



RENEWABLE SOLAR POWER PROJECT BY MAHINDRA RENEWABLES PRIVATE LIMITED



Document Prepared By

LGAI Technological Center S.A. (Applus+ Certification)

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Summary:

Verification purpose: LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “Mahindra Renewables Private Limited” to perform the 4th verification of the “Renewable Solar Power Project by Mahindra Renewables Private Limited” (VCS ID 2059)^{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 proposed project activity against the applicable CDM and VCS requirements.

The project activity by Mahindra Renewables Private Limited involves the generation of electricity through solar photovoltaic plant with a total capacity of 250 MW in the different villages of Rewa district, state of Madhya Pradesh India. This is a greenfield project activity and supply the generated electricity to the Indian grid, there by displacing the consumption of electricity from Indian grid system. Thus, project activity has reduced the dependence on fossil fuel-powered power plants by substituting carbon-intensive energy with the clean renewable solar energy. As per the baseline scenario, “Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants that are fossil fuel fired power plants.” The baseline scenario is the same as the scenario existing prior to the implementation of the project activity.

Start date of the project activity is the 06-July-2018 which is the date of commissioning of first phase of the Project. The project activity is a voluntary action and Mahindra Renewables Private Limited is the project proponent of their project activity. The monitoring period for this VCS verification is 01-October-2021 to 30-April-2022 (including both days) and the project activity achieved 284,488 tCO_{2e} emission reductions during this monitoring period thereon displaced 303,682.04 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). The MR is reviewed against the relevant criteria 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/^{10/}, review against registered PD and Final Validation report/^{17/}, VCS program guideline version 4.2/^{10/} and VCS Standard version 4.3/^{10/}.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 05 Corrective Action request (CAR) and 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, site visit 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 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

LGA Technological Center S.A. (Applus+ Certification) (Hereafter referred as Applus+ Certification) has been appointed by “Mahindra Renewables Private Limited” to perform the 4th verification of the “Renewable Solar Power Project by Mahindra Renewables Private Limited” under guideline 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 19.0/^{10/}”
- the project's monitoring plan is assessed against “ACM0002- Version 19.0/^{10/}”
- 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 version 4.2 and Standard version 4.3/^{10/}
- CDM validation and verification standard for project activities, Version 03.0/^{10/}
- VCS program guideline v4.2/^{10/}
- VCS standard v4.3/^{10/}

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

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered PD and registered approved methodology ACM0002- Version 19.0/^{10/}. 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/^{10/} and guideline version 4.2/^{10/}, including the approved baseline and monitoring methodology ACM0002- Version 19.0/^{10/}. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 03.0/^{10/}, and VCS program guideline version 4.2/^{10/} and VCS Standard version 4.3/^{10/}

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/^{11/}. There are no material errors, overestimation of ER, omission or misstatement. Verification team conducted site visit to verify equipment's & technical details and metering/monitoring arrangement. The verification team has reviewed all the documents like commissioning certificates/^{1/}, technical specification/^{3/}, O&M practices/^{8/}, JMR/^{11/}, invoices/^{11/}, training records/^{14/}, grievance registers/^{15/} 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, an Onsite visit was conducted and technical details and metering/monitoring arrangement verified through physical verification 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 19.0/^{10/} and the VCS standard.

1.4 Summary Description of the Project

The project activity by Mahindra Renewables Private Limited involves the generation of electricity through solar photovoltaic plant with a total capacity of 250 MW in the state of Madhya Pradesh India. This is a greenfield project activity and supply the generated electricity to the Indian grid there by displacing the consumption of electricity from the regional grid electricity distribution system. The monitoring period for this VCS verification is 01-October-2021 to 30-April-2022 (including both days) and the project activity achieved 284,488 tCO₂e emission reductions during this monitoring period thereon displaced 303,682.04 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 project is a voluntary action being undertaken by project owner of the project activity. No other entity has been involved in this project activity.

Verification team confirmed the capacity by verifying commissioning certificates/^{1/} and verified during onsite interviews with PP. The details of interconnection with grid of solar plants and commissioning details are given in Section 4.1 of this report.

The technical specifications/^{3/} of solar panels are confirmed with technical specifications from technology supplier and details as confirmed onsite are provided in Sec. 4.1 of this report.

The electricity meters are of a Elster: make of accuracy class 0.2s. The details of meters such as make, Sr, No., calibration/^{5/} frequency etc. are provided in Appendix 5 of this report.

Assessment team checked the Commissioning of project activity during onsite visit and confirmed with the commissioning Certificates/^{1/} 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.

2 VERIFICATIONPROCESS

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/^{10/} and “VCS Standard version 4.3, program guideline version 4.2/^{10/}” 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. Onsite visit 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 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
Dr Atul Takarkhede	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 01/6/ 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.

Onsite Visit

The Onsite audit is conducted by Applus+ Certification. Audit team performed onsite interviews, 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 revised final MR/⁶/ 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 details of the document observed during the verification process are listed below in Appendix 1 of this report

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2.3 Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Mehta	Saurabh	Site In-charge	11-July-2022	Project Implementation, JMR & invoicing procedure, calibration, grievance mechanism, Management practices, data storage, QA/QC	Dr Atul Takarkhede
2.	Pandey	Ms. Bhavini	EKI Energy Services Limited		GHG calculations, MR and ER preparation, Data collection, data storage, QA/QC	

2.4 Site Inspections

Duration of on-site inspection: 11-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 practised onsite. Also, assessment team checked any change in host country criteria which may affect the baseline of the project activity.	Rewa, District Madhya-Pradesh, India	11-July-2022	Dr. Atul Takarkhede

2.5 Resolution of Findings

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues from validation which need to

be clarified for 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/⁶/ 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	00	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
Applicability of methodology and standardized baseline	00	00	00
Deviation from methodology	00	00	00
Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	01	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 (Ongoing)	00	00	00
Others (please specify)	00	00	00
Total	00	05	00

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

2.5.1 Forward Action Requests

This is 4th verification of the project activity and no FAR was raised from validation or previous verification.

2.6 Eligibility for Validation Activities

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

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project is not applied under any other GHG program like CDM, GS, hence not applicable. PP has submitted an undertaking regarding no participation in any other GHG mechanism. Furthermore, VVB has checked the web site of other program like UNFCCC, VERRA & REC Registry of India and confirms that the project with same PP, installed capacity and locations are not listed.

3.2 Methodology Deviations

This section is not applicable for present verification as no methodology deviation sought during this verification

3.3 Project Description Deviations

Following deviations were approved during previous 3rd verification of the project activity.

Deviation 1:

During previous verification (01-April-2021 to 30-September-2021), PP had requested monitoring deviation, the monitoring practice is updated (November 2019) and it's shifted to Deviation Settlement Mechanism (DSM) in order to more strengthen the national grid. The export and import values are omitted. In DSM mechanism, PP have to forecast energy generation in a day time block (In India, 15 minutes each, total 96 blocks) well in advance. The invoicing is done on the forecasted value. The actual generation deviation from the forecasted values is penalized, it depends upon the deviation magnitude. Therefore, instead of export and import values, the final net actual values is directly obtained for the calculation of emission reduction. Total Energy schedule and the Actual values (which is the actual Net delivered) is maintained by the Western Regional Power Committee (WRPC) Secretariat, Central Electricity Authority, Government of India.

Regional Energy Account (monthly net export) for every month in respect of Southern Region has been uploaded on the SRPC website, <http://www.wrpc.gov.in/>. The weekly DSM data can be fetched through the website in order to have a cross check on the Actual values. The project description deviation doesn't impact the applicability of the methodology, additionality and baseline scenario of project. The nature of deviation is permanent. This deviation is already approved in previous verifications.

Deviation 2:

As per QA/QC procedures of section 4.2 of registered PD, "Generation data may be cross checked with the Monthly Generation Reports". The deviation is regarding the crosschecking of scheduled data and actual injections. The scheduled data can be crosscheck through the invoice/^{11/} generated and the actual data can be crosschecked with weekly DSM settlement statements receipt over <http://www.wrpc.gov.in>. This project description deviation doesn't impact the applicability of the methodology, additionality and baseline scenario of project. The nature of deviation is permanent. This deviation is already approved in previous verifications (01-April-2021 to 30-September-2021).

Deviation 3:

This deviation applied in the "Description of measurement methods and procedures to be applied" of EG_{facility,y} in the Data and Parameter monitored section. This deviation is applied to impart correct parameter monitoring procedure by the Project activity. Clarity added about the plant new meter procedure with respect to deviation 1. Line diagram and parameter monitoring procedures updated related to billing energy meters at substation. This project description deviation doesn't impact the applicability of the methodology, additionality and baseline scenario of project. The nature of deviation is permanent. This deviation is already approved in previous verifications (01-April-2021 to 30-September-2021).

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 audit, it was concluded that the project is implemented as per the instructions of the VCS PD and this is verified from the commissioning certificate/^{1/}. 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 breakdown summary sheet/^{13/} of the project activity. Scheduled maintenance was carried out as per the instruction of the manufacturer and the same is acceptable to the assessment team. Project location is confirmed by the assessment team through interview with PP during Onsite 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 PD are correct. The latitude and longitude of the project activity is given below;

Project Investor	Village	Tehsil	District	State	Latitude	Longitude
Mahindra Renewables Private Limited	Badwar	Gurh	Rewa	Madhya Pradesh	24 ° 28'35.3"N	81 ° 32'56.0"E
	Barsaita Pahad				24 ° 28'53.3"N	81 ° 34'31.9"E
	Barsaita Desh				24 ° 28'53.2"N	81 ° 34'31.4"E
	Itar Pahad				24 ° 28'49.7"N	81 ° 36'35.0"E
	Ramnagar Pahad				24 ° 28'51.0"N	81 ° 35'17.2"E

The technical specifications/^{3/} have been verified during Onsite audit as well as with the technical specifications/^{3/} of solar PV and cross checked from the technical manual of the Manufactures. VVB confirmed with commissioning certificates/^{1/} that entire capacity of the project i.e., 250 MW commissioned in phases. CAR 02 was raised regarding commissioning certificate/^{1/} which was closed successfully. The commissioning dates of the projects are as follows:

Project Investor	Capacity (MW)	Commissioning Dates
Mahindra Renewables Private Limited	5.1	06-July-2018
	35.7	07-Septemberr-2018
	100	05-April-2019
	94.2	10-July-2019
	15	03-January-2020
Total	250	

Assessment team checked the commissioning certificate/^{1/} and confirmed that the dates of Commission for the Solar plants are correct. There is no change in project design and the project is implemented as per the description provided in the VCS Joint PD & MR as confirmed by PP representative during the audit. The technical specification/^{3/} of the project capacities commissioned in phases, is given below:

Capacity of the projects and date of commissioning verified with commissioning certificates/^{1/} and technical specifications/^{3/} provided by technology supplier.

Geo coordinates checked on google earth and verification team conclude geo coordinates of project locations are consistent with registered PD.

Assessment team checked the technical details of the project activity from the manufactures specification and the detail are as follow:

Solar PV Project Technology Details –

The technical specifications/^{3/} of 5.1 MW of 250 MW of Solar PV Power plant is provided below:

Solar PV Modules	
Make and Model	1. Longi Solar. LR6-72HV-340M 2. Longi Solar.LR6-72HV-345M
PV Module Technology	Monocrystalline
Total number of modules	19964 (340W-10044 Nos., 345W-9920Nos.)

Inverter/Power Conditioner	
Inverter Make and Model	Tmeic-PVH-L2550E
Number of Inverters	2 numbers
Continuous AC power at 50 °C	2550 kWAc per Inverter
Mounting Structure	
Type of Structure	Fixed
Manufacturer and Model of Mounting Structure	Mahindra Susten
Tilt	14 °
Pitch	5.8 M

The technical specifications^{/3/} of 35.7 MW of 250 MW of Solar PV Power plant is provided below:

Solar PV Modules	
Make and Model	1. Longi Solar. LR6-72HV-340M 2. Longi Solar.LR6-72HV-345M
PV Module Technology	Monocrystalline
Total number of modules	132122 (340W-66092 Nos., 345W-66030 Nos.)
Inverter/Power Conditioner	
Inverter Make and Model	Tmeic-PVH-L2550E
Number of Inverters	14 numbers
Continuous AC power at 50 °C	2550 kWAc per Inverter
Mounting Structure	
Type of Structure	Fixed
Manufacturer and Model of Mounting Structure	Mahindra Susten
Tilt	14 °
Pitch	5.8 M

The technical specifications^{/3/} of 94.2 MW of 250 MW of Solar PV Power plant is provided below:

Solar PV Modules	
Make and Model	1. Longi Solar. LR6-72HV-340W 2. Longi Solar. LR6-72HV-345W 3. Trina Solar. TSM-DE14A(II)-340W 4. Trina Solar. TSM-DE14A(II)-345W 5. Canadian Solar. CSU-320W 6. Canadian Solar. CSU-325W 7. Canadian Solar. CSU-330W
PV Module Technology	Monocrystalline/Polycrystalline
Total number of modules	1. Longi Solar. LR6-72HV-340W:27746 Nos. 2. Longi Solar. LR6-72HV-345W:24546 Nos. 3. TRINA. TSM-DE14A(II)-340W:87326 Nos. 4. TRINA. TSM-DE14A(II)-345W:27286 Nos. 5. Canadian Solar. CS6U-320W:6944 Nos. 6. Canadian Solar. CS6U-325W:49724 Nos. 7. Canadian Solar. CS6U-330W:156984 Nos.
Inverter/Power Conditioner	
Inverter Make and Model	1. ABB:PVS980-58-2000 KVA 2. TMEIC:PVH-L2550E
Number of Inverters	1. ABB-42 Nos. 2. TMEIC-4 Nos.
Continuous AC power at 50 °C	1. ABB-2000 kWAc 2. TMEIC-2550 kWAc
Mounting Structure	
Type of Structure	Fixed
Manufacturer and Model of Mounting Structure	Mahindra Susten
Tilt	14°
Pitch	5.8 M

The technical specifications^{/3/} of 100 MW of 250 MW of Solar PV Power plant is provided below:

Solar PV Modules	
Make and Model	1. Canadian Solar-CS6U-325W 2. Canadiun Solar-CS6U-330W 3. TRINA-TSM-DEI14A(II)-340W 4. TRINA-TSM-DEI14A(II)-345W
PV Module Technology	Monocrystalline/Polycrystalline
Total number of modules	410192 (CS: 325Wp-166160 Nos., 330Wp-212784 Nos.), (Trina: 340 Wp-15624 Nos., 345 Wp-15624 Nos.)
Inverter/Power Conditioner	
Inverter Make and Model	ABB-PVS980-58-2000 KVA
Number of Inverters	50Nos.
Continuous AC power at 50 °C	2000 kWAc per Inverter
Mounting Structure	
Type of Structure	Fixed
Manufacturer and Model of Mounting Structure	Mahindra Susten
Tilt	14°
Pitch	5.8 M

The technical specification^{/3/} 15 MW out of 250 MW is mentioned below:

Solar PV Modules	
Make and Model	1. Canadian Solar -325 W (34462 Nos.) 2. Longi Solar-365 W (10800 Nos.) 3. Jolywood -345W (10800 Nos.)
PV Module Technology	Monocrystalline/Polycrystalline
Inverter/Power Conditioner	
Inverter Make and Model	Huawei 160 KWp 1500v – 69 Nos ABB 2 MW 1500V/660V- 2 Nos
Transformer	

Make and Model	Shilchar and Toshiba
Ratings and Quantity	4MVA 33KV/800V-800V (3 Nos) 4MVA 33KV/660V-660V (1 Nos)

The start date of the project activity (date on which the 5.1 MW solar PV project was commissioned by i.e., 06-July-2018. This is connected to Indian grid in line with the approved VCS Joint PD & MR and VCS Standard version 4.3^{10/}. The assessment team confirmed through interview with O & M personal during Onsite audit that there are no changes in to the project design during this monitoring period. It was found that the monitoring plan was implemented as per the requirement of the VCS PD & approved monitoring Plan and applied methodology ACM0002: Grid-connected electricity generation from renewable sources –Version 19.0^{10/}. The organizational role and responsibility as mentioned in the registered VCS PD is followed onsite. There are delay in calibration^{5/} of meters. The energy meters are not calibrated during first 4 months of the monitoring period (01- October-2021 to 21-January- 2022) due to COVID-19 pandemic as informed by PP during interview which comes under purview of state utility. The recent calibration^{5/} of meters were done on 22-Janaury-2022 and observed error are within permissible limit of accuracy class 0.2s. Further, Joint meter readings reports contains only quantity of net electricity generation supplied to grid (actual values). Therefore, PP does have no export and import data separately JMRS^{11/} prepared by state utility and PP has no role in preparation of JMRS^{11/}. Hence, PP has applied double of maximum permissible error i.e., 0.4% (2 x 0.2%) to the net electricity supplied to grid for the complete monitoring period which is conservatives approach adopted by PP. VVB confirmed the approach to be conservative and thus acceptable to VVB. All the emergency preparedness as mentioned in the registered VCS PD is followed onsite and no discrepancies were found regarding the same. The Project participant contribution from the project activity towards sustainable development in accordance to host country as explained below:

Social well-being: The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and may promote business with improved power generation.

Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.

Technological well-being: The successful operation of project activity would lead to promotion of solar based power generation and would encourage other entrepreneurs to participate in similar projects.

Environmental well-being: Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions.

Further, Project proponent has demonstrated contribution to a minimum three SDGs in Section 1.11 of final monitoring report^{6/}. However, as per VCS standard Version 4.3^{10/}, the same is effective immediately for all projects to be registered on or after 20-January-2023.

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

The assessment team observed that the project is in line with the registered PD and applied methodology and thus no clarification/deviation is sought. CAR 01 & CAR 02 were raised in this section during the verification process and closed successfully. Please refer below Appendix 2 for the detail closure of the CAR Assessment team confirms following during the verification onsite audit:

Assessment team confirms following during the verification audit:

1. Start date of the project is 06-July-2018 (as per VCS joint PD & MR).
2. An undertaking letter dated: 02-August-2022 has been submitted by PP for no double counting^{12/} 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.
3. Assessment team confirms that this is the 4th monitoring under VCS and covers the activity from 01-October-2021 to 30-April-2022 (inclusive of both dates). Thus, VCS crediting period should be maximum of 10 years till end date of VCS crediting period. 06-July-2018 is the start date and crediting period end on 05-July-2028. The GHG credits from 01-October-2021 to 30-April-2022 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the "Double Counting".
4. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	Mahindra Renewables Private Limited.
Contact person	Mr. Rakesh Khaitan
Title	CEO
Address	Mahindra towers, Dr. G.M. Bhosle Marg P.K. Kurne Chowk, Worli- Mumbai-400018, Maharashtra, India.
Telephone	+91-99306 74683
Email	mehta.saurabh2@mahindra.com

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	Ms. Bhavini Pandey
Title	Project Manager
Address	Enking Embassy, Office no. 201, Plot 48, Scheme 78 Part-2, Vijay Nagar, Indore-452010, Madhya Pradesh, India
Telephone	+91 9532180246
Email	registry@enkingint.org

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 is 284,488 tCO₂e which is 25.7% higher than the estimated emission reduction 226,469 (389,911/365 days *212 days) tCO₂e during this monitoring period which is due to climatic conditions and high PLF attained by the solar power plant during the current monitoring period. The project activity has achieved 23.87% PLF during the current monitoring period which is 25.7% higher than the estimation of PLF in the VCS PD & MR (19.0%). As per VCS joint PD & MR, sensitivity analysis stated that an increase of 59.40% in PLF would breach the IRR benchmarking values, the observed percentage PLF values in current monitoring period is 25.7% which is less. Therefore, the increase in PLF/generation does not impact the additionality. Also, there is neither technological nor design changes in the project activity. The values from JMRS/¹¹/ issued by state utility have been checked with the invoice/¹¹/ values and found to be perfectly aligned. The high PLF is due to seasonal variation during current monitoring period and not in control of PP. The project activity is otherwise operated according to its description in VCS PD and no changes observed during the monitoring period. Hence acceptable to VVB.

Further, in line with para 3.16.1, “The project proponent must demonstrate that a project contributes to at least three SDGs by the end of the first monitoring period, and in each subsequent monitoring period.” Thus, PP has provided project’s contribution towards SDGs 7.2, 4.4 and 13.0 in table 1 of monitoring period. Verification team verified the same with the employment declaration/²⁰/ and Training attendance sheet/²⁰/ submitted by PP along with the monitoring report and found both inline. Thus, accepted by VVB.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the documents review of VCS PD and grievance register/^{15/} 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. This report clearly mentioned 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 notification¹ solar/wind project falls under White Category and are practically non-polluting.

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/^{15/} 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, ver. 4.3/^{10/} and appropriate actions taken time to time by PP. PP has also provided an interface at susten@mahindra.com where suggestion and the grievance/^{15/} can be submitted.

Assessment team checked the grievance register/^{15/} 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 through either mail or grievance register. Thus, assessment team is of the opinion that the ongoing stakeholder mechanism is adequate and appropriate.

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 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.
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¹<https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

² http://envfor.nic.in/sites/default/files/Latest_118_Final_Directions.pdf

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	Ex-ante parameters The $EF_{grid,OM,y}$; $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ emission factors are fixed ex-ante and sourced from the registered Joint PD and MR. Combined margin CO₂ emission factor ($EF_{grid,CM,y}$) is equal to 0.9368 tCO₂/MWh. The calculation approach was in line with the Joint PD and MR. Values of ex-ante parameters are as follows: $EF_{grid,OM,y} = 0.9610$ tCO₂/MWh (Calculated as generation-weighted average using 3 year (2015-16, 2016-17, 2017-18), The data are sourced from Baseline CO₂ Emission Database, Version 14.0, published by Central Electricity Authority (CEA), Government of India) $EF_{grid,BM,y} = 0.8644$ tCO₂/MWh (Calculated as per “Tool to calculate the emission factor for an electricity system, version 07”.as per the latest data available for the year 2016-17. The value is directly sourced from “CO₂ Baseline Database for Indian Power Sector” version 14.0 published by the Central Electricity Authority, Ministry of Power, and Government of India) $EF_{grid,CM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$= Operating margin CO₂ emission factor in year y (tCO₂/MWh) WOM = Weighting of operating margin emissions factor (%) = 75%, WBM= Weighting of build margin emissions factor (%) = 25% Calculated as per “Tool to calculate the emission factor for an electricity system, version 07.0.0”. After calculation, the Combined Emission factor is obtained as 0.9368 tCO₂/MWh Monitored Parameter: Baseline emission: The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the regional grid emission factor of the grid. Formula Used: - $BE_y = EG_{PJ,y} * EF_{grid,CM,y}$ BE_y - baseline emissions in year y (tCO₂) $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year MWh $EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (t CO₂/MWh) Since project activity is greenfield project, Hence, $EG_{PJ,y} = EG_{PJ,facility,y}$ Where; $EG_{PJ,facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh) $EF_{grid,CM,y}$: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂e/MWh).

EG_{facility,y} - Quantity of net electricity generation supplied by the project (Solar) plant/unit to the grid during the monitoring period (MWh)

Electricity exported by the project to the grid at project site switch yard is the actual generation recorded and monitored by the metering system installed at the PGCIL substation. The meter readings are taken jointly on a fixed day of every month for the preceding month at the delivery point and signed by the representatives of SBE and PP representative.

The metering system comprises special energy meters (SEMs) installed at the substation station. Project Activity is connected via four transmission line of 220 kV, each having its own energy meters (main and check meter) at the PGCIL Substation. Currently project activity is connected to Barsaita Desh Substation & Badwar Substation through two 33 kV lines. The details of meters are as follows:

Meter Serial No.	Make	Accuracy class	Meter Calibration date	Due date of meter calibration	Meter Calibration date	Due date of meter calibration
5297256 Line-1 Main Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027
5296427 Line-1 Check Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027
5297266 Line-2 Main Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027
5297271 Line-2 Check Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027

The calibration frequency of meters is once in 5 years. Meters was not calibrated during first 4 months of current monitoring (01-October-2021 to 21-January-2022) The energy meters are not calibrated due to COVID-19 pandemic as informed by PP during interview which comes under purview of state utility. The recent calibration^{5/} of meters were done on 22-January-2022 and observed error are within permissible limit of accuracy class 0.2s. Further, Statements issued by Regional Energy Account Statement issued by Western Regional Power Committee (WRPC) i.e., JMRS^{11/} contains only quantity of net electricity generation supplied to grid (actual values). Hence, PP as applied double of maximum permissible error i.e., 0.4% (2x0.2%) to the net electricity supplied to grid for the complete monitoring period which is conservative approach adopted by PP.

	The information of meters calibration^{5/} and validity of calibration is provided in Section 4.5 of this report. During the current monitoring, the net electricity generation supplied by the project activity is 303,682.04 MWh which is sourced from the statements issued by Western Regional Power Committee (WRPC). The same has been verified with the monthly Statements issued by WRPC and found correct. Verification team also cross verified with invoice^{11/} generated weekly DSM settlement statements receipt available at http://www.wrpc.gov.in. Baseline emissions are calculated as follows. $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ $BE_y = 303,682.04 \text{ MWh} \times 0.9368 \text{ tCO}_2/\text{MWh}$ $= 284,488 \text{ tCO}_2\text{e (rounded down value)}$ As per methodology ACM0002 Version 19.0, for renewable energy projects, there is no any project emissions occurred. Hence, $PE_y = 0$ Leakage: As per methodology ACM0002 Version 19.0^{10/}, for renewable energy projects, there is no any leakage emissions occurred. Thus, Emission Reductions are: $ER_y = BE_y - PE_y$ $= 284,488 \text{ tCO}_2 - 0$ $= 284,488 \text{ tCO}_2\text{e}$ Verification team confirms that the monitoring has been carried out in accordance with the monitoring plan contained in the registered Joint PD and MR. Verification Team also confirmed that GHG reductions and removals has been quantified correctly and in line with monitoring procedure in VCS Joint PD MR and applied methodology.
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4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the Calibration details of the monitoring meters with the calibration certificates ^{5/} .
Findings	CAR 04 & CAR 05 were raised during the verification process and closed successfully. Please refer Appendix 2 of this report for the detail closure of the CAR.
Conclusion	The project activity has installed a special energy meter sealed by the Power Grid Corporation of India (PGCIL). The metering system includes the main system and a back-up system that measure, record and control the various monitoring

parameters. The back-up system would be used in case of failing of the main meter. Latest state-of-art monitoring and control equipment that measure, record and control the various monitoring parameters. These meters record parameters including electricity exported & imported. Moreover, the meters are located at the grid connected point are of accuracy class of 0.2s for project activity applied for verification. These electricity meters are being used by Power grid corporation of India for preparing electricity generation statements. The calibration details of the meters are as follows:

Meter Serial No.	Make	Accuracy class	Meter Calibration date	Due date of meter calibration	Meter Calibration date	Due date of meter calibration
5297256 Line-1 Main Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027
5296427 Line-1 Check Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027
5297266 Line-2 Main Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027
5297271 Line-2 Check Meter	Elster ABT type	0.2s	25-November-2015	24-November-2020	22-January-2022	21-January-2027

The calibration frequency of meters is once in 5 years. Meters were not calibrated during current monitoring (01-April-2021 to 30-September-2021) The energy meters are not calibrated due to COVID-19 pandemic as informed by PP during interview which comes under purview of state utility. The recent calibration^{/5/} of

	meters were done on 22-Janaury-2022 and observed error are within permissible limit of accuracy class 0.2s. Further, Statements issued by Regional Energy Account Statement issued by Western Regional Power Committee (WRPC) only quantity of net electricity generation supplied to grid (actual values) is given. Hence, PP as applied double of maximum permissible error i.e.,0.4% (2 x 0.2%) to the net electricity supplied to grid for the complete monitoring period which is conservatives approach adopted by PP. It is reported that the data will be kept for 2 years following the end of the crediting period or till the last issuance of VCUs for the project activity whichever occurs later. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the audit. Onsite audit and interview with site personnel confirms that the operational and organizational chart as mentioned in the VCS Joint PD & MR is as per the audit practice and thus assessment team confirms that the details are correct. The break down log is checked and found that the plant undergone scheduled maintenance and break down. VVB checked the breakdown and routine maintenance log book which also provided in Appendix 2 of MR and confirmed that it does not have any impact on project design and monitoring procedures. No unforced error observed. VVB confirmed that data/information used for determining GHG reductions and removals was sufficient in quantity and of appropriate quality. Calibration certificates^{/5/} of meters/ QA/QC procedure checked and found to be appropriate. Thus, assessment team concluded that the evidences are sufficient in quantity, and appropriate for the quality, to determine the GHG reductions and removals
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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 by Mahindra Renewables Private Limited to perform the 04th verification of the “Renewable Solar Power Project by Mahindra Renewables Private Limited”.

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 VCS PD and the applied methodology ACM0002- Version 19.0/^{10/}

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/Power plant 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 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.
- A Reasonable Level of assurance was achieved as planned, during verification process.
- Verification period: 01-October-2021 to 30-April-2022(inclusive of both days)

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

Year	Baseline emissions or removals (tCO ₂ e) ²	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-October-2021 to 31-December-2021	112,011	0	0	112,011

²Rounddown values

Year	Baseline emissions or removals (tCO _{2e}) ²	Project emissions or removals (tCO _{2e})	Leakage emissions (tCO _{2e})	Net GHG emission reductions or removals (tCO _{2e})
01-January-2022 to 30-April-2022	172,477			172,477
Total	284,488	0	0	284,488

Assessment team also compared actual VCUs with the estimated VCUs and found that the actual VCUs is 284,488 tCO_{2e} which is 25.7% higher than the estimated emission reduction 226,469 (389,911/365 days *212 days) tCO_{2e} during this monitoring period which is due to climatic conditions and high PLF attained by the solar power plant during the current monitoring period. The project activity has achieved 23.87% PLF during the current monitoring period which is 25.7% higher than the estimation of PLF in the VCS PD & MR (19.0%). As per VCS joint PD & MR, sensitivity analysis stated that an increase of 59.40% in PLF would breach the IRR benchmarking values, the observed percentage PLF values in current monitoring period is 25.7% which is less. Therefore, the increase in PLF/generation does not impact the additionality.

APPENDIX 1: Documents Reviewed or Referenced (Verification)

No.	Author	Title	References to the document	Provider
1.	Rewa Ultra Mega Solar Ltd.	Commissioning certificates of the Solar plants issued by Rewa Ultra Mega Solar Ltd. 1) For 5.10 MW: - Ref.No. RUMS-514/2018-19/141. 2) For 35.7 MW: - Ref.No. RUMS-514/2018-19/285. 3) For 94.2 MW: - Ref.No. RUMS-514/2018-19/112. 4) For 100 MW: - Ref.No. RUMS-514/2018-19/05. 4) For 15 MW: - Ref.No. RUMS-514/2018-19/308.	Dated 05/07/2018 Dated 06/09/2018 Dated 09/07/2019 Dated 04/04/2019 Dated 02/01/2020	PP
2.	Applus	Contract of the project participant with the DOE A+SH_SYST_TQC_VCS_VER_15122	Contract document signed between PP and DOE	PP
3.	NA	The operational lifetime of the project activity from the manufacturer = (Technical specifications)	Manufacturer technical specifications	PP
4.	VERRA	Registered PD VCS webpage for the project, VCS ID 2059; Verra Search Page	NA	PP
5.	ERDA	Calibration Certificates of energy meters	NA	PP
6.	NA	MR version 01 MR version 02	01-June-2022 08-August-2022	PP
7.	NA	Emission reduction sheet version 01 Emission reduction sheet version 02	01-June-2022 08-August-2022	PP
8.	NA	O & M Agreement	-	PP
9.	NA	Power Purchase Agreements (PPAs)	-	PP
10.	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 - UNFCCC Methodology: ACM0002 version 19	UNFCCC CDM/VCS web site	UNFCCC
11.	NA	Monthly statement- JMR & invoices for the complete monitoring period	-	PP
12.	NA	Declaration regarding no participation in other GHG program for the concerned monitoring period	02-August-2022	PP

No.	Author	Title	References to the document	Provider
13.	NA	Breakdown details for the monitoring period	-	PP
14.	NA	Employment records for plant persons	-	PP
15.	NA	Grievance Register maintained at site	-	PP
16.	UNFCCC	CDM validation and verification standard for project activities, Version 03.0	-	UNFCCC
17.	Applus	Previous Verification Report	24121	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.	E.2	Date : DD/MM/YYYY
Description of FAR				
There is no FAR from the validation/previous verification of the project activity				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

Table 2. CL from this verification

CL ID	XX	Section no.	NA	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-August-2022
Description of CAR				

During document review it is found that:	
1. Monitoring report found not clear about inclusion or exclusion of start & end dates of monitoring period. Corrective action sought. 2. Contents Page of Monitoring report is found not in-line with the VCS MR template. Thus, Corrective action sought 3. Break down details of Solar PV modules is missing in MR. PP also requested to submit the supporting evidence of break downs (plant log book for the monitoring period) to assessment team for verification. Corrective action is sought.	
Project participant response	Date: 08-August-2022
1. Inclusion of start and end date is corrected in MR 2. Content page is now has been aligned with MR template 3. Breakdown detail is attached in appendix of MR	
Documentation provided by project participant	
Breakdown Report	
VVB assessment	Date: 25/08/2022
1. PP has provided the updated MR to assessment team which contain inclusion or exclusion of start & end dates of monitoring period found it in line with MR template. 2. Contents page of updated MR is found in line with VCS MR template version 4.1 which is provided to the assessment team. 3. PP has updated the breakdown details of Solar PV modules in revised MR and assessment team has cross checked the breakdown details log book and found that no major breakdown happened during the current monitoring period. Hence all is CAR is closed.	

CAR ID	02	Section no.	4.1	Date : 06-August-2022
Description of CAR				
During the review of documents submitted by PP, assessment team found that the following documents are missing;				
1. Commissioning certificate for each phase 2. Technical specification of the project activity 3. Power Purchase agreement for the project activity 4. Declaration regarding double counting of the emission reductions achieved. 5. Supporting documents for the SDG contributions achieved during this monitoring period & over life time by the project activity.				
PP is requested to submit above documents for verification.				
Project participant response				Date : 08-August-2022
All the document are attached in the link.				
Documentation provided by project participant				
1. Commissioning certificate for each phase 2. Technical specification of the project activity 3. Power Purchase agreement for the project activity 4. Declaration regarding double counting of the emission reductions achieved. 5. JMR, Invoice, Training Details and ER Sheet				

VVB assessment		Date: 25/08/2022
Assessment team has cross-checked the following document.		
1. Project was commissioned in 5-different phases		
Project Investor	Capacity (MW)	Commissioning Dates
Mahindra Renewables Private Limited	5.1	06-July-2018
	35.7	07-September-2018
	100	05-April-2019
	94.2	10-July-2019
	15	03-January-2020
Total	250	
PP has provided all the commissioned certificate to assessment team and team has found commissioned date in MR is in line with commissioned certificate.		
2. PP has provided the technical specification of project activity and assessment team has found it in line with register PDD and MR.		
3. PP has provided PPA to assessment team which is signed by Mahindra Renewable pvt. ltd. With M.P. Power Co. Ltd. and Delhi Metro Rail Corp. and found error-free by assessment team.		
4. Assessment team has cross-checked the dated 02/08/2022 declaration regarding no double counting of emission reduction and found it inline.		
5. PP has provided the supporting documents of SDGs contribution of project activity assessment team has verified the supporting document JMRs, record, ER sheet found it in line with the SDGs goals.		
Thus, accepted by VVB team. CAR is closed		

Accuracy of GHG Emission Reduction and Removal Calculations

CAR ID	03	Section no.	4.4	Date : 06-August-2022
Description of CAR				
Assessment team checked the scheduled & actual values of the electricity supplied to the grid and values found correct in line with the JMRs i.e. Regional Energy Account (REA) reports submitted. However, Invoice values for the Electricity supplied to DMRC are found missing in ER calculation sheet. PP requested to submit all supporting evidence. Thus, Corrective action sought.				
Project participant response				Date: 08-August-2022
Invoice value is provided in attached ER Sheet				
Documentation provided by project participant				
1. Invoice of DMRC 2. ER Sheet				
VVB assessment				Date: 25/08/2022
Assessment team has found that PP has updated electricity supplied data to DMRC in Emission Reduction calculation sheet and same has been cross checked with JMR i.e.,				

Regional Energy Account (REA) reports submitted which was further verified with Invoices generated by PP Hence **CAR is closed.**

Quality of Evidence to Determine GHG Emission Reductions and Removals

CAR ID	04	Section no.	4.5	Date : 06-August-2022
Description of CAR				
PP have provided energy meter details and calibration dates in the monitoring report. Assessment team checked the calibration certificates for the year 2022 and information found correct. However, calibration certificates for the year 2015 found missing in the documents submitted by PP. Kindly submit.				
Project participant response				Date : 08-August-2022
Calibration Certificate of 2015 is provided in the attached link				
Documentation provided by project participant				
Calibration Certificate				
VVB assessment				Date: 25/08/2022
PP has provided the previous calibration certificate of period 2015 to 2020 to the assessment team and four months of delayed has been observed in current monitoring period thus PP has applied the 0.4% error factor for delayed period & assessment team has find it error-free. No other discrepancies have been found in this section. Thus accepted and CAR is closed.				

CAR ID	05	Section no.	4.5	Date : 06-August-2022
Description of CAR				
PP requested to review and update justification for the higher emission reductions achieved for this monitoring period. Corrective action sought.				
Project participant response				Date : 08-August-2022
Justification is provided in MR Section 5.4				
Documentation provided by project participant				
Revised MR				
VVB assessment				Date: 25/08/2022
PP has provided the justification for higher emission reduction in revised MR assessment team found that as per register PD if PLF increased by 59.40% than it would breach the threshold value of equity IRR value and higher PLF for current monitoring period is 25.7% which is not breaching the project additionality hence this CAR is closed.				

Table 4. FAR from this verification

FAR ID	XX	Section No.		Date : DD-Month-YYYY
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Description of FAR	
There is no FAR from this verification	
Project participant response	Date : DD-Month-YYYY
NA	
Documentation provided by project participant	
NA	
DOE assessment	Date: DD-Month-YYYY
NA	

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

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

Technical reviewer and approver of the verification and certification report

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

Short CVs of the Team:

- Dr. Atul Takarkhede** is Ph.D. (Environmental Sciences) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical papers related to environmental sciences. He counts with more than 15 years of experience in field of Environmental Auditing, consulting and accreditation. He is an expert in ISO 9001-14001, CO₂/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management reporting for organizations' environmental performance. His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; conducting environmental/water audits; NABET requirements appliance, functional area expert in Water Pollution & Solid & Hazardous Waste management among others. Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. Currently he is associated with True Quality Certifications Private Limited and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes.
- Mr. Denny Xue** (Master's Degree in Environmental Engineering, Bachelor's Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project

assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and technical review with Applus+. Before he joined Applus+ LGAI, he has been working for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development. Mr. Denny Xue is based in Shanghai, China. Mr. Denny Xue participates in the project's technical review team.

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
ERDA	Electrical Research and Development Association
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming potential
PP	Project Participant
PGCIL	Power Grid Corporation of India
VCUs	Verified Carbon Unit
WRPC	Western Regional Power Committee

APPENDIX 5: CALIBRATION DETAILS OF THE METERS

Meter Serial No.	Make	Type	Accuracy class	Meter Calibration date	Due date of meter calibration	Meter Calibration date	Due date of meter calibration
5297256 Line-1 Main Meter	Elster	ABT	0.2s	25-November-2015	24-Novemeber-2020	22-January-2022	21-January-2027
5296427 Line-1 Check Meter	Elster	ABT	0.2s	25-November-2015	24-Novemeber-2020	22-January-2022	21-January-2027
5297266 Line-2 Main Meter	Elster	ABT	0.2s	25-November-2015	24-Novemeber-2020	22-January-2022	21-January-2027
5297271 Line-2 Check Meter	Elster	ABT	0.2s	25-November-2015	24-Novemeber-2020	22-January-2022	21-January-2027

Delay in meter calibration has been observed, delay calibration shows that the readings are within permissible limits. Therefore, conservative error factor of 0.4% (Export and import values are not available in the new version of JMRs, therefore 0.4% error factor is applied to the net values) have been applied to the net values from October 2021 to January 2022.