



RENEWABLE POWER PROJECT BY SEI KATHIRAVAN POWER PRIVATE LIMITED

Document Prepared By



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Summary:

VKU Certification Pvt. Ltd. (hereafter referred as VKU) has been commissioned by **Infinite Environmental Solutions LLP** (hereafter referred Infinite Solutions) to verify greenhouse gas emission reductions reported for project activity “**Renewable Power Project by SEI Kathiravan Power Private Limited.**” (**VCS 1789**) in India. This is the fourth verification of monitoring period i.e., from **01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)** under the first crediting period i.e., from **09-March-2017 to 08-March-2027 (Inclusive of both dates)**.

Purpose of verification: The objective of verification process is to obtain an impartial evaluation of the ex-post determination of the monitored reductions in greenhouse gas (GHG) emission. This verification ensures that monitoring methodology is aligned with the plan outlined in the registered VCS PD /3/, and that the monitoring data used to confirm reductions in greenhouse gas emissions from sources is comprehensive, definitive and transparently presented.

Verification scope of the project is:

- To verify that the project is implemented as described in the registered VCS PD /3/.
- To evaluate the project's adherence to relevant regulations, including the legislation of the host country (India).
- To verify the implementation and functionality of monitoring system, ensuring the generation of Verified Carbon Units without any instances of double counting.
- To verify accuracy, completeness, consistency, transparency and absence of significant errors or omissions in the reported data by examining monitoring records and emissions reduction calculations.
- To ensure that actual monitoring systems and procedures align with those described in the monitoring plan.
- To assess the GHG emission reduction data and provide a conclusion with a reasonable level of assurance regarding the absence of material misstatements.
- To verify that reported GHG emission data is sufficiently supported by evidence.

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Program Guide version 4.4/8/, VCS Standard Version 4.5/10/, VCS Validation and Verification Manual version 3.2/11/, CDM M&P, the latest version of the CDM Validation and Verification Standard 3.0/12/, and relevant decisions of the COP/MOP and the CDM EB viz., 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 (India) legislation. Furthermore, standard auditing techniques have been applied throughout the verification process.

The verification process included inter alia a desk review, on-site assessment, the resolution of outstanding issues and the issuance of the final verification report and certification. This comprehensive verification is aimed to ensure that reported emission reductions are thorough and precise, aligned with relevant VCS requirements, thus enabling the project to obtain certification.

VKU diligently followed rule-based approach during verification process, ensuring strict adherence to the applicable VCS requirements. The verification encompassed a comprehensive assessment of the project activity's operations, monitoring procedures, and GHG emission reduction calculations.

During this Fourth verification of first Crediting Period, a total of **(08)** findings have been identified, comprising of **(05) Corrective Action Request (CARs) (03) Clarification Requests (CLs) and (00) Forward Action Requests (FAR)**. All the raised findings were successfully resolved/closed after necessary corrections/clarifications by the client. The same has been discussed in Appendix B of this verification report.

The assessment team ensured that the reported emission reductions are complete and accurate by verifying 100% of the data, along with the supporting documents and evidences. This was performed during desk review and also by conducting personnel interviews and focussed group discussions during site visit to project. Verification of data has been carried out in accordance with applicable VCS requirements, therefore the assessment team has detected no further uncertainties.

The GHG emission reductions have been calculated based on the approved methodology ACM0002: Grid-connected electricity generation from renewable sources - Version 18.1 /13/ and the monitoring plan included in the registered VCS Joint PD&MR version 3.0 dated 29-September-2018 /3/

Verification Conclusion:

Based on VKU's thorough assessment, it is their professional judgment that the project activity “Renewable Power Project by SEI Kathiravan Power Private Limited” (VCS ID 1789) fully complies with the applicable requirements of VCS standard version 4.5 /10/ and associated guidelines. The project has successfully implemented the designated baseline and monitoring methodology outlined in ACM0002: Grid-connected electricity generation from renewable sources- Version 18.1 /13/.

The monitoring system in place is effective and reliable, ensuring a reasonable level of measurement and precision level allowed by the methodology and the VCS standards without any significant discrepancies.

As a result, VKU is able to objectively state that the project has achieved an emission reduction of **183,078 tCO₂e** during the fourth verification of first crediting period **(09-March-2017 to 08-March-2027; Including both dates)**. Monitoring period spans from **01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)**. This certification affirms the project's substantial contributions towards mitigating greenhouse gas emissions.

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1 INTRODUCTION

1.1 Objective

Infinite Environmental Solutions LLP (hereafter referred as Infinite Solutions) commissioned VKU Certification (here after referred as VKU) to carry out fourth verification of the project “Renewable Power Project by SEI Kathiravan Power Private Limited.” (VCS ID 1789) in India for the period from **01-January-2021 to 31-December-2022** (Inclusive of both start and end dates) under first crediting period i.e., from **09-March-2017 to 08-March-2027** (Inclusive of both dates).

The objective of the verification is to have an independent evaluation of a project activity by an accredited validation and verification body against the requirements of the VCS Program Guide Version 4.4 /8/, VCS standard version 4.5 /10/ and GHG program applied, on the basis of the registered VCS Joint PD+MR Version 3.0 of dated 29-September-2018 /3/.

This is the 4th verification of **first crediting period** ¹**(09-March-2017 to 08-March-2027)**, (Inclusive of both dates) for a period of 02 years or 730 days i.e., from 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates). The project activity adopts renewable crediting period of 10 years which can be renewed twice as mentioned in section 1.6 of VCS Joint PD+MR Version 3.0 of dated 29-September-2018 /3/.

Table No 01: Number and time period of verification under first crediting period:

First Crediting Period Audit Trail			
Audit Type	GHG Programme	Monitoring Period (Inclusive of both dates)	Number of years
1 st Validation/Verification	VCS	(09-March-2017 to 25-July-2018)	01 year 04 months 17 days
2 nd Verification	VCS	(26-July-2018 to 30-September-2019)	01 year 02 months 05 days
3 rd Verification	VCS	(1-October-2019 to 31-December-2020)	01 year 03 months 00 days
4 th Verification (Current MP)	VCS	(01-January-2021 to 31-December-2022)	02 years 00 month 00 days

¹ This project is duly registered as per VCS standard 3.7 as per the validation report, in accordance with 3.8.1 of VCS standard 3.7. Please refer : <https://verra.org/documents/vcs-program-guide-previous-version-v3-7/> , Also as per latest VCS standard version 4.5 where in Appendix 1 serial number 01 states that **“Registered VCS projects and projects that request registration with the VCS Program on or before 31- December-2019 remain eligible under the VCS Program for the entirety of their crediting periods”** The Project completed validation before 31-December-2019 i.e. on 29-September-2018 and chose to use the crediting period requirements under VCS version 3.

The verification is performed by review of evidences & documents submitted to the VKU Assessment Team by PP, for the registered project activity to establish that:

- The project activity has been implemented and operated in strict adherence to the registered VCS PD Version 3.0 dated 29-September-2018 /3/ & MR /1/. Furthermore, all essential physical aspects (technology employed, technical specifications of the PV Modules, project equipment's, metering and monitoring protocols) of the project have been diligently implemented.
- The monitoring report/1/ and accompanying documentation have been meticulously compiled and are comprehensive in nature.
- The data has been methodically recorded and stored in accordance with the prescribed monitoring methodology outlined in "ACM0002: Grid-connected electricity generation from renewable sources - version 18.1 /13/ and approved monitoring plan.

The verification process aimed to confirm the seamless implementation and full functionality of the monitoring system, ensuring the accurate generation of Verified Carbon Units (VCUs) without any instances of double counting/33/. Additionally, meticulous scrutiny of the monitoring records and emissions reduction calculations has been carried out to guarantee the completeness, consistency, transparency and absence of any material errors or omissions in the reported data. This aims to establish the reliability and integrity of the data.

1.2 Scope and Criteria

The scope of this verification was the independent, objective review and ex-post determination of the monitored reductions in GHG emissions from the project activity "Renewable Power Project by SEI Kathiravan Power Private Limited". The verification of this project was based on the validated & registered VCS Joint PD&MR Version 3.0 dated 29-September-2018 /3/ & monitoring report/1/ along with supporting documents submitted by the project proponent to the VKU assessment team. The documents thus submitted to the VKU Assessment Team were reviewed against the following guidance & protocols:

- i) VCS Programme Guide (Version 4.4) /8/
- ii) VCS Standard (Version 4.5) /10/
- iii) VCS Program Definitions (Version 4.4) /6/
- iv) VCS Registration & Issuance Process (Version 4.4) /7/
- v) VCS validation and verification manual version 3.2/11/
- vi) CDM Approved methodology ACM0002 Version 16.0 /13/
- vii) CDM Validation and Verification Standard version 3.0/12/
- viii) Tool for the demonstration and assessment of additionality – Version 07.0.0/21/
- ix) Tool to calculate emission factor for an electricity system – Version 06.0/20/

The steps involved are as follows:

- To assess the project's compliance with other relevant rules including the host country (India) legislation.

- To confirm that the monitoring system is implemented and fully functional to generate voluntary emission reductions without any double counting.
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan of registered VCS-Joint PD-MR.
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement is sufficiently supported by evidence.
- The verification process ensures that the reported emission reductions are comprehensive and accurate in order to obtain certification.

The verification method and criteria encompassed several phases, including

- (i) Desk review of VCS Joint PD-MR, registered under Version 3.0 dated 29-September-2018 /3/ and other supporting documents listed in **Table-04**;
- (ii) Onsite interviews & Focussed Group Discussions with Stakeholders & PP representatives involved in project's implementation.
- (iii) VKU's Completeness/Quality Check, and
- (iv) The Final issuance of the verification report.

Outstanding issues were resolved, leading to the issuance of the final verification report and the relevant VCS Verification Deed of Representation.

It is important to note that the, verification/Assessment team are not involved in providing consultancy to the project proponents. However, requests for clarifications and corrective actions may have contributed to improvements in the monitoring process.

1.3 Level of Assurance

All the revisions of the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent VKU's procedure, with a "Reasonable level of assurance", as per section 04 clause 4.1.2, 4.1.10 and clause 4.1.24 of the VCS Standard version 4.5/10/.

The verification report is based on the Monitoring report/1/, registered VCS Joint PD-MR Version 3.0 of dated 29-September-2018 /3/ & supporting documents that were made available to the VKU's assessment team references provided in table-04 and information collected through performing interviews with PP Representatives/Local Stakeholders during on-site visit /40/

The technical review was performed by a technical reviewer(s) qualified in accordance with VKU's qualification procedure. The verification/assessment team and the technical reviewers consist of the following personnel.

Table No 02: The Assessment Team comprises of

Role/Qualification of Assessment Team	Last Name	First Name
VCS Team Leader & Technical Expert TA 1.2 (Local Expert- Country: India)	Kumar	Barun
Validator/Verifier	Kaushik	Niharika
Project Trainee	Dhankar	Anil

Table No 03: The Technical Reviewer Team comprises of:

Role/Qualification of Technical Team	Last Name	First Name
Technical Reviewer & Technical Expert TA 1.2	Kathuria	Sunil

1.4 Summary Description of the Project

Project Overview:

Project entails installation & operation of a 50 MW (AC) solar power initiative, executed by SEI Kathiravan Power Private Limited in the Virudhnagar District of Tamil Nadu, India. The primary objective of this undertaking is to generate clean electricity from renewable solar energy sources. The project entails the installation of 192,024 photovoltaic modules with rated capacities of 310 Wp, 315 Wp, and 320 Wp.

Start date of the project activity is the earliest date of interconnection with the grid i.e., 09-March-2017. This is the date of commissioning of 50 MW_{AC} solar Project activity by SEI Kathiravan Power Private Limited. The entire project is in continuous operation since its date of commissioning of the power plant. The details of the commissioning dates of the individual project activity are mentioned in the [section 4.1](#) of this report.

Energy Source:

This project harnesses solar energy to generate electricity through its 50 MW_{AC} solar power installation. The generated electricity is seamlessly integrated into the Unified Indian Grid. Notably, this procedure abstains from utilizing fossil fuels, ensuring the absence of greenhouse gas emissions. Consequently, this project contributes positively to the environment by producing sustainable power without adverse ecological effects.

Project Nature:

The project is categorized as a Greenfield facility, signifying its new and innovative character. The electricity generated by this endeavor is exclusively earmarked for export to the Indian electricity grid.

The Project activity is a new facility (Greenfield) and the electricity generated by the project will be exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent thus plans to avail (VCS) benefits for this initiative. These benefits encompass recognized credits for the reduction of greenhouse gas emissions, underscoring the project's commitment to environmental sustainability.

By implementing the project activity, the following GHG sources of emissions are reduced/avoided:

Baseline/Source	Generation of electricity by fossil fuel- dominated grid connected power plants
Project Equipment/Sink	Avoidance of GHG emission into the atmosphere is due to generation of electricity by renewable means i.e., Photovoltaic Modules/Installed Solar Power Plant of this project and exporting to Unified Indian Grid which is in line with 3.1.1 of ISO:14064 part -2
Baseline GHG emission source reduced/avoided	CO ₂ emissions from fossil fuels and other fuel fired grid connected plants/projects.

The entire project is in continuous operation since its date of commissioning of the solar plant, as witnessed by the assessment team during onsite visit, & same was verified against the registered VCS Joint PD&MR/03/ previous Verification report/05/ and commissioning certificates/34/. Above documents have been submitted by PP in response to the feedback raised as a CL#01. As per section 3.26 and clause 3.26.3 of the VCS Standard version 4.5/10/ it is an obligation for the project proponent to make available to the validation and verification body the required supporting documents.

Hence VKU in adherence to the section 3.1, clause 3.1.8 of the VCS Standard version 4.5/10/ conforms that the capacity of the project has been verified from the commissioning certificates/34/. This is also verified during on site visit/40/, while interviewing the site personnels, and hence declare that the project capacity is in line with the defined methodology ACM0002 version 18.1/13/ & registered VCS Joint PD&MR Version 3.0 dated 29-September-2018/3/.

The net electricity generated by the project activity that was evacuated to the grid during the current monitoring period (4th monitoring period) from 01-January-2021 to 31-December-2022 (inclusive of both the dates) is **193,222.76 MWh**. The total emission reductions achieved in this monitoring period i.e., from 01-January-2021 to 31-December-2022 (first and last days included) is **183,078 tCO₂e**.

2 VERIFICATION PROCESS

The registered VCS project “Renewable Power Project by SEI Kathiravan Power Private Limited.” (VCS ID 1789) is undergoing fourth periodic verification of first crediting period under VCS with VKU Certification Pvt. Ltd. from 01-January-2021 to 31-December-2022, both dates included. The first crediting period start from 09-March-2017 to 08-March-2027 (both dates included)

The approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

Verification was conducted using VKU’s procedures in line with the requirements specified in the VCS Requirements, i.e., VCS Program Guide Version 4.4 /8/, VCS standard document version 4.5 /10/. The project activity does not fall under category “grouped projects”, hence no sampling methods was employed by the assessment team and during onsite visit /40/ assessment team reviewed 100% data for this project at site for the verification of GHG emission reductions generated by the project.

- The GHG emission reductions are based on the approved Baseline and monitoring methodology **ACM0002 “Grid-connected electricity generation from renewable sources” Version 18.1/13/**
- Scope: 01 - Energy Industries (renewable /non-renewable sources)
- Project type: Type I - Renewable energy projects
- This is not a grouped and also a non-AFOLU project.

Tools used for GHG Calculations are as follows as per registered PD/3/:

- Tool to calculate the emission factor for an electricity system, Version 06.0 (EB 97, Annex 07) /20/
- Methodological Tool- Tool for the demonstration and assessment of additionality 8 - Version 07.0.0 (EB 70, Annex 08)

Keeping in line with ISO (14064-3; 2019, clause 06 & 14065-2020, clause 09) Standard guidelines assessment team has framed down the process for completing the verification and has followed the same throughout the execution of audit of the said project VCS 1789.

The verification consisted of the following phases.

1. **Planning and Intimation to VERRA about site visit:** The assessment team plans the GHG-programme site visit and starts with a desk review. Assessment team also shared a NOVS Notice of Validation/Verification Services (NOVS) Form and submit it to auditing@verra.org, 15 business days before the initial meeting with the project proponent. The form for this project was shared on 13-June-2023 and confirmation for conducting site visit was received from VERRA on 19-June-2023 /39/

2. **Strategic Analysis:** Assessment team performed strategic analysis to understand the activities and complexity of the project, and to determine the nature and extent of the verification activities. The results of the strategic analysis shall be used in the risk assessment.
3. **Risk Assessment;** Assessment team performed risk assessment of the GHG statement to identify the risk of a material misstatement or nonconformity with the criteria.
4. **Evidence Gathering Activities;** Using a risk-based approach assessment team prepared evidence gathering activities, to collect sufficient and appropriate evidence upon which the conclusion shall be based. It will also determine whether the GHG statement conforms to the criteria, taking into account the principles of the standards or GHG programme that apply to the GHG statement.
5. Need for site visit is identified and site visit is planned.
6. **Audit and Sampling Plan:** An audit plan is prepared, including all sub-elements required for an integrated verification process aligned with the contract, scope, objectives, level of assurance and materiality. /44/
7. **Evidence Gathering Plan;** The evidence-gathering plan is prepared based on the results of the VKU's Assessment Team's risk assessment. It was designed to lower the verification risk to an acceptable level. The evidence-gathering plan thus specify the type and extent of evidence-gathering activities.
8. **Client Confirmation and Approval:** The site visit audit plan is sent to the client for review and confirmation/approval via email.
9. **Document Review:** Relevant documents, such as the verification report, monitoring plan, methodology, VCS PD and QA/QC procedures are thoroughly reviewed.
10. **On-Site Assessment:** This includes interviews and evaluation of the actual project scenario. /45/
11. **Resolution of Discrepancies:** Any non-conformities identified during the assessment are addressed and resolved.
12. **Independent Review:** A technical reviewer provides an independent assessment.
13. **Final Verification:** After completeness checks, the verification report and certification are issued.

The following sections outline each step in more detail.

2.2 Document Review

During document review, VKU has applied standard auditing techniques to assess the quality of information provided. The verification was performed primarily based on the review of VCS monitoring report for "Renewable Power Project by SEI Kathiravan Power Private Limited." (Version 01 of 03-May-2023, Version 02 of 15-September-2023, Version 03 of 29-September-2023 & **Final Version 04 of 04-October-2023**) /1/ and the emission reduction calculations spreadsheet (version 01 of 03-May-2023, Version 02 of 15-September-2023 and **final Version**

03 of 29-September-2023)/2/. In addition, the registered VCS Joint PD&MR version 03 dated 29-September-2018/3/ has been specifically referred for baseline estimations and the monitoring plan for the project. The following **table-04** lists the documentation that was reviewed during the verification.

As per section 3.26 and clause 3.26.3 of the VCS Standard version 4.5 it is an obligation for the project proponent to make available to the assessment team the required supporting documents and data needed to support statements and data as documented in the monitoring report. Thus, the assessment team reviewed the following documents during verification:

Table No: 04; Lists of the documentation that were reviewed during the current verification:

Current Verification Reference Documents	
/1/	VCS monitoring report for “Renewable Power Project by SEI Kathiravan Power Private Limited” in India. - Version 01 of 03-May-2023 - Version 02 of 15-September-2023 - Version 03 of 29-September-2023 - Version 04 of 04-October-2023
/2/	Emission Reduction Calculation Spreadsheet for “Renewable Power Project by SEI Kathiravan Power Private Limited” in India. - Version 01 of 03-May-2023 - Version 02 of 15-September-2023 - Version 03 of 29-September-2023
Background Documents/Weblinks	
/3/	<u>Registered VCS PD for the project ‘Renewable Power Project by SEI Kathiravan Power Private Limited.’ version 03 dated 29-September-2018</u>
/4/	<u>LGAI Technological Center, S.A. (Applus+ Certification): Validation Report: Renewable Power Project by SEI Kathiravan Power Private Limited, Version 2.0, dated 31-October-2018</u>
/5/	<u>TÜV SÜD South Asia Pvt Ltd: Verification Report: Renewable Power Project by SEI Kathiravan Power Private Limited, Version 02, dated 12-May-2021</u>
/6/	<u>VCS program Definitions (Version 4.4) of 29-August-2023</u>
/7/	<u>VCS Registration & Issuance Process (Version 4.4) of 31-August-2023</u>
/8/	<u>VCS: VCS Program Guide, version 4.4 of 29-August-2023</u>
/9/	<u>VCS Standard, version 4.4 dated 17-January-2023</u>
/10/	<u>VCS Standard, version 4.5 of 29-August-2023 (Latest)</u>
/11/	<u>Validation and verification manual version 3.2 dated 19-October-2016</u>
/12/	<u>CDM Validation and Verification Standard version 3.0 dated 09-September-2021</u>

/13/	<u>CDM Executive Board: Baseline and Monitoring Methodology “ACM0002: Grid-connected electricity generation from renewable sources- version 19.0</u>
/14/	<u>VERRA: Project search</u>
/15/	<u>UNFCCC: Project search</u>
/16/	<u>Renewable Energy Certificate Registry of INDIA - Registered RE Generator List (recregistryindia.nic.in)</u>
/17/	<u>I-REC Standard - The International REC Standard Foundation (irecstandard.org)</u>
/18/	<u>Gold Standard Foundation</u>
/19/	<u>EIA NOTIFICATION dated 14-September-2006</u>
/20/	<u>Tool to calculate the emission factor for an electricity system, Version 06.0 (EB 97, Annex 07)</u>
/21/	<u>Tool for the demonstration and assessment of additionality, Version 07.0.0 0 (EB 70, Annex 08)</u>
/22/	<u>CO₂ Baseline Database for the Indian Power Sector Version 13 dated June 2018</u>
/23/	<u>Ministry of Environment, Forest and Climate Change (MoEF&CC) Notification dated 14-September-2006 (S.O. 1533(E)</u>
/24/	<u>The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September-2013</u>
/25/	<u>Directory of Accredited Calibration Laboratories</u>
/26/	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17-March-2006 No. 502/70/CEA/DP&D Amendments Notified on 26-June-2010 No. 502/6/2009/DP&D/D-I https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf <u>Metering Regulations Archives - Central Electricity Authority (cea.nic.in)</u>
Reference/Supporting documents submitted by PP to VVB	
/27/	• Power Purchase Agreement between M/s SEI Kathiravan Power Private Limited & TANGEDCO Dated 06-July-2015 & 08-July-2015 • Single Line Diagrams of the Power Plant
/28/	Certificates of Calibration for all the energy meters for the project activity during current monitoring period (01-January-2021 to 31-December-2022, inclusive of both start and end dates). Calibration is carried out by M/s <u>Measurematic India</u>. • Certificate No: MI/CAL/19/05/S1888, Dated: 24-May-2019 • Certificate No: MI/CAL/19/05/S1886, Dated: 24-May-2019 • Certificate No: MI/CAL/19/05/S1887, Dated: 24-May-2019

/29/	Employment Generation Records
/30/	Training Records
/31/	JMRs Issued by Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) to (PP) SEI Kathiravan Power Private Limited
/32/	Invoices issued by (PP) SEI Kathiravan Power Private Limited to DISCOM (Tamil Nadu Generation and Distribution Corporation Limited) TANGEDCO
/33/	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the current verification period (01-January-2021 to 31-December-2022, inclusive of both start and end dates)
/34/	Commissioning Certificates of 50 MW _{AC} installed solar power project activity 50 MW _{AC} Plant Capacity Evidence Document
/35/	Technical Specifications of installed equipment at the solar project activity i.e., PV Modules/Invertors/Transformers
/36/	Grievance Register/Grievance-Resolution Letters present on project implemented site; more information related to the same has been included in Section 4.2.2 of this report
/37/	Tripping/Breakdown Details
/38/	PLF data
Documents/Weblinks/Standards referred by VVB during current verification	
/39/	VCS: Notice of Validation/Verification Services (NOVS) Form
/40/	Onsite visit on 01-July-2023 to Project implemented site i.e. Villages - Koothanarkottai, Kamalipuliankulam & Veerakudi in District- Virudhnagar of State- Tamil Nadu, Country- India. On-site Visit Photographs/Evidences
/41/	GPS Google earth software used for Location; Google Earth
/42/	GPS Map Camera: Geotag Photos & Add GPS Location
/43/	Personnel Interviews and Focussed Group Discussions during onsite visit dated 01-July-2023 detailed in section 2.3 of this report
/44/	VKU-Audit and Sampling Plan_ VKU.VER.107.23_VCS_1789
/45/	VKU-Attendance Sheet of Onsite Audit_ VKU.VER.107.23_VCS_1789
/46/	ISO 14064-3:2019: Greenhouse gases – Part 3: Specification with guidance for the verification and validation of greenhouse gas statements
/47/	ISO 14065:2020: General principles and requirements for bodies validating and verifying environmental information
/48/	ISO/IEC 17029:2019: Conformity assessment – General principles and requirements for validation and verification bodies

2.3 Interviews

An on-site inspection/40/ was performed by the VKU assessment team (VKU). The representatives of the PP were interviewed personally on 01-July-2023; i.e., Tables 05 & 06 provide a comprehensive overview of the onsite interview process/43/ conducted during the verification, The interviews specifically targeted individuals responsible for monitoring project activity, data collection and management, as well as those involved in the quality assurance and quality control (QA/QC) procedures. The tables serve to identify the individuals interviewed and provide relevant information regarding their roles within the project. Key personnel interviewed during the opening meeting and closing meeting sessions of the onsite audit, and the main topics of the interviews are summarized in the table below:

Table no: 05: Details of Personnel Interview

S.no	Name	Gender	Designation	Topic of Discussion
1	Sudhakar	Male	Deputy Manager	Implementation of the project, Baseline emission,
2	E. Shenbaga kumar	Male	Deputy Manager	Emission reduction calculation,
3	V. Jeevantha	Male	Deputy Manager	Technical description of the project and monitoring along with QA/QC
4	M. Thangaraj	Male	Deputy Manager	SCADA, Breakdown details and maintenance of generation records Data recording, management and archiving procedure

The topics covered during interview ranges from general features and implementation of project to technical details of the project like calibration details, monitoring and measuring system and data collection, recording, emergency procedures, internal audit and archiving procedures. The assessment was based on the feedback received during onsite interview/43/ coupled with the documentation.

During Onsite Visit/40/, local stakeholders involved in the projects /43/ have been also interviewed to verify implementation of grievance mechanism and process of it's resolution, as mentioned in the Monitoring report/1/ (refer section 1.11, & 2.2 of MR/1/). It also included confirmation of sustainable development claims and verification of the socio-economic impact made by the project on the local community. VKU also checked records and observed that the PP has provided opportunities for the locals to express their opinions and grievances. Project developed has put efforts to resolve issues through effective communication & consultation with

stakeholders. VKU could verify & confirm all the above statements via focussed group discussions and personnel interview/43/ with stakeholders as tabulated below:

Table no: 06: Details of Personnel Interview/Focussed Group Discussion with Stakeholders

S.No	Name	Gender	Designation	Category	Topic of Discussion
1	G. Sethopathi	Male	Helper	Local Stakeholder	Execution of Project activity and its impact on the economic, social and environmental parameters on the local people of the area & around the situated project activity
2.	M. Balamurugapandian	Male	Security Guard		The ongoing communication procedure and the address of their grievance mechanism followed by the project proponent Scope and generation of employment in the locality due to the implementation of said project activity in the area. The ongoing trainings provided to the locals for self-employment.

VKU meticulously documented information obtained during the interviews with site personnel /43/. This data was recorded using VKU's dedicated form, VKU.F46W, known as the Attendance Sheet of Onsite Audit/45/. Through a comprehensive process involving documentation, desk review, document verification and interviews with site personnel and local stakeholders, VKU Assessment Team affirms that no negative comments have been received during the current monitoring period. For further details, please refer to [section 4.2.2](#) of this report.

2.4 Site Visits

Site Location visited:

An On-site visit has been planned & undertaken by the assessment team) on 01-July-2023/39/, to the project location identified in the MR/1/ at Location specified below: Decision to take site visit was based on independent risk assessment, as defined in section 4.1.13 of VCS standard version 4.5/10/

Villages - Koothanarkottai, Kamalipuliankulam & Veerakudi in **District-** Virudhnagar of **State-** Tamil Nadu, **Country-** India. *(Further the location along with longitude and is mentioned in [section 4.1](#) of this report;*

- An assessment of the implementation and operation of the registered project activity as per the registered VCS Joint PD-MR version 03 dated 29-September-2018/3/ and VCS MR/1/.
- A review of information flows that have been used to generate, aggregating and reporting of the monitoring parameters.
- Interviews/43/ with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the registered VCS Project Description (Joint PD+MR) version 03 dated 29-September-2018/3/.
- A cross check between information provided in the monitoring report and data from other sources such as plant generation log books, inventories, purchase records or similar data sources.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the VCS PD-MR version 03 dated 29-September-2018/3/, applied methodology including applicable tool(s), and wherever applicable, the applied standardized baseline.
- A review of calculations and assumptions made in determining the GHG data and emission reductions.
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

2.5 Resolution of Findings

The aim of this verification phase is to address any remaining issues that require clarification to enable VKU to reach a favourable conclusion regarding project description. In the interest of transparency, a customized verification protocol has been developed specifically for this project. This protocol transparently outlines the requirements, methods of verification and the outcomes of verifying the specified criteria. The verification protocol is organized into three tables, each containing various columns, which are described as follows.

A corrective action request (CAR) is raised if one of the following occurs:

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient.
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions.
- Issues identified in a FAR during previous assessment i.e., in validation or verification report to be cross verified during verification have not been resolved by the project participants.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

A forward action request is also raised in cases where any required deviation/information is not fulfilled in current verification and thus needs to be taken up in consequent verification for better transparency thus holding the applicability of the methodology eligible to the project activity and there is no impact of the same on additionality, baseline scenario & emission reduction calculation of project.

Keeping in line with the Clauses 4.1.21 of the VCS Standard Version 4.5, Assessment team has documented a summary of total **08 Findings** that include, (**00 FARs, 03 CLs and 05 CARs**) were raised during this verification which were closed successfully and details are provided under [Appendix B](#) this report.

2.5.1 Forward Action Requests

Based on the review of the VCS Validation-Verification Report/04/ and previous VCS Verification Report /05/, assessment team confirms that no FAR was raised during Validation and previous Verification which needs to be closed during this verification and **no FAR has been raised during current verification, (01-January-2021 to 31-December-2022; Inclusive of both start and end dates).**

2.6 Eligibility for Validation Activities

VKU has not conducted any validation activities as part of the verification process and does not possess accreditation for validating any pertinent sectoral scope. Therefore, this section does not apply. It is important to emphasize that during the current verification, no validation assessment has been carried out either by VKU or concurrently by other certification bodies. This information has been confirmed through focused group discussions and interviews with the Project Proponent (PP), as documented during the site visit.

Assessment team assessed the VERRA's website on 05-October-2023: <https://verra.org/validation-verification/vku-certification-pvt-ltd/#vcs> wherein the scope of services of VKU certification Pvt. Ltd. is mentioned as verification and not validation. VKU Certification Pvt. Ltd is currently undergoing validation accreditation with ANAB for which witness audit has already been conducted. Thus, ensuring that the accreditation details mentioned in FVR is consistent and correct.

Thus, ensuring that the accreditation details mentioned in this report (FVR) is consistent and correct.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

Project's GHG Program Status:

The project has exclusively applied for registration under the Verified Carbon Standard (VCS) with ID: 1789. This sole registration status has been confirmed through rigorous scrutiny of the VERRA registry website. A similar comprehensive search was conducted across the CDM (Clean Development Mechanism), GS (Gold Standard), GCC (Global Carbon Council), and UCR (Universal Carbon Registry) etc registries, using matching project titles and capacity, as well as Project Proponent details. This diligent examination did not yield any instances of the project being registered under any of the aforementioned registries or any comparable mechanisms

Verification through Declaration:

The Project Proponent (PP) has substantiated this single-registration claim through the declaration /33/ submitted, affirming that the GHG emission reductions achieved by the project during the current monitoring period will not be sought or claimed under any other registries apart from VCS.

Cross-Verification of GHG Benefits:

An independent search was also conducted to ascertain whether the project had been registered or claimed for other GHG-related benefits, such as Renewable Energy Certificates (RECs) and International Renewable Energy Certificates (I-RECs). This thorough assessment, coupled with the declaration submitted by the PP, corroborates that there is no double counting of GHG benefits arising from this project activity for the current monitoring period.

Issuance Records Confirmation:

The assessment team further corroborated this by cross-checking the issuance records available on the VERRA website. This cross-verification process unequivocally confirmed that the emission reductions generated by the project activity have not been, double counted, thus warranting acceptance by the assessment team. The assessment team has also cross-checked the issuance records (of the VCUs issued during last verification) available on the Verra website and thus confirmed & ensured that the emission reduction generated from the project activity. The weblink for the same has been referenced in the link table below.

Non-Rejection by Other GHG Programs:

The project's non-rejection status by other GHG programs has also been confirmed through a meticulous assessment. A declaration /33/ attesting to this fact was duly verified and found to be accurate by the assessment team. Additionally, an independent verification process was

initiated with other relevant registries, which substantiated that there were no instances of project rejection by these entities.

In conclusion, the project's exclusive registration under VCS for the current monitoring period, along with its absence from rejection lists of other GHG programs, has been comprehensively verified, ensuring the integrity and credibility of its GHG benefits claims. Details of the registries checked are as follows:

- 1) <https://www.recregistryindia.nic.in/>
- 2) <http://cdm.unfccc.int/>
- 3) <http://www.goldstandard.org/>
- 4) <https://verra.org/verra-standards-and-programs/>
- 5) [I-REC Standard - The International REC Standard Foundation \(irecstandard.org\)](http://www.irecstandard.org/)
- 6) <https://cri.nccf.in/>
- 7) [International Carbon Registry - International Carbon Registry](http://www.internationalcarbonregistry.org/)
- 8) [GCC PROJECTS PORTAL \(globalcarboncouncil.com\)](http://www.globalcarboncouncil.com/)
- 9) [VCU Issuance Records](#)

3.2 Methodology Deviations

No instances of methodology deviation have been identified throughout the current monitoring period from 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates), signifying the adherence and compliance of the project to the prescribed methodologies. Furthermore, it is noteworthy that no methodology deviations were observed as confirmed from the approved VCS Joint Validation & Verification report /4/ and previous VCS Verification report/5/, affirming the project's steadfast commitment to upholding the designated methodologies and ensuring accurate and reliable results.

3.3 Project Description Deviations

During the current monitoring period from 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates), no discrepancies or deviations in the project description have been identified. This finding aligns with the absence of any deviations tracked during the VCS Joint Validation & Verification /4/ and previous Verification/5/. To ensure accuracy and compliance, the assessment team cross-references the project webpage /14/ to verify the consistent and accurate representation on the project's description if any requested so far.

3.4 Grouped Project

This is not a grouped project. Therefore, this section is Not Applicable.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Based on the on-site audit carried out in conjunction with the representative from the project proponent (PP), it was determined that the project is being executed in accordance with the requirements outlined in the registered VCS Joint PD&MR version 03 dated 29-September-2018/3/ and the approved monitoring plan. Solar Energy is the main source of power generation. The project activity is step forward in harnessing the untapped solar potential and further diffusion of the solar technology in the region. The project activity leads to the promotion and demonstrates the success of solar projects in the region which further motivate more investors to invest in solar power projects. Hence, the project activity leads to technological well-being.

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy sources. The project activity involves installation of a 50 MW_{AC} solar power project in Tamil Nadu state of India. Project Capacity has been verified through combined rating of 67 Inverters installed at project site/34/. During the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 77,356 tCO_{2e} per year, by displacing 81,643 MWh/year 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 was fully commissioned on 09-March-2017 and operating smoothly with schedule maintenance at regular intervals /34/. The dates of commissioning were also verified by assessment team during the onsite audit/40/ that there is no change in project design with reference to previous verification/05/and VCS standard version 4.5 /10/ in section 3.3 of the report. The project is implemented as per the description provided in the registered VCS PD /3/.

No unforeseen incidents or events occur that could significantly impact the operation of the project activity have been identified, with the exception of scheduled maintenance and service breakdowns. These breakdowns did not impact the project activity's reduction of greenhouse gas (GHG) emissions or the monitoring methodology employed. The % difference between ERs achieved during current MP & estimated ER for the MP is +18.33 % that is mainly accounted for due to high seasonal PLF & minor downtime during the current monitoring period.

During this monitoring period, project activity experienced no unexpected incidents or events that could have had a significant impact on its operation. However, there were some scheduled/unscheduled breakdowns amounting to **412 hours** for the purpose of plant maintenance and service.

This downtime is **2.35%** of total available hours of operation of the solar power plant, during the current monitoring period.

Table no: 07: Breakdown Hours for the current Monitoring Period at panel level spanning from 01-January-2021 to 31-December-2022, both days

S.No.	Plant Site	Total Hours	Net operational Hours	Breakdown Hours
1	SEI Kathiravan Power Private Limited	17,520 hours ²	17,108 hours/ 97.64% of total hours	412 hours/ 2.35% of total hours

It's crucial to highlight that these breakdowns did not have substantial impact on both the project activity's reduction of greenhouse gas (GHG) emissions.

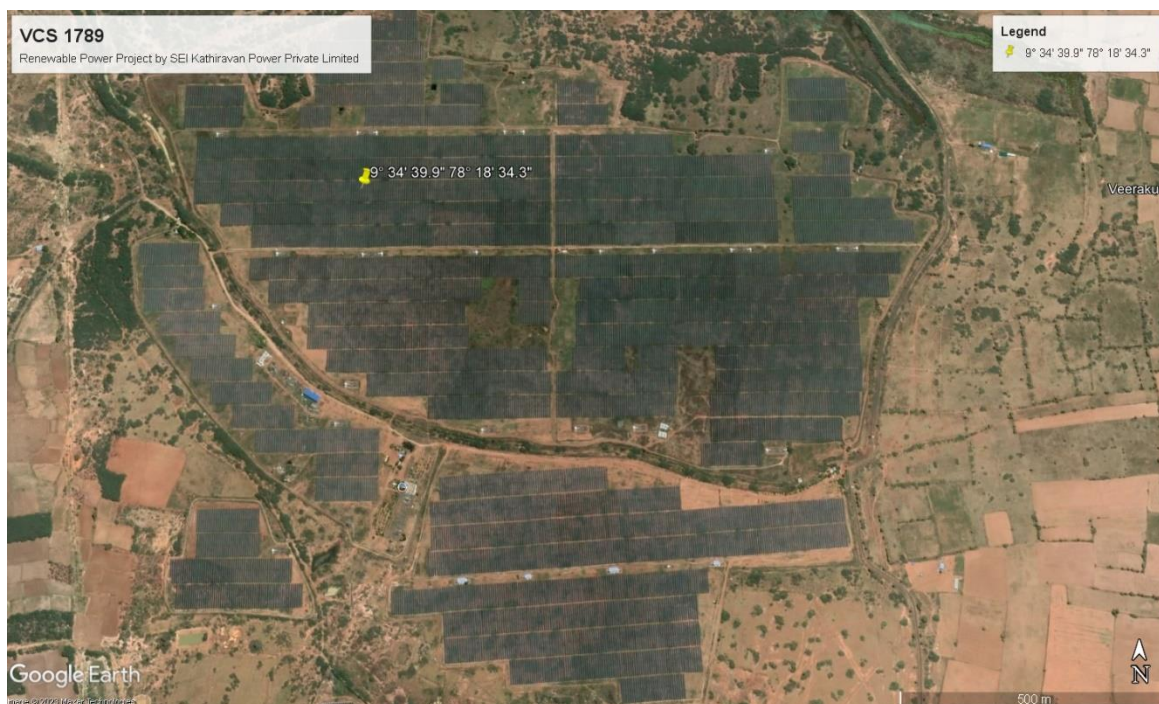
The breakdowns were due to scheduled maintenance activity as per manufacture's specification. Moreover, it is important to note that the whole plant was not entirely shut down during these breakdown hours; only the affected strings of PV modules were temporarily taken out of operation. Solar panel strings and stacker maintenance are extremely minor so those are not included. The breakdowns were attributed to various minor reasons, which may include:

- Over Load trip,
- Manual off/Manual shutdown/Line Repairs
- TNED Grid Failure
- 110 KV Line Maintenance
- IDT
- SCB

During onsite visit while interviewing the site personnel it was confirmed that the plant was not entirely shut down during these breakdown hours; only the affected parts were temporarily taken out of operation. This information is consistent with the details mentioned in Section 3.1 and Appendix 2 of the MR/01/. This approach is deemed acceptable by the assessment team and is verified to align with the methodology. Furthermore, no unforeseen incidents were identified that would affect the applicability of the methodology observed through breakdown log sheet records present on project site and tripping details for each month submitted to VKU Assessment Team by PP that the plant supplied 193,222.76 MWh of electricity, and thus contributing to 183,078 tCO_{2e} GHG reductions. The estimated emission reduction for this monitoring period as per registered VCS PD is 154,712 tCO_{2e}, whereas actual emission reductions achieved are 183,078 tCO_{2e}, which is +18.33% higher than the estimated emission reductions for the current verification period. Further explanation is provided in [section 4.5](#) of this report

² Total hours = 17520 (i.e., 730*24)

Figure 1: Project implemented location verified and mapped down



The project location was verified by the assessment team through Google earth pro/41/ during desk review and GPS map camera software during onsite visit /42/. Moreover, assessment team confirm that the latitude and longitude as mentioned in the registered VCS joint PD+MR dated 29-September-2018/3/, VCS Joint Validation & Verification Report/04/, VCS MR/1/

Table No 08: The 50 MW_{AC} commissioning dates are confirmed below:

Name of PP	Capacity in MW	COD	Connection with Grid	State	Supply to
SEI Kathiravan Power Private Limited	50 MW	09-March-2017	Indian Grid	Tamil Nadu	Sale to Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO)

The power rating of the PV modules has been verified with the name plates as well as with the technical specifications of PV modules/Inverters/transformers submitted to VKU Assessment Team by PP and also cross checked from the technical manual of the Manufactures/35/. The same could be verified from the VCS Joint Validation-Verification Report/04/ Assessment team confirms that the technical parameters are consistent with the registered VCS Joint PD-MR / 3/. The major technical specifications are as follows:

Table No. 10: Technical specifications:

S. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Number of modules ³ and their model capacity	Make: Astron energy Solar India Pvt. Ltd. No. of Modules- 95,696 for 310 Wp, 93,286 for 315 Wp Model capacity- 310 Wp & 315 Wp
		Make: Risen Energy Co. Ltd. No. of Modules- 627 Module capacity- 320 Wp
		Make- Renesola No. of modules- 2,415 Module capacity- 320 Wp
		Total no. of modules: 192,024
3	Number of Inverters, Inverter Make & Model	67 Inverters Make: TMEIC Model no: PVL0750 E (750 KW) – 65 nos Make: TMIEC Model no: PVL0500 E (625 KW) – 2 nos
4	Modules per String	42/2
5	Tilt	Tracking
6	Tracker	Single Axis tracker

- ❖ The assessment team confirmed through onsite visit with PP representative that there is no proposed or actual change to the project design during this monitoring period. It was observed that the monitoring plan has been implemented as per the registered VCS Joint PD&MR/3/ and applied methodology ACM0002, Version 18.1 /13/. The organizational role and responsibility as mentioned in the registered VCS Joint PD&MR/3/ is followed onsite. Meters are calibrated as per calibration frequency in registered VCS Joint PD&MR /3/. All the emergency preparedness as mentioned in MR/1/ are followed onsite and no discrepancies were found regarding the same

❖ **O & M Head**

- Reviewing the monthly and annual generation statistics.
- Evaluating the GHG performance of the project activity.
- Identifying the opportunities for future improvement.
- Addressing the grievance related to project activity.
- Sends the monitored data to consultants for emission reduction calculations.

❖ **Site In-charge/ Technician/ Supervisor Organization:**

- Primarily collects data.
- Conducts regular testing and calibration of monitoring equipment.
- Monitors, records, reports, and archives data.
- Prepares credit statements.

³ 95696 + 93286 + 627 + 2415 = 192,024 Modules

- Implementation of corrective appropriate measures in case any discrepancies are identified in the reported parameters.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. The module cleaning mechanism of the solar panels is also available at the project site and the NMR only doing the module cleaning

Assessment team concludes the following:

- a) There are no material discrepancies between project implementation and the project description provided in the registered VCS Joint PD&MR Version 3.0 dated 29-September-2018 /3/.
- b) The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analysing the monitored data and parameters) is appropriate.
- c) There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the crediting period of project description/3/ and the applied methodology/13/.
- d) Materiality threshold applied is 05% as per 4.1.10 of VCS Standard v4.5, It was concluded that the materiality threshold applicable to the project activity based on the type of project i.e., Project is 05%. This effectively means that there is uncertainty inherent in the estimation of emission reduction of 05%. This is consistent with the section 4.1.10 of VCS standard v4.5 which is equal to 9,153.9 tCO₂e
- e) The GHG emission reductions or removals generated by the project have not been included in any emissions trading program or any other mechanism that includes GHG allowance trading/33/.
- f) Complying with clause 3.24.5 of the VCS Standard version 4.5. Assessment Team confirms that the project has not received or pursued any other form of environmental credit, nor has it become eligible to do so since VCS Validation/04/ or previous VCS Verification/05/
- g) The project Activity is a solar power project and does not involve any supply chain in the project such as manufacturers, wholesalers, distributors and retailers. So, no indirect upstream and downstream GHG emissions are involved in the project activity. Thus, the **Scope 3 emissions are not applicable in this project activity.**
- h) The project activity complies with indicators for **sustainable development** in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under **section 1.11 of MR/1/**. Assessment team has verified the same during on site visit/40/ and found all the indicators to be effective and applicable for the project activity.

As per the VCS Standard Version 4.5⁴ Page no 79, Appendix 03: Document History and Effective dates, For V4.2, serial number 04 states that “it is required by project proponents to demonstrate contributions to a minimum of three SDGs in all monitoring reports verified after the effective date. Effective immediately for all projects that request registration on or after 20-January-2023. Projects that request registration before 20-January-2023 shall demonstrate contributions to at least three SDGs by 20-January-2025”. This is project's Fourth periodic verification of crediting period for the Monitoring Period 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates), Since this project is registered before 20-January-2023, so the Project Proponent (PP) must demonstrate contributions to at least three SDGs by 20-January-2025.

For the current monitoring period, the PP is voluntarily showing contributions to two SDGs, as indicated below but has only claimed two SDGs i.e.,

- **SDG no 7.2: (Renewable energy share in the total final energy consumption)**
- **SDG no 8.5; (8.5.1 Average hourly earnings of employees, by sex, age, occupation and persons with disabilities)**
- **SDG no 13.2 (13.2.1: Tonnes of greenhouse gas emissions avoided or removed)**

The project activity has implemented activities that results in 03 SDG Contributions; 7.2, 8.5.1 & 13.2

1. **7.2 i.e. (Renewable energy share in the total final energy consumption)** As a part of this project activity lifetime $(129,231+117,924+114,051+193,222.7^5 = 554,428.76)$ MWh. Net renewable electricity has been exported to Indian grid that helps to strengthen the renewable energy share in the energy mix. VKU has referred previous verification report /05/ monitoring report for current monitoring period/1/ & emission reduction sheet/2/ which were cross checked from JMRs/31/ & Invoices/32/ submitted to the VKU Assessment Team for current monitoring period and thus found the above claimed renewable electricity supplied to Indian grid is correct.
2. **8.5 i.e. (8.5.1 Average hourly earnings of employees, by sex, age, occupation and persons with disabilities)** Project has contributed directly to achieve the SDG target, because the project activity has created 53 jobs (29 skilled and 24 unskilled). The same was verified by the assessment team from the employment records/Attendance sheets /29/ submitted by PP to VVB and VKU found the above claimed SDG correct and deemed satisfactory.
3. **13.0 i.e. (Tonnes of greenhouse gas emissions avoided or removed)** Due to installation of this project activity i.e., solar power project activity PP has prevented the release of

⁴ <https://verra.org/documents/vcs-standard-v4-5/>

⁵ Contribution of Renewable energy share in the total final energy consumption to current MP i.e., 4th Verification Period.

(122,446+111,732+108,063+183,078⁶ = 525,319) tCO₂ into the atmosphere till the end of current monitoring period i.e., 01-January-2021 to 31-December-2022 (Inclusive of both the days). It, proves that the project generates eco-friendly, GHG free power which contributes to sustainable development of the region. VKU Assessment Team has referred previous verification report /05/ monitoring report for current monitoring period/1/ & emission reduction sheet/2/ which were cross checked from JMRs/31/& Invoices/32/ submitted. VKU Assessment Team now conclude that the above claimed greenhouse gas emissions avoided or removal is correct for current monitoring period

All the above stated information was verified by VKU assessment team during onsite visit/36/ at the project implemented site and also by interviewing the site personnel and by conducting focussed group discussion with them /43/.

There are no potential harmful socio-economic and environmental effects in the project activities. The project activity does not have any major adverse impacts on environment during its construction or operational phase. All necessary measures to handle impacts were found in place, which was confirmed during site visit /40/.

The project has implemented comprehensive training programs during current monitoring to ensure that staff members are equipped with the necessary skills and knowledge to carry out their roles effectively and ensure the proper monitoring of emission reductions. The training programs cover a range of topics to address various aspects of the project's operations. Plant helpers have received training in equipment operation, data recording, report writing, operation and maintenance, and emergency procedures, aligning with the requirements outlined in the monitoring plan. In addition to the core training, additional programs have been organized during the monitoring period. These include Environment Awareness, First-Aid Box items Awareness, Information Security Management System, Grievance Management, Defensive Driving and road safety training. These programs aim to raise awareness among employees regarding environmental concerns, ensure preparedness for emergencies and promote safety practices. Furthermore, technical trainings such as electrical safety, workplace risk management and fire and safety training have been conducted. These trainings address specific technical aspects related to the project's operations and contribute to the overall safety and risk management protocols. PP submitted training records /30/ and also during onsite visit and interview with site personnels, the above stated information about training programs was rectified and found satisfactory. The plant site has a dedicated team for conducting trainings and keeping their staff personnels in check for the plant.

⁶ Contribution of Tonnes of greenhouse gas emissions avoided or removed to current MP i.e., 4th Verification Period.

As per the section 1.1 of the MR/01/, PP has provided the audit history as below:

Audit Type	Period (First and last days included)	Program	VVB Name	Number of years
1st Joint Validation/ Verification	(09-March-2017 to 25-July-2018)	VCS	LGAI Technological Center S.A. (Applus+ Certification	01 year 04 months 17 days
2nd Verification	(26-July-2018 to 30-September- 2019)	VCS	Earthood Services Private Limited	01 year 02 months 05 days
3rd Verification	(1-October-2019 to 31-December- 2020)	VCS	TUV SUD South Asia Pvt. Ltd.	01 year 03 months 00 days
4th Verification (Current monitoring period)	(01-January-2021 to 31-December- 2022)	VCS	VKU Certification Private Limited	02 years 00 month 00 days
Total	(09-March-2017 to 31-December- 2020)	VCS	-	05 years 09 months 22 days

This has been checked by the assessment team through validation and previous verification reports already approved and uploaded on [Verra's webpage](#) which is deemed accurate and satisfactory to VKU's assessment team.

4.2 Safeguards

4.2.1 No Net Harm

The project activity involves implementation of 50 MW_{AC} as a voluntary measure to strengthen the national grid of India through exploitation of solar power generation potential available to India. Project is in accordance with the Ministry of Environment, Forest and Climate Change (MoEF&CC) Notification dated 14-September-2006 (S.O. 1533(E) 7, and exempted from Environmental Impact Assessment (EIA) submission. Since the project involves solar-based activities, it is not required to obtain clearance from the Pollution Control Board. As per section 3.4.3 of the report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September-2013⁸, on “Environmental

⁷ <http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>

⁸ Draft report on use of non-conventional energy resources for Simhastha 2016 (niua.org)

Impacts from solar farms”, the report clearly states. that solar energy project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same. [Draft report on use of non-conventional energy resources for Simhastha 2016 \(niua.org\)](#)

Throughout the monitoring period, the project operation had no negative impacts on air, water, soil quality, surroundings, or socio-economic factors. Moreover, there were no anticipated adverse environmental or socio-economic effects, eliminating the need for mitigation measures. The use of solar energy as a renewable resource not only preserves natural resources but also promote environmental well-being without any detrimental consequences for the local environment.

Additionally, the Monitoring Report MR/1/ explicitly confirmed that the project proponent (PP) ensured that the operational and maintenance phases had no adverse effects on air, water, or ecological aspects. The project's commitment to eco-friendly power generation has resulted in sustainable development within the region, as highlighted in MR/1/.

Furthermore, the project activity has positively impacted the local community by creating job opportunities during construction and operation phases, as verified through on-site interviews and visits by the VKU Assessment Team /40/.

4.2.2 Local Stakeholder Consultation

The project i.e., VCS 1789: “Renewable Power Project by SEI Kathiravan Power Private Limited.” has undergone stakeholder consultation which is in compliance with the Verified Carbon Standard (VCS) and local regulations. Various stakeholder groups, including Representatives from PP, local villagers were engaged through multiple phases using methods such as focus group discussions and social mapping.

Stakeholder Engagement Overview:

The project, already registered under the VCS mechanism, conducted a Local Stakeholder Consultation during the validation stage. Here are the key details:

- **Date of Invitation:** 09-November-2015
- **Date of Meeting:** 16-November-2015
- **Location:** Project site in Tamil Nadu

Stakeholder Meeting Highlights:

At the meeting, SEI Kathiravan Power Private Limited (Project Investor) provided an introduction to the climate mitigation project. Stakeholders were informed about the environmentally friendly solar power generation, which reduces greenhouse gas emissions. The benefits of the solar project, such as increased energy availability, improved power quality, and employment opportunities for the local population, were also discussed.

Feedback Mechanisms:

To encourage continual improvement and stakeholder engagement, a dedicated visitor and grievance register was placed at the project site. This register allows stakeholders to provide feedback, ensuring transparency and accessibility. Additionally, a grievance register is available for stakeholders to voice complaints, with genuine concerns promptly addressed. The project team maintains ongoing communication by participating in community meetings arranged in a nearby village Temple where all the panchayat meetings/social events/ festivals are organized, that help in conducting a direct communication of PP with the local stakeholders of the village & aids in facilitating feedback exchange and addressing community needs.

Current Monitoring Period:

No grievances were received during the current monitoring period. As a result, no mitigation measures are required. Since the project is already registered under the VCS mechanism, no further action is necessary.

In summary, the project effectively engaged with stakeholders, communicated its environmental benefits, and established mechanisms for feedback and grievance resolution, contributing to a smooth and well-managed project operation.

Additionally, the VKU assessment team did not come across any negative comments or feedback from focussed group discussions with local stakeholders during their on-site assessment, as summarized in section 2.2 of MR/1/.

As a result, the assessment team concluded that the ongoing communication with local stakeholders complies with the established guidelines defined in section 3.18, clause 3.18.3, 3.18.4 of the VCS Standard versions 4.5/10/. The project proponent's efforts in engaging with stakeholders have been deemed suitable and in line with the prescribed requirements.

The local stakeholders interviewed in Interviews section 2.3 of this report confirmed the same. Hence confirming that the project activity does not have a negative impact on the surrounding environment, thus promoting environmental wellbeing, hence complying with the guidelines set in section 3.19 of VCS standard version 4.5.

4.3 AFOLU-Specific Safeguards

As the project comes under the category of NON – AFOLU projects therefore this section does not apply for this verification. Hence Not Applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The equations and choices provided in the methodology/13/ and all other methodological tools are correctly quoted in the MR /1/. The emission reductions of the project activity are calculated using the formulae mentioned in the applied methodologies i.e., ACM0002 Version 18.1 /13/.

The assessment team has reviewed the emission reduction spread sheets (ER sheets) /2/ and checked all the formulae and found they are correct and are in accordance with the monitoring plan of the VCS Joint PD & MR Version 3.0 of dated 29-September-2018 /03/ and the applied monitoring methodology /13/.

The monitoring plan laid in the registered VCS Joint PD - MR/03/ is being followed at the site/40/. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR/01/. The emission reductions are based on the net electricity generated and exported from the project. PP has provided all the sufficient data for current monitoring period. The values of the parameter net electricity generation supplied to the grid by each phase is used in deriving the GHG emission reduction. Data in MR could be very well correlated between the data sets and ER spreadsheet/02/ provided by PP. The verification of monitoring parameter has been discussed later in section 4.5 of this report.

The project monitoring plan involves only one single parameter to be monitored;

- 1) **EG_{PJ,y}** (Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh);

The monitored parameter is according to the monitoring plan and monitoring report/1/.

The parameter **EG_{PJ,y}** value is sourced from the Monthly Joint Meter Readings /JMRs/ issued to PP by the State DISCOM (TANGEDCO). Net electricity supplied to the grid by the project plant in a given month = **Export, kWh – Import, kWh** is then converted to MWh units to obtain the **EG_{PJ,y}** value. The value for net generation has been reviewed by assessment team thoroughly by cross checking the values of JMRs/31/ with Invoices /32/ (issued to DISCOM by PP) as submitted by PP and found correct including all the formulae and conversions and aggregations.

The monitoring plan outlined in the officially registered VCS Joint Project Design (PD & MR) version 03, dated 29-September-2018, is being rigorously adhered to at the project site. The assessment team has conducted a comprehensive examination of the entire information process, commencing from data generation and consolidation, through to recording, computation, allocation, and inclusion of pertinent parameters in the Monitoring Report (MR), designated as MR/1/. The reductions in emissions are calculated based on the net electricity generated by the project and subsequently supplied to the grid.

The appropriateness of default values used in the monitoring report is elaborated below:

Table No: 14 Data and Parameters Available at Validation or Ex-ante parameters:

Parameter	Unit	Description	Value & Source
EF _{grid,OM, y}	tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	0.9726 tCO₂/MWh is consistent with the registered VCS Joint PD & MR/3/. Calculated as the last 3-year (2014-15, 2015-16, 2016-17) generation-weighted average, sourced from <u>Baseline CO₂ Emission Database, Version 13.0, June 2018</u> published by Central Electricity Authority (CEA), Government of India
EF _{grid,BM,y}	tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	0.8723 tCO₂/MWh is consistent with the registered VCS Joint PD & MR /3/ <u>Baseline CO₂ Emission Database, Version 13.0, June 2018</u> published by Central Electricity Authority (CEA), Government of India
EF _{grid,CM,y}	tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	0.9475 tCO₂/MWh is consistent with the registered VCS Joint PD & MR /3/ Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from <u>Baseline CO₂ Emission Database, Version 13.0, June 2018</u> published by Central Electricity Authority (CEA), Government of India

According to applicable methodology ACM0002; Version 18.1

Under section 5 of Baseline Methodology with further description under

- Clause 34 of section 5.4-page 13 mentions about Project emissions:** As per methodology “For most renewable energy power generation project activities, considering this is a solar project activity **PE_y = 0 tCO₂**”

2. **Clause 60 of section 5.6-page 20 about Leakage emissions mentions that** since project activity is a renewable project activity i.e., solar power project & no other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g., extraction, processing, transport etc.) are neglected. Leakage emissions: **LE_y = 0 tCO₂**

Methods and formulae set out in the project description for calculating actual emissions for current monitoring period.

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year y (tCO₂e/yr)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = 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)

PP has submitted all the evidences like JMRs/31/ and Invoices /32/ to VKU Assessment Team for verification and assessment of ER Sheet/2/

Hence VKU Assessment Team attests to the correctness of the formulas and methodologies i.e., ACM0002: “Grid-connected electricity generation from renewable sources - version 18.1” /13/. used to compute baseline emissions. The applied default values, emission factors and assumptions in the calculations are all reasonable. The assumptions, emission factors and default values that were applied in the calculations are justified.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

When verifying the reported emission reduction, VKU ensured that there was a clear audit trail that contained the evidence and records that validate the stated figures. All source documents that form the basis for assumptions and other information underlying the GHG data are shown above.

When assessing the audit trails, VKU also examined:

1. Whether sufficient evidence was available, both in terms of frequency and in covering the full monitoring period
2. The source and nature of the evidence

3. If comparable information was available from sources other than that used in the monitoring report/1/, VKU cross-checked the monitoring report against the other sources to confirm that the stated figures were correct. The sources and the data referenced are shown in Section 2.2 above.

All records i.e., JMRs/Invoices/Monthly Generation Reports/Calibration Records of energy meters etc needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the assessment team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

There is only one parameter to be monitored;

- 1) **EG_{PJ,y}** - Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh.

The below table describe how the parameter **EG_{PJ,y}** (Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh), that is to be measured according to the monitoring plan, has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are met:-

Table No: 12 Assessment of Parameter EG_{PJ,y} (Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh) in year y

Parameter	EG _{PJ,y} (Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh)	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The parameter is a calculated parameter & is monitored continuously and recorded at least monthly by energy meter.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered Joint PD & MR/3/ and monitoring methodology/13/. Also, in current monitoring period there is no deviation from the stated procedures in the registered monitoring plan. This was verified by assessment team during desk review and by Team Leader during onsite visit and interviews/40/ with site personnel.

	Monitoring equipment	This is a calculated value, however monitoring equipment are used for recording Export and import are measured by energy meter of accuracy class 0.2s and the difference of export and import values are used for monthly values of net electricity supplied to the grid by the project activity and same value are be considered for ER calculations. Equipment: Electronic Meter: (3 sets – Main, check and standby) Type: 3 – phase, 4 – wire Accuracy Class: 0.2s
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	This is a calculated value; Hence this section is not applicable, however monitoring equipment used for recording the value for Net generation is derived by the difference of export and import values measured by energy meters installed at grid sub-substation, is measured by energy meter is of accuracy class 0.2s.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	This is a calculated value; hence this section is not applicable. However as explained above that value for Net generation is derived by the difference of export and import values measured by energy meters installed at grid sub-substation, is measured by energy meter is of accuracy class 0.2s, this accuracy class is valid for the entire measuring range i.e., (Monitoring Report: 01-January-2021 to 31-December-2022)
	Calibration frequency /interval:	As per section 4.3 of VCS Joint PD & MR /3/, the calibration /28/ testing of the meters at delivery point (GSS) is not under the control of

		PP. Calibration/ Testing frequency for the set of meters (main and back-up) shall be in accordance with local/ national standards or the manufacturer's specifications. If local/national standards or the manufacturer's specifications are not available, international standards shall be used. As national standards available therefore PP has followed the national standards prescribed by the Central Electricity Authority (CEA) for meter calibration, which requires testing of meters once every five years as per the CEA order dated 17-March-2006 /26/.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes, it is in line with the monitoring plan & registered methodology. Outlined in the registered VCS Joint VCS PD & MR dated 29-September-2018/3/ Joint Validation-Verification Report /4/ & Calibration/ Testing frequency for the set of meters (main and back-up) shall be in accordance with local/ national standards or the manufacturer's specifications. As national standards available therefore PP has followed the national standards prescribed by the Central Electricity Authority (CEA) for meter calibration, which requires testing of meters once every five years as per the CEA order dated 17-March-2006 /26/.
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes, Calibration/28/ of the measuring equipment's is carried out by M/s Measurematic India. As per <u>Directory of Accredited Calibration Laboratories</u> by NABL Measurematic India. is certified for performing calibration with certificate no. CC-2211. Hence deemed satisfactory to the VVB.

	Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibration frequency mentioned in VCS Joint PD & MR/03/ and in the PPA for once in five years (As per the national standards prescribed by the Central Electricity Authority (CEA) for meter calibration, which requires testing of meters once every five years as per the CEA order dated 17-March-2006/26/.) is valid for the whole reporting period and as per the selected frequency there are no delays in the calibration. Hence deemed satisfactory to the VVB.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes, the calibration of energy meter is carried out appropriately for the given energy meter: Phase/wire: 3 Phase 4 wire Voltage/Frequency: 3X63.5V, 50Hz Current: -/1A Meter Constant: 50000 pulse/unit Make L&T Type: ER300P The calibration frequency is once in five years which is also as per the national standards i.e., Clause 18 of Central Electricity Authority (Installation and Operation of Meters)/26/. (Please refer Appendix 01 of MR/01/ & Table no 14 for calibration Details) The calibration is carried out appropriately as per the registered monitoring plan and VCS Validation and Verification manual version 3.2/11/.
	How were the values in the monitoring report verified?	Cumulative value of EG_{PJ,y} for entire monitoring period 01-January-2021 to 31-December-2022 (inclusive of both dates) is reported in the monitoring report/1/, and monthly values in the ER calculation sheet/2/ in MWh. The monthly values were verified from JMRs/31/ and cross checked from invoices/32/ thus found to be consistent. Value of this parameter for the current monitoring period was verified as 193,222.76 MWh.

		Year	Net Electricity Generation (MWh)
		2021	93,984.00 (Vintage wise round down)
		2022	99,238.76 (Vintage wise round down)
		Total	193,222.76 (Round down Value)
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of EG_{PJ,y} in JMRs/31/ were further cross checked with the monthly invoices/32/ raised by the PP to DISCOM and the Credit Statements were further cross checked with JMRs /31/ issued by Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) which is found to be consistent with the PPA/27/	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	On site personnel interview/43/ with the project stakeholder of the project activity confirms that the necessary QA/QC procedures are in place and the data management system is effective and reliable. The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years⁹. The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines are been applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP does not have any control on it.	

⁹ https://cea.nic.in/wp-content/uploads/2020/04/review_regulation.pdf

		The billing is raised based on substation meters i.e., 110 kV PSS end
	In case project proponents have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CL#02 & CAR#02 CAR#04 were raised and resolved	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The emission reduction calculation for the project activity is estimated based on the electricity supplied by the project. Since 100% data was verified, the team can ascertain that the values taken for emission reduction calculation are free from material errors.	

During the verification assessment of project activity, accuracy of all metering equipment's has been checked and found appropriate by assessment team during onsite visit/40/. The installation and working conditions of the meters were checked during the site inspection/40/ and were found to be satisfactory as compared to the provision of calibration/testing frequency, prescribed under the VCS PD/3/.

Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO)/ concerned DISCOMs is the sole authority to conduct the meter calibration local/ national standards or the manufacturer's specifications. If local/national standards or the manufacturer's specifications are not available, international standards shall be used but there are national standards (CEA guidelines) available so national standards is followed. PP has considered CEA order dated 17-March-2006; which prescribes under the para 18(b) that "all the meters shall be tested once in five years." Thus, validity of the calibration is considered for five years. Details of meters are provided in below table:

Table No: 15 Calibration details of Feeder meters: The calibration details of meters installed by Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO)/ concerned DISCOMs for measurement of $EG_{PJ,y}$, is as below.

Meter Details	Main Meter	Check Meter	Standby Meter
Meter Serial No	16194542	16194544	16194553
Name of Entity	Measurement India	Measurement India	Measurement India
Meter Make	L & T	L & T	L & T
Type of meter	ER300P	ER300P	ER300P
Calibration done by	Measurematic India	Measurematic India	Measurematic India
Accuracy Class	0.2s	0.2s	0.2s
Date of Subsequent Calibration	24-May-2019	24-May-2019	24-May-2019
Due date of Calibration	23-May-2024	23-May-2024	23-May-2024

Metering Arrangement

The solar plant has their metering arrangement at the 110kV (PSS) located at Veerakudi village. There are three meters (Contains a main, a check and a standby meters) of 3 phase 4 wire, ER 300P type. The output 60 MWDC from solar panels gets converted through inverters to 50 MWAC at 380V. Output from inverters from Inverter and it is connected to inverter duty transformer which step up voltage to 33KV. They are connected to MCR HT panels and again step up with 33KV /110 KV Power transformer to step it up to 110KV. Power is metered before evacuation, and is 33KV/110KV and then further stepped up to 230kV at TANGEDCO Tiruchuli substation (GSS).

The provision of calibration/testing frequency, prescribed under the VCS Joint PD & MR/3/. PP has considered CEA order dated 17-March-2006; which prescribes under the para 18(b)/26/ that "all the meters shall be tested once in five years." Thus, validity of the calibration is considered for five years. This is verified by assessment team from the calibration certificates/28/ submitted by the PP. As per VCS PD "The project adheres to all the mandatory regulatory and statutory requirements at the state as well as national level & hence acceptable to VKU assessment team.

The energy meter calibration certificates/28/ are checked and found that the calibration details provided in the MR /1/ are correct. From the verification of above table, assessment team also confirms that the energy meter calibrations are valid for the complete monitoring period i.e., from 01-January-2021 to 31-December-2022, including both the start and end dates.

The export and import energy are been measured continuously using above mentioned Main and Check meters located at the 110KV Pooling substation (PSS) located at Veerakudi village. Readings of meters are taken on monthly basis by authorized officer of SEB (State Electricity Board/ Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices are raised. These invoices can be used for cross checking the meter readings taken for the respective project activity. Both the meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility and the calibration of the meters are done by the state utility/ Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and not under the control of PP. The frequency of calibration is once in 5 years¹⁰ by Measurematic India approved laboratory.

Data Collection and Archiving:

Meter readings are collected in the presence of the plant in-charge, and export/import data are diligently recorded and stored both in logs and electronically on a daily basis. The Plant Manager regularly checks these records and conducts thorough discussions with the plant supervisor. Monitored data is stored for a period of 2 years after the end of the crediting period or until the last issuance of VCU for the project activity, whichever comes later.

The project proponent (PP) has established a comprehensive self-Operation and Maintenance (O&M). the project continuously measures and records electricity exported to and imported from the grid. This data collection and recording are conducted at least on a monthly basis.

In accordance with *paragraph 66 of ACM0002, version 18.1*, all monitoring-related data is electronically archived and retained for a minimum of two years following the conclusion of the last crediting period. Site personnel are primarily responsible for collecting, collating, and aggregating this data. They achieve this through the use of centrally through the Supervisory Control and Data Acquisition (SCADA) system at the Central Monitoring Station maintained at project implemented site.

The monitoring and measurement of electricity at the project metering point are carried out continuously, while the recording is done on a monthly basis through Joint Meter Readings, performed jointly by representatives of the State Utility Operations & Project Proponent/Site Personnels Representatives.

Emergency Preparedness:

The project activity poses no risk of unidentified activities resulting in substantial emissions. Hence, no emergency preparedness related to data monitoring is deemed necessary for the current monitoring period. In case of any issues with the Main meter or Check meter, they are promptly repaired, recalibrated or replaced. If the Main meter is out of service due to

¹⁰ https://cea.nic.in/wp-content/uploads/2020/04/review_regulation.pdf

maintenance, repairs or testing, the Check meter is used for readings. Similarly, in the rare event that both the Main meter and Check meter are unavailable, the Standby meter is employed for readings. During the monitoring period, both the Main and Check meters operated within acceptable accuracy limits. It is to note that meters are directly connected to the TNEB and there is no manual procedure of data measurement, TNEB Headquarters issues the JMRs to the PP on online basis which can be easily accessed by the PP. Hence in-case where meters are damaged by any natural calamities, the data measurement is still in line and process under the purview of TNEB.

Personnel Training:

To ensure the proper functioning of the project and accurate emission reduction monitoring, staff receive comprehensive training. This includes equipment operation, data recording, report writing, and adherence to operational and emergency procedures. Training sessions conducted during the current monitoring period covered road safety awareness, firefighting, fire safety, electrical and operational safety, the use of personal protective equipment (PPE), and hazard identification and risk assessment.

QA/QC Procedures:

Meters are approved, tested, and sealed by the State Utility, with calibration carried out at specified intervals. Faulty meters are promptly replaced in accordance with guidelines set by the Central Electricity Authority (CEA), which mandates calibration every 5 years. The monthly electricity supplied/exported is cross-checked with sales invoices in the Joint Meter Reading (JMR) report. In case of meter calibration delays, appropriate guidelines are applied to ensure metering accuracy.

The accuracy class of meters and calibration frequency are under the control of the state electricity board, and the Project Proponent (PP) does not influence these aspects. The PP receives net electricity supply values for monitoring purposes, and billing is based on substation meters. All monitored data is archived for 2 years after the crediting period or until the last issuance of VCU, stored electronically and manually in secure storage by the PP

The meters in use are two-way devices (Bi-Directional Tri-Vector Energy Meters) that measure both electricity import and export, providing the net electricity consumption data.

If the meters operate outside allowable limits, they will either be replaced or calibrated. When the main meter malfunctions, the consumption recorded by the backup meter is used. If both metering systems fail, malfunction details, timestamps, parameters, and load survey data will be retrieved from the main meter. The nature of the malfunction is then determined, and the recorded consumption in the main meter is adjusted accordingly.

During onsite visit/40/ the assessment team checked all the meters and confirmed that the meters were working satisfactorily. Also, the calibration of meters is completely under purview of

Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and PP has no control over the same as confirmed through interviews of site personnel /40/ and PPA /27/.

Data Adjustment in case of monitoring period different from billing period:

The net electricity supplied to the grid would be reported as the difference between the net export and import from the solar plant. The electricity export and import data are monitored via main, check and standby meters connected to the sub-station.

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.

Hence it can be concluded that the approach followed by the PP is conservative and in line with the guidelines provided under paragraph 3.4.2 of Validation and verification manual version 3.2//.

The assessment team has verified the JMRs /31/ issued by DISCOM to PP & Invoices/32/ issued to DISCOM identified in the PPA /27/ by Renewable Power Project by SEI Kathiravan Power Private Limited PL. confirmed that only the data recorded through main meters is used to calculate net electricity supplied to the grid consequently for ER calculations recorded in ER sheet /2/.

In view of the above discussion the VKU assessment team is able to confirm that evidence used to determine the GHG reductions and removals are sufficient and appropriate with respect to quality and quantity.

GHG Calculations:

The calculation of emission reduction has been done in accordance with the applied methodology used i.e., ACM0002; Version 18.1/13/. As per the applied methodology, the values of project emission and leakages are considered as zero for the project activity. The emission reduction as per the applied methodology equals the baseline emissions (project emissions and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year y (tCO₂e/yr)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the VCS project activity in year y (MWh/yr)

$EF_{grid,CM,y}$ = 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)

Here,

$EF_{grid,CM,y} = 0.9475$

$EG_{PJ,y}$ = 93,984 MWh (from 01-January-2021 till 31-December-2021)

= 99,238.76 MWh (from 01-January-2022 till 31-December-2022)

(Please refer calculations in ER sheet for descriptive calculations for vintage wise round down values and also provided below)

$EF_{CO_2} = EF_{GridCM,y}$

EF_{CO_2} = CO₂ Emission Factor in year y (tCO₂e/MWh)

$EF_{GridCM,y}$ = Combined margin CO₂ Emission Factor of Indian Grid (tCO₂e/MWh)

Where,

Calculations:

The baseline emissions for Year 2021 (from 01-January-2021 till 31-December-2021)
= 93,984 MWh * 0.9475 tCO ₂ /MWh
= 89,049 tCO₂e (Round down Value)
The baseline emissions for Year 2022 (from 01-January-2022 till 31-December-2022)
= 99,238.76 MWh * 0.9475 tCO ₂ /MWh
= 94,029 tCO₂e (Round down Value)
The Total Baseline Emissions; (89,049+94,029) = 183,078 tCO₂e (vintage wise Round down)
The Net Electricity Generation = 193,222.76 MWh

Emission Reduction Achievement:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-January-2021 to 31-December-2021	89,049	0	0	89,049
01-January-2022 to 31-December-2022	94,029	0	0	94,029
Total	183,078	0	0	183,078

It's important to highlight that the estimated emission reduction expected from the project activity during the current monitoring period was projected to be 154,712 metric tons of carbon dioxide equivalent (tCO₂e). However, the actual emission reductions achieved exceeded this estimate, totalling 183,078 tCO₂e. This represents an impressive 18.33% increase over the anticipated value.

Sunshine Hours Impact:

The principal reason for this surplus emission reduction is attributed to the exceptionally high number of sunshine hours during the monitoring period. It's worth noting that electricity generation from solar projects is influenced by various climatic conditions, and these factors are beyond the control of the project participant.

Plant Load Factor (PLF):

One crucial metric for evaluating the project's performance is the Plant Load Factor (PLF). The actual PLF for the generated energy during this monitoring period stood at 22.06%. In contrast, the Project Design and Monitoring Report (PDMR) indicated a PLF of 24.61%. Even though the actual PLF falls slightly short of the VCS PD-MR projection, it remains significantly higher than what is typically observed.

Estimated PLF as per registered VCS Joint PD-MR	18.64%
Actual Generation (MWh)	1,93,223
Total no. of days	730
Capacity	50
Actual PLF	22.06%
Percentage variation in PLF wrt registered PDMR	18.33%
Breaching value of PLF as per PDMR	24.61%
As per IRR sheet	
IRR as per registered PDD	6.32%
Benchmark is	15.10%

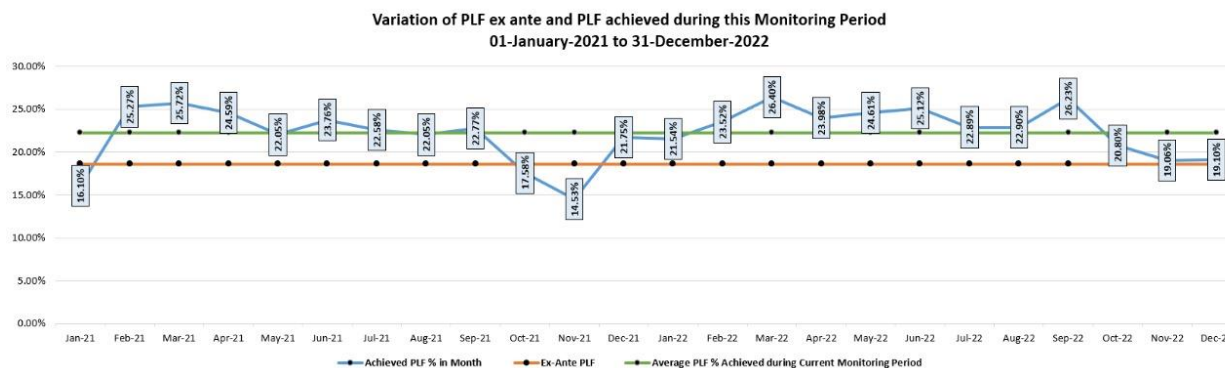
Further by performing the analysis of the achieved PLF against the ex-ante PLF for current monitoring period from the SCADA PLF details provided by PP the following deductions were made and data was verified.

**Table No: 16 Variation of PLF from ex-ante estimation for current monitoring period
01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)**

Month	Achieved PLF % in Month	Variation between Achieved and Ex-ante fixed at 18.64%
Jan-21	16.10%	-13.627%
Feb-21	25.27%	35.569%
Mar-21	25.72%	37.983%
Apr-21	24.59%	31.921%
May-21	22.05%	18.294%
Jun-21	23.76%	27.468%
Jul-21	22.58%	21.137%
Aug-21	22.05%	18.294%
Sep-21	22.77%	22.157%
Oct-21	17.58%	-5.687%
Nov-21	14.53%	-22.049%
Dec-21	21.75%	16.685%
Jan-22	21.54%	15.558%
Feb-22	23.52%	26.180%
Mar-22	26.40%	41.631%
Apr-22	23.98%	28.648%
May-22	24.61%	32.028%
Jun-22	25.12%	34.764%
Jul-22	22.89%	22.800%
Aug-22	22.90%	22.854%
Sep-22	26.23%	40.719%
Oct-22	20.80%	11.588%
Nov-22	19.06%	2.253%
Dec-22	19.10%	2.468%
Average PLF for current Monitoring Period = 22.29%		
Percentage variation in PLF w.r.t registered Joint PD-MR = 18.33 %		

Since the data available for current monitoring period is from January, 2021 to December, 2022, assessment team plotted the Month wise graph for study the trend.

Figure 03: Trends of PLF from 01-January-2021 to 31-December-2022



From figure 01, it is clear that the monthly trend of PLF in current monitoring period has been higher. This is reflected in higher emission reductions for the current monitoring period at +18.33% due to the increase in power output resulting from a higher number of sunshine hours. This suggests that power output is directly related to the amount of sunshine, and that the higher generation observed during the current period.

Project Additionality:

This performance underscores the project's additionality, demonstrating that it delivers emission reductions beyond what would be achieved through business-as-usual practices. The higher-than-expected emission reductions, despite the high PLF compared to the VCS Joint PD & MR projection, provide compelling evidence of the project's environmental benefits.

For a detailed analysis of the PLF, please refer to the PLF analysis in the Emission Reduction (ER) sheet. This data reinforces the project's effectiveness in reducing greenhouse gas emissions and underscores its value in contributing to a sustainable and low-carbon energy future.

Hence the +18.33% actual higher emission reduction achieved during the current monitoring period neither affects additionality nor there is any deviation from the registered monitoring plan, which was verified during onsite visit & verified and traced through evidences and calculative computation during desk review & hence acceptable to VKU.

All the data have been made available to the assessment team by PP during site visit/36/ and as supporting evidences which have been monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above.

The assessment team has checked and confirmed the emission reduction calculations in the spreadsheet and found to be accurate. The monitoring report/1/ is supported by emission reduction spreadsheet/2/. The consistency and formula were verified and found to be accurate.

VKU is of the opinion that this method of calculation of emission reductions is accurate and results in conservative estimation of emission reduction and is in line with the applicable VCS

requirements set out in section 3.15 of VCS Standard version 4.5 and that the verification of the GHG statement was conducted in accordance with ISO 14064-3; 2019. /46/

4.6 Non-Permanence Risk Analysis

This is not an AFOLU project hence this section is not applicable

5 VERIFICATION OPINION

VKU Certification Pvt. Ltd. has performed the fourth verification for Monitoring period 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates for period) of the crediting period (09-March-2017 to 08-March-2027; which is inclusive of both dates) for the project activity “Renewable Power Project by SEI Kathiravan Power Private Limited” in India, VCS Registry Project ID 1789), with regard to the relevant requirements for VCS activities. The project proponent (SEI Kathiravan Power Private Limited) of the “Renewable Power Project by SEI Kathiravan Power Private Limited.” amounts to **183,078 tCO₂e** of carbon dioxide equivalent (tCO₂e). These reported reductions have been assessed in accordance with the relevant requirements outlined in the VCS Standard, version 4.5/10/.

The project proponent SEI Kathiravan Power Private Limited) of the “Renewable Power Project by SEI Kathiravan Power Private Limited” project is responsible for:

- The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the project on the basis set out in the monitoring plan contained in the registered VCS Joint PD & MR version 3.0 of dated 29-September-2018 /3/.
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the project.

It is the responsibility of VKU to express an independent verification opinion about the project’s conformity with the requirements of VCS Standard version 4.5/10/ and GHG program applied, on the reported greenhouse gas emission reductions from the project.

Based on documented evidence and corroborated by an on-site assessment, VKU can confirm that:

- The project has been implemented and operated as per the registered VCS Joint PD & MR version 3.0 of dated 29-September-2018 /3/
- The monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 4.5/10/ requirements;
- The monitoring is in place as per the applied baseline and monitoring methodology;
- The monitoring plan in the registered VCS Joint PD & MR version 3.0 of dated 29-September-2018/3/ is as per the applied baseline and monitoring methodology.

VKU Certification verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. VKU Certification planned and performed the verification by obtaining evidence and other information and explanations that VKU Certification considered necessary to give **reasonable assurance** that reported GHG emission reductions are fairly stated.

As per VCS Standard Version 4.5, clause 4.1.23, 4.1.24 and 4.1.25, VKU is of opinion that GHG emission reduction stated in the **monitoring report version 04 of 04-October-2023** for the “Renewable Power Project by SEI Kathiravan Power Private Limited.” in India for the period 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates) **are fairly and correctly stated.**

Table No 17: Opinion/Conclusion by Validation-Verification Body

Opinion	Final Documents	Monitoring Period	Emission Reductions achieved	Remarks
Positive opinion ☒ Negative Opinion ☐ Adverse Opinion ☐ Unmodified Opinion ☒ Modified Opinion ☐	Monitoring Report Version 04 dated 04-October-2023 Emission Reduction Sheet Version 03 of 29-September-2023	01-January-2021 to 31-December-2022 (Inclusive of both the days)	183,078 tCO ₂ e	The GHG emission reductions are calculated on the basis of approved methodology. ACM0002: Grid-connected electricity generation from renewable sources --- Version 18.1/13/. and the monitoring plan included in the registered VCS PD /3/.
Hence VKU is able to certify that the emission reduction from the project during the current monitoring period 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates) amounts to 183,078 tCO₂e assessed in line with the applicable VCS requirements set out in section 3.15 of VCS Standard version 4.5/10/. The VVB hereby issues a resolutely positive and unmodified opinion meticulously drafted in strict accordance with ISO 14064-3:2019, /46/ Section 09, and the precise provisions of Clause 9.7.1.6 & 9.7.2 of ISO 14065:2020. /47/ This opinion stands in full alignment with the exacting requirements delineated in ISO/IEC 17029:2019, Section 9.7/48/. Our verification process provides a robust and reasonable level of assurance regarding the veracity of the reported GHG emission reduction data. This data is devoid of any material misstatements and is steadfastly supported by the evidence furnished by the Project Proponent (PP), comprehensively presented in <u>Table 04</u> of this report.				

Verified GHG emission reductions and removals in the above verification period, broken down by calendar year:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-January-2021 to 31-December-2021	89,049	0	0	89,049
01-January-2022 to 31-December-2022	94,029	0	0	94,029
Total	183,078	0	0	183,078

Verified GHG emission reductions and removals in the above verification period

Year	Ex-ante emissions reductions/removals	Achieved emissions reductions/removals	Percent difference	Justification for the difference
Verification period: 01-January-2021 to 31-December-2022 (Inclusive of both start and end dates)	154,712	183,078	+18.33%	It is to be noted here that as per the estimated emission reduction to be achieved from the project activity for the current monitoring period is 154,712 tCO₂e, whereas actual emission reductions achieved are 183,078 tCO₂e which is 18.33% is higher than the estimated value. This is due to the higher of sunshine hours during the monitoring period. Generation of electricity depends entirely depends upon availability of Solar power and not within the control of the project participant. The actual PLF for the generated energy in this monitoring period is 22.06. As per the Joint PD & MR project will continue to remain additional until it breaches the value of 24.61% PLF which is still higher than actual PLF. Hence project is additional. Refer tab PLF analysis in ER sheet.

APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
AT	Assessment Team
BE	Baseline Emissions
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CEA	Central Electricity Authority
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DISCOM	Distribution Company
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
ER	Emission Reductions
PPA	Energy Purchase Agreement
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GSS	Grid Sub Station
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LE	Leakage Emissions
MoV	Means of Verification
MR	Monitoring Report

NGO	Non-governmental Organization
ODA	Official Development Assistance
OM	Operating Margin
(O&M)	Operation and Maintenance
PD	Project Description
PE	Project Emission
PP(s)	Project Proponent(s)
PPA	Power Purchasing Agreement
PSA	Power Sale Agreement
PV	Photovoltaic
Ref.	Document Reference
SCADA	Supervisory Control and Data Acquisition
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
TR	Technical Reviewer
UNFCCC	United Nations Framework Convention on Climate Change
VCU	Verified Carbon Unit
VKU	VKU Certification Ltd.
VT	Verification Team
VVS	Validation and Verification Standard

APPENDIX B: AUDIT FINDINGS

CL: Clarification Request 03

CAR: Corrective Action Request 05

FAR: Forward Action Request 00

DESCRIPTION OF CLARIFICATION REQUESTS (CLS) RAISED BY VVB:

Type	Date	14-July-2023
CL#1	Reference	Section 01/DR/OSV/AT
Description of the Non-Conformance		
1) Section 1.1 of MR: - PP is requested to clarify i.e.; the project capacity is in AC or DC. - PP has not provided commissioning certificate to assessment team to verify the date of commissioning of the solar plant - PP is requested to submit the evidence supporting i.e., PPA/EPA the claim that the electricity generated at this plant is supplied to grid. 2) In Section 1.8 of MR: During desk-review Assessment team traced down that the tool referred here is found to be inconsistent with PD Version 03 Dated 29-September-2018 3) In Section 1.9 of MR: During desk-review Assessment team could not trace down the declaration for avoiding double accounting via any means as claimed here. 4) In section 1.10 of MR: PP needs to provide a declaration for - The project is not a part of any emission trading program as confirmed by the project proponent through the declaration of no double counting certificate. - The project activity has not availed any other form of environmental credit as confirmed by the project proponent through the declaration of no double counting. - PP to substantiate the made claim regarding the employment generation with required supporting documents applicable to the current monitoring period. - PP to elaborate the impacts due to the implementation of the project as applicable till current monitoring period. 5) In SDG Table; Indicator 7.2/13.0: PP is requested to justify that how electricity generation can support to SDG indicator 1.1.1 Proportion of population below the international poverty line. - What is the SDG indicating to decrease?? - PP to specify the time frame, Either applicable to current monitoring period or not. - PP to either provide the hyperlinks to the stated audit history or insert footnote to the validation/verification as stated here for better traceability of the generated electricity/Emission reductions		
1 st Response from PP	Date	15-August-2023
1) In section 1.1 of the revised MR - The project capacity is in AC and updated in the revised MR version 2.0 - The commissioning certificate is submitted with responses. - The PPA has been submitted with responses. 2) In section 1.8 of the revised MR version 2.0 the tool number has been revised and made consistent with the registered PD version 03. 3) In section 1.9 of the revised MR version 2.0 the declaration for avoiding no double accounting has been submitted with responses. 4) In section 1.10 of the revised MR following changes has been made:		

- The project is not a part of any emission trading program is confirmed through no double accounting and the supporting document for the same has been provided. - The project activity has not availed any other form of environmental credit is confirmed through no double accounting and the supporting document for the same has been provided. - The supporting document regarding employment generation in the current monitoring has been submitted. - There are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity. Furthermore, the details regarding participation in other GHG program and other forms of credit has already been mentioned in Section 1.9 & 1.10 of the revised MR.				
5) In SDG table, indicator 7.2/13: The SDG indicator has been corrected as per the SDG target claimed in the revised MR version 2.0 and earlier it was a typo error. It has been revised.				
It is covering the current monitoring period and the same has been incorporated in the revised MR version 2.0. The weblinks has been incorporated in the footnote for better traceability of the generated electricity/ Emission reductions.				
1stAssessment by Audit	Status	Closed	Date	21-September-2023
Team				
1) Section 1.1 of MR: - Assessment Team confirms that the PP has specified the project capacity is in 50 MW_{AC} - Assessment Team confirms that PP has submitted the commissioning certificate of the solar plant. - Assessment Team confirms that PP submitted the evidence supporting i.e., PPA/EPA the claim that the electricity generated at this plant is supplied to grid.				
2) In Section 1.8 of MR: Assessment team confirms that the tool referred in this section is made consistent with PD Version 03 Dated 29-September-2018				
3) In Section 1.9 of MR: Assessment team confirms that the declaration for avoiding double accounting via any means as claimed in this section is submitted by the PP.				
4) In section 1.10 of MR: Assessment team confirms that the has submitted the evidence that confirms the following: - The project is not a part of any emission trading program as confirmed by the project proponent through the declaration of no double counting certificate. - The project activity has not availed any other form of environmental credit as confirmed by the project proponent through the declaration of no double counting. - Assessment team confirms that the PP has substantiated claim regarding the employment generation with required supporting documents applicable to the current monitoring period. - Assessment team confirms that PP has provided a brief description about the impacts due to the implementation of the project as applicable till current monitoring period.				
5) In SDG Table; Indicator 7.2/13.0: - Assessment Team confirms that the PP has revised the SDG Indicators referred with correct description. - Assessment Team confirms that the SDG indicating to increase the share of renewable energy? - Assessment Team confirms that the PP has specified the time frame applicable to current monitoring period. - Assessment Team confirms that the PP has provided the registry hyperlink to the stated audit history.				
Hence VKU's assessment team confirms that CL#01 is closed.				

Type	Date	25-July-2023
CL#2	Reference	Section 02/DR/OSV/AT
Description of the Non-Conformance		
1) In section 2.1 of MR; As per VCS template guideline version 4.2 to fill this section Verra has stated to summarize any potential negative environmental and socio-economic impacts and the steps taken to mitigate them. 2) In section 2.2 of MR: As per VCS template guideline version 4.2 to fill this section PP has not stated to the process for, and the outcomes from, ongoing communication with local stakeholders conducted prior to verification. Include details on the following: - The procedures or methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods during which input was sought). - The procedures or methods used for documenting the outcomes of the local stakeholder communication. The mechanism for on-going communication with local stakeholders.		
1 st Response from PP	Date	15-August-2023
1) In section 2.1 of the revised MR, there are no negative environmental and/or socio-economic impacts due to the project activity hence no mitigation measure required. Furthermore, the details regarding participation in other GHG program and other forms of credit has already been mentioned in Section 1.9 & 1.10 of the revised MR. 2) In section 2.2 of the revised MR, the following changes has been made - The procedures or methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods are mentioned and for the outcomes of the local stakeholder communication refer joint PDMR version 3.0 at the time of validation. - The procedures or methods used for documenting the outcomes of the local stakeholder communication are been added in this section and for ongoing stakeholder outcomes the grievance register has been provided as supporting documents.		
1 st Assessment by Audit Team	Status	Open/Closed
Date	21-September-2023	
1) In section 2.1 of MR; Assessment Team confirms that the PP has stated that there are potential negative environmental and socio-economic impacts. But has not provided any information about if Mitigation of any type is required or Not (Open) 2) In section 2.2 of MR: Assessment Team confirms that PP has revised the section and has included information about the mechanism for on-going communication with local stakeholders & procedures or methods used for documenting the outcomes of the local stakeholder communication. (Closed) CL#02 is Open		
2 nd Response from PP	Date	29-September-2023
1) There are no negative environmental and/or socio-economic impacts due to the project activity hence no mitigation measure required and the same has been incorporated in the updated MR version 3.0.		
2 nd Assessment by Audit Team	Status	Closed
Date	30-September-2023	
1. In section 2.1 of MR; Assessment Team confirms that the PP has stated that there are potential negative environmental and socio-economic impacts & has elaborated on mitigation. Hence VKU's assessment team confirms that CL#02 is closed.		

Type	Date	25-July-2023
CL#3	Reference	Section 03/DR/OSV/AT Section 04/DR/OSV/AT Section 05/DR/OSV/AT Appendix /DR/OSV/AT
Description of the Non-Conformance		
1) In Section 3.1 of MR: PP is requested to provide evidentiary documents to verify the Technical Specification of the PV Modules involved in the project activity. 2) In Section 4.2 of MR: As per the VCS MR template version 4.2 requirement PP needs to specify if any standards or protocols are to be followed, and the person/entity responsible for the measurement. Include any relevant information regarding the accuracy of the measurements (e.g., accuracy associated with meter equipment or laboratory tests). - PP is requested to provide Monthly generation reports for the current monitoring period - PP is requested to provide daily generation data and evidence for the same. 3) In Section 4.3 of MR: - PP is requested to provide a copy of plant logbooks. - PP to submit required evidence i.e., attendance sheet regarding training of the site personnel specific to the solar power plant. - As per VCS MR template guidelines version 4.2 PP has not stated the methods used for generating/measuring, recording, storing, aggregating, collating and reporting the data on monitored parameters. 4) In Section 5.5 of MR Table no 2: PP is requested to justify 19.99% indicating a higher or lower percentage difference. 5) Section 5.4 of MR: PP is requested to provide the PLF data for 2 years (if available) or at least 1-year PLF data prior to this MP. This data will allow the assessment team to assess the ER calculations in line with VCS MR template v 4.1 sections 3.1 and 5.4. 6) In APPENDIX 1: PP to explain how the date of calibration inscribed here is 05 years ahead of the date as mentioned in the Calibration certificate submitted by the PP to the assessment team. PP to incorporate justification for the same in the MR. Kindly quote required section of the relevant notification that mentions about the frequency of calibration in once in 05 years 7) In Appendix 02: PP to provide a comprehensible figure of the plant metering arrangement, with proper description and detail. 8) In Appendix 03; Assessment team could not trace down the reference of the breakdown details in any section of this report.		
1 st Response from PP	Date	15-August-2023
1) In section 3.1 of the revised MR version 2.0, the technical specification has been updated and the supporting documents for the same has been provided. 2) In section 4.2 of the MR following changes are done: - Monthly generation reports for the current monitoring period has been submitted. - Daily generation data and evidence for the same has been submitted. 3) For section 4.3 of the MR: - A copy of plant logbooks has been provided. - Supporting document of attendance sheet regarding training of the site personnel specific to the solar power plant has been provided.		

All the data has been incorporated as per VCS MR template guidelines version 4.2 4) In section 5.5 of the MR Table no. 2, for justification of 19.99% higher percentage difference PLF assessment has been done the supporting has been included in the ER sheet under PLF tab and the same has been revised in the updated MR also. 5) In section 5.4 of MR, PLF data for 2 years (if available) or at least 1-year PLF data prior to this MP has been provided. 6) In appendix 1 of the revised MR version 2.0, as per registered VCS Joint PDMR version 3.0, calibration frequency is once in 5 years, and it is valid throughout the crediting period hence the frequency of 5 years is applied. However, the calibration is carried out by DISCOM is in every year which is a conservative approach, but it is to be noted that calibration of meters is not in control of PP. 7) In appendix 2 of the revised MR version 2.0, a comprehensible figure of the plant metering arrangement and supporting for the same has been provided. 8) In appendix 3 of the revised MR version 2.0, the breakdown details have been added and the supporting document for the same has been provided.				
1stAssessment by Audit Team	Status	Open/Closed	Date	21-September-2023
1) In Section 3.1 of MR: PP has submitted evidentiary documents to verify the Technical Specification of the PV Modules involved in the project activity. (Closed) 2) In Section 4.2 of MR: (Closed) - PP has incorporated the relevant information regarding the accuracy of the measurements - PP has submitted the required documents as requested by VVB to verify the values of Net generation. 3) In Section 4.3 of MR: (Closed) - Assessment Team confirms that the PP has provided a copy of plant logbooks. - Assessment Team confirms that the PP has submitted the attendance sheet regarding training of the site personnel specific to the solar power plant. - Assessment Team confirms that the PP has now included the methods used for generating/measuring, recording, storing, aggregating, collating and reporting the data on monitored parameters. 4) In Section 5.5 of MR Table no 2: PP has not addressed the 18.33% higher or lower percentage difference with a -/+ sign to clarify if the achieved emissions are on a higher or a lower side. (Open) 5) Section 5.4 of MR: PP has submitted the PLF data for 2 years. (Closed) 6) In APPENDIX 1: PP has now elaborated about the calibration practice on-site. (Closed) 7) In Appendix 02: PP to provide a comprehensible figure of the plant metering arrangement, with proper description and detail. (Open) 8) In Appendix 03: Assessment team confirms the incorporation of breakdown details in the MR by PP. (Closed) CL#03 is Open				
2nd Response from PP			Date	29-September-2023
4. In section 5.5 of MR table no 2: It has been denoted by + sign which clearly specifies that the achieved GHG emission is 18.33 % is higher than the estimated value. 7. In appendix 02: The figure of the plant metering arrangement has been revised.				

2 nd Assessment by Audit Team	Status	Closed	Date	30-September-2023
4. In Section 5.5 of MR Table no 2: Assessment Team confirms that PP has sufficiently addressed the 18.33% higher or lower percentage difference with a -/+ sign t& has also provided clarification if the achieved emissions are on a higher or a lower side. 7. In Appendix 02: Assessment Team confirms that PP has provided a comprehensible figure of the plant metering arrangement, with proper description and detail. Hence VKU's assessment team confirms that CL#03 is closed.				

Description of Corrective Action Requests (CARs) raised by VVB:

Type	Date	25-July-2023
CAR#1	Reference	Section 01/DR/OSV/AT Section 03/DR/OSV/AT
Description of the Non-Conformance		
1) In Section 1.1 of MR: As per VCS MR version 4. 2 guidelines to fill MR, PP has not provided a summary description of the implementation status of the technologies/ measures (e.g., plant, equipment, process, or management or conservation measure) included in the project. 2) In Section 1.2 of MR: As per VCS template guideline version 4.2 to fill this section Verra has stated to only define: Indicate the sectoral scope(s) applicable to the project, the AFOLU project category and activity type (if applicable) and whether the project is a grouped project” PP to modify the statements as per the guidelines in the template for MR version 4.2 3) In Section 1.6 of MR: As per PD, PP has opted for a renewal crediting period for 10 years, but as per VCS standard 4.4, for non-AFLOU project RCP allowed is 7 years twice renewable. Please clarify how this is consistent with the clause 3.9.1 of the VCS standard 4.4. 4) In Section 1.7 of MR; Since the plant is spread over several acres, PP is requested to provide coordinates to represent the full extent of the plant. • In the map provided by the PP in this section proper location cannot be comprehended by the assessment team, PP to please employ a map with better scaling and clarity 5) In Section 1.8 of MR: As per VCS template guideline version 4.2 to fill this section Verra has stated to only define: “Provide the title, reference and version number of the methodology or methodologies applied to the project. Include also the title and version number of any tools applied by the project” PP to modify this section as per the guidelines stated in VCS MR template version 4.2 • During desk-review Assessment team traced down that the tool referred here is found to be inconsistent with PD Version 03 Dated 29-September-2018. 6) In Section 1.11 of MR: As per VCS template guideline version 4.2 to fill this section Verra has stated to only define the section with a brief description for this particular in no more than 100 words • As per the registered PD version 03 dated 29-September-2018, the technology of the project is Solar which was further confirmed during the site visit. PP to please clarify 7) In section 3.1 of MR: As per VCS template guideline version 4.2 to fill this section Verra has stated PP has not indicated the operation of the project activity(s) during this monitoring period, including any information on events that may impact the GHG emission reductions or removals and monitoring. 8) In section 3.2 of MR: As per VCS standard version 4.4 clause 3.20 PP is required to indicate whether any deviations were taken during the previous verification and validation processes.		
1stResponse from PP	Date	15-August-2023
1) In section 1.1 of the revised MR, all the details have been incorporated as per VCS MR version 4.2 guidelines to fill MR. 2) In section 1.2 of the revised MR the statement has been revised as per the guidelines in the template for MR version 4.2.		

3) **In section 1.6 of the MR**, as per registered PD MR version 3.0 it is clearly been mentioned that the project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times and the same has been mentioned.

4) **In section 1.7 of the MR**,

- As the project activity is a single location therefore a single GPS coordinate is provided.

5) Section 1.8 of the revised MR version 2.0,

- The tool number has been corrected and made consistent with the registered PD MR version 3.0 and the weblink for the same has been provided in the footnote.

6) Section 1.11 of the revised MR version 2.0,

- It is solar project and the it has been corrected as per registered PD version 3.0

7) Section 3.1 of the revised MR version 2.0, the total operating hours, Actual operating hours, total breakdown hours with percentage difference have been added in the given table and it is clear that breakdown occurred is for a total of 0.01% of total hours of all solar panels and from this much breakdown in the current monitoring period it has no impact in the GHG emissions.

8) **In section 3.2 of MR**, there are no deviations during current, previous verification and validation processes.

1stAssessment by Audit Team	Status	Open/Closed	Date	21-September-2023
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- 1) In Section 1.1 of MR:** Assessment Team confirms that the PP has addressed the VCS MR version 4. 2 guidelines & has mentioned details of the implementation status of the technologies/ measures (e.g., plant, equipment, process, or management or conservation measure) included in the project. (Closed)
- 2) In Section 1.2 of MR:** Assessment Team confirms that the as per VCS template guideline version 4.2, PP has removed the irrelevant information and has revised the section as required. (Closed)
- 3) In Section 1.6 of MR:** PP to note that since the verification is requested in the current date when VCS version 4.5 is applicable. Also, PP to elaborate on the specific clause of applied VCS standard in which the PD was developed that mentions about a renewable crediting period of 10 years. VVB could not trace down any explanation in the MR regarding the same. (Open)
- 4) In Section 1.7 of MR;** PP has not updated the section as per the latest requirement under VCS standard v4.5 i.e., section 3.11.1. Also, a single coordinate does not represent the plant is spread over several acres, PP is requested to provide coordinates to represent the full extent of the plant. (Open)
In the map provided by the PP in this section proper location cannot be comprehended by the assessment team, PP to provide a map sourced from an official gazette/Official source with proper hyperlink, the one which is officially acceptable. (Open)
- 5) In Section 1.8 of MR:** Assessment Team confirms that PP has modified the section and the tool referred here as per guidelines in VCS MR template and registered VCS PD, (Closed)
- 6) In Section 1.11 of MR:** Assessment Team confirms that PP has revised this section with a brief description for this particular in no more than 100 words as per MR template guidelines along with the confirmation about the technology of the project. (Closed)
- 7) In section 3.1 of MR:** Assessment Team confirms that PP has stated the operation of the project activity(s) during this monitoring period, including any information on events that may impact the GHG emission reductions or removals and monitoring. (Closed)

8) In section 3.2 of MR: As per VCS standard version 4.4 clause 3.20 PP is required to indicate whether any deviations were taken during the previous verification and validation processes. (Open) CAR#01 is Open				
2 nd Response from PP		Date	29-September-2023	
3. In section 1.6 of MR: As per PD at the time of registration VCS standard 4.5 was not there and applicable. So, 4.1 is applicable as per VCS standard 4.1 the crediting period is opted, please refer VCS standard 3.7.				
4. In section 1.7 of the MR: As per registered PD MR version 3.0 the VCS standard 4.5 was not available and has been done as per VCS standard 3.7. The exact location of the project in the map has been shown and revised and also the map sourced from an official source and the weblink has been added in the footnote for the same.				
8. Section 3.2 of the MR has been revised.				
2 nd Assessment by Audit Team	Status	Closed	Date	30-September-2023
3. In Section 1.6 of MR: Assessment Team confirms that PP has provided explanation for the crediting period.				
4. In Section 1.7 of MR; Assessment Team confirms that PP has updated the section as per VCS template requirements.				
8. In section 3.2 of MR: Assessment Team confirms that as per VCS standard version 4.4 clause 3.20 PP is required to indicated for any deviations if taken during the previous verification and validation processes.				
Hence VKU's assessment team confirms that CAR#01 is closed.				

Type	Date	25/July/2023
CAR#2	Reference	Section 04/DR/OSV/AT
Description of the Non-Conformance		
1) In section 4.1 of MR: As per registered PD version 03 dated 29-September-2018 Page 11 states that the tool to calculate the emission factor for an electricity system is version 06. PP to justify this inconsistency 2) In section 4.2 of MR: As per the VCS MR template version 4.2 requirement PP needs to specify if any standards or protocols are to be followed, and the person/entity responsible for the measurement. Include any relevant information regarding the accuracy of the measurements (e.g., accuracy associated with meter equipment or laboratory tests). 3) In section 4.2 of MR: During site visit assessment team found out during interview with the site personnel that PP has a practice of calibrating meters annually. However, during desk-review it was traced that as per registered PD PP has opted calibration of once in five years as per CEA notification. PP has not elaborated about the same anywhere throughout the MR. 4) In section 4.2 of MR: PP has not specified the substation name. 5) In Section 4.3 of MR: PP to also specify the name of the substation from where the electricity is finally transported to grid lines & at what voltage. And PP is also requested to specify how the electricity generated at site is supplied to Unified Indian Grid.		

- As per VCS MR template version 4.2 PP has not specified and elaborated in MR the energy generation to conversion and then distribution to Grid.
- PP has not elaborated about the cleaning mechanism of the solar panels employed at site to improve the efficiency of the plant. PP to also mentions about the frequency, monitoring equipment, and the authority responsible for the same.
- PP has not incorporated the QA/QC procedure in this section.
- PP has not included line diagrams to display the GHG data collection and management system.
- PP has not mentioned the details about the authority responsible to meter calibration, site where energy meters are located. Also specify if the calibration certificates issued to PP have a NABL accreditation
- PP has not specified the substation referred here where the energy meters are located and from where the energy measurement is taken by the SEB officer.
- PP has not defined the authority recording the readings from the meters in presence of plant in charge.
- PP has not submitted the training records. PP has also not defined the trainings undertaken at the site for the site personnels either specific to Solar plant or compulsory safety trainings in this section MR, which is required to be elaborated as per VCS MR template version 4.2
- PP has not defined the emergency procedures as stated here.
- As per VCS guidelines to fill MR template version 4.2, PP has not defined the procedures used for handling any internal auditing performed and any non-conformities identified.

1 st Response from PP	Date	15-August-2023
1) In section 4.1 of the revised MR the tool to calculate the emission factor for an electricity system has been corrected and made in line with the registered PD version 3.0. 2) In section 4.2 of of the revised MR, as per the VCS MR template version 4.2 requirement the following details has been incorporated and details of accuracy of the measurement are also been mentioned. 3) In section 4.2 of revised MR version 2.0, as per registered VCS Joint PD MR version 3.0, calibration frequency is once in 5 years, and it is valid throughout the crediting period hence the frequency of 5 years is applied. However, the calibration is carried out by DISCOM is in every year which is a conservative approach, but it is to be noted that calibration of meters is not in control of PP. 4) In section 4.2 of the revised MR version 2.0 the substation name has been incorporated. 5) In section 4.3 of the MR following changes has been made: • name of the substation from where the electricity is finally transported to grid lines & at what voltage mentioned. • energy generation to conversion and then distribution to Grid. • The module cleaning mechanism is also available at the site and NMR is only doing the module cleaning and the same has been incorporated in the given section The QA/QC procedure has been added. • QA/QC procedure incorporated. • It has been added in appendix 2 and the supporting SLD for the same has been provided. • All the details have been incorporated in the given section. • Substation name and where the energy meters are located and from where the energy measurement is taken by the SEB officer are mentioned. • It has been updated in the revised MR version 2.0		

• Training records and details has been submitted as supporting document. • Emergency preparedness has been updated. • It is now been revised as per VCS guidelines to fill MR template version 4.2.				
1 st Assessment by Audit	Status	Open/Closed	Date	22-September-2023
Team				
1) In section 4.1 of MR: The tool to calculate the emission factor for an electricity system is version 06, this is now corrected by the PP and hence acceptable to the VVB. (Closed) 2) In section 4.2 of MR: Assessment Team confirms that PP has specified if any standards or protocols are to be followed, and the person/entity responsible for the measurement along with the accuracy of the measurements. (Closed) 3) In section 4.2 of MR: Assessment Team confirms that the frequency of once in five years as per CEA notification. PP has not elaborated about the same anywhere throughout the MR. (Closed) 4) In section 4.2 of MR: Assessment Team confirms that PP has specified the substation name. (Closed) 5) In Section 4.3 of MR: • PP to also specify the name of the substation from where the electricity is finally transported to grid lines & at what voltage. And PP is also requested to specify how the electricity generated at site is supplied to Unified Indian Grid. (Open) • As per VCS MR template version 4.2 PP has not specified and elaborated in MR the energy generation to conversion and then distribution to Grid. (Open) • Assessment Team confirms that PP has now elaborated about the cleaning mechanism of the solar panels employed at site to improve the efficiency of the plant. (Closed) • Assessment Team confirms that PP has now incorporated the QA/QC procedure in this section. (Closed) • PP has not included line diagrams to display the GHG data collection and management system. (Open) • Assessment Team confirms that PP has now mentioned the details about the authority responsible to meter calibration, site where energy meters are located. (Closed) • But PP has not specified if the calibration certificates issued to PP have a NABL accreditation (Open) • PP has not specified the substation referred here where the energy meters are located and from where the energy measurement is taken by the SEB officer. (Open) • PP has not defined the authority recording the readings from the meters in presence of plant in charge. (Open) Assessment Team confirms that PP has submitted the training records. (Closed) • But PP has also not defined/ mentioned in MR about any the trainings undertaken at the site for the site personnels either specific to Solar plant or compulsory safety trainings in this section MR, which is required to be elaborated as per VCS MR template version 4.2 (Open) • Assessment Team confirms that PP has now defined the emergency procedures as stated here. (Closed) • As per VCS guidelines to fill MR template version 4.2, PP has not defined the procedures used for handling any internal auditing performed and any non-conformities identified. (Open)				
CAR#02 is Open				
2 nd Response from PP			Date	29-September-2023
5) In section 4.3 of MR:				

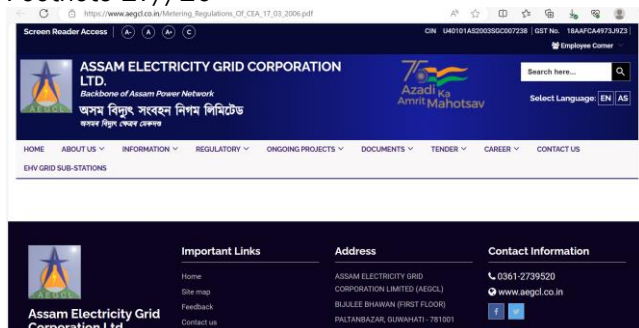
- The name of the substation from where the electricity is finally transported to grid lines & at what voltage and also how the electricity generated at site is supplied to Unified Indian Grid has been incorporated. - Energy generation to conversion and then distribution to Grid. revised. - The line diagram has been revised in appendix 2 of the revised MR version 3.0 - The calibration certificates issued are approved by Measurematic India. - It has been revised. - It has been revised in the monitoring report. - The training details has been elaborated in the monitoring report as per template version 4.2. - There is no internal audit performed at the site and the same has been mentioned in the monitoring report version 3.0				
2ndAssessment by Audit Team	Status	Closed	Date	30-September-2023
5) In Section 4.3 of MR: PP has sufficiently addressed the findings raised in-line with VCS MR template requirements. Hence VKU's assessment team confirms that CAR#02 is closed.				

Type	Date	25-July-2023
CAR#3	Reference	Section 05/DR/OSV/AT
Description of the Non-Conformance		
- In section 5.2 & 5.3 of MR: PP has not quoted the specific clause of methodology that mentions about the non-applicability of this section for Solar projects. - In Appendix 01 of MR; PP has not mentioned the meter type, meter model and the name of the entity who performed the calibration. - In Appendix 03 of MR: PP has not stated the total operating hours, Actual operating hours, total breakdown hours and also show difference between then and incorporate sufficient justification if there is change in operating hour. PP has also not provided the computed value of breakdown hours with the total production hours for the current monitoring period. - In ER Sheet; PP has not accounted PLF calculation for the current monitoring period since there are 19.99% higher emissions from the estimated value.		
1stResponse from PP	Date	15-August-2023
- In section 5.2 and 5.3 of the MR specific clause of methodology about the non-applicability of this section for Solar projects has been added. - In appendix 01 of the revised MR version 2.0 the meter type, meter model and the name of the entity who performed the calibration has been incorporated and the calibration certificates are provided as supporting. - In appendix 03 the breakdown details the total operating hours, Actual operating hours, total breakdown hours with percentage difference have been added in the given table and it is clear that breakdown occurred is for a total of 0.01% of total hours of all solar panels and from this much breakdown in the current monitoring period it has no impact in the GHG emissions. This section has also been added under section 3.1 of the revised 2.0. - In ER sheet PLF tab has been added in support of 19.99% higher emissions from the estimated value in the current monitoring period.		

1 st Assessment by Audit Team	Status	Open/Closed	Date	22-September-2023
1) In section 5.2 & 5.3 of MR: Assessment Team confirms that PP has quoted the specific clause of methodology but PP to clarify how was the statement in MR in this section confirmed already “Since emissions from the project activity is zero” (Open)				
2) In Appendix 01 of MR; PP has mentioned the meter type & meter model however detail about name of the entity who performed the calibration is still not found. (Open)				
3) In Appendix 03 of MR: PP has provided Breakdown details but the calculations for the Breakdown for Year 2021 is not correct. (Open)				
4) In ER Sheet; PP has now accounted PLF calculation for the current monitoring period. (Closed)				
CAR#03 is Open				
2 nd Response from PP			Date	29-September-2023
1) In section 5.2 & 5.3 of MR: It has been revised in the monitoring report with specific clause of methodology and justification that project and leakage emissions are zero.				
2) In appendix 1 of the MR: The name of the entity who performed the calibration has been incorporated.				
3) In appendix 03 of the revised MR: The breakdown details for year 2021 have been revised and corrected.				
2 nd Assessment by Audit Team	Status	Closed	Date	30-September-2023
1) In section 5.2 & 5.3 of MR: Assessment Team confirms that PP has quoted the specific clause of methodology & has clarified the statement in MR about emissions from the project activity is zero”				
2) In Appendix 01 of MR; Assessment Team confirms that PP has mentioned about the name of the entity who performed the calibration.				
3) In Appendix 03 of MR: Assessment Team confirms that PP has corrected the Breakdown details.				
Hence VKU's assessment team confirms that CAR#03 is closed.				

Type	Date	22-September-2023
CAR#04	Reference	Section 01/DR/OSV/AT Section 02/DR/OSV/AT Section 03/DR/OSV/AT Section 04/DR/OSV/AT Section 05/DR/OSV/AT
Description of the Non-Conformance		
1) In section 1.1 of MR: The days are not calculated correctly. Also clarify if the MP dates are inclusive of first and last days? The total years calculated are not correct.		
2) In section 1.11 of MR: - The Net Generation value is found to be inconsistent. - The ER value is found to be inconsistent.		
3) In section 1.11 SDG Table no 01 of MR: - The values for Net electricity and ERs achieved during current MP is inconsistent with ER sheet. In SDG 8.5 of MR: PP has not specified the exact number of the people employed required as per template//PP to check the template requirement of this section and update accordingly.		

- In **SDG 7.2 and 13.0**: The cumulative value is incorrect.
- 4) In **section 3.1 of MR**: The technical specifications information about PV Modules in incorrect and incomplete. PP has not provided a descriptive and presentable information.
- 5) In **section 4.1 of MR**: In “Tool to calculate the emission factor for an electricity system, version 06, the weblink added is not traceable.
- 6) In **section 4.2 of MR**:
 - PP has not checked the weblinks properly. Please clarify the weblink added in Footnote 17//20



- PP to check the information added is relevant to the template requirement
- 7) In **section 4.3 of MR**: PP has not provided information on the times when the monitoring period dates do not match with the JMR or invoice date, how is the ER calculation performed.
- 8) In **section 5.1 of MR**:
 - Assessment Team confirmed from the project webpage that the project is registered under VCS GHG Programme. PP has not ensured the presentation of correct information in the MR
 - PP to explain the requirement about mentioning the $EG_{facility,y}$, as per assessment team's desk-review there is no mention of this ($EG_{facility,y}$) anywhere in methodology or Registered PD version 03 dated 29-September-2018
- 9) In **section 5.4 of MR**:
 - Are leakage emissions not considered? The formula is not correct as per methodology opted in Registered PD.
 - In the formula above the LE_y are not considered, why are the same taken into consideration in the calculation of final VCUs
- 10) In **Appendix 01 of MR**: The calibration dates are inconsistent with the calibration certificates mentioned in the calibration certificates submitted by PP.
- 11) In **ER Sheet**: PP has not provide any description of Project title//Version number// Date of ER submission.

1stResponse from PP	Date	29-September-2023
1) In section 1.1 of MR , the no. of days is revised and first and the last days are inclusive and the same has been mentioned in the revised MR version 3.0 2) In section 1.11 of MR , • The value of net generation has been revised and made consistent with the ER sheet. • The ER value has been revised and made consistent with the ER sheet. 3) In section 1.11 SDG table no. 1 of MR : • The values for Net electricity and ERs achieved during current MP is made consistent with ER sheet. • In SDG 8.5 of MR: PP has not specified the exact number of the people employed required as per template//PP to check the template requirement of this section and update accordingly.		

- The exact number of people employed in the current monitoring period has been mentioned in the revised MR version 3.0 - SDG 7.2 and 13.0, the cumulative values has been corrected.				
4) In section 3.1 of MR, the technical specifications of PV modules have been revised.				
5) In section 4.1 of MR: The weblinks has been revised in the footnote and now it is in working condition.				
6) In section 4.2 of MR: The weblinks has been revised in the footnote and now it is in working condition.				
7) In section 4.3 of MR, PP has provided the information on the times when the monitoring period dates do not match with the JMR or invoice date and how is the ER calculation performed.				
8) In section 5.1 of the MR,				
- It has been updated. - It has been revised as EG_{facility} is not shown anywhere in registered PDMR version 3.0				
9) In section 5.4 of MR,				
- The formula is consistent as per section 3.4 of the registered PDMR version 3.0 - It has been revised as per registered PDMR version 3.0				
10) In appendix 1 of MR, the calibration dates are in lined with the calibration certificates provided.				
11) In revised ER sheet, Project title//Version number// Date of ER submission has been added.				
1 st Assessment by Audit Team	Status	Closed	Date	30-September-2023
1) In section 1.1 of MR:				
Assessment Team confirms that in the Audit history table days are calculated correctly & PP has confirmed that MP dates are inclusive of first and last day. The total years calculated are not correct.				
2) In section 1.11 of MR:				
Assessment Team confirms that the Net Generation value & the ER value is found to be consistent as corrected by the PP.				
3) In section 1.11 SDG Table no 01 of MR:				
- Assessment Team confirms that the values for Net electricity and ERs achieved during current MP are now made consistent with ER sheet by PP. - In SDG 8.5 of MR: Assessment Team confirms that PP has specified the exact number of the people employed required as per template. - In SDG 7.2 and 13.0: Assessment Team confirms that the cumulative value is now corrected by the PP.				
4) In section 3.1 of MR: Assessment Team confirms that the technical specifications information about PV Modules is now corrected. PP provided a descriptive and presentable information.				
5) In section 4.1 of MR: Assessment Team confirms that In “Tool to calculate the emission factor for an electricity system, version 06, the weblink added is now updated.				
6) In section 4.2 of MR: Assessment Team confirms that PP has updated the information//weblinks relevant to the template requirement				
7) In section 4.3 of MR: Assessment Team confirms that PP has now provided information on the times when the monitoring period dates do not match with the JMR or invoice date, how is the ER calculation performed.				
8) In section 5.1 of MR:				
Assessment Team confirmed from the project webpage that the project is registered under VCS GHG Programme & has not ensured the addition of correct information in the MR				

Assessment Team confirms that PP has revised the section.
9) In section 5.4 of MR: Assessment Team confirms that the formula is correct as per methodology opted in Registered PD.
10) In Appendix 01 of MR: Assessment Team confirms that the calibration dates are now revised & made consistent with the calibration certificates mentioned in the calibration certificates submitted by PP.
11) In ER Sheet: Assessment Team confirms that PP has provided description of Project title//Version number// Date of ER submission.
Hence VKU's assessment team confirms that CAR#04 is closed.

Type	Date	02-October-2023
CAR#05	Reference	Section of Ver protocol 01//DR/TR Section of Ver protocol 02//DR/TR Section of Ver protocol 03//DR/TR Section of Ver protocol 04//DR/TR Section of Ver protocol 05//DR/TR
Description of the Non-Conformance		
In section 02 of MR: This is not in line with VCS guidelines of filling which states " How due account of all and any input received during ongoing communication has been taken" More importance has been given to Grievance register as an only means of communication In Section 3 of MR: Solar Plants do not work 24 hrs like wind projects so this calculation is not correct. Also, multiplication by Number of panels is not a correct presentation of data. PP has not calculated the breakdown correctly. In section 03 of MR: inconsistency in number of modules these don't add up to value used in foot note 192024 This number needs to be verified In section 04 of MR: - This value of EGPI, y is not as per description of parameter i.e vintage wise. Description of how output from solar panels gets converted to AC and at what voltage DC to AC gets converted and further step-up happens. - Incorrect voltage mentioned is not matching with SLD & JMR In section 4.3 of MR: - Description does not match with calibration records - This statement is not in line with SLD also Please check across the document for consistency complete SINGLE LINE DIAGRAM Of 110/33 KV POOLING SS by M/S.SEI Phoebus Pvt Ltd With 110 KV Metering arrangement At Tiruchuli For 50 MW Solar Power Plant - Pooling substation details as per SLD including voltages In section 5.1 of MR: VCU's value is not calculated for each year separately and then summed up In Appendix 02 of MR: Transmission line voltage is not matching with SLD		

1 st Response from PP		Date	04-October-2023	
1. In section 02 of MR: The section has been revised. 2. In section 03 of the MR: The breakdown calculations have been revised and corrected. 3. In section 03 of the MR: The number of modules has been revised and made consistent. 4. In section 04 of MR: The value has been provided vintage wise. All the descriptions have been incorporated. It has been made consistent with JMR and SLD. 5. In section 4.3 of MR: It has been made consistent with calibration certificates. The statement has been revised as per SLD and also the SLD diagram has been revised. Pooling substation details incorporated. 6. In section 5.1 of MR: VCUs value are calculated vintage wise. 7. In appendix 02 of MR: The diagram has been updated.				
1 st Assessment by Audit Team	Status	Closed	Date	04-October-2023
Assessment Team confirms that PP has successfully made revisions in MR and submitted version 4.0 of MR to VVB.				
Hence VKU's assessment team confirms that CAR#05 is closed				

DESCRIPTION OF FORWARD ACTION REQUESTS RAISED BY VVB:

Type		Date	~~DD-Month-YYYY~~	
~~FAR~~		Reference	~~Section of Val/Ver protocol~~	
Description of the Non-Conformance				
~~1stResponse from PP~~		Date	~~DD-Month-YYYY~~	
~~1stAssessment by Audit Team~~	Status	~~Open/Closed~~	Date	~~DD-Month-YYYY~~

APPENDIX C: COMPETENCE STATEMENT

Team Leader



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Barun Kumar
Nationality	Indian
Countries of Experience	India, South Africa, Kenya, Uganda, DR Congo, Zambia
Education Qualification	B.Sc. (Environmental Science & Water Management) M.Sc. (Ecology & Environmental Sciences)
Year of Experience	12 Years +
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	TA 1.2 - Renewables TA 3.1 - Energy Demand TA 6.1 - Construction TA 7.1 - Transport

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	NO
Verifier	NO
Team Leader	YES
Technical Reviewer	YES
Local Expert (Country Wise)	YES
TA Expert (1.2, 3.1, 6.1, 7.1)	YES
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	06/12/2022
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	06/12/2022

Validator/Verifier



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Niharika Kaushik
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (Zoology Honours) M.Sc. (Environmental Sciences)
Year of Experience	2.5+ Years
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	YES
Verifier	YES
Team Leader	NO
Technical Reviewer	NO
Local Expert	NO
TA Expert (X.X)	NO
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	09.05.2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	09.05.2023

Project Trainee



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Anil Dhankar
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (BCZ) M.Sc. (Environmental Science)
Year of Experience	NA, Fresher
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Project Trainee	YES
Validator/Verifier Trainee	NO
Validator	NO
Verifier	NO
Team Leader	NO
Technical Reviewer	NO
Local Expert (Country Wise)	NO
TA Expert (X.X)	NO
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	06/12/2022
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	06/12/2022

Technical Reviewer



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Sunil Kathuria
Nationality	Indian
Countries of Experience	Malaysia, Uganda, Kenya, South Africa, Nigeria Bangladesh, China, Vietnam, Thailand, Philippines, United Kingdom, Germany, USA
Education Qualification	B.E. (Electrical Power)
Year of Experience	40 Years
Area of Expertise	Climate Change & Environment Energy Generation / Distribution GHG Footprints Manufacturing Sector
Eligible Sectoral Scope	TA 1.1 - Thermal energy generation TA 1.2 - Renewables TA 2.1 - Energy distribution TA 3.1 - Energy Demand (General & Cook Stove) TA 4.1 - Cement and lime production (Manufacturing Industries)

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	YES
Verifier	YES
Team Leader	YES
Technical Reviewer	YES
Local Expert (Country Wise)	YES
TA Expert (1.1, 1.2, 2.1, 3.1, 4.1)	YES
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	13/05/2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	13/05/2023