date:** 06-July-2022
Calibration certificates are submitted herewith				
Documentation provided by project participant				
Calibration certificate				
DOE assessment				**Date:** 19-July-2022
PP has submitted calibration certificates for the energy meters located at feeders which were checked. The due calibration date mentioned in the MR appendix 1 does not match with the certificates submitted. CAR is OPEN				
Project participant response				**Date:** 19-July-2022
The due calibration date has been corrected in Revised MR Version 3.0				

Documentation provided by project participant	
Revised MR version 03	
DOE assessment	**Date:** 19-July-2022
Revised MR was checked to confirm the due date of calibration are correctly mentioned. Hence this CAR is closed.	

CAR ID	06	Section no.	4.1	Date: 19-July-2022

Description of CAR

1. PP shall check and correct content page in line with VCS MR template
2. PP has used terms PDD, CERs which are not applicable to VCS project. Further, VERs is not the correct terminology used under VERRA.
3. The date format shall be consistent throughout the VCS MR.
4. PP shall maintain consistency in wind energy generator terminology. In section 1, WTG is mentioned while section 4 onwards WEG is mentioned.
5. In line with the template guideline, please complete all sections using Arial or Franklin Gothic Book 10.5-point, black, regular (non-italic) font.

Project participant response	Date: 19-July-2022

1. Content page has been corrected.
2. The terminologies are corrected as per the VERRA in the revised MR Version 03
3. Date format is made consistent in the revised MR Version 03
4. The wind energy generator terminology is made consistent in the revised MR Version 03.
5. All sections in revised in Franklin Gothic Book 10.5-point, black, regular (non-italic) font.

Documentation provided by project participant	
Revised MR Version 03	
DOE assessment	**Date:** 19-July-2022

1. Revised MR was checked to confirm that content page is corrected in line with VCS MR template. Hence this part of CAR is closed.
2. Revised MR was checked to confirm CDM related terms are now removed and correct terminology is used. Hence this part of CAR is closed.
3. Revised MR was checked to confirm that the date format is consistent throughout the VCS MR. Hence this part of CAR is closed.
4. Revised MR was checked to confirm that PP has maintained consistency and Wind Electric Generator (WEG) is mentioned. Hence this part of CAR is closed.
5. Revised MR is completed in Franklin Gothic Book 10.5-point, black, regular (non-italic) font. Hence this part of CAR is closed.

CAR is closed.

CAR ID	07	Section no.	4.5	Date: 19-July-2022

Description of CAR

It is observed that actual emission reductions are 35.98% higher than the estimated value. PP shall discuss about its effect on additionality of the Project Activity.

Project participant response	Date: 19-July-2022

This variation is due to high PLF i.e 31.20% achieved during the current monitoring period as compared to the PLF (22.95%) in the registered project description. The higher plf of the project breaches benchmark. During this season the north region of Gujarat is arid and semi-arid, the southern region is humid. The seasonal cycle leads to strong winds from March to August and relatively weak winds from November through March. Because Gujarat has a long coast line, sea breezes also influence the wind characteristics in this region. The El Niño Southern Oscillation plays an important role in India. El Niño affects the monsoon. El Niño years are typically characterized by week monsoons and droughts, but the wind in Gujarat is strong during this season
Documentation provided by project participant
Revised MR Version 03

DOE assessment	**Date:** 19-July-2022
PP has mentioned that with high PLF of 31.20% achieved for current monitoring period, the project breaches benchmark in the financial analysis. The current monitoring period is of 66 days which consists of high wind period due to Monsoon in India. VVB has checked previous monitoring periods to verify that this is first instance of high PLF. VVB confirmed that PLF calculated for 66 days only and higher but annual PLF as evidenced from previous monitoring periods is always lower . As the observed PLF is high but only for period of 66 days and annual PLF observed based on earlier monitoring period is always less hence is accepted. **CAR is closed.**	

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Lead Auditor/Technical Expert	OR	PANKAJ	KUMAR	TQC-Outsourced entity	Yes	No	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR) / Technical Expert (TE)	EI	Meesa	Srikanth	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

Short CVs of the Team:

1. **Mr. Pankaj Kumar** has done M. Sc in Environment Management from Forest Research Institute, Dehradun and B. Sc. (Hons.) in Environment & Water Management from Magadh University, Bihar, India. He has also done Post Graduate Diploma in Environmental Law from NLSIU, Bangalore. He has more than 12 years of working experience in GHG Assessments and has participated during his career in Agencies and DOEs like MITCON, Agrinergy, Carbon Check and is empanelled with Applus+ Certification since 2015 for the performance of CDM/VCS/GS project assessments. He has extensive experience in the Renewable, Waste Management and Energy Demand Scopes of UNFCCC CDM and has done more than 100 Validations and Verifications of PAs and PoAs as Lead Auditor, Technical Expert and Technical Reviewer, mainly in Asia, Africa, USA, Asia Pacific and Americas under CDM, Verified Carbon Standard, Gold Standard & Social Carbon Standard, Brazil. He is an experienced, qualified and result oriented Environment and climate change professional having 16 yrs. of relevant experience in Climate Change (Mitigation & Adaptation), Environmental Due Diligence, Disaster Risk Reduction, Climate finance, adaptation planning, capacity building, validation and verification of GHG project. He can also provide technical support for environmental investigative, remedial projects involving air, water and soil, Waste management, EIA, Environmental Compliance, ISO 14001, OHSAS 18001, GHG accounting (ISO 14064) and Carbon foot printing. Mr. Pankaj Kumar is based in Patna, India. Mr. Pankaj Kumar may participate as part of the Audit Team as Lead Auditor and Technical Expert for the assessment.

2. **Mr. Srikanth Meesa** is a climate change professional with more than 15 years of experience in the fields of climate change, GHG auditing, carbon footprint assessments, water and energy audits, scope-3 emissions, net zero strategies, sustainability & ESG sectors and water and wastewater treatment sectors. He has completed his masters in Environmental Engineering& Management from I.I.T Delhi and Bachelors in Civil Engineering from Osmania University. Furthermore, he has extensive experience i.e., more than 14 years on the auditing of CDM, VERRA, GS, JCM projects of various sectoral scopes across the world. He has worked with reputed certification bodies such as TUV NORD, DNVGL, TUV SUD and LR. He also has consulting experience on sustainability reports& road-maps, stakeholder consultation and LCA studies while working at Thinkstep (Now called Sphera). Currently, he is associated with Global Green Solutionz and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes. Mr. Srikanth Meesa is based at Hyderabad, India. Mr. Srikanth Meesa may participate review team.

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
VER	Verified 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
DGR	Daily Generation Report
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)
GETCO	Gujarat Energy Transmission Corporation Limited
GWP	Global Warming potential
PP	Project Participant
PLF	Plant Load Factor
MR	Monitoring Report
JMR	Joint Metering Report
PPA	Power Purchase Agreement
WTG	Wind Turbine Generator
VCS	Voluntary Carbon Standard
VVB	Validation and Verification Body

APPENDIX 5: CALIBRATION DETAILS

Location No.	Name of Feeder	EB Meter No	Calibration date	Calibration due date
MDW-21	Feeder-1	GJU62221	16-January-2021	15-January-2022
MAH-13	Feeder-1	GJU62216	16-January-2021	15-January-2022
MAH-14	Feeder-1	GJU62223	16-January-2021	15-January-2022
MAH-15	Feeder-1	GJU62222	16-January-2021	15-January-2022
MAH-41	Feeder-1	GJU62220	16-January-2021	15-January-2022
MAH-16	Feeder-2	GJB01930	15-January-2021	14-January-2022
MAH-18	Feeder-2	GJU62225	15-January-2021	14-January-2022
MAH-22	Feeder-2	GJU62218	15-January-2021	14-January-2022
MAH-21	Feeder-2	GJU62217	15-January-2021	14-January-2022
JSD-41	Feeder-2	GJU62227	13-January-2021	12-January-2022
JSD-42	Feeder-2	GJU62226	13-January-2021	12-January-2022
JSD38	Feeder-2	GJU62215	17-January-2021	16-January-2022

APPENDIX 6: BREAKDOWN DETAILS

Date	Location	Duration	Remarks
29-June-2021	JSD38	24.00	HSS Shaft Failure
30-June-2021	JSD38	24.00	HSS Shaft Failure
1-July-2021	JSD38	24.00	HSS Shaft Failure
2-July-2021	JSD38	19.70	HSS Shaft Failure
3-July-2021	JSD38	12.00	HSS Shaft Failure
4-July-2021	JSD38	24.00	HSS Shaft Failure
5-July-2021	JSD38	24.00	HSS Shaft Failure
6-July-2021	JSD38	24.00	HSS Shaft Failure
7-July-2021	JSD38	24.00	HSS Shaft Failure
8-July-2021	JSD38	24.00	HSS Shaft Failure
9-July-2021	JSD38	24.00	HSS Shaft Failure
10-Jul-2021	JSD38	17.90	HSS Shaft Failure
11-July-2021	JSD38	24.00	HSS Shaft Failure