

VALIDATION AND VERIFICATION OF “RENEWABLE SOLAR POWER PROJECT BY RISHABH RENERGY”



Document Prepared By **Earthood Services Private Limited (ESPL)**

Project Title	Renewable Solar Power Project By Rishabh Renergy
Report Title	Validation and Verification Report of Renewable Solar Power Project By Rishabh Renergy
Version	01
Report ID	VCS.VAL.19.50
Verification Period	28/03/2018 to 01/11/2019 (including first and last dates)
Client	EKI Energy Services Limited
Pages	48
Date of Issue	27/12/2019
Prepared By	Earthood Services Private Limited
Contact	Regd. Office: 424-A, Tower B3, Spaze I-Tech Park, Sector 49, Sohna Road, Gurgaon-122018, INDIA Tel:+91 124 4204599 Fax:+91 124 4204599 Website: www.earthood.in , Email: info@earthood.in
Approved By	Dr.Kaviraj Singh
Work Carried Out By	Team Leader: Vivek Kumar Ahirwar Technical Expert (TA 1.2) and Meth Expert: Vivek Kumar Ahirwar Local Expert: Vivek Kumar Ahirwar Technical Reviewer: Anshika Gupta Technical Expert (TA 1.2): Anshika Gupta

Summary:

Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by EKI Energy Services Limited (Representative of Project proponent and the focal point of communication with VCS) to conduct the validation and verification of the project - **“Renewable Solar Power Project By Rishabh Renergy”** (hereinafter also referred to as Project Activity), with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 3.7, & VCS program guide version 3.7)/17/. Relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting has been applied for validation and verification.

The monitoring period covered under this verification is from 28/03/2018 to 01/11/2019 (both the days inclusive).

The verification includes confirming the implementation of the monitoring plan of the validated VCS joint PD and MR (Version 2 dated 21/12/2019) (Project pipeline ID 2023) and the application of the monitoring methodology as per AMS I.D. Version 18: “Grid connected renewable electricity generation”/04/. A site visit was conducted to verify the data submitted for validation and in the monitoring report.

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. The project involves installation of 14 MW solar project in Harapanahalli village in Davangere district of Karnataka.

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 23,089 tCO₂e per year, thereon displacing 24,647 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.

Thus the project aims to displace electricity produced by fossil fuel power plants harnessing solar energy. Therefore, the project reduces greenhouse gas emissions and thereby contributes to sustainable development. The project being a renewable energy generation activity, leads to reduction in fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and also plays beneficial role in the mitigation of climate change.

The project proponent has applied the baseline and monitoring methodology AMS I.D., version 18.0: “Grid connected renewable electricity generation”.

A risk based approach has been followed to perform this combined validation & verification. In the course of validation & verification, 06 Corrective Action request (CARs) and 02 Clarification request (CLs) were raised and successfully closed.

The review of the project design documentation, monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and stakeholders have provided ESPL with sufficient evidence to validate the fulfillment of the stated criteria.

In detail the conclusions can be summarized as follows:

- The project is in line with all relevant host country criteria (India) and all relevant VCS and UNFCCC requirements for CDM
- The project additionality is sufficiently justified in the VCS joint PD & MR document.
- The monitoring plan is transparent and adequate.
- The calculation of the emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 230,885 tCO₂e are most likely to be achieved within the 10 years crediting period. Also, due to expected longer technical lifetime of the project, project can be further renewed under VCS crediting period.

Validation & Verification Conclusion:

The conclusions of this report show, that the project, as it was described in the project documentation and monitoring report, is in line with all criteria applicable for the validation and verification. This validation and verification are based on the information made available to ESPL and the engagement conditions are detailed in this report. No restrictions or uncertainties were identified related to the validation and verification.

ESPL confirms that the project is implemented in accordance with the validated VCS joint PD & MR. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 23,653tCO₂e during period 28/03/2018 to 01/11/2019.

Table of Contents

CONTENTS

1	Introduction.....	5
1.1	Objective	5
1.2	Scope and Criteria	5
1.3	Level of Assurance.....	6
1.4	Summary Description of the Project	6
2	Validation AND VERIFICATION Process	8
2.1	Method and Criteria.....	8
2.2	Document Review	9
2.3	Interviews	10
2.4	Site Inspections	11
2.5	Resolution of Findings.....	12
2.5.1	Forward Action Requests	12
3	Validation Findings	13
3.1	Project Details	13
	Additional Information Relevant to the Project	16
	Eligibility Criteria for grouped projects.....	16
3.2	Participation under Other GHG Programs	16
3.3	Application of Methodology	17
3.3.1	Title and Reference	17
3.3.2	Applicability	17
3.3.3	Project Boundary	21
3.3.4	Baseline Scenario	21
3.3.5	Additionality	22
3.3.6	Quantification of GHG Emission Reductions and Removals	25
3.3.7	Methodology Deviations	27
3.3.8	Monitoring Plan	27
3.4	Non-Permanence Risk Analysis.....	30
4	safeguards.....	30
4.1	No Net Harm	30
4.2	Environmental Impact	30
4.3	Local Stakeholder Consultation	31
4.4	Public Comments	31
5	VERIFICATION FINDINGS.....	32
5.1	Accuracy of GHG Emission Reduction and Removal Calculations.....	32
5.2	Quality of Evidence to Determine GHG Emission Reductions and Removals	33
6	Validation AND VERIFICATION conclusion	38
	APPENDIX 1: Document Reference	41
	APPENDIX 2: Abbreviations	43
	APPENDIX 3: Competency Statement	44
	APPENDIX 4: Findings Overview	45

1 INTRODUCTION

1.1 Objective

ESPL has been contracted by EKI Energy Services Limited (Representative of Project proponent, to undertake the validation and verification of the renewable energy project titled “Renewable Solar Power Project By Rishabh Renergy” (which was under the VCS pipeline with ID PL2023). The verifiers have reviewed the GHG data collected for the monitoring period from 28/03/2018 to 01/11/2019 (both days included) covered in this verification.

The purpose of this validation and verification is to have an independent third party assessment of whether the project activity conforms to the qualification criteria set out in the VCS Version 3.7 standard/17/ to attain real, measurable, additional and permanent emission reductions. The validation/verification statement/opinion is a written assurance that:

- The project complies with all the applicable VCS requirements and has the ability to generate the emission reductions stated over the project's crediting period.
- The validation followed the requirements of the current version of the VCS Standard Version 3.7 and VCS program guide 3.7/17/ to ensure the quality and consistency of the validation work and the report.
- The project has resulted in emission reductions as declared by the organisation or GHG project's GHG assertion;
- The data reported is accurate, complete, consistent, transparent and free of material error or omission.

1.2 Scope and Criteria

For validation:

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan which is included in the VCS Joint PD & MR (Version 02, dated 21/12/2019) and other relevant supporting documents.

The scope of work covered in the validation is described below:

- To validate whether the project activity meets the requirements of VCS Standard Version 3.7, VCS Validation and VCS program guide 3.7/17/ including additionality, proof of title and compliance with local laws.
- To evaluate whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program
- To confirm that the information presented are completed, consistent, transparent and free of omission or material error
- Background investigation and follow up interviews
- Issuance of draft validation report with CARs, CLs & FARs, if any
- Final validation opinion

The information in the VCS joint PD & MR is reviewed against the criteria of VCS Standard 3.7, the VCS program guide 3.7/17/ and the approved baseline and monitoring CDM methodology AMS I.D., version 18/04/.

ESPL has performed validation based on a risk based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Verified Carbon Units (VCUs).

For Verification:

The scope of the verification was the independent and objective review and ex-post determination of the monitored reductions in GHG emissions from “Renewable Solar Power Project By Rishabh Renergy”. The verification of this project was based on the validated VCS joint project description & monitoring report /01/ and supporting documents submitted by the project proponent to the verification team. The documents were reviewed against the following guidance and protocols:

- VCS Standard: Version 3.7, dated 21 June 2017/17/
- Approved baseline and monitoring methodology AMS I.D., version 18, “Grid connected renewable electricity generation”/04/.
- Validated VCS joint Project Description & monitoring report version 2.0 dated 21/12/2019/01/
- VCS Program Guide, Version 3.7, dated 21 June 2017/17/
- ISO 14064-3: Specification with guidance for the validation and verification of greenhouse gas assertions, 2006

The validation & verification is not meant to provide any consulting towards the client. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Level of Assurance

The validation has been planned and organized to achieve a

☒ Reasonable level of assurance

☐ Limited level of assurance

1.4 Summary Description of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. The project involves installation of 14 MW solar project in Harapanahalli village in Davangere district of Karnataka.

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 23,089 tCO₂e per year, thereon displacing 24,647 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 details of the project is mentioned in the table below

Project Investor	Capacity (MW)	COD	Connection with the Grid	State	Usage
Rishabh Buildwell Pvt. Ltd	14	28/03/2018	Indian Grid	Karnataka	Sale to Grid

During the Current Monitoring Period from 28/03/2018 to 01/11/2019 (First and last date included) the project activity has supplied 25,259.54 MWh of electricity, and thus contributing to the GHG reductions 23,653 tCO₂e.

The project shall result in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 23,089 tCO₂e per year, thereon displacing 24,647 MWh/year amount of electricity from the grid over the 10 years crediting period.

The project activity aims to harness solar energy through installation of Solar PV project with total installed capacity of 14 MW.

The technical details of the 14 MW solar project by Rishabh Buildwell Pvt. Ltd.

Sl. No.	Technical details of the equipment	Description/11/
1	Technology Used	Solar PV technology (Multi-Crystalline silicon)
2	Number of modules and their capacity	Module Make-Canadian Solar No. of Modules- 47620 Model capacity- 315 Wp
3	Number of Inverters & Capacity	Inverter Make- ABB No. of Inverters used- 14 Capacity- 1000 KW

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

For Validation:

The validation process is undertaken by validation team that involves the following:

- The desk review of documents and evidences submitted by the project proponent in context of the reference VCS rules and guidelines,
- Undertaking site visit, interview or interactions with the representative of the project proponent,
- Reporting audit findings with respect to clarifications and non-conformities and the closure of the findings, as appropriate and
- Preparing a draft validation report
- Resolution of outstanding issues and the issuance of final verification report and opinion

In order to ensure transparency, a validation protocol was prepared for the project according to the VVS for PAs version 02.0 verification requirements and VCS Standard version 3.7/17/. The Clarification Requests (CL) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the first verification of the project activity.

For Verification:

The verification approach consists two phases.

- In the first phase, ESPL completed a strategic review and risk assessment of the project activities and processes in order to gain a full understanding of:
- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the Monitoring Report.

At the end of this phase, ESPL produced a Verification Checklist which, based on the risk assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

Using the Verification checklist, ESPL verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the Monitoring Report. This verification report describes the findings of this assessment.

2.2 Document Review

For Validation:

The validation team has conducted the validation using the VCS Standard and the AMS I.D. version 18 methodology as the reference criteria. The validation team had done the completeness check of VCS joint PD & MR (Version 2, dated 21/12/2019) submitted by the PP as per the VCS standard Version 3.7/17/ requirements was reviewed. Furthermore, a desk review was also carried out to assess the following:

- Information of project details in compliance with VCS joint PD & MR template
- Appropriateness of methodology AMS I.D. version 18 applied to the project activity
- Compliance with relevant laws and regulations
- Correctness of application of baseline and monitoring methodology
- Demonstration of additionality
- Monitoring plan described in the VCS joint PD & MR
- Stakeholder consultation
- Proof of listing of project under pipeline
- Calculation of grid emission factor, etc. where applicable.

The VCS joint PD & MR version 01 dated 15/11/2019 /01/ was initially reviewed and the PP requested to submit the revised documents along with the supporting information and documents. The revised documents and additional supporting documents were further assessed by the validation team during des review as well as verified physically during site visit. During the validation process, the revised VCS joint PD & MR (version 02, dated 21/12/2019) /01/ and the supporting documents were assessed to confirm the actions taken by the PP to the CARs and CLs issued.

The validation team has reviewed the final version of the VCS joint PD and MR (i.e. Version 2.0 dated 21/12/2019) to confirm that all changes agreed have been incorporated adequately.

Further, prior to the onsite visit, it was verified by the validation team that the project was listed in the VCS pipeline in line with the requirements (Section 3, Registration and Issuance process, version 3.8) Ref: https://www.vcsprojectdatabase.org/-/pipeline_details/PL2023./06/

For Verification:

The validated VCS joint PD & MR /01/ (version 2.0 dated 21/12/2019) and additional supporting documents related to the project performance submitted by the client were reviewed.

The details of the documentation reviewed during the validation & verification are provided under Appendix 1 of this report.

2.3 Interviews

The assessment team has carried out interviews in order to verify the information included in the project documentation and to gain additional information regarding the compliance of the project with the VCS requirements. Before and during the on-site visit, the assessment team has interviewed the representatives of the PP to confirm selected information and to clarify issues identified during the document review. Representatives of the PP and O&M contractor were also interviewed. The names and designations of the personnel interviewed are mentioned in section 2.4 below.

The main topics covered during the interview are as follows:

- General Aspects of the project
- Project Implementation
- Equipment and operation
- Staff Training procedures
- Calibration procedures
- Monitoring & Measuring System
- Data collection, recording and archiving procedure
- QA/QC procedures
- VCS documentation
- Emission reduction calculations

2.4 Site Inspections

As part of the validation & verification, an on-site inspection has been performed by the assessment team. The site visit was carried out on 17/12/2019. During the site visit representatives of the PP and O&M contractors were interviewed; i.e. personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed, and the topics discussed are mentioned in the table below:

Location: Village/ Taluk: Harapanahalli village in Dvanagere district of Karnataka	Date: 17/12/2019
Coverage	Source of Information / Persons Interviewed
Project implementation start date as per the VCS requirements. Electricity Generation Records (monthly energy statements, Invoices) Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure	Mr. Vipin Gupta (Rishabh Renergy Pvt. Ltd)
Monitoring and measuring system - Collection of measurements - Observations of established practices - Data Verification of monitoring parameters	Mr. Barun Sharma (Enking International) Ms. Neetu Yadav (Enking International) Mr. Kingshuk Das (Enking International)
QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations	Mr. Barun Sharma (Enking International) Ms. Neetu Yadav (Enking International) Mr. Kingshuk Das (Enking International)
Documentation Review and verification of data/information with the original documents	Mr. Barun Sharma (Enking International) Ms. Neetu Yadav (Enking International) Mr. Kingshuk Das (Enking International)

2.5 Resolution of Findings

As an outcome of the validation & verification process, the team can raise different types of findings:

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

Where a non-conformance arises the team leader shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The VCS requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.
- The validation process may be halted until this information has been made available to the team leader's satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR. No CL has been raised during the validation of the project activity.

During the validation and verification process, total 06 CARs and 02 CLs were raised and resolved satisfactorily. The list of CARs/CLs/FARs raised and the response provided, the mean of validation, reasons for their closure and references to correction in the relevant documents are provided in Appendix 4 of this report.

2.5.1 Forward Action Requests

A Forward Action Request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the VCS requirements for registration.

No FAR has been raised during the validation and verification of this project activity.

3 VALIDATION FINDINGS

3.1 Project Details

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. The project involves installation of 14 MW solar project in Harapanahalli village in Davangere district of Karnataka.

The project aims at providing electricity to the state grid by effective utilization of renewable resources. The electricity generated from the project activity would be supplied to the national grid of India.

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 plans to avail the VCS benefits for the project.

During the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 23,089 tCO₂e per year, thereon displacing 24,647MWh/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.

Details of the capacity & installation dates are mentioned in Section 1.4 above.

Project location

Assessment team during the validation site visit confirms via google map that the Solar power plant is located at village Harapanhalli, District Davanagere, state Karnataka.

Latitude: 14° 47' 31.3296" N

Longitude: 76° 05' 12.1200" E

During the Current Monitoring Period from 28/03/2018 to 01/11/2019 (First and last date included) the project activity contributed to the GHG reductions 23,653 tCO₂e.

Project Start Date

Start date of the project activity is the earliest date of interconnection with the grid i.e. 28-03-2018. This is the date of commissioning of 14 MW solar PV project activity.

Project crediting period Date

Crediting Period Start date: 28-March-2018

Crediting Period End date: 27-March-2028

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

Project Scale and Estimated GHG Emission Reductions or Removals

The project involves setting up of a solar power project having a capacity of 14 MW in the state of Karnataka.

Project Scale	
Project	✓

Large project	
---------------	--

As the estimated annual average GHG emission reductions or removal per year is 23,089 tCO₂e which is less than 300,000 tonnes of CO₂e per year, thus the project falls in the category of Project.

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1	23,602
Year 2	23,502
Year 3	23,384
Year 4	23,266
Year 5	23,148
Year 6	23,029
Year 7	22,911
Year 8	22,793
Year 9	22,675
Year 10	22,557
Total estimated ERs	230,885
Total number of crediting years	10
Average annual ERs	23,089

The above estimated emission reduction is confirmed by assessment team via emission reduction calculation spreadsheet. The calculation is conservative and this acceptable to the assessment team.

Conditions prior to project initiation

Assessment team during the desk review and onsite visit confirms that the project is a solar powerproject and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. The baseline as described in section 3.3.4 of this report will continue to be the baseline in the absence of project activity.

Project compliance with applicable laws, statutes and other regulatory frameworks

Assessment team confirms that the Project has received necessary approvals for development and commissioning for the proposed Solar project from the state Nodal agencies and is in compliance to the local laws and regulations. Assessment team checked the Commissioning certificates, wheeling agreement with state board, Installation report for solar power plant in the name of PP issued by state nodal agency of the respective state to confirm the project capacity and its relevant statutory requirements as per the host country regulations.

Assessment team noted that the project fulfils the norms put down by Central Pollution Control Board norms. As per Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India), final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (29/02/2016).

Being a renewable power project, it falls under the category of White and thus these projects do not need clearance for Consent to operate and only needs to inform the relative State Pollution Control Board. The same is done for the project and thus it can be confirmed that it follows the local laws of the host country.

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using renewable energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage solar power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

Thus, assessment team confirms that the project activity follows the National and local law and regulation of the host country.

Project Ownership

Rishabh Renergy Pvt. Ltd. is the project proponent (PP) of project activity and they *have formed SPV which have* the legal right to control and operate the project activities.

The project ownership has been checked by the Assessment Team and demonstrated through below supporting documents:

1. Commissioning certificates – The letter from respective State Nodal Agency to Rishabh Buildwell Pvt. Ltd for the commissioning of project indicates that, PP have the legal right to control and operate the project activities./03/

2. Contract with EPC contractor – The purchase orders in the name of Rishabh Buildwell Pvt. Ltd indicates that the PP has the legal right to control and operate the project activities./12/

Assessment team confirms that, Based on above evidences, the project ownership of the SPV is demonstrated and Rishabh Renergy Pvt. Ltd is authorized on behalf of the SPV.

Emissions trading programs and other binding limits

Assessment team confirms that the Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits. Audit team checked the REC Mechanism database of India and found that the project activity is not accredited/ registered under REC mechanism/16/. Further, Declaration in effect of the same has been submitted by project proponent to audit team and found to be correct. Thus, it is concluded that the project activity not involved on other Emissions trading programs and other binding limits.

Additional Information Relevant to the Project

Eligibility Criteria for grouped projects

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

Leakage Management for AFOLU projects

Not applicable to the project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description. The details are presented transparently to the assessment team for analysis which lead to positive conclusion for this validation and verification.

Sustainable Development

Contribution to sustainable development:

Ministry of Environment Forest and Climate Change, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. Assessment team found that the project contributes to sustainable development using the following ways.

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

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

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

Environmental well-being: Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities.

Project undergone continuous operation and only scheduled maintenance as per the manufacturer specification is considered. No unforeseen incident observed for the present monitoring period.

3.2 Participation under Other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program. Audit team checked the REC Mechanism database of India and found that the project activity is not accredited / registered under REC mechanism. Further, declaration for the same is checked and found correct by the assessment team. Also assessment

team checked the following registries to confirm the same. The details of the registries checked are as follows:

1. <https://www.recregistryindia.nic.in/>
2. <http://cdm.unfccc.int/>
3. <http://www.goldstandard.org/>

Rejection by other GHG programs

The Project is not rejected by other GHG programs. A declaration for the same is checked and found correct by the assessment team. Also assessment team checked the following registries to confirm the same. The 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. www.v-c-s.org

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

Renewable energy certificates are available for trading in the host country However, the same is not availed by the project participant. The undertaking regarding the same is submitted by PP which is acceptable to the assessment team and assessment team also checked the REC web site (<https://recregistryindia.nic.in/>) and found the declaration to be correct.

3.3 Application of Methodology

3.3.1 Title and Reference

Assessment team checked that following methodology and tools are applicable for the project activity. The details are as below:

Title : Grid connected renewable electricity generation

Methodology : Grid connected renewable electricity generation AMS-I.D.(Version 18.0)

Type I : Energy industries (renewable / non-renewable sources)

Category : Approved Consolidated Methodology (AMS-I.D.: Grid connected renewable electricity generation --- Version 18.0 /04/

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100, Annex 04) /05/

3.3.2 Applicability

All applicability conditions of the updated version of the methodology (AMS I.D version 18) are met. Thus the methodology is deemed fully applicable for the new crediting period and no request for deviation with regards to the applicability of the methodology is required. All applicability conditions are completely and correctly included in the joint VCS PD & MR.

Criteria-1.

This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the

project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).

Validation assessment:

- Project activity is Greenfield solar power project, supplying electricity to Indian national grid. This is verified through the Power purchase Agreements /07/ and commissioning certificate/03/.

Thus the criterion is fulfilled by the project activity.

Criteria-2: Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies is included below:

	Project type	AMS-I.A	AMS-I.D	AMS-I.F
1	Project supplies electricity to a national/regional grid		√	
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			√
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		√	
4	Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			√
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	√		

Validation assessment:

The project activity is supplying power to national grid which confirm from Power purchase agreements /07/.

Thus the criterion (1) and (3) is applicable for the project activity.

Criteria-3:

This methodology is applicable to project activities that (a) install a Greenfield plant; (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); (d) involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) involve a replacement of (an) existing plant(s).

Validation assessment:

The project activity does not involve any capacity additions, retrofits or replacements of an existing facility because it is a Greenfield solar power generation project activity; same has been confirmed from physical inspection during the validation and verification site visit.

Thus the criterion (a) is applicable for the project activity.

Criteria-4: Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:

- The project activity is implemented in an existing reservoir with no change in the volume of reservoir;
- The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²;
- The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m².

Validation assessment:

The project activity is the installation of a new solar power plant not a hydro power plant hence this criterion is not applicable for the project activity.

Criteria-5: If the new unit has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.

Validation assessment:

The project activity is 14 MW solar electricity generation. Unit does not co-fire fossil fuels. Hence the criterion is not applicable to the project activity.

Criteria-6: Combined heat and power (co-generation) systems are not eligible under this category.

Validation assessment: The Project activity is a renewable solar energy project and is not a combined heat and power system. Hence, the criteria is not applicable to the project activity.

Criteria-7: In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.

Validation assessment: The project activity is Greenfield and there is no existing power generation facility at the site. Hence, the criteria is not applicable to the project activity.

Criteria-8:

In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.

Validation assessment:

The project activity is Greenfield and there is no existing power generation facility at the site. Hence, the criteria is not applicable to the project activity. Thus the criterion is not applicable for the project activity.

Criteria-9:

In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the

recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.

Validation assessment:

The Project activity is a renewable solar power project and is not a landfill gas, waste gas, waste water treatment and agro-industries projects or recovered methane emissions project. Hence, the criteria is not applicable to the project activity.

Criteria-10:

In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.

Validation assessment:

The Project activity is a renewable solar power project and is not a biomass project. Hence, the criterion is not applicable to the project activity.

The project activity is the installation of a solar based Power Generation project; it is not a hydro project, thus all conditions related to hydro plants are not applicable to the project activity (and not included in this section).

Thus, it can be concluded that the applied methodology AMS I.D., version 18/04/ is applicable to the project activity.

Further, the applied methodology refers to latest available versions of the following tools;

1. Tool to calculate the emission factor for an electricity system

The joint VCS PD & MR/01/ refers and correctly applies the latest version of tool to calculate the emission factor for an electricity system, version 07.0 /05/. Also in the final version of the Joint VCS PD & MR, the PP has referred the CEA Baseline CO₂ Emission Database version 14, dated December 2018/14/. This is the latest available database at the time of revised version of the joint VCS PD and MR submission for validation of the project activity. The location of the project in the state of Gujarat in India. As per CEA Baseline CO₂ Emission Database/14/, the state of Gujarat comes under the Indian grid, the geographic and system boundaries of which are clearly identified; information on the characteristics of the grid is available. Thus, the tool is applicable for the project activity.

Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion

Since there is no fossil fuel combustion involved in the project site or in the project boundary, this tool is not applicable to the project activity and not used/applied by the project participant.

3.3.3 Project Boundary

The project boundary is given by the applied methodology, AMS I.D., version 18.0/04/:

“The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to.”

The project boundary includes the solar project, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the India national grid. Therefore, the entire India national grid and all connected power plants have been considered in the project boundary for the proposed VCS project activity, thereby displacing the grid generated electricity. The project boundary includes the solar project, sub-stations, grid and all power plants connected to grid, which has been illustrated in the Section 2.3 of the joint VCS PD & MR/01/ and gives clear understanding of the project boundary; thus it is acceptable. The same has been confirmed during the site visit and is found to be appropriate.

The consideration, by the PP, of only CO₂ gas for the baseline emissions is conservative and also in line with the methodology. The exclusion of CH₄ & N₂O in the baseline scenario is appropriate. The project activity involves the generation of electricity using solar energy. Hence, there are no project emissions associated with this project activity. Hence, the exclusion of CO₂, CH₄ & N₂O in the project scenario are appropriate. There are no other sources of project emissions. Hence, the project participant has considered the project emissions as zero for project activity; this is in line with the methodology.

The assessment team is able to conclude that the project boundary and selected sources are applied as per the methodology and the applicable VCS criteria.

3.3.4 Baseline Scenario

Assessment team confirms that being a grid connected Solar energy generation project, PP developed the project based on the Methodology AMS I.D., version 18/04/. As per methodology if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

As per CDM Validation and Verification Standard for project activities version 02, “where the baseline scenario is not prescribed in the approved methodology, the DOE shall assess the list of identified credible alternatives to the project activity in the joint VCS PD & MR selected to determine the most realistic baseline scenario.” Thus, joint VCS PD & MR should mention the credible alternatives to the project activity in order to determine the most realistic baseline scenario. As the selected large-scale methodology clearly mention the baseline scenario and the same has been opted in this project, therefore, no further analysis on baseline is required.

Validation Team, therefore, concludes that the joint VCS PD & MR conforms to the guidance given by EB via CDM Validation and Verification Standard for project activities version 02 and VCS via VCS standard version 3.7.

The project activity involves setting up solar projects to harness the power of sun and solar to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid, CM, y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publicly available. The Central electricity authority (CEA) database version 14 is the latest available data at the time of joint VCS PD & MR submission to DOE for validation, hence same is considered for emission factor calculations.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid, CM, y}$	0.9368 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 14.0, December 2018 published by Central Electricity Authority (CEA), Government of India/14/
$EF_{grid, OM, y}$	0.9610 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3-year (2015-16, 2016-17& 2017-18) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 14.0, December 2018 published by Central Electricity Authority (CEA), Government of India/14/
$EF_{grid, BM, y}$	0.8644 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	Baseline CO ₂ Emission Database, Version 14.0, December 2018 published by Central Electricity Authority (CEA), Government of India/14/

Assessment team thus confirmed that baseline is selected as per the applied methodology and combined margin is calculated as per the tool and thus acceptable to the assessment team.

3.3.5 Additionality

The project activity is a type of project activity which is deemed automatically additional, as defined by the applied approved methodology, tool, standardized baseline or specific renewable technologies/measures conferring automatic additional micro scale CDM project activities proposed by a DNA and approved by the Board.

Specify the methodology, tool, standardized baseline or specific renewable technologies/measures conferring automatic additional micro scale CDM project activities proposed by DNAs and approved by the Board, that establish automatic additionality for the proposed project activity (including the version number and the specific paragraph, if applicable).	Methodology: AMS-I.D “Grid connected renewable electricity generation” (EB 81, Version 18)/04/ Guidelines on the Methodological Tool for the demonstration of additionality of small-scale project activities - Version 10.0.0 (EB 83, Annex 14)/25/,
Describe how the proposed project activity meets the criteria for automatic additionality in the relevant methodology, tool, standardized baselines or specific renewable technologies/measures conferring automatic additional micro scale CDM project activities proposed by a DNA and approved by the Board.	As per Guidelines on the Methodological Tool for the demonstration of additionality of small-scale project activities- Version 10.0.0 (EB 83, Annex 14)/25/, a positive list of grid-connected renewable electricity generation technologies are listed that are automatically defined as additional, without further documentation of barriers. The positive list comprises of the following grid-connected renewable electricity generation technologies of installed capacity up to 15 MW: 1) Solar technologies (photovoltaic and solar thermal electricity generation); 2) Off-shore wind technologies; 3) Marine technologies (wave, tidal). 4) Building-integrated wind turbines or household rooftop wind turbines of a size up to 100 kW; Since, the proposed Solar project activity is of 14 MW, it can be concluded from the above list that this project activity is automatically additional and does not require demonstration of barriers, and hence, it is auto additional.

Since the project activity is a solar photovoltaic electricity generation project of capacity 14 MW, it can be concluded from the above list that the project activity is automatically additional and does not require demonstration of barriers.

Thus, it is well established that the proposed project activity is auto additional.

Annexure 3 of the EB 22 states that national and/or sectoral policies and circumstances have to be accounted for when considering the baseline scenario.

Para 7(a) of the same states that, only those national and/or sectoral policies or regulations under paragraph 6(a) i.e. type E+ policy that increase GHG emissions, that have been implemented before adoption of the Kyoto Protocol by the COP (decision 1/CP.3, 11 December 1997), shall be taken into account when developing a baseline scenario. The Electricity Act of 2003 promoted cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity (Refer Section 86(1) of Electricity Act 2003). Therefore, it could be seen that the provincial and sectoral policies are E- i.e. policies

that decrease GHG emissions and are after November 2001. Hence, the baseline scenario is the electricity generation by grid connected fossil fuel dominated power plants confirming to Annex 3 of EB 22.

Further, the baseline alternative mentioned above is in compliance with all the applicable regulatory policies and laws. Additionally, the project participant is under no compulsion to opt for any particular technology or even a renewable mode of power generation. There is no governmental body or EB policy which requires a particular kind of fuel to be chosen and there is no legal requirement to which the above alternative does not conform.

The above discussions show that solar power development is a small scale project activity and As per Guidelines on the Methodological Tool for the demonstration of additionality of small-scale project activities- Version 10.0.0 (EB 83, Annex 14)/25/, solar power projects are in positive list that are automatically defined as additional, without further documentation of barriers; hence the project activity is additional and the assessment team considers the approach and calculations acceptable as per the requirements in the methodological tool.

3.3.6 Quantification of GHG Emission Reductions and Removals

Assessment team checked the baseline, project and leakage calculation and confirm that the evaluation of baseline, project and leakage is as per the approved methodology and formula used to calculate the same is correct. The detail analysis is as below:

Baseline Emission:

As per the approved consolidated Methodology AMS I.D., version 18/04/:

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (t CO₂/yr)

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

$EF_{grid,CM,y}$ = Combined margin 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" (tCO₂/MWh)

The grid emission factor is calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values. The value of combined margin is sourced from Baseline CO₂ Emission Database, Version 14, and December 2018/14/ published by Central Electricity Authority (CEA), Government of India. CEA calculates the data based on Tool to Calculate the Emission Factor for an Electricity System", Ver. 7.0/05/. No further assessment is required for grid emission calculation as the ex-ante value is sourced directly from the Govt. of India database.

Emission factor (EF_y):

$EF_y = EF_{grid,CM,y} = 0.9368$ t CO₂/MWh. This value is fixed ex-ante for the crediting period.

$$BE_y = 24,647 \times 0.9368 = 23,089 \text{ tCO}_2$$

Project Emission:

As per the approved consolidated Methodology AMS I.D. (Version 18.0): "For most renewable energy power generation project activities, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y = Project emissions in year y (tCO₂e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (tCO₂/yr)

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (tCO₂e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr)

As the project activity is the installation of a new grid-connected solar power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants.

Therefore, $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

Leakage Emission:

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.

Net Emission reduction:

Reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y	=	Emission reductions in year y (t CO ₂ e/yr)
BE_y	=	Baseline emissions in year y (t CO ₂ /yr)
PE_y	=	Project emissions in year y (t CO ₂ e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:

$$ER_y = BE_y - PE_y$$

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year 1	23,620	0	0	23,620
Year 2	23,502	0	0	23,502
Year 3	23,384	0	0	23,384
Year 4	23,266	0	0	23,266
Year 5	23,148	0	0	23,148
Year 6	23,029	0	0	23,029
Year 7	22,911	0	0	22,911
Year 8	22,793	0	0	22,793
Year 9	22,675	0	0	22,675
Year 10	22,557	0	0	22,557
Total	230,885	0	0	230,885

This is the annualized average value calculated for ex-ante representation purposes. The year-wise ER value has been demonstrated under the section 3.4 of the Joint VCS PD & MR, which is found to be acceptable.

Conclusion:

In line with the paragraph 113 of VVS for PAs version 02.0/17/, validation team confirms that the project activity complies with the specified requirements of algorithms and/or formulae used to determine emission reductions and discussed above. The assessment team also confirms that:

- All assumptions and data used by the project participants are listed in the joint VCS PD&MR, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the joint VCS PD & MR;
- All values used in the joint VCS PD & MR are considered reasonable in the context of the project activity;
- The baseline methodology and corresponding tool(s) have been applied correctly to calculate project emissions, leakage emissions, baseline emissions and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the joint VCS PD & MR.

3.3.7 Methodology Deviations

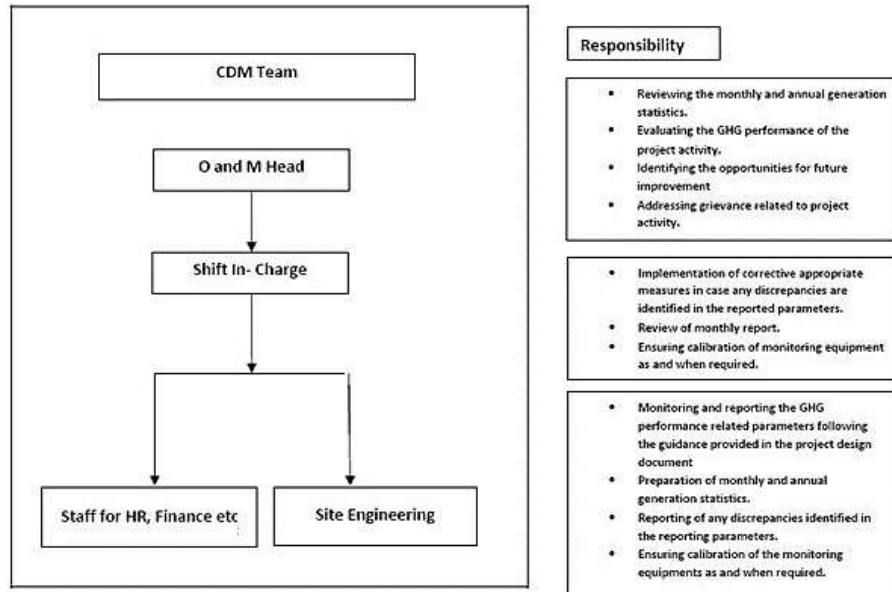
Assessment team confirms that No methodology deviation is applicable for the present project activity.

3.3.8 Monitoring Plan

According to the applied methodology, AMS I.D., version 18/04/, the only parameter to be monitored is the “Quantity of net electricity generation supplied by the project plant/unit to the grid in year y”. This parameter is directly monitored through the dedicated metering system installed at the switch yard located at project site.

The monitoring plan is developed in accordance with the modalities and procedures for VCS project activity and is proposed for grid-connected solar power project being implemented. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:



Data Measurement

The export and import energy will be measured continuously using above mentioned Main and Check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data collection and archiving

Readings from meters will be collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VCUs for the project activity whichever occurs later.

Emergency preparedness

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

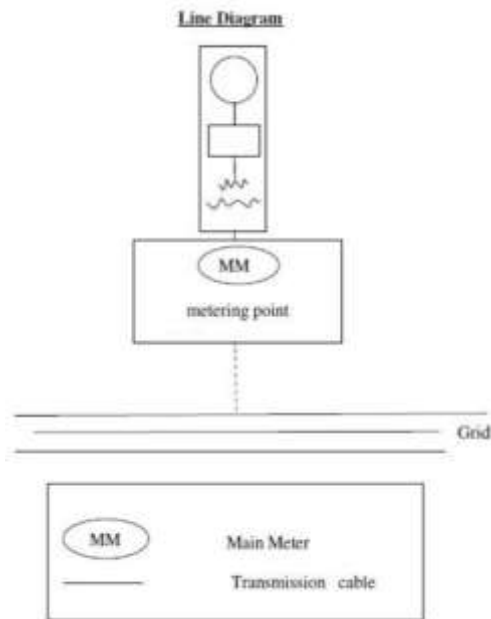
In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Metering Arrangement

Line diagram with metering arrangement for the solar project activity is shown below



QA/QC procedures

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records will be crosschecked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

Apportioning

In case the dates of a particular monitoring period do not match with the dates of the billing cycle, the net electricity exported to the grid would be calculated from:

- Apportioning the net electricity exported to grid, as recorded in the consolidated Share Certificate / JMR Report / Credit Notes certified by the respective state discom, based on the number of days in the monitoring period and the number of days for which Share Certificate / JMR Report / Credit Notes was prepared.

The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the site visit.

Conclusion:

The monitoring methodology applies consistently the choice of the option selected for monitoring of baseline emissions. The monitoring plan provide procedures for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period.

The project participant has the ability to implement the monitoring plan. This is checked through discussion with consultant, the project participant and O&M contractors of the project activity during the physical site inspection. The staffs at the sub-station and the representative of the technology providers were also interviewed to verify the accuracy in the documents. This has been checked during the site visit and is found to be acceptable.

The final joint VCS PD & MR (version 02, dated 21/12/2019) /01/ has been reviewed to check that the procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mention in the PD. The monitoring plan completely describes all measures to be implemented for monitoring all parameters required. Based on the above discussion and the requirements of paragraphs 117 and 119 of the VVS for PAs version 02.0/09/, the validation team confirm that:

1. The monitoring plan included in the joint VCS PD & MR is based on the baseline methodology AMS I.D. version 18.0 which has been applied to the VCS project activity.
2. The monitoring arrangements described in the monitoring plan are feasible within the project design.
3. The PP has the ability to implement the monitoring plan as per the joint VCS PD & MR.

3.4 Non-Permanence Risk Analysis

The project activity does not require a non-permanence risk analysis. Hence this is not applicable.

4 SAFEGUARDS

4.1 No Net Harm

There is no negative impact to any socio economic conditions of the region due to the project activity. This project activity will not involve any negative environmental or socio-economic impacts, as the project activity involves generation of power using solar power which is a clean source of energy. Hence no mitigation measures are required.

4.2 Environmental Impact

The project activity is expected to have positive impacts and no significant adverse environmental impacts are foreseen. Since, the project activity is an electricity generation from renewable source (i.e. Solarenergy) therefore no negative impact are envisaged. There is no mandatory legal

requirement for carrying out an environmental impact assessment in the host country. The Ministry of Environment, Forests & Climate change (MoEFCC), Government of India (GoI) notification dated 14/09/2006/24/ regarding the requirement of Environment Impact Assessment (EIA) studies states that any project developer in India needs to file an application to the Ministry of Environment and Forests (including a public hearing and an EIA) in case the proposed industry or project is listed in a predefined list. The list includes thirty nine project activities that require EIA studies. The Solar power projects are not included in this list and thus an EIA study is not required.

4.3 Local Stakeholder Consultation

The local stakeholder consultation process has been described in detail, by the PP, in section 5.3 of the joint VCS PD & MR the project participant identified the relevant stakeholders such as local villagers, local employee, representatives of affected people residing in the project area and local village head etc.

Local stakeholder consultation process has been performed during the design phase through inviting the relevant stakeholders to comment on the project activity. The Local Stakeholder Meeting was held on 04/01/2018 at the project site in village Harpanhalli, District Devanagere, state Karnataka in India.

Stakeholders were invited through public notice on 28/12/2017. The documentary evidence provided as proof of date of the invitation, meeting; and mode of invitation/08/ has been checked by the assessment team during the site visit and found to be appropriate.

After sharing information with the local stakeholders about the company and the purpose of proposed activity, the stakeholders were briefed about non-conventional energy sources and their importance. The PP also informed the stakeholders about their intention of securing carbon credit benefits for the project activity for financial sustainability of the project. The Minutes of the meeting of the stakeholder meeting and attendance sheet/08/ have been submitted by the PP.

During the site visit the assessment team interviewed some of the local villagers. Based on the replies of the villagers, the validation team was convinced that the process of stakeholder consultation was carried out as described in the joint VCS PD & MR. The villagers also confirmed that they were invited for the meeting through public notice. This was found to be consistent with the invitation process mentioned in the joint VCS PD & MR /01/.

Overall, there was an understanding among the stakeholders that the project activity would lead to the overall development of the area, mainly by generating employment opportunities and improving the infrastructure leading to an improved life for the villagers. The local stakeholders interviewed during the site visit endorsed this view.

4.4 Public Comments

In accordance with the requirement in clause 3.17.5 of the VCS standard version 3.7 "All VCS projects are subject to a 30-day public comment period. The date on which the project is listed on the project pipeline marks the beginning of the project's 30-day public comment period".

The PP listed their project activity in the VCS pipeline for 30 days from 20/11/2019 to 20/12/2019 (https://www.vcsprojectdatabase.org/-/pipeline_details/PL2023) for public comments.

No comments received during the commenting period, as evident from the VCS pipeline in the

5 VERIFICATION FINDINGS

5.1 Accuracy of GHG Emission Reduction and Removal Calculations

The calculation of the emission reductions is found to be correct. The details of the reported and the verified values for all parameters are listed in section 5.2 of this report.

The parameter “Quantity of net electricity generation supplied by the project to the grid in year y” by each sub-project is directly sourced from meter reading report and invoice issued by relevant grid authority. The PP has provided the complete set of data for all the monitored parameters in the ER spreadsheet/02/. This data has been verified as described in section 5.2 below. The formulae & method used to calculate the baseline emissions, project emissions and leakage are appropriate and in line with the approved methodology AMS I.D., version 18/4/.

The PP has calculated the grid emission factor as per the combined margin approach described in the ‘Tool to calculate the emission factor for an electricity system’, version 07.0/5/. The grid emission factor has been calculated as the weighted average of OM & BM; and has been fixed ex-ante for the entire crediting period.

The OM and BM have been obtained from a publicly available source i.e. “Central electricity authority (CEA) database version 14/14/”. The combined margin emission factor was arrived at by applying weights of 75% for OM and 25% for BM, as specified in the tool. The OM and BM have been calculated to be 0.9610 tCO₂/MWh and 0.8644 tCO₂/MWh respectively. Applying the weights, the grid emission factor has been calculated to be 0.9368 tCO₂/MWh.

As per ER excel spreadsheet/02/ submitted by the PP, the net emission reduction for the current monitoring period has been estimated to 23,653 tCO₂e which was against the quantity of net power supplied to the grid during the monitoring period 28/03/2018 to 01/11/2019, which was 25,259.54MWh.

The assessment team is able to confirm that the GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology. Hence, the total quantity of emission reductions claimed for the current monitoring period, i.e. 23,653 tCO₂e, has been verified.

5.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

All the data recorded is in compliance with the VCS joint PD & Monitoring Report/1/.The assessment team has checked the monthly electricity generated and supplied by project activity/26/ in the current monitoring period to verify the values of monitoring parameter reported in ER calculation sheet and found to be consistent. Since the monthly statement prepared and issued by state utility, they are found to be reliable and authentic.

As per the validated joint VCS PD & MR /01/, the operations, maintenance and monitoring of the project activity is being carried out by an in-house O&M team at project site, consist of trained technical professionals. Also, regular training sessions are imparted to the team for ensuring efficient monitoring and operation of the project. Hence it is confirmed that the management system of the VCS project is in place; with the responsibilities properly identified. The same was also verified during the on-site verification.

The monitoring of the project activity is found to be in accordance with the monitoring methodology described in AMS I.D., version 18.0/4/.The monitoring mechanism is effective and reliable. During the site visit, personnel involved at various levels of the operation of the project activity have been interviewed to confirm that the plant personnel are conscious of the importance of the monitoring activities. The on-site verification of the plant records also substantiate consistency in recording and reporting of monitored data.

The required monitoring systems have been installed and are operational. The meters comply with appropriate quality standards applicable for the used technology. The accuracy class of the meters installed for the project activity was verified against the validated VCS joint PD & MR /01/ and cross-checked against the Power Purchase Agreements /07/ signed for the project activity.

The supporting records of power generation/26/ were checked and found to be in line with the calculation provided by PP in the ER sheet and MR section.

The following parameter has been verified for current monitoring period:

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

Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The parameter is monitored continuously and recorded on monthly basis.
	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 joint VCS PD & MR/01/ and monitoring methodology/04/.

	Monitoring equipment	The two parameters, import and export to the grid, are measured at the same location near the connection to the grid, through standard electricity metering instrument. The metering instruments are installed at the grid-connected point to measure the amount of electricity going from and to the grid. The readings of electricity will be continuously measured by metering instrument itself and monthly recorded. The energy meter details are reported under section 4.3 of the joint VCS PD & MR/01/ which are verified by assessment team and same is included under a table under the section 3.3.8 above.
	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?	The accuracy of the monitoring equipment used is 0.2s as verified from the physical inspection of the project activity, which is as per the joint VCS PD & MR/01/ which is as per the norm defined in the PPA/07/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes. The new meters are installed at the time of commissioning of the project which are pre-calibrated meters from the manufacturer. Hence at present no external calibration or testing is required
	Calibration frequency /interval:	Calibration frequency of the meters is once in 5 years/19/.
	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	Yes. The calibration frequency is in line with the monitoring plan as outlined in the joint VCS PD & MR/01/. The new meters are installed at the time of commissioning of the project which are pre-calibrated meters. Hence, the due date of calibration will be after 5 years.

	frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	The new meters are installed at the time of commissioning of the project which are pre-calibrated meters from the manufacturer. Hence at present no external calibration or testing is required.
	Is(are) calibration(s) valid for the whole reporting period?	Yes, the calibrations of meters are valid for the whole monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	The new meters are installed at the time of commissioning of the project which are pre-calibrated meters from the manufacturer. Hence at present no external calibration or testing is required.
	How were the values in the monitoring report verified?	In line with the monitoring parameter, the cumulative value of $EG_{PJ,y}$ for entire monitoring period is to be reported in the monitoring report, whereas monthly values are to be reported in the ER calculation sheet. The assessment team has verified the values from the monthly generation report and invoice and also checked the ER calculation in line with the prescribed formulae and procedure.
	If applicable, has the reported data been cross-checked with other available data?	Yes. The assessment team has cross checked the quantity of net electricity supplied to the grid both from the monthly generation report and invoice raised by the project participant to the third party.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the adequate QA/QC procedures were implemented in the project. The energy meters at the feeders are maintained and owned by state utility. Neither the project proponent nor the site personnel have any control over it. The meters are calibrated by the monthly generation report and invoice at-least once in 5 years.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM	No such issues.

	EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	
Findings	No finding raised	
Conclusion	The parameter has been monitored appropriately, in accordance with the monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. From the physical verification, documentary evidence the assessment team has concluded that the monitoring plan is adequately implemented and also the all required records and documentations are maintained, hence results are achievable.	

Meter and Calibration Details for 14 MW Solar project by RishabhBuildwellPvt. Ltd

Meter Details	Main Meter	Check Meter
Meter Serial No	18015358	17071186
Meter Make	L & T	L & T
Accuracy Class	0.2 s	0.2 s
Date of Calibration	27/03/2018	27/03/2018
Due date of next calibration	26/03/2023	26/03/2023

Parameters fixed ex ante:

$EF_{grid,OM,y}$; tCO_2e/MWh : it is the operating margin emission factor of India national grid fixed for the entire crediting period and the value is considered as $0.9610 tCO_2e/MWh$, that is consistent with the joint VCS PD & MR/01/.

$EF_{grid,BM,y}$; tCO_2e/MWh : it is build margin emission factor of India national grid fixed for the entire crediting period and the value is considered as $0.8644 tCO_2e/MWh$, that is consistent with the joint VCS PD & MR/01/.

$EF_{grid,CM,y}$; tCO_2e/MWh : it is the combined margin emission factor of India national grid fixed for the entire crediting period and the value is considered as $0.9368 tCO_2e/MWh$, that is consistent with the joint VCS PD & MR/01/.

The details of monitoring equipment are involved in the project activity and their calibration details/27/ are mentioned in the table under section 4.3 of the joint VCS PD & MR/01/. There details of energy meters are provided in the VCS document, and assessment team has verified the information during the site visit that all the meters were tested and calibrated at the time of installation and currently calibration is not due; hence accepted.

While the meters have been physically inspected during the site visit, the meter details are found to be consistent with that observed during the site visit.

In view of the above discussion the assessment team 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 emission reduction as per the applied methodology equals the baseline emissions (project emissions 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 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" (tCO₂/MWh) (i.e., 0.9368 tCO₂e/MWh).

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

$$BE_y = 25,259.54 \text{ MWh} * 0.9368 \text{ tCO}_2\text{e/MWh} = 23,653 \text{ tCO}_2\text{e}$$

As per the applied methodology, the project emission is nil. Hence, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

$$ER_y = 23,653 \text{ tCO}_2\text{e}$$

The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. However, due to infirm power generation during the current monitoring period, the actual emission reduction achieved is considered as zero, which is a conservative approach. Hence the assessment team has concluded the justification in emission reduction calculation as justified and acceptable. The means of verification for the different parameters used for baseline emission calculation formulae are described above.

6 VALIDATION AND VERIFICATION CONCLUSION

EKI Energy Services Limited has contracted the Earthood Services Private Limited(also referred to as ESPL)to validate and verify the project: “Renewable Solar Power Project By Rishabh Renergy” with regard to VCS Version 3 requirements and the information provided by the project proponent related to the project design, operation, monitoring and reporting. The monitoring period considered for current verificationisfrom28/03/2018 to 01/11/2019 in the VCS joint project description & Monitoring Report Version 02 dated 21/12/2019 are eligible for registration and issuance.

A risk-based approach has been followed to perform this validation and verification. In the course of the joint validation & verification 06 Corrective Action Requests (CARs), 02 Clarification requests (CLs) were raised and successfully closed.

No limitations or doubts were identified related to the validation and verification.

Validation conclusion:

ESPL has reviewed the project description documents and subsequently carried out site visit interviews to confirm the fulfilment of stated criteria.

The purpose of this project activity is to generate electricity using renewable sources (solar) and export it to India national grid and sold to the KPTCL, thereby marginally contributing to reducing the energy demand supply gap in India.

The project activity has applied the baseline and monitoring methodology, AMS I.D.: Grid connected renewable electricity generation, Version 18.0.0, which is an approved methodology under the CDM programme and is acceptable under VCS Version 3. The baseline has been determined in accordance with the stated approved baseline methodology.

As summary the validation team able to conclude that:

- The project is in line with all relevant host country criteria (India) and all relevant VCS version 3 program guidelines requirements.
- The project additionality is sufficiently justified in the joint VCS PD & MR.
- The monitoring plan is transparent and adequate and in line with applied baseline and monitoring methodology of AMS I.D., version 18/04/.
- The calculation formulae and use of parameter for the project emission reductions estimation are transparent and in line with the requirement of the applied methodology. The ex-ante projection of emission reductions given is found to be appropriate, conservative and in line with the requirement. The ex-ante projected volume of 23,089 tCO₂e/year and a total of 230,885 tCO₂e is most likely to be achieved during the 10 years (renewable) of crediting period. The calculated emission reduction for the current monitoring period (i.e. 28/03/2018 to 01/11/2019) is 23,653 tCO₂e, which is correct, in line with the calculation prescribed in the VCS PD & MR, hence considered to be verified ERs.
- The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation as outlined under VCS version 3.

Verification conclusion:

This engagement covers the verification of emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the project “Renewable Solar Power Project By Rishabh Renergy” (Project pipeline VCS ID-2023), as well as an additional confirmation of the compliance of the joint VCS PD & MR with the requirements of VCS Standard version 3.7.

ESPL is an entity accredited by the United Nations Framework Convention on Climate Change (UNFCCC) to undertake certification and verification services in the sectoral scope in which the Project is undertaken.

The VCS joint project description & Monitoring Report, together with other information examined, was prepared as per the VCS joint project description & Monitoring Report Template, Version 3.1.

The information in the VCS joint project description & Monitoring Report together with other information examined by the assessment team, including all the information necessary to determine that the emission reductions achieved have been determined correctly.

In view of the information provided in the VCS joint project description & Monitoring Report and other relevant information, it can be concluded that the project meets all the requirements of the VCS Standard Version 3.7/18/. Also on the basis of our examination of the VCS joint project description & Monitoring Report and other relevant information, it has been concluded that the emission reductions during the current monitoring period (i.e. 28/03/2018 to 01/11/2019 (both the days included)) are verified as 23,653 tCO₂e.

The CDM team of EKI Energy Services Ltd. (i.e. authorized representative of PP) is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions. ESPL is responsible for verification and confirming emission estimates for the project, as described in the VCS joint project description & Monitoring Report.

The certification approach followed by ESPL draws on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. Our examination includes an assessment of evidence, through desk review, and where necessary, interviews, stakeholder discussions and site visits, relevant to certifying the rightfulness of the amounts and disclosures in relation to the Project’s GHG emission reductions.

We planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that the amount of GHG emission reductions for the given period, prepared on the basis of the VCS Joint project description & Monitoring Report, are fairly stated.

Based on process and procedures conducted, in our opinion, Rishabh Renergy Pvt. Ltd. (i.e. PP) assertion on GHG emission reductions for the “Renewable Solar Power Project By Rishabh Renergy” (i.e. VCS project pipeline ID-2023) project during the reporting period “28/03/2018 to 01/11/2019” is materially correct and is a fair representation of the GHG data and information and the emission reductions are fairly stated. The GHG emission reductions were calculated correctly on the basis of approved monitoring methodology AMS I.D, version 18. The verification team also confirms that the project is implemented as described in the validated VCS joint PD & MR (final version 02, dated 21/12/2019).

Therefore, ESPL is able to certify that the project is in full compliance with the VCS Standard Version 3.7, and the quantity of the reported emission reductions during below reporting period are completely, comparably, accurately and correctly reported.

Verification period: From[28/03/2018] to [01/11/2019]

The verified GHG emission reductions and removals in the above verification period (both the dates inclusive) are presented as follows:

Year / Period	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)
28-03-2018 to 31-12-2019	10,746	0	0	10,746
01-01-2019 to 01-11-2019	12,907	0	0	12,907
Total	23,653	0	0	23,653

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 36,942 tCO₂e, whereas actual emission reductions achieved are 23,650 tCO₂e, which is approximately 36% lower than the estimated emission reductions. The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant. The lower generation during the current verification period is due to certain natural conditions. Hence, it is acceptable.

Approved by



Dr. Kaviraj Singh
Managing Director
Earthood Services Privated Limited

Date: 27/12/2019
Place: Gurgaon, Haryana

APPENDIX 1: Document Reference

Ref. No	Title of Document	Version	Date
1	VCS Project description (VCS PD)	1.0	15/11/2019
		2.0	21/12/2019
2	Emission Reductions Calculation Spread sheet	01	04/12/2019
3	Commissioning certificate		28/03/2018
4	AMS I.D, "Grid connected renewable electricity generation"	18.0	EB81, Annex 24
5	Tool to calculate the emission factor for an electricity system	07.0	EB 100 Annex 4
6	VCS pipeline: https://www.vcsprojectdatabase.org/-/pipeline_details/PL2023	-	-
7	Power purchase agreement (PPA) signed by PP with KPTCL	-	19/10/2018
8	Local stakeholder documents – - Public notice - Attendance sheet - Comments sheet - Photographs	-	01/08/2018
9	Clean Development Mechanism Validation and Verification Standard	02.0	29/11/2018
10	Detailed Project Report (DPR)	-	
11	Technical specifications (part of DPR)	-	
12	EPC contract		-
13	Financial Data, Information and supporting documents applicable to the project activity, important dates of chronological events etc. (Certified Declaration from PP)	-	28/11/2019
14	CO ₂ baseline database published (in Dec 2018) by Central Electricity Authority, Govt. Of India	14	December 2018
15	Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2016	-	29/04/2016
16	Detailed procedure on REC mechanism dated 01/06/2010 by Central Electricity Regulatory Commission (http://www.nerltdc.org/Docs/Order for Detailed Procedure 01-06-2010.pdf) REC registry (Source : https://recregistryindia.nic.in/)	-	-
17	VCS Standard	Version 3.7	21/06/2017
	VCS Program Guide	Version 3.7	21/06/2017
	VVS, latest version by CDM	Version 02.0	29/11/2018
18	Letter of undertaking/declarations from PP regarding not having created or sought any other form of environmental credits and other GHG programs for the project	-	02/12/2019
19	Central Electricity Authority (Installation and Operation of Meters) Regulations Notified on 17/03/2006 No. 502/70/CEA/DP&D Amendments Notified on 26/06/2010 No.	-	17/03/2006

	502/6/2009/DP&D/D-I CERC Regulation (2016) http://www.cercind.gov.in/2016/regulation/124_1.pdf	-	06/04/2016
20	Site visit attendance sheet, photographs	-	17/12/2019
21	VCS Listing Representation	-	13/11/2019
22	Communication Agreement for VCS representation	-	13/11/2019
23	Ministry of Environment and Forest notification dated 14/09/2006		14/09/2006
24	EIA Notification, 2006 (Annexure -2, MoEF&CC, OM on J-11013/41/2006-IA.II (I) dated 7th July 2017)	-	07/07/2017
25	Tool for the demonstration of additionality of small-scale project activities	10	EB83, Annex 14
26	B-Forms and invoices		28/03/2018 to 01/11/2019
27	Calibration Certificates		28/03/2018 to 01/11/2019

APPENDIX 2: Abbreviations

ABT	Availability Based Tariff
ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
DISCOM	Distribution company
DPR	Detailed Project Report
EB	Executive Board
EIA	Environmental Impact Assessment
EPC	Engineering and Procurement Contractor
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse Gases
KPTCL	Karnataka Power Transmission Corporation Limited
ISO	International Organization for Standardization
JMR	Joint Meter Readings
LCS	Local Controller System
MGRs	Monthly Generation Reports
MoEF	Ministry of Environment and Forest
MP	Monitoring Period
MW	Mega Watt
MWh	MegaWatt hour
OM	Operating Margin
O&M	Operation & Maintenance
PD	Project Description
PP	Project proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/Quality Control
REC	Renewable Energy Certificates
tCO ₂	Tonnes of Carbon Dioxide
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit

APPENDIX 3: Competency Statement

Competence Statement			
Name	Vivek Kumar Ahirwar		
Country	India		
Education	B.E. (Mechanical Engineering) M.Tech (Energy Management)		
Experience	10 Years +		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	ACM0002, AMS.I.D		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (1.1, 1.2, 13.1)		
Reviewed by	Shreya Garg	Date	11/09/2018
Approved by	Anshika Gupta	Date	11/09/2018

Competence Statement			
Name	Anshika Gupta		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	4 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.A., AMS-II.G., ACM0002, AMS-III.A.V.		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	Yes (TA 1.2, TA 3.1)		
Reviewed by	Shreya Garg	Date	12/03/2019
Approved by	Kaviraj Singh	Date	12/03/2019

APPENDIX 4: Findings Overview

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

FAR ID	Section no.	NA	Date :DD/MM/YYYY
Description of FAR			
N/A			
Project participant response			Date :DD/MM/YYYY
NA			
Documentation provided by project participant			
NA			
DOE assessment			Date: DD/MM/YYYY
NA			

Table 2. CL from this validation and verification

CL ID	01	Section no.	-	Date: 06/12/2019
Description of CL				
PP needs to furnish documents related to the following- 1. letter of undertaking mentioned in section 1.12.2, 1.12.3 and 1.12.5 2. supplier Technical specification of solar panel and inverter 3. commissioning certificates 4. Energy Meter calibration certificates 5. B-Form for electricity generation 6. Invoices for monitoring period				
Project participant response				Date:18/12/2019
1.The Letter of Undertaking has been provided in support to the Section 1.12.2,1.12.3 & 1.12.5 2. The technical details of the solar plant has been taken from the DPR, which has now been provided to the assessment team. 3. Commissioning Certificates has now been submitted to assessment team 4.Energy Meter calibration certificates has now been submitted to the assessment team 5.B-Form for electricity generation for the entire monitoring period has now been submitted to the assessment team. 6. Invoices for the entire monitoring period has now been submitted to assessment team.				
Documentation provided by project participant				
1.Undertaking Letter 2.DPR Report 3.Commissioning Certificate 4.Energy Meter Calibration Certificates 5.B – Forms for the entire monitoring period 6.Invoices for the entire monitoring period				
DOE assessment				Date:26/12/2019
Assessment team confirm receipt of documents and all documents are inline with requirements. Hence acceptable				
CL#1 Closed				

CL ID	02	Section no.	-	Date: 06/12/2019
Description of CAR				
PP shall clarify as how the PLF/Electricity generation is in conformity with the EB 48, Annex 11 (Guidelines for the reporting and validation of Plant Load Factors). Further please indicate as how it meets the requirements of the paragraph 3 of this above Guideline.				
Project participant response				Date:18/12/2019

PLF estimation is in line with Para 3 (b) of the guideline mentioned in Annex 11, EB 48. The PLF value has been taken from the DPR that was submitted to PP by a third party.	
Documentation provided by project participant	
DPR	
DOE assessment	Date: 26/12/2019
Assessment team confirm that PLF/Electricity generation taken from DPR, it's fulfill requirement of Annex 11, EB 48 Guidelines for the reporting and validation of Plant Load Factors.	
CL#2 Closed	

Table 2. CAR from this validation and verification

CAR ID	01	Section no.	-	Date: 06/12/2019
Description of CAR				
In section 1.8 " <i>Description of the project activity</i> ", PP need to provide more technical details i.e., inverter Type, module model etc.				
Project participant response				Date: 18/12/2019
Technical Details of Inverter type & Model and Module Type & Model is included in Section 1.8 of the revised VCS PD MR.				
Documentation provided by project participant				
Revised VCS PD MR				
DOE assessment				Date: 26/12/2019
Assessment team confirm that PP has included technical details of solar panel and inverter, which is acceptable.				
CAR#1 Closed				

CAR ID	02	Section no.	-	Date: 06/12/2019
Description of CAR				
In Section 5.4 " <i>Public Comments</i> " of the VCS-PD, PP needs to add the details of the public comments once the comment period (Listing period) is over.				
Project participant response				Date: 21/12/2019
The "Public Comment" section of the VCS PD MR is now updated. No comment received during public commenting period				
Documentation provided by project participant				
Revised VCS PD MR				
DOE assessment				Date: 26/12/2019
Assessment team confirm that during public commenting period no comment has been received. And PP has updated section 5.4 accordingly.				
CAR#2 Closed				

CAR ID	03	Section no.	-	Date: 06/12/2019
Description of CAR				
In Section 2.5 " <i>Additionality</i> " of the VCS-PD, PP needs to justify the additionality argument as per tool 21 and 22. PP is requested to correct foot note 4 and 5 it's related with "Tool for the demonstration of additionality of small scale project activities".				
Project participant response				Date: 18/12/2019
The section 2.5 of the VCS PD is now updated. The footnotes 4 & 5 are now corrected.				
Documentation provided by project participant				
Revised VCS PD MR				
DOE assessment				Date: 26/12/2019

Assessment team confirm that PP has updated Additionality argument and foot note 4 & 5. Hence acceptable.

CAR#3 Closed

CAR ID	04	Section no.	-	Date: 06/12/2019
Description of CAR				
PP is requested to include exact period for 2018 and 2019 vintage credits in section 6.5.				
Project participant response				Date: 18/12/2019
The exact period for 2018 and 2019 vintage credits has now been included in section 6.5. of the revised VCS PD MR.				
Documentation provided by project participant				
Revised VCS PD MR				
DOE assessment				Date: 26/12/2019
Assessment team confirm that PP has included exact period for 2018 and 2019 vintage credits in section 6.5 of revised VCS PD and MR. Hence acceptable.				
CAR#4 Closed				

CAR ID	05	Section no.	-	Date: 06/12/2019
Description of CAR				
PP is requested to include energy meter numbers and their calibration details in VCS PD and MR.				
Project participant response				Date: 18/12/2019
The energy meter numbers and their calibration details are now updated in Appendix- 1 of the revised VCS PD MR.				
Documentation provided by project participant				
Revised VCS PD and MR				
DOE assessment				Date: 26/12/2019
Assessment team confirm that PP has included energy meter numbers and their calibration details in Appendix- 1 of the revised VCS PD and MR. Hence acceptable.				
CAR#5 Closed				

CAR ID	06	Section no.	-	Date: 06/12/2019
Description of CAR				
PP is requested to correct para number and section reference as per methodology AMS I.D version 18 in section 1.1.				
Project participant response				Date: 18/12/2019
The reference is now corrected in the section 1.1 of the revised VCS PD MR.				
Documentation provided by project participant				
Revised VCS PD MR				
DOE assessment				Date: 26/12/2019
Assessment team confirm that PP corrected para reference in section 1.1. of revised VCS PD and MR.				
CAR#6 Closed				

Table 2. FAR from this validation and verification

FAR ID		Section No.	PD	Date : DD/MM/YYYY
Description of FAR				
NA				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				

DOE assessment	Date: DD/MM/YYYY
NA	