

JOINT VALIDATION & VERIFICATION REPORT FOR

“150 MW SOLAR PROJECT IN KARNATAKA BY AVAADA SOLAR.”



Document Prepared By Earthood Services Private Limited

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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	Technical Reviewer: Shreya Garg Technical Expert (TA 1.2): Shreya Garg
Work Carried Out By	Team Leader: Ravi Kant Soni Technical Expert (TA 1.2) and Meth Expert: Ravi Kant Soni

Local Expert: Ravi Kant Soni

Summary:

Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by WeAct Pty Ltd. (Representative of Project proponent and the focal point of communication with VCS) to conduct the validation and verification of the project - "150 MW Solar Project in Karnataka by Avaada Solar." (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). 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 20/12/2018 to 31/05/2019 (both the days inclusive).

The verification includes confirming the implementation of the monitoring plan of the validated VCS joint PD and MR (Project pipeline ID 1914) and the application of the monitoring methodology as per ACM0002 version 19.0: "Grid-connected electricity generation from renewable sources". A site visit was conducted to verify the data submitted for validation and in the monitoring report.

The VCS Project activity is promoted by "Avaada Solar Energy Private Limited" (also referred as ASEPL) and is a Solar PV project of total capacity 150 MW(ac) in Pavagada village of Tumkur District, of state Karnataka, India. It involves generation of electricity by using the renewable energy source (i.e. solar) supplying to the Indian electricity grid. 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 ACM0002, Version 19.0.0: "Grid-connected electricity generation from renewable sources". The project activity involves installation of 150 MWac (commissioned in three phases of 50 MW each) solar power project in the above mentioned location in the state of Karnataka (India). The first phase of the project activity was commissioned on 20/12/2018, 2nd phase on 06/02/2019 and 3rd phase on 27/02/2019, under long term Power Purchase Agreements (PPAs) with three different Discoms in Karnataka, namely GESCOM, MESCOM & CESC Mysore, with 50 MW capacity each. The same was verified against the commissioning certificates/07/ and PPAs/08/.

The project activity is a Green field project which results in an estimated GHG emission reduction of 3,19,470 tCO₂e per year (the calculated annualized average value as per ex-ante calculation) and a total of 31,94,705 tCO₂e over 10 years of the crediting period. The power generated by the project will be replacing the equivalent amount of electricity from the Grid system of India, which is dominated by fossil fuel based grid connected power plants.

A risk based approach has been followed to perform this combined validation & verification. In the course of validation & verification, 01 Corrective Action request (CARs) and 01 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 31,94,705 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 is 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 83,319 tCO₂e during period 20/12/2018 to 31/05/2019.

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1 INTRODUCTION

1.1 Objective

ESPL has been contracted by WeAct Pty Ltd. (Representative of Project proponent, to undertake the validation and verification of the renewable energy project titled “150 MW Solar Project in Karnataka by Avaada Solar.” (which was under the VCS pipeline with ID PL1914). The verifiers have reviewed the GHG data collected for the monitoring period from 20/12/2018 to 31/05/2019 (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 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 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 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 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, CRs & 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 and the approved baseline and monitoring CDM methodology ACM0002, version 19.0.

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 “150 MW Solar Project in Karnataka by Avaada Solar.”. 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
- Approved baseline and monitoring methodology ACM0002 version 19.0, “Grid-connected electricity generation from renewable sources”.
- Validated VCS joint Project Description & monitoring report version 2.0 dated 22/08/2019
- VCS Program Guide, Version 3.7, dated 21 June 2017
- 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 project activity comprises installation of a grid connected solar photovoltaic based power project with a total capacity of 150 MW_{AC}. The project activity is a renewable solar electricity generation project and supplying power to the unified Indian Grid system. The power generated from the project is under three different Power Purchase Agreements (PPAs), viz. GESCOM, MESCOM & CESC Mysore with capacity allocation of 50 MW each. The power generated by the project will be replacing the equivalent amount of electricity from the Indian Grid system of India, which is dominated by fossil fuel based grid connected power plants. The project activity is located in Pavagada village in Tumkur district of Karnataka, in India. The project site is around 130 kms away from Bellary which is the nearest railway station. Nearest airport is at Bengaluru Airport, about 155 kms. The entire capacity of project activity was commissioned in three phases (50 MW_{ac} each), first phase was on 20/12/2018, 2nd phase on 06/02/2019 and 3rd phase on 27/02/2019.

The commissioning certificates/07/ and power purchase agreements/08/ are reviewed by the verification team and found to be appropriate. The verification team has also conducted onsite observation and physically verified the project equipment(s) and monitoring arrangements. The project activity was found to be implemented as it has been defined in the joint VCS PD & MR /01/.

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. The Clarification Requests (CR) 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 projects 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 ACM0002 version 19.0 methodology as the reference criteria. The validation team had done the completeness check of VCS joint PD & MR submitted by the PP as per the VCS standard Version 3.7 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 ACM0002 version 19.0 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 10/06/2019 /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 22/08/2019) /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 22/08/2019) 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/PL1914.

For Verification:

The validated VCS joint PD & MR /01/ (version 2.0 dated 22/08/2019) 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 20/07/2019. 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: Pavagada, District: Tumkur, State: Karnataka (India). Pavagada Solar Park (block 4, 7 & 8)	Date: 20/07/2019
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. Rajesh Dwivedi (Head - O&M - PP) Mr. Deepjyoti Borah (Sr. Advisor, WeAct)
Monitoring and measuring system - Collection of measurements - Observations of established practices - Data Verification of monitoring parameters	Mr. Nagaraju P. (DGM, Project site), Mr. Raghu Tejasvee (Asst. Manager, Project Site)
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. Rajesh Dwivedi (Head - O&M - PP) Mr. Deepjyoti Borah (Sr. Advisor, WeAct)
Documentation Review and verification of data/information with the original documents	Mr. Praveen Golash (Sr. GM, PP) Mr. Deepjyoti Borah (Sr. Advisor, WeAct)

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 01 CAR and 01 CL 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 2 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

Project type, technologies and measures implemented, and eligibility of the project:

As per the project type defined by the UNFCCC and VCS standard version 3.7 Guidelines, the project activity is falls under type-I (Renewable energy projects) and the list of Sectoral the sectoral scope 1 - Energy Industries (renewable/ non-renewable sources).

The project activity consists of the installation of 150 MW_{ac} Solar Photovoltaic Project in the state of Karnataka. The project activity has already been commissioned as mentioned in section 1.4 of this report and it is found to be running satisfactorily. This is checked and confirmed from the commissioning certificates/07/ of the project activity, also verified during the site visit.

The project activity is a Green field project which results in an estimated GHG emission reduction of 3,19,470 tCO₂e per year (the calculated annualized average value as per ex-ante calculation) and a total of 31,94,705 tCO₂e over 10 years of the crediting period.

The technology employed by project activity involves, generation of electrical energy using solar power. The technology used in the project does not generate any GHG emissions, hence considered as an environment friendly. The project activity is a Greenfield project and there was no electricity generation at the project site prior to the implementation of project activity. The technical lifetime of the project activity is mentioned as 25 years. The equipment's are based on manufacturer's specifications and as per industry standards. Technical specifications are as follows:

Solar Module:

Module Model	Renesola & SUNTECH: JC330/325/320M
Maximum Power (Pmax)	330/325/320 Wp
Module technology	Poly Crystalline
Orientation	12 Deg
Inverter: SUNGROW	
Model	PVS980-58-2091 kVA
No. of Inverters	72

The purpose of the project activity is to generate the electricity by the utilization of solar power and is being supplied to Indian grid. The project activity will generate greenhouse gas (GHG) emission reductions by avoiding GHG emissions which otherwise would have been generated by the operation of grid connected power plants and by the addition of new sources. Hence the project accomplishes VCS conditions.

Project proponent and other entities involved in the project:

The project activity is developed by Avaada Solar Energy Private Limited (ASEPL). ASEPL is the Project Proponent (PP) having overall operational control and ownership of the Project activity.

Another entity "WeAct Pty Ltd." is also involved into the project activity. WeAct is the "Authorized Representative" of PP and the "Sole Focal Point" for all the communications with the DOE, VCS Board and Registry; and to take all the necessary actions for the project under VCS mechanism as and when required. Communication Agreement/30/ has been signed in between the parties.

Project start date:

The project start date is 20/12/2018 /07/. This was commissioning date of the first phase of the project activity.

Project crediting period-

The crediting period of the project activity is considered for 10 years (renewable). The first crediting period is from 20/12/2018 to 19/12/2028.

Project scale and estimated GHG emission reductions or removals:

The estimated annual emission reductions for the project activity are 3,19,470 tCO₂e per year (proposed annualized average value) is more than 300,000 tCO₂e. Hence the category/scale of the project is applicable under "Large Project".

Project location:

The project activity is located at Pavagada Taluk/village, in Tumkur district, in the Indian state of Karnataka, in the host country India. The project site is around 130 kms away from Bellary which is the nearest railway station. Nearest airport is at Bengaluru Airport, about 155 kms.

The geo-coordinates of the location are as follows:

Latitude : 14°18'35.07" N

Longitude : 77°24'21.38" E

Conditions prior to project initiation:

The project activity is set up to produce clean power from solar power. The project is Greenfield project. There was no project installed prior to commissioning of this project.

Project compliance with applicable laws, statutes and other regulatory frameworks:

The project is a voluntary initiative by the project proponent and has not been implemented to meet any local / national laws or regulatory compliances. The project activity is in compliance with current laws and regulations and there are no legal and/or regulatory requirements that prevent the project implementation. Also the validation team has confirmed that there is no such compliance requirement with an emission trading program or any binding limits on GHG emissions for the project activity in India (host country) as it is a non-annex 1 country. The project has obtained valid consents/15/, for the installation and operation from the state nodal agencies and is in compliance with local laws and regulations.

Ownership and other programs-**Right of use**

The Project is developed and owned by Avaada Solar Energy Private Limited, who authorizes WeAct Pty Ltd. as the authorized representative of project proponent for the VCS project, and to receive VCUs and remain focal point of communication at the registry /30/.

The ownership of the project activity is verified through the following documents:

- Commissioning certificates /07/
- Power Purchase agreement signed by the PP with three different Discoms, viz. Gulbarga Electricity Supply Company (GESCOM), Mangalore Electricity Supply Company (MESCOM) and Chamundeshwari Electricity Supply Corporation Ltd. (CESC Mysore) /08/
- Purchase order issued by the PP to technology supplier/14/

Emissions trading programs and other binding limits

The project is not participating in other emission trading programs. The letter of undertaking/25/ has been furnished by project participant confirming that 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.

Other forms of environmental credit sought or received and eligible to be sought or received:

The project seeking registration under the VCS (Pipeline ID-1914) and not listed under REC mechanism/22/ as verified from <https://recregistryindia.nic.in/index.php/publics/index>.

Participation under other GHG programs:

Project is seeking registration under VCS only (Pipeline ID-1914). The PP has submitted the declaration/25/ which states that the net GHG emission reductions generated by the project activity will not be used for compliance with any other emissions trading program or to meet binding limits on GHG emissions for the same monitoring period.

Rejection by other GHG programs:

The project has not been rejected by other GHG programs.

Additional information relevant to the project, including:

- **Eligibility criteria for grouped projects**

The project activity is not a grouped project, hence not applicable to the project activity.

- **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.

Conclusion:

In view of the assessment of VCS Joint PD & MR/01/ and supporting documents as listed in Appendix 1 of this report, the validation team is able to confirm that the description contained in the VCS joint PD & MR of the project activity provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation. Consequently, **ESPL** confirms that the project description of the project contained in the joint VCS PD& MR/01/ to be complete and accurate. The VCS joint PD & MR complies with the relevant forms and guidance for completing the VCS joint PD & MR.

3.2 Participation under Other GHG Programs

The project activity is seeking registration under VCS programme only. The start date of the project activity is 20/12/2018 which is the commissioning date of the first phase of the project activity. Hence it can be confirmed that the project is complying with all the applicable VCS rules, including project start date and project crediting period requirements.

During the verification process, the verification team has reviewed the declaration submitted by the project proponent confirming that GHG emission reduction credits from the Project have not been registered under another GHG program. It can be concluded that the project is eligible to participate under the VCS Program.

3.3 Application of Methodology**3.3.1 Title and Reference**

The project activity has applied CDM approved methodology ACM0002 version 19.0.

Title: Grid-connected electricity generation from renewable sources

Tools referenced in the applied methodology:

- Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100, Annex 04)
- Methodological Tool- Tool for the demonstration and assessment of additionality - Version 07.0.0 (EB 70, Annex 08)

3.3.2 Applicability

All applicability conditions of the updated version of the methodology (ACM0002 version 19.0) 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 grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).

Validation assessment:

- Project activity is Greenfield solar power project, supplying electricity to national grid. This is verified thorough the Power purchase Agreements /08/ and commissioning certificates/07/.

Thus the criterion is fulfilled by the project activity.

Criteria-2:

The methodology is applicable under the following conditions:

(a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;

(b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.

Validation assessment:

The project activity is the installation of a new solar power plant. This is confirmed through the purchase order/14/ and commissioning certificates/07/.

Thus the criterion (a) is applicable and (b) is not applicable for the project activity.

Criteria-3, Criteria 4, Criteria 5 and Criteria 6:

The methodology is not applicable to these criteria given under the methodology as project is only a solar power project, not related to any hydro power generation.

Validation assessment:

The project activity is the installation of a new solar power plant and does not involve in any hydro power generation. This is confirmed through the purchase order/14/ and commissioning certificates/07/.

Criteria-7:

The methodology is not applicable to these criteria given under the methodology as project is only a solar power project, not related to any hydro power generation.

(a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;

(b) Biomass fired power plants/units.

Validation assessment:

The project activity is the installation of a new solar power plant and does not involve switching from fossil fuels to renewable energy sources at the site of the project activity. This is confirmed through the purchase order/14/ and commissioning certificates/07/.

Thus the criterion is not applicable for the project activity.

Criteria-8:

In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance."

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 site visit.

Thus the criterion is not applicable for 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 ACM0002, version 19.0 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. This is the latest available database at the time of revised version of the VCS Joint PD & MR submission for validation of the project activity. The location of the project is in the state of Karnataka in India. As per CEA Baseline CO₂ Emission Database/16/, the state of Karnataka 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.

2. Tool for the demonstration and assessment of additionality

The latest version 7.0.0 of the “Tool for the demonstration and assessment of additionality”/23/ has been used by the PP. Since the additionally tool is included in an approved methodology, additionality tool needs to be applied for the project activity. Also PP is neither proposing new methodology nor proposing alternative methods to demonstrate additionality for consideration by the Executive Board. This it is concluded that the Tool for the demonstration and assessment of additionality is applicable for the project activity.

3. Combined tool to identify the baseline scenario and demonstrate additionality

The PP has used the “Tool to demonstration and assessment of additionality” in demonstration of additionality and the baseline has been developed in accordance with the applied baseline methodology. Hence, the combined tool is not used by the project participant.

4. 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, ACM0002, version 19.0.0:

“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 purpose of this project activity is to generate electricity using renewable sources (Solar) and export it to state grid of Karnataka which part of Indian grid, 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

The project activity involves the installation of a newly built and grid-connected renewable power plant (i.e. Solar PV) and supplying the generated electricity to Indian grid, hence, according to the applied methodology ACM0002, version 19.0.0, the baseline scenario is determined properly as:

“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”..”

The latest available version for “Tool to calculate the emission factor for an electricity system” is version 07.0 /05/ and the PP has correctly referred to the same in the section 3.1 of the final VCS joint PD & MR /1/ for determining baseline grid emission factor and it is found to be correct.

The calculation for the operating margin and combined margin for the Indian Grid is readily available and published by the Central Electricity Authority, Government of India/16/. The CEA power sector data is referred by all CDM project in India in the ER calculation and it is yearly updated with recent data. The project activity has referred the CEA Baseline Carbon Dioxide Emission Database is version 14/16/ dated December 2018, which was the latest version available during submission of the PD.

The PP has used the simple operating margin calculation. The simple operating margin is calculated as an average of the latest available three years (at the time of revised PD submission for validation) i.e. 2015-16, 2016-17 and 2017-18. The value for weighted average operating margin has been validated and used as 0.9610 tCO₂/MWh. The Build margin for the Indian grid is considered as 0.8644 tCO₂/MWh. The weighted average combined margin has been calculated by the PP, considering the 75% weighted for operating margin and 25% for build margin; this is in accordance with the tool. The weighted average combined margin emission factor for the project activity comes to 0.93684 tCO₂/MWh. The PP has provided the calculation for the same in the ER calculation sheet and it was validated by the validation team. The baseline emission factor for the electricity system has been calculated on ex-ante basis and will remain fixed for the entire project crediting period.

The discussion on baseline is comprehensive in the VCS joint PD & MR section 3.1 and it is in line with the applied baseline and monitoring methodology ACM0002 version 19.0.0. Also the identified baseline for the project activity is the most likely scenario of what would have occurred in the absence of the project activity and is confirmed by TA expert on the team; thus it is accepted. The project participant has included all sources and references used for baseline determination for the project activity in the PD/1/ and the identified baseline is justified appropriately by the project participant. The Baseline scenario and baseline emission calculations are found as per ACM0002 version 19.0.0/4/. The combined margin approach is the ex-ante approach as per tool to calculate the emission factor for an electricity system. Based on the requirements of paragraph 83 of the VVS version 02.0 /10/, the validation team confirm that:

- (a) All the assumptions and data used by the PP are listed in the VCS joint PD & MR, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the project activity.

3.3.5 *Additionality*

The project activity is a large scale project and the additionality of the project activity was demonstrated on the basis of the "Tool for the demonstration and assessment of the additionality", Version 07.0.0, approved by the CDM EB 70 and required by the methodology ACM0002, Version 19.0.0.

PP has adopted the step-wise approach for demonstrating and assessing the additionality of the project activity as follows:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

This step is optional and not used for this project. Moreover, the project is not the first-of-its-kind activity.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

As the project activity involves the installation of a newly built and grid-connected renewable power plant that exports the generated electricity to the Indian grid system in India, hence, according to the methodology ACM0002 version 19.0, the baseline scenario is determined properly as:

“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”.

The approved methodology that is applied prescribes the baseline scenario, and the same has been opted in this project, therefore, no further analysis on baseline is required.

The relevant National Acts and regulations pertaining to generation of energy in India are:

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

The above mentioned National Acts and regulations pertaining to generation of energy in India 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.

Furthermore, the assessment team has verified the information on alternatives to project activity demonstrated under the Appendix 2 of the revised VCS PD (version 03). As per the step 1 of the tool and as per the realistic scenario of the project, the probable baseline scenarios could be as follows:

Alternative 1: The proposed project activity without CDM benefit;

Alternative 2: Continuation of the current situation, i.e., electricity will continue to be generated by the existing generation mix operating in the grid.

The project activity is a solar power project; both the alternatives are in compliance with all applicable legal and regulatory requirements as:

- The implementation of project activity is a voluntary initiative and is not mandatory or a legal requirement;
- The applicable environmental regulations do not restrict the use of solar energy; and
- There is no legal requirement on the choice of a particular technology.

The assessment team has further reviewed that as per the clarification report of ‘Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India, dated 29/02/2016 (Source: <http://www.indiaenvironmentportal.org.in/files/file/Final%20Document%20on%20Revised%20Classification%20of%20Industrial%20Sectors%20Under%20Red,%20Orange,%20Green%20and%20White%20Categories.pdf>), Solar PV projects are considered under ‘White Category of Industries’ which does not need clearance for consent to operate and only needs to inform the relative State pollution control board. Thus it can be confirmed that it follows the local laws of the host country. Due to above categorization of white category and being the renewable in nature, the project activity does not emit any emissions. Thus there is no any other surplus regulatory requirement for the project activity.

However, of the two alternatives identified, alternative (i) cannot be considered realistic as further analysis in the following paragraph of the tool (i.e. investment analysis based on IRR) reveals that it is not economically feasible option. Hence, alternative (ii) alone could be justified as realistic, credible and plausible alternative to PP.

Validation team is, therefore, convinced that the project developer has taken into consideration all realistic and credible alternatives (with regards to the governing methodologies) including the project being undertaken as non-carbon revenue based activity (i.e. with CDM or VCS) and continuation of current scenario, have been considered. The identification of alternatives is in conformity with the guidance given by the tool.

Thus, outcome of Sub-step 1a: “All the realistic alternatives for the project activity have been enlisted above”.

Sub-step 1b: Consistency with mandatory laws and regulations:

The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. (This sub-step does not consider national and local policies that do not have legally-binding status.) Both the alternatives are in compliance with all applicable legal and regulatory requirements as explained above, as:

- The implementation of project activity is a voluntary initiative and is not mandatory or a legal requirement;
- The applicable environmental regulations do not restrict the use of solar energy; and
- There is no legal requirement on the choice of a particular technology.

Additionally, outcome of Sub-step 1b: “Hence, both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. However, Alternative 2 has been selected as the appropriate baseline alternative for this project activity. Which also confirms the same scenario that was referred by PP w.r.t the methodological choice prescribed under para 22 of ACM0002, v19.

Step 2: Investment analysis

For the project activity, the PP has demonstrated investment barrier through step 2 of “Tool for the demonstration and assessment of additionality” (version 07.0.0).

Sub-step 2a: Determine appropriate analysis method:

The project activity generates revenues from the sale of electricity which is supplied to grid; therefore, the Simple Cost Analysis (Option I) and Option-II (Apply investment comparison analysis) cannot be applied. Instead, the Benchmark Analysis (Option III) is selected as the appropriate analysis method to demonstrate the investment barrier.

Financial Indicator (IRR Assessment):

The PP has selected Equity IRR as the financial indicator for the Investment Analysis. The appropriateness of the financial indicator has been verified by the assessment team, it was confirmed that the Equity IRR is a widely accepted financial metric used by many corporations and financial institutions for investment decision-making and is a long-established benchmark for investment decisions in the Indian power sector and is in line with the requirements of “Methodological Tool27: Investment analysis (Version 09.0)”. Also, the return on equity approach has been considered to calculate the benchmark in line with the guidance prescribed under the tool.

The - Equity IRR for the project activity at the time of investment decision comes out to be 7.10%. The data, rationales, assumptions and justifications mentioned in the IRR spreadsheet/03/ (results presented and input values are referred to IRR sheet under the joint VCS PD & MR/01/) were checked against the local knowledge of the validation team, sectoral scope expertise, regulatory and applicable financial and legal requirements in the Host country India. The documents were also verified by the financial expert. The appropriateness of the input values, used for financial calculation have been checked in line with the requirements of "Methodological Tool27: Investment analysis (Version 09.0)". PP has included details of calculation approach under the section 2.5 of the PD and input values are listed under the Appendix-2. The assessment team found the calculation practices and information reported under the PD are consistent with the IRR computation sheet.

Based on detailed assessment and documents review, DOE could confirm that the input parameters in the financial analysis have been taken as per the values and assumptions applicable and available at the time of decision to invest in the project activity in line with Paragraph 10, investment analysis tool version 09.0/23/.

The approach used in the joint VCS PD & MR/01/ has been assessed based on a document review, whilst the following relevant documents have been reviewed:

- Verified and Certified data and financial input values, dated 25/04/2019 /14/
- Project IRR and Benchmark Analysis calculation sheets/3/
- Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2004/17/

On site, the additionality of the project activity has been discussed with representatives of the PP and finally the data, rationales, assumptions; justifications and documentation provided have been checked using local knowledge and sectoral and financial expertise of the Assessment Team, and cross checked all relevant documents/14/.

The individual financial parameters used for calculations of Project IRR of the project activity have been discussed as below in detail;

1. Project Cost:

The Project cost for the project activity has been considered on the basis of the Detailed Project Report /13 &14/ which is in turn based on budgetary offers received from the technology supplier to the project participant during conceptualization stage of the project. The project cost includes cost of materials and equipment, labour and services, identification, selection and allocation of land, cost for obtaining all government permissions and infrastructure development charges. This is found to be appropriate and it is accepted. The project cost for the project activity has been considered as INR 6995.10 million based on project cost from DPR available at the time of investment decision for the project activity.

The appropriateness of the same is further cross-checked against the actual purchase order/14/ placed for the project activity and this assumed project cost is found to be conservative as actual project cost is more than this input value. Also, the per MW cost prescribed by CERC order 2016 for Solar PV project is higher than the value considered for IRR calculation. Thus, the consideration of project cost is appropriate and already very conservative.

Also, sensitivity analysis considering +/- 10% variation in the project cost is carried under the IRR sheet and results are summarized in this report.

2. Operation and Maintenance Cost and its escalation:

Operation and maintenance cost considered is INR 56.64 million for the project activity (including the applicable tax) and an escalation of 5% per year has been considered as per DPR.

This consideration of O&M cost is found to be appropriate and conservative as actual O&M cost is higher than this input value, also CERC order 2016 prescribes higher value than both the assumed and actual values.

Also, sensitivity analysis considering +/- 10% variation in the project cost is carried under the IRR sheet and results are summarized in this report.

3. Plant Load Factor:

The PP has considered the PLF or CUF of the project based on the projected generation provided in the approved DPR/13, 14/, which is 26.78%.

The assessment team has verified the generation based on the actual achieved and also compared with a third party PLF assessment report. Moreover, this assumed value has also been compared with CERC Order 2016 and MNRE performance report; and found the input value considered for IRR computation is optimistic and conservative.

Hence, the assessment team is of opinion that the value used is in line with the investment guidelines and is sufficient for validation of Plant load factor (PLF). The plant load factor (PLF) is sourced from the project DPR which is a third party certified document (Engineering Company), which is in conformity with para 3 (b) of annex-11, EB48 report. Also this parameter is considered under +/-10% sensitivity.

4. Electricity Tariff:

The Project participant had considered the tariff rate in line with the Tariff rate considered and available at the time of decision making, which is INR 2.92 per kWh and fixed for 25 years of project's lifetime. Since the source documents referred for, tariff rate were the latest available and applicable documents at the time of conceptualization of the project activity, paragraph 10 of investment analysis tool version 09.0 is followed and it is accepted. Thus it is concluded that electricity tariff considered for the project activity is found to be appropriate and it is accepted.

Also, in order to check the conservativeness of value, the tariff rate is further verified with CERC tariff order 2016 that indicate the tariff rate as INR 6.35/kWh. Additionally, the actual tariff rate availed by the project under the three signed PPAs/08/ with Discoms has been checked, which is INR 2.92/kWh; hence the above tariff considered for IRR calculation is found to be relevant and appropriate for acceptance.

The Electricity Act, 2003, the policies framed under the Act, as also the National Action Plan on Climate Change (NAPCC) provide for a roadmap for increasing the share of renewable energy in the total generation capacity in the country. Central Electricity Regulatory Commission (CERC) has notified Regulation on Renewable Energy Certificate (REC) in fulfilment of its mandate to promote renewable sources of energy and development of market in electricity. Thus the project applicability for these benefits under REC mechanism has been checked. Detailed procedure on REC mechanism dated 01/06/2010 published by Central Electricity Regulatory Commission/26/ (<https://recregistryindia.nic.in/>) is checked for REC eligibility of the project activity and it is confirmed that the procedure was applicable at the time of projects investment decision. It is confirmed that REC is not applicable for the projects taking benefits of preferential tariff, hence it is concluded that REC benefits are not applicable to the project activity. Also in the actual scenario, PP will not be claiming REC benefits for the project activity and it is confirmed during

the site visit while interviewing the PPs representative and further checked from the official web site of REC registry/22/ hence it is accepted.

5. Debt to Equity Ratio:

The project activity is funded by 25% equity and 75% debt. This is in line with the Paragraph 06, the Guidance on the Assessment of Investment Analysis (EB 62 Annex 05), which talks about typical debt/equity finance structure in the sector in the country. Also, this ratio is applicable as per DPR which was the base document at the time of conceptualization of the project activity, which is further in line with the paragraph 10 of investment analysis tool version 09.0, and hence. This D:E ratio has also been checked with the actual D:E ratio, also checked from CERC order 2016 /17/ and found to be comparable and hence accepted.

6. Insurance Premium/MW:

Insurance premium/MW for the project activity is considered as 0.32% of total project cost. This is checked from the DPR and also from CERC order 2016/17/ which is latest available at the time of investment decision. It has been confirmed that this assumption is conservative and hence acceptable.

7. Life Time of project activity: 25 years

The lifetime of the project activity is 25 years which has been considered from the DPR and also as per CERC order 2016/17/. This is consistent with the lifetime of solar power projects and has been confirmed by the technical expert. The crediting period of the project activity is 10 years (renewable) as mentioned in the joint VCS PD & MR/01/. However the period of assessment considered for the investment analysis is 25 years. This has been confirmed from the IRR-benchmark spread sheet submitted by the PP. Hence the considered assessment period of 25 years meets the requirement of paragraph 6 of investment analysis tool version 09.0.

8. Interest rate on term loan, Loan tenure, Repayment period and Moratorium period:

The PP has considered the interest rate of 12.76% on term loan as per the DPR and also in line with CERC order 2016/17/. The loan tenure of 20 years including 6 months of moratorium period. As these values are as per latest available documents to the PP at the time of the investment decision, hence the values are found to be appropriate and in line with applicable guidance in paragraph 10 of investment analysis tool version 09.0. Also, assessment team has checked the actual loan documents. Even though the actual loan parameters are not the same as that was assumed, but they are comparable with the input values and do not have any significant variation.

9. Book Depreciation Rate and Income Tax Depreciation Rate:

The Depreciation on plant and machinery is calculated at 3.80% as per the Straight Line Method (SLM) as per the Companies Act, Schedule XIV, Item II (i) (a) published by the Government of India/19/. Furthermore, the PP has considered 10% as salvage value and 90% as depreciable component on plant and machinery as per publically available source (CERC order, 2016 and Schedule XIV, The Companies Act 1956), which is found justified.

The income tax depreciation rate of 7.69% has been considered as per the Income Tax, depreciation rates for power generating units published by the Government of India.

(Source: <https://www.incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm>)

As the Income tax India website is official data, it eliminates any ambiguity that there could have been in this regard.

10. Income Tax and MAT:

PP has considered Income Tax as 34.61% sourced from IT rule (https://www.taxmann.com/emailer/images/pdf/incometaxratesfor_17-03-2016.pdf)

MAT 21.34% (Including surcharge and education cess) as per the IT rule (https://www.bcasonline.org/referencer2016-17/Taxation/Income%20Tax/rates_of_income_tax.html) in investment analysis for the project activity.

The appropriateness of the same has been checked and confirmed by financial expert involved in the project activity. This is found to be appropriate and it is accepted.

11. Deration in generation:

The PP had considered Deration in generation as 0.7% per year from the second year of commissioning of the project activity, which is in line with the DPR. This has been also checked from the report on "Performance of Solar Power Plants in India" dated Feb 2011 submitted to CERC/17/, and also from the MNRE performance report. The actual practice and the experience of the assessment team also confirm equivalent fraction, hence this value is found to be acceptable.

12. Residual (Salvage) Value:

Salvage value is considered as 5% of the total project cost (excluding cost of land charges) has been considered as per the assumption of DPR. The value has been added back to the cash flow. As the land is purchase and it is being non-depreciable item, it is added back to the cash flow. However, PP considered 5% of cost of plant and machinery and 100% land cost as residual (salvage) value for the project activity conservatively. This is further validated as per the accounting practises and same has been also cross checked from Section 205 (2b and c) of Companies Act 1956 on the publically available web-link(<http://www.indiankanoon.org/doc/1422372/>) which allows a depreciable cost of ninety five per cent which implies a consideration of 5% of salvage value as a standard accounting practice. Thus, the consideration by the PP of 5% salvage value is conservative and hence appropriate for the purpose. The appropriateness of this is confirmed by the financial expert involved in the project activity; thus it is accepted.

Conclusion:

As mentioned above, the assessment team has verified and confirmed that the values considered for all the above discussed parameters were available at the time of investment decision and hence are valid and applicable to the project activity. All input values have been be consistently mentioned and applied in all calculations. Also, the application of input values is found to be conservative and also comparable/referenced to the publicly available documents that are relevant to the project type/sector.

Thus, it meets the requirement of paragraph 10 of investment analysis tool version 09.0. The assessment team confirms that in the calculation of equity IRR only the portion of investment costs which is financed by equity has been considered as the net cash outflow and the portion of the investment costs which is financed by debt has not been considered a cash outflow. This meets the requirement of paragraph 14 of investment analysis tool version 09.0.

Sub-step 2a: Determine appropriate analysis method:

The project activity identified in Step 1 generates revenues from the sale of electricity; therefore, the Simple Cost Analysis (Option I) cannot be applied. Instead, the Benchmark Analysis (Option III) is selected as the appropriate analysis method.

Sub-step 2b: Apply benchmark analysis (Option III)

The VCS project activity is a solar power project which could be developed by an entity other than the PP. Hence the benchmark has been based on parameters that are standard in the market, which is suitable in the context of the underlying project activity. This meets the requirements of TOOL27 Methodological tool: Investment analysis (Version 09.0)..

The PP has provided the calculation of the benchmark in the VCS joint PD & MR /01/ and investment analysis spread sheets. As per the default value for Cost of Equity (expected return on equity) prescribed under the tool, PP has selected the default value applicable for India, under the Group 1 (i.e. Energy Industries), which is 9.79%. Also as per para 16 of the tool, the default value has been converted to nominal value by applying appropriate inflation rate sourced from the Reserve Bank Of India (RBI); considered Inflation forecast (CPI Combined Mean) for 10 yrs which is 4.4% /21/. Thus, calculated benchmark is 14.62%.

. It was verified that the mean value of inflation rate is expected to be 4.4% over the next 10 years. The RBI is the Central Bank of India and hence the source for the inflation rate is appropriate. The assessment team has confirmed that the default value was available at the time of decision making and has been appropriately applied by the PP.

Accordingly PP converted the default benchmark which is in real terms into nominal terms by using the following equation:

$$\text{Nominal Benchmark} = (1 + \text{Benchmark real}) \times (1 + \text{Inflation rate}) - 1$$

Where,

Default value for Real Benchmark = 9.79% (as per Tool27, version 09.0)

Inflation Rate= forecast for by Reserve Bank of India (RBI) (i.e. Central Bank of India) for India.

$$\text{Therefore the Nominal Benchmark estimated} = (1 + 9.79\%) \times (1 + 4.4\%) - 1 = 14.62\%$$

The assessment team referred the book 'Corporate Finance" 2nd edition, by Aswath Damodaran. In page 320 of the book, the same equation is mentioned for converting real into nominal values. Hence the assessment team considers the above equation as appropriate for converting real benchmark into nominal benchmark.

The suitability of the benchmark considered for the project activity is confirmed in line with paragraph 100 of VVS for PAs version 2.0 as follows:

- a. The financial indicator used for the project investment analysis is post-tax Equity IRR, and the benchmark has been calculated as ROE which is suitable to the type of financial indicator chosen by the PP.
- b. Since this is a solar energy generation project, and RBI's CPI Combined mean inflation rate for host country i.e. India is applied as per the guidance prescribed under the Methodological Tool27 (version 9) and hence no risk premiums are applied.
- c. The financial analysis of the project at the time of investment decision as well as with actual parameters, along with the respective sensitivity analysis, shows that the Equity IRR of the project, under no scenario crosses the benchmark returns. Therefore it can be concluded that the project is not financially viable and hence no investment would have been made at a rate lower than the benchmark return in absence of expected carbon revenue from the project under VCS.

Thus, based on the above parameters, the equity IRR for the project activity is arrived as 7.10%. This is lower than the calculated benchmark of 14.62%. This signifies that the project activity is not financially attractive and is therefore additional.

Sub-step 2d: Sensitivity analysis:

The sensitivity analysis has been carried out by the project participant for a reasonable range of variations i.e. +/-10% of major parameters, and this was found to be as per paragraph 27 of Investment Analysis tool version 09.0. At the time of decision, the PP had considered the project cost and O&M cost for project activity, as per DPR. The PLF is nature dependent and varies depending on availability of sunlight. Also electricity tariff is assessed under sensitivity analysis though the actual tariff received for the project activity is lesser than the assumption and fixed for 25 years period of the project activity. These parameters have material impact on the investment analysis.

The project participant has considered all the variables that constitute more than 20% of either total project costs or total project revenue i.e. PLF, Project Cost, tariff and O&M cost in the sensitivity analysis and hence this is found to be in line with paragraph 27 of Investment Analysis tool version 09.0.

The table below summarizes the outcome of sensitivity:

Variation %	-10%	Normal (without variation)	+10%	Variation required to reach the benchmark
PLF	4.76%	7.10%	9.48%	27.80%
O&M	7.35%	7.10%	6.86%	-311.00%
Project Cost	9.44%	7.10%	5.23%	-23.40%
Tariff Rate	4.76%	7.10%	9.48%	27.70%

Threshold limits for variations:

It is verified that the project IRR crosses the benchmark if:

1. Project cost reduced by 23.40%:

This is not a likely scenario as actual project cost has already been incurred and it is almost nearly the same cost as that was considered in IRR calculation. This is verified through the actual purchase records order/14/, hence reaching to this threshold is not possible.

Actual Project cost: INR 7020 million against the proposed cost of INR 6995.10 million.
(as verified from the actual records/14/)

2. PLF increases by 27.80%:

PLF considered by the project participant is appropriate in line with paragraph 3 (b) of EB 48 Annex 11. Project IRR is crossing the benchmark if PLF is increased by more than 35.80% and it is very unlikely as the average PLF considered in the assessment is already higher than the same mentioned in the CERC tariff order. Additionally, PP has done a third party PLF assessment /31/ which also confirms a lower PLF than the value assumed in the IRR.

PLF assumed for IRR assessment: 26.78% against the actual estimated PLF via third party assessment of 20.21% (as verified from the actual records/13,14,31/)

3. Tariff increases by 27.70%:

The breakeven for tariff rate is at increase in tariff rate by 35.80%, however DOE has verified that further increase in tariff rate is not possible as PP has already signed long term PPAs/8/ with Discoms for 25 years which is the same tariff as considered for IRR calculation.

The Power Tariff is 2.92 Rs./kWh, which is fixed for 25 years (as verified from the PPAs/8/).

4. O&M cost decreases by 311%:

This is a highly impractical condition as O&M cost can never go negative. Moreover, as verified from the actual O&M document, the O&M cost is going to be higher than what was assumed in the IRR.

The actual O&M contracted at 0.32 mill/MW, with 5% annual escalation (as verified from the actual records /14/).

Outcome of Step 2:

In view of the above discussion the assessment team has concluded that the project activity is additional and it is found to be financially not viable.

Step 3: Barrier analysis:

This option is not opted for the project activity.

Step 4: Common practice analysis

PP has demonstrated common practice analysis as per "Common practice tool" version 03.1. The stepwise approach to validate common practice analysis for the project activity is discussed as below;

As per paragraph 13 of "Tool for the demonstration and assessment of additionality" – Version 7.0.0, project activity belong to measure "Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies"; hence sub-step 4a) of the tool is applicable for the project activity. As per sub-step 4a), paragraph 58 of

the tool, latest version of the “Guidelines on common practice” available on the UNFCCC website shall be applied. The PP applied latest version 03.1 of “common practice tool”.

PP has demonstrated all the required steps of Common practice analysis under the section 2.5 of the Joint VCS PD & MR and also demonstrated under the Appendix-2. A separate sheet with data/information sources with list of projects in the state of Karnataka has been submitted by PP. The assessment team has verified the information¹ and calculation provided by PP and confirmed the following outcome:

$F = 1$; which is greater than 0.2;

and

$N_{all} - N_{diff} = 1$; which is less than 3

As per paragraph 18 of the “Common practice tool”, v.03.1 *“The proposed project activity is a “common practice” within a sector in the applicable geographical area if the factor F is greater than 0.2 and $N_{all} - N_{diff}$ is greater than 3”*. As the project activity does not satisfy the 2nd condition, as mentioned above, the project activity is not a “common practice” within a sector in the applicable geographical area.

Conclusion:

The assessment team is able to confirm that:

- The project analysis complies with requirements of the latest version of VVS.
- All the parameters and assumptions used in the investment analysis have been assessed thoroughly and found appropriate. The information with regard to how the input values was validated, cross-checked is included under relevant parameter.
- The sources used have been reviewed by the assessment team found to be authentic as referenced under relevant parameter.
- The benchmark was found suitable and has been thoroughly explained in detail.
- All the assumptions and calculations for investment analysis area have been checked by the financial expert and technical expert and found to be correct and reasonable.
- The financial returns from the project activity are insufficient to meet the required investment against the selected benchmark under reasonable variations (sensitivity) conducted on key parameters.
- The project activity complies with the latest version of “Tool for demonstration and assessment of additionality” and “Tool 27 : Methodological Tool - Investment Analysis (version 09)”.

¹ The information submitted by PP related to project lists are based on official data published by Ministry of New and Renewable Energy India (MNRE), Karnataka Renewable Energy Development Limited (KREDL) and also from the official database of CDM in UNFCCC site.

3.3.6 Quantification of GHG Emission Reductions and Removals

The project activity has applied baseline methodology as mentioned in the methodology ACM0002 version 19.0.0. As per the paragraph 42 of the methodology:

“Baseline emissions include only CO₂ emissions from electricity generation in 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:

$$BE_y = EG_{PJ,y} \times EF_{grid, CM,y} \dots\dots\dots(1)$$

Where:

BE_y = Baseline emissions in year y (t CO₂)

$EG_{PJ,y}$ = 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)

$EG_{PJ,y} = EG_{PJ, facility,y}$ (for Greenfield projects paragraph 44 ACM0002)

$EF_{grid, CM,y}$ = 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 Project proponent has adopted the combined margin approach for determination of the grid emission factor as per Tool to calculate the emission factor of an electricity system’ Version 7.0. The PP opted for combined margin emission factor ($EF_{grid, CM, y}$) for the project activity and it has been estimated ex-ante as 0.93684 tCO₂/MWh (National electricity grid in India). It will remain fixed throughout the crediting period for the project activity as opted by PP. The combined margin emission factor is obtained from the three years generation weighed average of the operating margin emission factor and the latest year build margin emission factors by applying suitable weights (i.e. 75% to operating margin emission factor ($EF_{grid, OM,y}$) and 25% to build margin emission factor ($EF_{grid, BM,y}$) as referred to the EF tool version 7.0.

The weighted operating margin value of 0.9610 tCO₂/MWh and build margin value of 0.8644 tCO₂/MWh for Indian electricity grid have been referred from CO₂ baseline database published by Central Electricity Authority, Govt. Of India, version 14 dated December 2018/16/. This is the latest available CO₂ baseline database at the time of the revised VCS PD submission for validation of the project activity. This is found to be appropriate and it is accepted.

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

The PP has considered the value of $EG_{PJ,y}$ as 3,41,009 MWh/year for the project activity, which is an annualized average value calculated ex-ante based on the estimated generation available at the time of investment decision. Thus, the estimated annual average of emission reductions is arrived as 319,470 tCO₂e and total 31,94,705 tCO₂e over the 10 years of crediting period. The validation team confirms that the estimates of baseline emissions can be replicated using the information provided in the final Joint VCS PD& MR/1/. It can also be verified using the emission reduction calculation spread sheet/02/. Hence, it is concluded that the approach to calculate emission reductions is clearly demonstrated in the Joint VCS PD& MR/01/ is appropriate.

Estimation of Project Emissions (PE_y):

As per paragraph 34 of the applied methodology, for most renewable 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, by using the following equation:

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

Where,

PE_y = Project emissions in year y (tCO₂e)

PE_{EF,y} = Project emissions from fossil fuel consumption in year y (tCO₂)

PE_{GP,y} = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO₂e)

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

As per para 37 of ACM0002 version 19,

“For all renewable energy power generation project activities, emissions due to the use of fossil fuels for the backup generator can be neglected”

The project activity is solar power project; hence the project emissions are not applicable to the project activity. Hence, PE_y = 0.

Estimation of Leakage Emissions (LE_y):

As per the paragraph 56 of ACM0002 version 19.0, No other leakage emissions are considered, thus leakage emissions are zero (LE_y = 0).

Estimation of GHG emission reductions:

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y,$$

Where

ER_y = Emission reductions in year y (tCO₂)

BE_y = Baseline Emissions in year y (tCO₂)

PE_y = Leakage emissions in year y (tCO₂)

$ER_y = 3,19,470 - 0 - 0$

$= 3,19,470$ tCO₂ per year

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, 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

No methodology deviations identified.

3.3.8 Monitoring Plan

According to the applied methodology, ACM0002, version 19.0, 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 project boundary includes the solar project, sub-stations, grid and all power plants connected to grid. The project activity evacuates power to the Indian grid. Therefore the entire Indian grid

and all connected power plants have been considered in the project boundary for the project activity.

The project developer “ASEPL” is having a dedicated metering arrangement on his 33kV/220V line at KSPDCL SS-1 and SS-2 which is further connected to Pavagada (PGCIL grid substation) in Tumkur district. The meters are approved, tested & sealed by the State Utility. The meters are solely in the custody of State Utility. The frequency of calibration is once in 5 years or as per the clause mentioned in the PPA. All the meters are of 0.2s accuracy class.

The aggregated net monthly electricity supplied/exported by the project activity (150MW Capacity, in three blocks – block 4, 7 & 8) is monitored, measured & metered continuously at the 33kV/220V KSPDCL substation 1 & substation 2 which forms the basis for Joint Meter Reading (JMR) report i.e. named as “B-Form”. B-Form report can be cross checked with the monthly invoices of sale.

In the absence or delay in the meter calibration appropriate guidelines will be applied appropriately to confirm the conservativeness of metering & monitored values.

The metering arrangement, accuracy class of meters, calibration frequency and apportioning approach is under control of state electricity board and project developer does not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter.

Monitoring Equipment Details: Energy Meter

All Energy Meters has been installed at 33kV feeder line.

Block 4	Main Meter	Check Meter	Stand by Meter
RR No: KSPDCL-SS1-A25 (Line 10)			
S. No	18153016	18148125	18009355
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date/Installation Date	20/12/2018	20/12/2018	20/12/2018
RR No: KSPDCL-SS1-A26 (Line 09)	Main Meter	Check Meter	Stand by Meter
S.No	18153006	18152933	18009400
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date /Installation Date	20/12/2018	20/12/2018	20/12/2018
Block 7:			
RR No: KSPDCL-SS2-A33 (Line 09)	Main Meter	Check Meter	Stand by Meter
S.No	18152962	18153010	18009343
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date/Installation Date	06/02/2019	06/02/2019	06/02/2019

RR No: KSPDCL-SS2-A34 (Line 10)	Main Meter	Check Meter	Stand by Meter
S.No	18153024	18153023	18009343
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date/Installation Date	06/02/2019	06/02/2019	06/02/2019
Block 8:	Main Meter	Check Meter	Stand by Meter
RR No: KSPDCL-SS2-A47 (Line 8)			
S.No	18153022	18152958	18009426
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date/Installation Date	27/02/2019	27/02/2019	27/02/2019
RR No: KSPDCL-SS2-A48 (Line 7)	Main Meter	Check Meter	Stand by Meter
S.No	18152966	18152977**	18009375
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date/Installation Date	27/02/2019	27/02/2019	27/02/2019

QA/QC procedures: The energy meters at the feeders are maintained and owned by Karnataka DISCOMs. Neither the project proponent nor the site personnel have any control over it. The records will be cross-checked with the records of sold electricity to the third party. The meters are calibrated by DISCOMs at-least once in five years.

Data Measurement: The export and import energy will be measured continuously using above mentioned Main & Check meters. Export & Import readings of Main & Check meters shall be taken on monthly basis by authorized officer of state DISCOM in the presence of project developer or representative. The meter reading will be taken jointly and signed by the representatives of the state DISCOM and project investors. Based on the readings, invoices will be raised by project investors. These invoices can be used for cross checking the meter readings taken for the project activity. It is to be noted though project developer or their representative is available during meter reading, the calculations of net electricity supplied to state DISCOM grid and developer do not have any control on it. Also, accuracy class of meters and calibration frequency is under purview of state DISCOM and developer does not have any control on it. They get the monthly credit report from where net electricity supplied to grid is obtained and used for emission reduction calculations.

Data Archiving: Monthly data shall be archived electronically and in paper form and stored for the entire crediting period and two years thereafter.

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 and stand by meter reading will be used by ESKOMs official only for the emergency as per PPA.

In case of failure of all the meters simultaneously, a decision will be taken by ASEPL, KSPDCL and DISCOM as per the clause mentioned in the PPA and a generation statement will be issued by DISCOM based on their specific procedure. The DISCOM statement will form the basis for considering the amount of electricity delivered to the grid in that particular situation.

Training and maintenance requirements: Training on the machine is an essential pre-requisite, to ensure necessary safety of man and equipment(s). In order to ensure, that O&M team is deft at handling technical snags, the necessity of ensuring that they are capable of handling mounts and structures with absolute ease and comfort has been established. Each and every site personnel is provided with proper training to meet the requirements of the Operations and maintenance. This ultimately leads to creativity in problem solving.

Apportioning: In case of mismatch of date between the start date of the billing cycle and the start date of monitoring period the data will be apportioned in line to the daily generation values for the said mismatch period.

Other observations & remarks:

During the on-site audit, it has been found that on 10/05/2019 KSPDCL & AVAADA representative jointly visited the “Bay bearing the RR No: KSPDCL-SS2-A48 (Line 7) check meter”, KSPDCL officials examined the check meter and found that Rph CT coil inside the check meter was not functioning and not recording the current in that phase, the same was reported by KSPDCL and request for replacement of Check Meter has been raised.

Check Meter with S. No 18152977 has been replaced with energy meter S. No 18068257, replacement has been done on 06/07/2019. This was referred in the B-Form for the month of July 2019.

Furthermore, for the purpose of preparing B-Form for the month of Apr-19 & May-19 for “RR No: KSPDCL-SS2-A48 (Line 7)” it has been decided by KSPDCL & DISCOM that the energy recorded in the standby meter shall be considered as per the procedures mentioned in the PPA. The assessment team has referred to the B-Form for the month of Apr-19 & May -19 to verify the same.

Post meter replacement details:

RR No: KSPDCL-SS2-A48 (Line 7)	Main Meter	Check Meter	Stand by Meter
S. No	18152966	18068257	18009375
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date/Installation Date	27/02/2019	03/06/2019	27/02/2019

It has also been noted in this monitoring period in the month of March 2019, some troubleshooting work was undertaken by the KSPDCL & DISCOM maintenance officials as per their schedule on 7th Mar on bay bearing RR NO: KSPDCL-SS1-A25 (Line 10) but on 11th March it was observed by Avaada & KSPDCL maintenance officials that Bph CT wire was slightly skinned and connected with GI pipe at RR No: KSPDCL-SS1-A25 (Line 10) due to which it has

been observed that Main meter & Check meter energy measurement was less by 10,92,600 kWh as compared with Standby meter. The officials rectified the issues immediately. It was decided by KSPDCL and DISCOM that for RR No: KSPDCL-SS1-A25 (Line 10) from 07/03/2019 to 11/03/2019 standby meter reading (18009355) shall form the basis for preparing B-Form as per the PPA. And for the remaining period i.e. from 01/03/2019 to 06/03/2019 and from 12/03/2019 to 01/04/2019 (00:00hrs) for RR No: KSPDCL-SS1-A25 (Line 10) Main meter & Check meter reading was considered for the B-Form preparation by the DISCOM officials. These details were verified from the B-form for the month of Mar 2019. PP has also reported this information transparently under the monitoring plan section.

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 /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 02.0/10/, the validation team confirm that:

1. The monitoring plan included in the joint VCS PD & MR is based on the baseline methodology ACM0002 version 19.0.0 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. As per the notifications issued by Ministry of Environment and Forest dated 01/12/2009 (ref: <http://moef.nic.in/downloads/rules-and-regulations/3067.pdf>), Environmental Impact Assessment for the solar projects is not required to be done.

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

4.2 Environmental Impact

The project proponent has mentioned in the Joint VCS PD & MR/01/ that the present project activity does not require EIA to be carried out because as per the schedule 1 of Ministry of Environment and Forest notification dated 14/09/2006/26/ <http://envfor.nic.in/legis/eia/so1533.pdf> and further notification number 3067 from MoEF dated 01/12/2009 <http://moef.nic.in/downloads/rules-and-regulations/3067.pdf>, activities are required to undertake environmental impact assessment studies. The project activity does not fall under the listed categories and hence not required an EIA to be done. Thus the adequacy of the analysis carried out by the project participant for the impact of the implementation of the project activity on the environment has been validated as per paragraphs 126 and 129 of VVS for PAs version 02.0.

The validation team is of the opinion that the project complies with environmental regulations in India

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 11/07/2019 at the project site in Pavagada, Karnataka.

Stakeholders were invited through public notice on 30/06/2019. The documentary evidence provided as proof of date of the invitation, meeting; and mode of invitation/9/ 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/9/ 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 10/07/2019 to 09/08/2019 (https://www.vcsprojectdatabase.org/#!/pipeline_details/PL1914) for public comments.

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

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 JMRs issued by relevant state utility. 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 ACM0002 version 19.0/4/.

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. “CO2 Baseline Database for Indian Power sector”, version 14/16/ published by Central Electricity Authority, Ministry of Power, and Government of India. The OM has been determined as the average of the previous 3 years values obtained from the CEA database/16/. The value of BM has been identified directly from the CEA database. 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 0.93684 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 83,319 tCO₂e which was against the quantity of net power supplied to the grid during the monitoring period 20/12/2018 to 31/05/2019, which was 88,937 MWh.

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. 83,319 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 B-Forms for electricity generated and supplied by project activity/27/ 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 ACM0002, Version 19.0.0/4/.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 /08/ signed for the project activity.

The supporting records of power generation/27/ 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/08/.

	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/01/.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. 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.
	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 B-forms 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 B-Forms and the monthly invoices 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 Discom. Neither the project proponent nor the site personnel have any control over it. The meters are calibrated by the state Discom at-least once in five years.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CL #1,CAR #2, was raised and resolved	
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.	

Parameters fixed ex ante:

EF_{grid,OM,y}; tCO₂e/MWh: it is the operating margin emission factor of Indian grid fixed for the entire crediting period and the value is considered as 0.9610 tCO₂e/MWh, that is consistent with the joint VCS PD & MR/01/.

EF_{grid,BM,y}; tCO₂e/MWh: it is build margin emission factor of Indian grid fixed for the entire crediting period and the value is considered as 0.8644 tCO₂e/MWh, that is consistent with the joint VCS PD & MR/01/.

EF_{grid,CM,y}; tCO₂e/MWh: it is the combined margin emission factor of Indian grid fixed for the entire crediting period and the value is considered as 0.93684 tCO₂e/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/33/ 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. The CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006/30/ which is considered as national standard mentions that "All interface meters shall be tested at least once in five years." Hence, the stipulated calibration frequency once in 5 years is appropriate.

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., 0.93684 tCO₂e/MWh).

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

$$BE_y = 88,937 \text{ MWh} * 0.93684 \text{ tCO}_2\text{e/MWh} = 83,319 \text{ tCO}_2\text{e}$$

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

$$ER_y = BE_y - PE_y$$

$$ER_y = 83,319 \text{ tCO}_2\text{e}$$

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

M/s. WeAct Pty Ltd. has contracted the Earthood Services Private Limited (also referred to as ESPL) to validate and verify the project: “150 MW Solar Project in Karnataka by Avaada Solar.” 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 verification is from 20/12/2018 to 31/05/2019 in the VCS joint project description & Monitoring Report Version 03 dated 25/11/2019 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 01 Corrective Action Requests (CARs), 01 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 Indian national grid via long term PPAs under three different Discoms, namely Gulbarga Electricity Supply Company (GESCOM), Mangalore Electricity Supply Company (MESCOM) and Chamundeshwari Electricity Supply Corporation Ltd. (CESC Mysore), thereby displacing the grid generated electricity.

The project activity has applied the baseline and monitoring methodology, ACM0002: Grid-connected electricity generation from renewable sources, Version 19.0.0, 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 ACM0002, version 19.0.
- 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 3,19,470 tCO₂e/year and a total of 31,94,705 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. 20/12/2018 to 31/05/2019) is 83,319 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 “150 MW Solar Project in Karnataka by Avaada Solar” (Project pipeline VCS ID-1914), 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 3.7/28/. 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. 20/12/2018 to 31/05/2019 (both the days included)) are verified as 83,319 tCO₂e.

The CDM team of WeAct Pty. 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, Avaada Solar Energy Private Limited. (i.e. PP) assertion on GHG emission reductions for the “150 MW Solar Project in Karnataka by Avaada Solar.” (i.e. VCS project pipeline ID-1914) project during the reporting period “20/12/2018 to 31/05/2019” 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 ACM0002 version 19.0. The verification team also confirms that the project is implemented as described in the validated VCS joint PD & MR (final version 03).

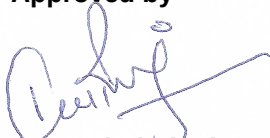
Therefore, ESPL is able to certify that the project is in full compliance with the VCS Standard Version 3.7, and the quantity of the reported emission reductions during below reporting period are completely, comparably, accurately and correctly reported.

Verification period: From [20th – Dec - 2018] to [31st – May – 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)
2018 (20 th Dec to 31 st Dec 2018)	1,310	0	0	1,310
2019 (1 st Jan to 31 st May 2019)	82,009	0	0	82,009
Total	83,319	0	0	83,319

Approved by



Dr. Kaviraj Singh
Managing Director
Earthood Services Privated Limited

Date: 02/12/2019
Place: Gurgaon, Haryana

APPENDIX 1: Document Reference

Ref. No	Title of Document	Version	Date
1	Joint Project Description & Monitoring Report	1.0	10/06/2019
		2.0	22/08/2019
		3.0	25/11/2019
2	Emission Reductions Calculation Spread sheet (Validation and verification)	01	10/06/2018
		02	19/08/2019
3	Combined IRR and Benchmark Analysis Spread sheet	01	15/05/2019
		02	25/11/2019
4	ACM0002, "Grid-connected electricity generation from renewable sources"	19.0	-
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/P_L1842	-	-
7	Commissioning Certificates of the project activity	-	20/12/2018, 06/02/2019, & 27/02/2019
8	Power purchase agreement (PPAs) signed by PP with GESCO, MESCOM and CESC Mysore.	-	24/04/2018
9	Local stakeholder documents – • Public notice • Minutes of meeting • Attendance sheet • Comments sheet	-	11/07/2019
10	Clean Development Mechanism Validation and Verification Standard	02.0	29/11/2018
11	Tool for the demonstration and assessment of additionality	07.0.0	EB 70, Annex 8
12	Technical specifications of the project	-	-
13	Detailed Project Report (DPR) – initial version Detailed Project Report (DPR) – revised version	-	10/02/2018 & 19/05/2018
14	Financial Data, Information and supporting documents applicable to the project activity (Certified Declaration from PP)	-	25/04/2019
15	Approvals and Clearances for project activity	-	-
16	CO ₂ baseline database published (in Dec 2018) by Central Electricity Authority, Govt. Of India	14	December 2018
17	Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations	-	29/04/2016
18	Income Tax Act 1961 (Source: Appendix IA of Income Tax Rules) http://taxguru.in/company-law/rates-of-depreciation-under-the-companies-act-as-mentioned-in-schedule-xiv.html	-	-

19	IT depreciation rate http://www.incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm	-	-
20	Income tax rate and Minimum Alternate Tax (MAT) rate http://indiabudget.nic.in/ub2008-09/fb/bill81.pdf http://www.incometaxindiapr.gov.in/incometaxindiapr/content/taxrates/taxrates_2008_09_cos.htm GST applicability: https://www.ceew.in/sites/default/files/CEEW_GST_A_Good_Solar_Tax_January17.pdf	-	-
21	Inflation forecast (CPI Combined Mean) as per RBI for 5 yrs & 10 yrs https://m.rbi.org.in/scripts/PublicationsView.aspx?id=18092	-	07/02/2018
22	Detailed procedure on REC mechanism dated 01/06/2010 by Central Electricity Regulatory Commission (http://www.nerldc.org/Docs/Order_for_Detailed_Procedure_01-06-2010.pdf) REC registry (Source : https://recregistryindia.nic.in/)		
23	Guidelines on the assessment of the investment analysis	EB 62, Annex 05	-
	Investment Analysis tool , EB 101, Annex 11	09.0	-
24	VCS Standard	Version 3.7	21/06/2017
	VCS Program Guide	Version 3.7	21/06/2017
25	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	-	08/08/2019
26	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. 502/6/2009/DP&D/D-I	-	17/03/2006
27	Monthly Generation records for the project activity issued for the current monitoring period (reference to 'infirm power' during the current monitoring period)	-	-
28	Site visit attendance sheet, photographs	-	20/07/2019
29	VCS Listing Representation	-	10/06/2019
30	Communication Agreement for VCS representation	-	07/06/2019
31	PLF assessment Report	-	23/05/2019

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
CESC	Chamundeshwari Electricity Supply Corporation Ltd.
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
GESCOM	Gulbarga Electricity Supply Company
ISO	International Organization for Standardization
JMR	Joint Meter Readings
KSPDCL	Karnataka Solar Power Development Corporation Limited
LCS	Local Controller System
MESCOM	Mangalore Electricity Supply Company
MGRs	Monthly Generation Reports
MoEF	Ministry of Environment and Forest
MP	Monitoring Period
MR	Monitoring Report
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
SECI	Solar Energy Corporation of India Ltd
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	Ravi Kant Soni		
Country	India		
Education	B. Tech. (Mechanical Engineering) M. Tech. (Energy Management)		
Experience	8 Years +		
Field	Energy and Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.C., ACM0002		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (TA 1.2)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Kaviraj Singh	Date	01/03/2018

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

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
Documentation provided by project participant			
DOE assessment			Date: DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	1	Date : 05/08/2019
Description of CL				
1) PP is requested to submit the ER sheet 2) PP is requested to submit the IRR spreadsheet 3) PP is requested to share the scanned copies of the supporting documents which were verified during the site visit.				
Project participant response				Date : 24/08/2019
1. PP is submitting the ER sheet, both the versions. Version 01, which was applicable to the version 01 of the PD & MR at the time of VCS listing, and version 02 is the revised final version as per actual information and verified data. PP would also like to update that EF calculation has been revised as per latest available CEA database (i.e. version 14). Thus, version 02 of the ER sheet is based on revised EF. Additionally, the final ER estimated (annualized average calculated for ex-ante estimation) for the project is now more than 300k tCO ₂ e per year, hence the scale of the project is now change to "Large Scale" in line with VCS requirement. The changes are addressed in the revised Joint PD and MR document.				
2. PP is submitting the IRR spreadsheet along with all input values, benchmark calculation and sensitivity analysis.				
3. PP is submitting all the relevant supporting documents for the project validation as well as applicable for the current monitoring period. Also, PP is submitting a certified official statement containing all data and information which were verified by DOE during the site visit				
Documentation provided by project participant				
1) ER sheet (Version 01 and Version 02). Applicable version is version 02, dated 19/08/2019 2) Revised Joint PD & MR, version 02, dated 22/08/2019. 3) IRR spreadsheet, version 01, dated 15/05/2019 4) Supporting documents and certified financial data and declarations				
DOE assessment				Date: 28/08/2019

- 1) The ER sheets submitted by PP have been checked with the data and formulae as per the applicable methodology and also verified the actual data with JMR and supporting invoices during the on-site audit. The version 02 of the ER sheet has been considered as final as it has updated EF as per latest available CEA database (i.e. version 14, Dec 2018) and the ex-ante calculations are in line with the final approved joint VCS PD & MR (version 02). Also, the scale of the VCS project category is now changed due to increase in ex-ante estimation, same has been addressed in the Joint VCS PD & MR, version 02 appropriately. **Hence accepted.**
- 2) PP has submitted the IRR spreadsheet and verified the input values and calculation in line with the applicable investment guidelines. The input values are cross checked from the data and information available at the investment decision and further validated with the actual parameters. Also, the benchmark analysis and sensitivity analysis are thoroughly evaluated and found to be in line with the investment guideline. All data and parameters are verified against source documents during the site visit and found to be in line with the certified data declaration submitted by PP. **Hence accepted.**
- 3) PP has submitted all required documents which were verified during the site visit, **hence accepted.**

CL is closed.

Table 3.CAR from this verification

CAR ID	02	Section no.	4.1	Date : 05/08/2019
Description of CAR				
1. PP is requested to justify the commissioning date of the project and consideration of Crediting period under VCS.				
2. PP is requested to include a comprehensive monitoring plan and all metering points in the PD document. Also, please explain if there is any apportioning for Net generation is required.				
3. PP is requested to include the details of public listing of the project in VCS pipeline. Also, include the information related stakeholders consultation.				
4. PP is requested to submit the communication agreement and VCS listing representation document which were submitted to APX at the time of public listing.				
5. PP is requested to include the tech specification of the project.				
Project participant response				Date : 24/08/2019

1. PP would like to clarify that project activity has been commissioned in three phases 3 X 50 MW = 150 MW. PP has considered the start date of the project as per the date of commissioning of the 1st phase of 50 MW project, which is 20th Dec 2018 as per the commissioning certificate. Therefore, the current monitoring period has been considered from “20/12/2018 to 31/05/2019” and accordingly crediting period of 10 years has been considered from 20/12/2018 to 19/12/2028”.
2. PP has updated the section 4.3 of the joint VCS PD & MR in order to include detail information related to monitoring plan and metering points of the project.
3. The details of public listing under VCS have been included under the section 5.4 of the Joint PD & MR document.
4. PP is submitting the copies of all relevant documents which were uploaded in APX registry at the time of initial listing.
5. PP has included technical specification of the project under the section 1.8 of the revised PD.

Documentation provided by project participant

1. Commissioning Certificates.
2. Revised Joint PD & MR, version 02, dated 22/08/2019.
3. Communication Agreement to VCS.
4. VCS Listing Representation.
5. Document related to Technical Specifications of the plant.

DOE assessment

Date: 28/08/2019

1. The justification and details provided under the Joint VCS PD & MR for commissioning date and consideration of crediting period are found to be appropriate, **hence accepted.**
2. The information provided under the revised joint VCS PD & MR (i.e. version 02) are in line with the actual monitoring structure implemented in the project, which was verified by DOE during the on-site verification. The information reported under the section 4.3 is complete and comprehensive; **hence accepted.**
3. The details of the public listing are updated under the section 5.4 of the revised Joint VCS PD & MR. The information has been verified from the VCS web-interface and found to be consistent. **Hence accepted.**
4. All documents related to VCS listing under APX VCS registry have been received and found to be in line with the requirements. **Hence accepted.**
5. The technical specifications are now included under the relevant section of the revised VCS document, **hence accepted.**

CAR is closed.

Table 4. FAR from this verification

FAR ID	NA	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				