

VALIDATION REPORT

KARNATAKA PAVAGADA-II SOLAR PROJECT BY AVAADA (150 MW)



Document Prepared By Earthhood Services Private Limited

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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 of the project - "Karnataka Pavagada-II Solar Project by Avaada (150 MW)" (hereinafter also referred to as Project Activity), with regard to the relevant requirements of VCS programme guidelines and standard (VCS standard version 4.0, & VCS program guide version 4.0). 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.

The verification includes confirming the implementation of the monitoring plan of the validated VCS PD (Project pipeline ID 2017) 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 Solarise Energy Private Limited and is a Solar PV project of total capacity 150 MW(ac). Total capacity of the project commissioned in three different blocks (B22, B39 and B40A) in the Pavagada Solar Park in Karantaka, with 50 MW capacity in each block. The project has been implemented in three blocks in Pavagada Solar Park, which is a solar park spread over a total area of 13,000 acres in Pavagada taluka, in Tumkur district, 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 solar power project in the above-mentioned location in the state of Karnataka (India).

The project activity has achieved full commissioning of the total capacity in three blocks (i.e. each block of capacity 50 MW). The first block was commissioned on 8th Nov 2019. Hence, the start date of the project is considered as per the COD of the first phase, which is 8th Nov 2019. The remaining capacity of the project has also got commissioned in two phases, as on 21st Nov & 27th Nov 2019.

The proposed project activity is a Green field project which results in an estimated GHG emission reduction of 305,870 tCO₂e per year (the calculated annualized average value as per ex-ante calculation) and a total of 3,058,709 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, 4 Corrective Action request (CARs), 01 Clarification request (CLs) and 00 Forward Action Request (FAR) were raised and successfully closed.

The review of the project design documentation 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 PD 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 3,058,709 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 Conclusion:

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. This validation 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.

ESPL confirms that the project is implemented in accordance with the validated VCS PD. 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 will result in 305,870 tCO₂e emission reduction per year during 10 year crediting period 08/11/2019 to 07/11/2029.

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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 of the renewable energy project titled “Karnataka Pavagada-II Solar Project by Avaada (150 MW)” The validator has reviewed the GHG data collected monitoring methodology and implementation plan.

The purpose of this validation is to have an independent third party assessment of whether the project activity conforms to the qualification criteria set out in the VCS Version 4.0 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 4.0 and VCS program guide 4.0 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

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 PD 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 4.0, VCS Validation and VCS program guide 4.0 including additionality, proof of title and compliance with local laws.
- To evaluate whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program
- To confirm that the information presented are completed, consistent, transparent and free of omission or material error
- Background investigation and follow up interviews
- Issuance of draft validation report with CARs, CLs & FARs, if any
- Final validation opinion

The information in the VCS PD is reviewed against the criteria of VCS Standard 4.0, the VCS program guide 4.0 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).

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 by the project is 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 has been implemented in multiple locations in the district of Tumkur, in the state of Karnataka, India. The project activity has achieved full commissioning of the total capacity in three blocks (i.e. block reference 22, 39 & 40A, each block of capacity 50 MW) of in the “2000 MW Solar Park Pavagada”, in the state of Karnataka (India). Furthermore, Validation Team has checked and verified that “Avaada Solarish Energy Pvt. Ltd.” is the Project Developer of the project, whereas “2000 MW Solar Park Pavagada” is the name of the Solar Park where this particular Project is located. Validation Team has been verified the same from the commissioning certificates of the project wherein “2000 MW Pavagada Solar Park is specifically mentioned. Further, validation team has verified that the first block (block 39) was commissioned on 8th Nov 2019. Hence, the start date of the project is considered as per the COD of the first phase, which is 8th Nov 2019. The remaining capacity of the project has also got commissioned on 21st Nov & 27th Nov 2019 respectively for the block 40A & 22.

The power purchase agreements (PPAs)/07/ 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 VCS PD /01/.

2 VALIDATION 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 validation 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 4.0. The Clarification Requests (CL) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the first verification of the project activity.

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 PD submitted by the PP as per the VCS standard Version 4.0 requirements was reviewed. Furthermore, a desk review was also carried out to assess the following:

- Information of project details in compliance with VCS PD 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 PD
- Stakeholder consultation
- Proof of listing of project under pipeline
- Calculation of grid emission factor, etc. where applicable.

The VCS PD version 01.1 dated 16/11/2019 /1/ was initially reviewed and the PP has been requested to submit the revised documents along with the supporting information and documents based on assessment findings. 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 PD (version 02, dated 21/12/2019) /1/ 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 PD /1/ (i.e. Version 2.0 dated 21/12/2019) to confirm that all changes agreed have been incorporated adequately.

Further, prior to the onsite visit, it was verified by the validation team that the project was listed in the VCS pipeline in line with the requirements (Section 3.16.5 and 3.16.6 of VCS Standard Version 4) Ref: https://www.vcsprojectdatabase.org/#/pipeline_details/PL2017 and the listing period was over as on 20 Dec 2019 without any comment or concern.

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 03/12/2019. During the site visit representatives of the PP and O&M contractors were interviewed; i.e. personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure. The details of the people interviewed, and the topics discussed are mentioned in the table below:

Location: Pavagada Solar Park in Tumkur district, Karnataka, India	Date: 03/12/2019
Coverage	Source of Information / Persons Interviewed
Project implementation start date as per the VCS requirements. Electricity Generation Records (monthly energy statements, Invoices) Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure	Mr. Raghu Tejasve G (Site In charge, PP) Mr. Deepjyoti Borah (Sr. Advisor, WeAct) Mr. Nagaraju Ponnagarti (Dy. G. M., PP)
Monitoring and measuring system - Collection of measurements - Observations of established practices - Data Verification of monitoring parameters	Mr. Venkata Rama Reddy A (Assistant Manager) Mr. Vijaya Bhaskar Gangana (Assistant Manager)
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. Kanna Dhasw Pugalenthiran (SCADA Eng.) Mr. Screenath C. (SCADA Project Manager)
Documentation Review and verification of data/information with the original documents	Mr. Ramana Reddy Vaddamani (Supervisor) Mr. Raghu Tejasve G (Site In charge) 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 04 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 4 of this report

2.5.1 Forward Action Requests

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

No FAR has been raised during the validation and verification of this project activity as project has been commissioned and operational as per the designed parameters with all relevant monitoring aspects in line with the applied methodology.

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 4.0 Guidelines, the project activity 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 total capacity of the project activity has been commissioned in three phases, with 50 MW in each phase, which has been verified from the commissioning certificates/35/. The project development, power evacuation etc. are in line with the provisioned prescribed under the PPAs/07/. This is checked and confirmed from the PPAs/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 305,870 tCO₂e per year (the calculated annualized average value as per ex-ante calculation) and a total of 3,058,709 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, which have been verified during the site visit:

For block 22 (50 MW):

Date of Commissioning:	27 th Nov 2019
Location Number:	Thirumani (V)
SS connected to:	5 (KSPDCL T1)
Module Model:	
Make or Supplier(s)	JA solar and Renesola
Maximum Power (Pmax)	325wp,330wp and 335wp
Module technology	Polycrystalline Silicon photovoltaic modules
Orientation	12*6 = 72 cells, 12 Degree, Fixed Angle
Inverter:	
Model / Make	SUNGROW & 3125KW GRID CONNECTED PV INVERTER & SG3125HV-20
No. of Inverters	16
Lifetime of the Inverters	25 YEARS
Technical Lifetime of the SPV plant:	25 YEARS

For Block 39 & 40A (50 X 2 MW):

Date of Commissioning:	Plot 39 – 8 th November 2019 Plot 40 A – 21 st November 2019
Location Number:	Rayacharlu (V)
SS connected to:	8
Module Model:	
Make or Supplier(s)	Renesola
Maximum Power (Pmax)	325Wp,330Wp and 335 Wp
Module technology	Polycrystalline Silicon photovoltaic modules
Orientation	12*6 = 72 cells, 12 Degree, Fixed Angle
Inverter:	
Model / Make	SINENG & 3125KW ,Grid connected PV inverter,

	EP-3125-HA-UD
No. of Inverters	32
Lifetime of the Inverters	25 years
Technical Lifetime of the SPV plant:	25 years

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 Solarise Energy Private Limited. Avaada Solarise Energy Private Limited is an SPV of “M/s Giriraj Renewables Pvt. Ltd., acting as the Project Proponent (PP) for the project activity 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. This has been verified from the communication agreement and VCS Listing Representation/29,30/.

Project start date:

As per VCS guidelines, the project start date is the date on which the project is commissioned. The project activity has achieved full commissioning of the total capacity in three blocks (i.e. each block of capacity 50 MW). The first block was commissioned on 8th Nov 2019. Hence, the start date of the project is considered as per the COD of the first phase, which is 8th Nov 2019. The remaining capacity of the project has also got commissioned in two phases, as on 21st Nov & 27th Nov 2019.

Project crediting period-

PP has adopted renewable crediting period in line with the VCS version 3 (v4.0). Thus, the crediting period of the project activity is considered for 10 years (renewable). The first crediting period is from 08/11/2019 to 07/11/2029.

Project scale and estimated GHG emission reductions or removals:

The estimated annual emission reductions for the project activity are 305,870 tCO₂e per year (proposed annualized average value) is higher than 300,000 tCO₂e. Hence the category is applicable under “Large Project”. The ex-ante estimated ER calculation has been submitted by PP/02/.

Project location:

The proposed project will be implemented in three blocks in Pavagada Solar Park named as “2000 MW Solar Park Pavagada”, which is a solar park spread over a total area of 13,000 acres in Pavagada taluka, in Tumkur district, Karnataka, India.

The proposed Geo-coordinates for the project locations are as follows:

Latitude : 14° 40' 0.012" N

Longitude : 75° 49' 59.988" E

Total capacity of the project has been commissioned in three different blocks (B22, B39 and B40A) in the Pavagada Solar Park in Karnataka, with 50 MW capacity in each block. The information related to project location has been verified from the commissioning certificates/35/ of the project wherein “2000 MW Pavagada Solar Park is specifically mentioned and also confirmed during the site visit/28/.

Conditions prior to project initiation:

The project is a Greenfield solar power project and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. Prior to the initiation of the project activity, the equivalent amount of electricity would have been drawn from grid connected or new power plants, in Indian Grid. The grid is predominantly coal based and therefore is a major source of carbon di oxide emissions in India. The main emission in the pre project scenario is the fossil fuel based power plants connected to the Indian Grid, and main GHG involved is CO₂.

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 shall obtain necessary approvals/14/ for development and commissioning for solar project from the state Nodal agencies and is in compliance to the local laws and regulations, in line with the Schedule 2 of the PPA.

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

The Project is developed and owned by Avaada Solarise 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 /29,30/.

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

- Power Purchase agreement signed by the PP with Bangalore Electricity Supply Company Ltd. (BESCOM) on 7th November 2018/7/
- 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/24/ 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-2017) and not listed under any other forms of environmental credits. In this regard, the assessment team has checked the possibility of applying the project under Indian Renewable Energy Certificates (REC) mechanism/21/ as REC is applicable for renewable energy projects in India. However, the project is under PPA terms which does not make the project eligible under REC. Moreover, assessment team has further verified from the REC online portal, source: <https://recregistryindia.nic.in/index.php/publics/index>. Project is not sought for any REC benefits.

Participation under other GHG programs:

Project is seeking registration under VCS only (Pipeline ID-2017). The PP has submitted the declaration/24/ 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. DOE has received all required documents and source of information to validate the project which was verified during the site visit. All required sections under the VCS PD have been adequately filled with relevant information.

Conclusion:

In view of the assessment of VCS PD/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 PD 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 VCS PD/01/ to be complete and accurate. The VCS PD complies with the relevant forms and guidance for completing the VCS PD.

3.2 Application of Methodology

3.2.1 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)
- Tool27 - Methodological Tool - Investment analysis (Version 09.0)

3.2.2 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 VCS PD.

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 /7/.

Thus the criterion is fulfilled by the proposed 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/.

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

Criteria-3:

The methodology is not applicable to:

(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/.

Thus the criterion is not applicable for the proposed project activity.

Criteria-4:

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 proposed 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 VCS PD /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 VCS PD, 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 PD submission for validation of the project activity. The location of the project 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”/10,11/ 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 proposed project activity and not used/applied by the project participant.

3.2.3 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 VCS PD /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.

3.2.4 Baseline Scenario

The project activity involves the installation of a newly built and grid-connected renewable power plant 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”..” Option (a) has been considered to calculate the grid emission factor as per the ‘Tool to calculate the emission factor for an electricity system’ since data is available from an official source.

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 PD /1/ for determining baseline grid emission factor and it is found to be correct.

In step 1 of Tool; the PP has identified the electricity system is based on the option 1 (under the para 17 of the tool) which is unified Indian Grid system . 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.

In step 2 of the Tool, the PP has considered option I *“Only grid power plants are included in the calculation.”* Further under step 3, the PP has used the simple operating margin calculation method to determine the operating margin (OM). As per Tool para 40 -42; The PP has chosen ex-ante option (option a) for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the VCS-PD to the registry for initial listing. In step 4, the PP has calculated 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. In step 5; the Build margin for the Indian grid is considered as 0.8644 tCO₂/MWh as per *“Tool to calculate the emission factor for an electricity system”* (Version 07.0, EB 100, Annex 4) para 72 (i.e. as per the provision of the section 6.5 of the tool) where the Option 1 is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of VCS-PD and is fixed for the entire crediting period. In step 6, the combined margin (CM) emission factor is calculated based on option (a) i.e., weighted average CM as accordance to Tool. 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 which said *“Wind and solar power generation project activities: wOM = 0.75 and wBM = 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods”*. 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/02/ 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 PD 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 and VCS Standard/24/, the validation team confirm that:

- (a) All the assumptions and data used by the PP are listed in the VCS PD, 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 proposed project activity.

3.2.5 *Additionality*

The proposed 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 not applied to the project activity since it is not first-of-its-kind, hence the additionality of the project will be demonstrated in next steps below.

Step1. Identification of alternatives to the proposed project activity consistent with current laws and regulations

As per the applied methodology ACM0002 version 19; Para 22, if the project activity is the installation of a Greenfield power plant, the baseline scenario is electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid connected power plant and by the addition of new generation sources, *as reflected in the combined margin (CM) calculations described in “TOOL07: Tool to calculate the emission factor for an electricity system”/11/.*

However, step 1 is conducted to establish the baseline in an elaborative manner. As per this step, the probable baseline scenarios could be as follows:

Alternative 1: The proposed project activity without CDM benefit (or say carbon benefits);

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

Having considered the fact that 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.

It can be noted that the project fulfils the norms put down by Central Pollution Control Board of India. As per ‘Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)’, final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (29/02/2016). The newly introduced White category of industries pertains to those industrial sectors which are practically non-polluting such as Biscuit trays etc. from rolled

PVC sheet (using automatic vacuum forming machines), Cotton and woollen hosiers making (Dry process only without any dying/washing operation), Electric lamp (bulb) and CFL manufacturing by assembling only, Scientific and mathematical instrument manufacturing, **Solar power generation through photovoltaic cell**, wind power and mini hydel power (less than 25 MW). There shall be no necessity of obtaining the "Consent to Establish/Operate" for 'White Category' of industries. Intimation to concerned SPCB / PCC is sufficient.

Being a renewable power from Solar, project activity falls under the category of White and thus these projects do not need clearance for Consent to operate and only needs to inform the relative State pollution control board. 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. This also demonstrates the 'regulatory surplus' aspect as prescribed by VCS.

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.

Therefore, all realistic and credible alternatives (with regards to the governing methodologies) including the project being undertaken as non-carbon revenue based activity (i.e. non-VCS) and continuation of current scenario, have been considered. The identification of alternatives is in conformity with the guidance given by the tool.

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:

- 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.

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.

Since, project investment was decided by PP based on a benchmark analysis approach (i.e. IRR calculation) and as revealed from the step 2 it is an economically unviable project for PP without carbon revenue, hence only baseline possible is Alternative (ii), i.e. "Continuation of the current situation, i.e., electricity will continue to be generated by the existing generation mix operating in the grid".

This identified baseline is in line with the para 22 of the applied methodology, ACM0002, version 19.

Step 2: Investment Analysis

Sub-step 2a: Determine appropriate analysis method

As per "Tool for the demonstration and assessment of additionality" (version 07.0.0), for financial analysis of the project, the following three options are available:

Option I: Simple Cost Analysis

Option II: Investment Comparison Analysis

Option III: Benchmark Analysis

The project will generate revenues from sale of electricity, therefore Option I is not applicable. Option II also does not apply since there is no comparable investment alternative available to the project participant. The most appropriate financial analysis method is therefore option III: the benchmark analysis, where the returns on investment in the project activity are compared to benchmark returns that are available to any investors in the country.

Sub-step 2b: Option III. Apply benchmark analysis

Project Developer has considered Post-Tax Equity IRR for investment analysis at the time of investment decision. As per Para 16 of EB 92, Annex 5 states that "...Required/expected returns on equity are appropriate benchmarks for an equity IRR. Therefore, the Expected return on equity is considered appropriate benchmark." *Also, as per currently valid and applicable tool, i.e. Methodological Tool27 (as per para 19), return on equity approach has been considered to calculate the benchmark.* Accordingly, the post-tax Equity IRR has been considered as the relevant financial indicator for Investment Analysis and has been compared against a default value of benchmark return (Cost of Equity), *as prescribed under the para 19 of the methodological Tool27.*

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):

Considering conservative approach in input values, an equity IRR^{1/03/} has been estimated and compared with the benchmark. *The input values of the IRR model are based on the project related information available at the time of investment decision. These values are then compared with actual values of the project financials incurred and same has been analysed through a sensitivity analysis also.*

¹ PP has submitted the detailed IRR calculation sheet during the validation process along with the supporting documents. The IRR assessment has been reviewed by financial expert of validation team.

Calculation Approach:

PP has demonstrated the calculation approach of the IRR in the VCS PD and IRR sheet is in consistent with the same. The IRR computation has been done as per standard IRR accounting practice. The guidance prescribed under the section 5 of the Methodological tool27 has been referred. 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, the portion of the investment costs which is financed by debt is not considered a cash outflow. Also, as per the section 4 of the tool27, internal rate of return (IRR) (both Project and Equity IRR) calculations should reflect the period of expected operation of the underlying project activity (technical lifetime). Therefore, the IRR assessment has been performed for a period of 25 years, which is the technical lifetime of the project as prescribed under the section 1.8. Also, Para 10 of the tool27 prescribes that 'Input values used in all investment analysis shall be valid and applicable at the time of the investment decision taken by the project participant'. Therefore, all input parameters (as listed under the Appendix 2 of the VCS PD) used for IRR computation are based on relevant and applicable data which were available to PP at the of investment decision (i.e. date of investment decision by board, which is 25/03/2018 as indicated in the IRR sheet and reference evidence submitted to DOE). These input values were verified by DOE from the relevant source documents. Moreover, computations of depreciation, tax, fair value, etc. are considered as per standard accounting practices of the host country and best practices, which is also in line with the requirements of the section 4 of the tool.

In order to compare the IRR with a benchmark, the default value for the expected return on equity (after converting to nominal value as prescribed under the guideline) has been considered as per "TOOL27 Methodological tool: Investment analysis (Version 09.0)". The calculation of default value benchmark sheet has been included as a part of the IRR sheet, version 02 /03/. The values and calculation details are verified by validation team.

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%. The benchmark has been calculated in line with paragraph 13 and 15 of EB 62 Annex 05. Based on the option in paragraph 15, the PP has selected the default value for the expected return on equity (in real terms) from Appendix (EB 62 Annex 05). The default value has been obtained as 11.75% for India corresponding to Group 1 (Energy Industries).

The IRR calculation has been carried out on in nominal terms. Hence as per the requirement of paragraph 7 Appendix of EB 62 Annex 05, the PP has converted the default value (i.e. 11.75 %) which is in real terms to nominal terms by adding an inflation rate. The inflation rate has been sourced from the Reserve Bank of India's (RBI) Survey of Professional Forecasters: Results of 34th Round (Q2:2015-16) dated 03/06/2015/21/. It was verified that the mean value of inflation rate is expected to be 4.45% 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:

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

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.

Therefore, the Nominal Benchmark estimated = $(1 + 9.79\%) * (1 + 4.4\%) - 1 = 14.62\%$

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.

Both the assessment team and financial expert of DOE has evaluated the IRR sheets/03/ (IRR sheet version 02 is the final) and calculation practices. The below results are demonstrated in the IRR sheet and also mentioned in the VCS PD.

Equity IRR (without carbon revenue)	Benchmark (Equity IRR)
6.71%	14.62%

This signifies that the project activity is not financially attractive and is therefore additional. The results show that the proposed project activity cannot be considered as financially attractive proposition without an external revenue support as the equity IRR for the project activity is less than the expected Benchmark. Hence, the additionality justification based on IRR is acceptable.

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

Project Cost:

The Project cost for the project activity has been considered on the basis of the Detailed Project Report /13,15/ 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 6753.30 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/15/ 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, as verified by DOE during the documents review. Also, the per MW cost prescribed by CERC order 2016 /26/ 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

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.

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, 15/, which is 25.64%.

The assessment team has verified the generation based on the actual achieved in the initial month. 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 quite 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.

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 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/07/ with Discom 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.

Debt to Equity Ratio:

The project activity is funded by 25% equity and 75% debt. This is in line with the Investment Analysis tool, 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 and hence. This D:E ratio has also been checked with the actual D:E ratio, also checked from CERC order 2016 /26/ and found to be comparable and hence accepted.

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 2016/26/ which is latest available at the time of investment decision, it has been confirmed that this assumption is conservative and hence acceptable.

Life Time of project activity: 25 years

The lifetime of the project activity is 25 years which has been considered from the DPR/13,15/ and also as per CERC order 2016/26/. 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 VCS PD /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.

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. 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. 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.

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/18,19, 20/, 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.

Income Tax and MAT:

PP has considered Income Tax as 34.61% sourced from IT rule (<http://www.cercind.gov.in/2016/orders/SORE.pdf>)

MAT 21.34% (Including surcharge and education cess) as per the IT rule (https://www.bcasonline.org/referencer2016-17/Taxation/Income_Tax/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.

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/26/, 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.

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/13,15/. 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 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 requirements of the investment analysis tool. 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.

Sub-step 2d: Sensitivity Analysis

The following factors have been considered for sensitivity analysis:

- PLF
- O&M Cost
- Project Cost
- Tariff

The rationale of sensitivity is, "The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis." The above identified parameters are the most relevant sensitive parameters w.r.t. the project additionality (i.e. IRR assessment).

A sensitivity analysis has been performed and the results show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate, the Equity IRR remains well below the proposed benchmark. The results of sensitivity analysis are provided by PP under the Appendix-2 of the VCS PD. The validation team has done the sensitivity assessment by changing the variables in the IRR sheet under the sensitivity section. The variation in values of the sensitive parameter that leads to IRR crossing the benchmark has also been evaluated. Thus, the project remains additional even under the most favourable conditions. The details of sensitivity analysis are submitted in the IRR sheet.

The table below summarizes the outcome of sensitivity:

Variation %	-10%	Normal (without variation)	+10%	Variation required to reach the benchmark
PLF	4.76%	6.71%	9.48%	29.10%
O&M	7.35%	6.71%	6.86%	-314.00%
Project Cost	9.44%	6.71%	5.23%	-24.30%
Tariff Rate	4.76%	6.71%	9.48%	29.05%

Threshold limits for variations:

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

1. Project cost reduced by 24.30%:

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/15/, hence reaching to this threshold is not possible.

Actual Project cost: INR 6980 million against the proposed cost of INR 6753.30 million.
(as verified from the actual records/15/)

2. PLF increases by 29.10%:

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/26/. 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: 25.64% against the actual PLF estimated based on daily generation reports, which is 20.19% (as verified from the actual records/13, 15, 31/)

3. Tariff increases by 29.05%:

The breakeven for tariff rate is at increase in tariff rate by 29.05%, however DOE has verified that further increase in tariff rate is not possible as PP has already signed long term PPAs/7/ with Discom 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/7/).

4. O&M cost decreases by 314%:

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 /15/).

Outcome of Step 2:

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark) for the investor. Thus, it can be easily concluded that project activity is additional & is not business as usual scenario.

Step 3: Barrier analysis

Barrier analysis has not been used.

Step 4: Common practice analysis

PP has demonstrated common practice analysis as per Methodological tool “Common Practice”, version 03.1 EB84, Annex 7 .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” and same has been as below;

Applicable Geographical Area: As per section 4 clause 9 of common practice tool version 03.1

“Applicable geographical area should be the entire host country. If the project participants opt to limit the applicable geographical area to a specific geographical area (such as province, region, etc.) within the host country, then they shall provide justification on the essential distinction between the identified specific geographical area and rest of the host country.”

The applicable geographical area has been considered as Karnataka state, since applicable power tariff structure for renewable energy projects is unique for all the states across national boundary of India; which is based on Electricity Act 2003 (EA 2003), section 82 which clearly mentions “Every State Government shall, within six months from the appointed date, by notification, constitute for the purposes of this Act, a Commission for the State to be known as the (name of the State) Electricity Regulatory Commission” Appropriateness of the same has been checked and confirmed from EA 2003 (<http://www.cercind.gov.in/08022007/Act-with-amendment.pdf>).

Therefore based on the above discussed objective information validated, it has been concluded that the investment climate for the renewable energy projects varies from State to State within India due to state specific local policy & regulatory framework as outlined by the State Electricity Regulatory Commissions of the respective state. This difference in investment condition leads to essential distinction among solar energy projects between different States of the host country India. In additionally, the plant load factor, power transmission facilities are different in each state. The power off-taker is also a state Discom that regulates and operates the entire modality in line with the power purchase agreement signed for the project.

Therefore, consideration of the specific geographical area i.e. state of Karnataka (i.e. the state where project is located) against the entire host country for the common practice analysis of the proposed project activity found to be reasonable and justified.

The PP has submitted PD as per steps below for projects identification for similar and different projects and found to be appropriate.

Step 1: calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

The capacity of the project activity is 50 MW; hence applicable output range is 25 – 75 MW.

Step 2: identify similar projects (both CDM and non-CDM) which fulfill all of the following conditions:

- a. The projects are located in the applicable geographical area;

- b. The projects apply the same measure as the proposed project activity;*
- c. The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;*
- d. The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;*
- e. The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;*
- f. The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.*

Validation Team has verified that the project activity is a green-field solar power project and uses measure (b) “Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies”. Therefore, the PP has considered the projects applying same measure (b) are candidates for similar projects in common analysis as found appropriate as per common practice tool version 03.1.

The PP has considered appropriately the same energy source used by the project activity i.e. solar as per above step 2(c). Hence, this is found to be correct and accepted that only solar energy projects have been considered for analysis as per common practice tool version 03.1.

The PP has justified the step 2 (d) as the project activity produces electricity and supplies to Electricity Supply Companies in Karnataka (i.e. BESCOM) via Power Purchase Agreement; therefore, all power plants that produce electricity and supply to Grid under PPA are candidates for similar projects. Projects which produce electricity but sell electricity to third parties, or used under Land Owning Farmer Category or as part of any private solar park etc. can't be considered as output or services with comparable quality, properties and application areas as that of the project activity. Based on review of above justification given by the PP and review of signed PPA provided by the PP, it is found to be appropriate and accepted by validation assessment team as per common practice tool version 03.1.

As stipulated the requirement step 2 (e) and step (f) the PP has done the analysis to find the solar power generation projects in applicable geo-graphical area (which is Karnataka State of India) in applicable output range of +/-50% of the total design capacity of 150 MW i.e. output range of 75 – 125 MW. The validation team has checked and confirmed that the PP has appropriately considered the projects in common practice analysis which have started their commercial operation before start date of the project activity i.e 08/11/2019 (i.e. date of commissioning is 08/11/2019 which is the start date for VCS) as per requirement stipulated under Step 2 (f) of common practice tool version 03.1.

The PP has considered only the solar projects, which have started commercial operation before 08/11/2019 within the above define range of 75 MW to 125 MW in common practice analysis and found only one project which fulfil above-mentioned conditioned are. Validation team has verified the source of data provided by the PP and found to be correct and hence accepted. solar power projects commissioned list published by Karnataka Renewable Energy Development Ltd., (<http://kredlinfo.in/scrollfiles/Commissioned%20list%20Solar.pdf>) and (http://kredlinfo.in/solargrid/sqlist/Solar_alotlist.xlsx) and State wise commissioning status of grid connected Solar Power Projects - MNRE, India (<https://mnre.gov.in/file-manager/UserFiles/state-wise-commissioned-grid-connected-solar-power-projects.htm>) & <https://mnre.gov.in/file->

[manager/UserFiles/State%20wise%20commissioning%20status%20of%20grid%20connected%20solar%20power%20projects/Karnataka.pdf](#)) and found to be appropriate, thus it is accepted.

Based on review of above information and analysis validation team has confirm the out-come of step 2 that only one project identified (i.e. sl no. 290 in the given excel sheet or above source link) that can be considered to fall under the capacity range as identified above.

Step 3: within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all}

Validation Team has review the solar projects submitted to CDM and VCS within the consider project capacity range and found to be either registered, submitted for registration or undergoing validations. Validation Team has checked and confirmed from UNFCCC project database and CDM Pipeline or VCS database. After exclusion of the projects, registered, submitted for registration or undergoing validations, the number of similar projects identified are $N_{all} = 1$.

Step 4: within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff}

The PP has considered the projects implemented in different investment climate as different technology on the date of the investment decision.

The VCS Project activity is a grid connected large scale Solar PV project (i.e. 150 MW) and the projects identified in Step 3 are not any different project as compared to the technology. Hence, the value of different technology needs to be considered, which means,

$$N_{diff} = 0$$

Step 5: calculate factor $F = 1 - N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

PP has demonstrated all the required steps of Common practice analysis under the section 2.5 of the VCS PD (version 02) and also demonstrated under the Appendix-2 of the PD. A separate sheet with data/information sources with list of projects in the state of Karnataka has been submitted by PP/36/. The assessment team has verified the information² and calculation provided by PP and confirmed the following outcome:

$$F = 1 - N_{diff}/N_{all}$$

$$F = 1 - (0/1) = 1$$

Outcome of Step 4:

(i) $F = 1$; which is greater than 0.2;

² 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.

and

(ii) $N_{all} - N_{diff} = 1$; 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 not 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:

Thus assessment team had concluded that the project activity is not a common practice in the host country India, as F is greater than 0.2 , but $N_{all} - N_{diff}$ is lesser than 3. This is found to be appropriate and it is accepted

The approach used in the VCS PD /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, /13, 15/
- Project IRR and Benchmark Analysis calculation sheets/3/
- Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2016/26/

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/31/.

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)”.

3.2.6 Quantification of GHG Emission Reductions and Removals

The proposed 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” (t CO₂/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 2018/15/. 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 326,439 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 305,870 tCO₂e and total 3,058,709 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 VCS PD /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 VCS PD /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”

Proposed 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, The main emission potentially giving rise to leakage in the context of electrical sector projects is emission arising due to activities arising such as power plant construction and upstream emission from fossil fuel use (e.g. extraction, processing, and transport). These emission sources are neglected. (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 = Project emissions in year y (tCO₂)

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 VCS PD, which is found to be acceptable.

The ex-ante projection of estimated ER has been demonstrated in the section 3.4 of the VCS PD which is supported by an ER spreadsheet.

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 VCS PD, 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 VCS PD;
- All values used in the VCS PD are considered reasonable in the context of the proposed 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 VCS PD.

3.2.7 Methodology Deviations

No methodology deviations identified.

3.2.8 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 proposed 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 monitoring methodology specified in the applied methodology requires that the project-monitoring plan to consist of monitoring of quantity of net electricity supplied to the grid in the year y. In order to monitor the mitigation of GHG due to the project activity, the total energy exported needs to be measured. The net energy supplied to grid by the project activity multiplied by emission factor for regional grid, would form the baseline for the project activity.

Since the baseline emission factor is based on an ex-ante determination, monitoring of this parameter is not required. The sole parameter for monitoring is the net electricity exported to the grid.

The project boundary includes the solar project, sub-stations, grid and all power plants connected to grid. The proposed 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.

Monitoring Equipment Details:

All Energy Meters have been installed at 66kV feeder line.

Block 22	Main Meter	Check Meter	Stand by Meter
RR No: KSPDCL-T1-A83 (Line 09)			
S. No	LT-0830-A	LT-0837-A	16094016
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date/Installation Date	25/11/2019	25/11/2019	25/11/2019
RR No: KSPDCL-T1-A84 (Line 10)	Main Meter	Check Meter	Stand by Meter
S. No	LT-0790-A	LT-0824-A	16093972
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date /Installation Date	25/11/2019	25/11/2019	25/11/2019

Block 39	Main Meter	Check Meter	Stand by Meter
RR No: KSPDCL-R2-A73 (Line 03)			
S. No	LT-0780-A	LT-0786-A	17010111
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date/Installation Date	04/11/2019	04/11/2019	04/11/2019
RR No: KSPDCL-R2-A74 (Line 04)	Main Meter	Check Meter	Stand by Meter
S. No	LT-0787-A	LT-0789-A	17010150

Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date /Installation Date	04/11/2019	04/11/2019	04/11/2019
Block 40A:			
RR No: KSPDCL-R2-A75 (Line 05)	Main Meter	Check Meter	Stand by Meter
S. No	LT-0806-A	LT-0791-A	17010143
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date/Installation Date	18/11/2019	18/11/2019	18/11/2019
RR No: KSPDCL-R2-A76 (Line 6)			
	Main Meter	Check Meter	Stand by Meter
S. No	LT-0793-A	LT-0800-A	17010123
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date/Installation Date	18/11/2019	18/11/2019	18/11/2019

The assessment team has verified the information related to monitoring plan demonstrated by PP under the section 4.3 of the VCS PD (version 02)/01/ with respect to the DPR, PPA and actual power evacuation and monitoring practice implemented on ground. The information reported are found to be consistent and acceptable.

The key outlines of the monitoring plant are as follows:

Methods of measuring, recording and reporting of data etc.:

As prescribed under the section 4.2, the monitoring parameter will be measured continuously by metering system to be installed at the grid interconnection points.

Data shall be recorded by SLDC and monthly net power exported reports/statements shall be generated in the form of B-form or JMR. Billing will be on monthly basis, to be billed by PP to BESCOM.

Metering Equipment:

As per PPA provisions, the metering point will be at 66kV side of 220/66kV substation (as shown in the line diagrams above), where the power from the solar project is injected and at 220 kV side of 400/220 kV substation of CTU. i.e. Powergrid. For commercial settlement, PPA proposes interconnection point or delivery point shall mean the point at 220 kV side of 400/220 kV PGCL substation of CTU.

Calibration of monitoring equipment:

The energy meters at the feeders are maintained and owned by BESCOM. 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. As per ongoing practice in the region, the meters are being tested/calibrated by authority in every quarter or at once in six months. However, there is no such set precedent in place, hence PP has considered the calibration requirements in line

with the CEA order dated 17 Mar 2016 (para 18(b)), which proposes that the meters will be calibrated by the authority at-least once in five years. As frequency of once in five year is a national regulation in the host country, hence this is justifiable.

The procedures for internal auditing and QA/QC:

As confirmed by PP during the audit interview practices, PP shall also keep records of all data and reports for internal auditing purpose for the VCS activity. Such data/reports are like monthly records, invoices, meter test/calibration reports, etc. The QA/QC procedure will be generic in line with the overall quality maintained by PP across its operations.

Since the internal audit & QA/QC process will oversight the requirements of the monitoring activity and its accountability, hence this will suffice the requirement of the overall monitoring plan.

Emergency preparedness:

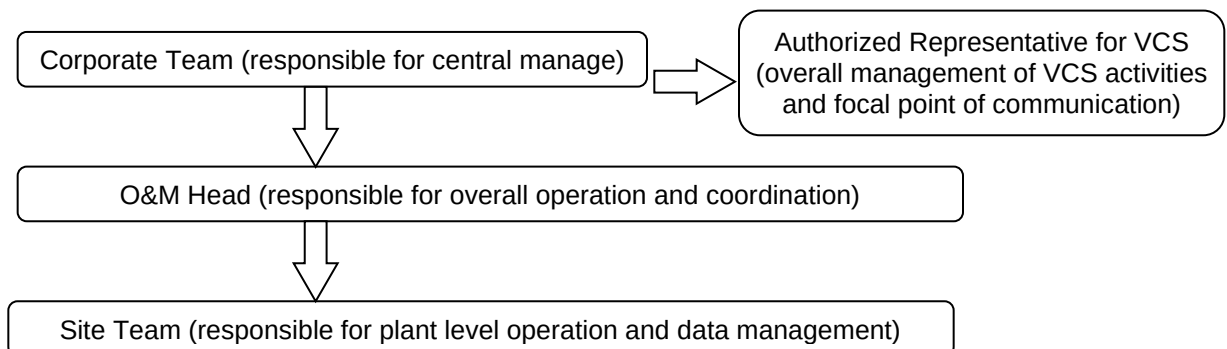
The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized. However, in the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired, recalibrated or replaced and the data from the check meter will be used in its place.

In case both the main and check meters are found to be beyond the permissible limit of error, both meters shall be calibrated immediately and correction applicable to main meter shall be applied to the energy registered by the Main Meter at the correct energy for the purpose of energy accounting/billing for the actual period during which such inaccuracy may occur.

As this practice is a requirement under the PPA, hence information related to emergency preparedness is justifiable.

Organization Structure:

PP has proposed the following organization structure pertaining to the project activity:



Validation team reviewed the structure and is of the opinion that this structure will help PP achieving effective operation & management of the VCS project activity. Hence acceptable.

Training and maintenance requirements:

Training on the technical components, plant operation etc. are essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the solar plants, it is extremely essential, that the engineers and technicians understand the equipment(s) and keep them in good health. 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 shall be provided with proper training to meet the requirements of the Operations and maintenance.

The procedures for handling non-conformances with the validated monitoring plan:

PP would conduct best possible practice to monitor all required parameters in order to implement the validated monitoring plan as prescribed in the VCS PD. In this regard, procedure established for internal audit and QA/QC will be adopted to avoid any non-conformances. However, in case of any non-conformances observed during the verification process, PP would submit a project description deviation applicable to the reporting period, justifying the conservativeness of the alternative approach as may be selected. Also PP shall identify why the scheduled checks were missed or non-conformity arose in the monitoring process; and thereby enhanced monitoring and quality assurance procedures will be adopted accordingly. In case non-conformity is unjustifiable, required post registration changes shall be applied to be in line with the requirements of the applied methodology and VCS guidelines.

These information are reliable and based on site visit, validation team has an understanding that Project will be associated with required and adequate training and maintenance to ensure proper implementation of the monitoring plan.

Sampling Approach:

No sampling approach is proposed.

The proper monitoring diagram along with meter points is included in the VCS PD under the section 4.3. It was observed that, the project activity is connected to the grid through an appropriate power evacuation system. Appropriate metering system and calculation procedures are transparently described in the monitoring plan to enable accurate determination of emission reductions achieved by the project activity. All information was verified by DOE and found to be appropriate.

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 VCS PD /01/ has been reviewed to check that the procedure for data uncertainty, emergency preparedness, roles and responsibility, operational and management structure are mentioned 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 02.0/24/, the validation team confirm that:

- ✓ The monitoring plan included in the VCS PD is based on the baseline methodology ACM0002 version 19.0.0 which has been applied to the proposed VCS project activity
- ✓ The monitoring arrangements described in the monitoring plan are feasible within the project design.
- ✓ The PP has the ability to implement the monitoring plan as per the VCS PD.

3.3 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 'Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)', final document on revised classification of Industrial Sectors dated 01/12/2009 (ref: http://moef.gov.in/wp-content/uploads/2018/07/4-SO3067E-01122009_0.pdf) under Red, Orange, Green and White Categories, Solar project activity falls under the "White category". Due to above categorization of white category and being the renewable in nature, the project activity does not emit any emissions. As confirmed by this rule, there shall be no necessity of obtaining the "Consent to Establish/Operate" for 'White Category' of industries. Intimation to concerned SPCB / PCC is sufficient. Which further confirms that 'Solar Project' does not lead to any negative environmental impact, hence no mitigation measures required.

However, as a part of internal reporting and interest, PP has conducted an ESIA assessment for the entire project capacity. The ESIA report/32/ has been submitted to DOE for reference. Validation team has reviewed the report which also includes all NOCs and approvals related to the project activity. ESIA report confirms that no negative impact environmental and Socio economic impact from project activity.

This project activity will not involve any negative environmental or socio-economic impacts, as the project activity involves generation of power using solar 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 VCS PD/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 14/09/2006/32/ http://environmentclearance.nic.in/writereaddata/EIA_notifications/2006_09_14_EIA.pdf and further notification number 3067 from MoEF dated 01/12/2009 http://moef.gov.in/wp-content/uploads/2018/07/4-SO3067E-01122009_0.pdf, activities are required to undertake environmental impact assessment studies. Moreover, EIA Notification, 2006 (Annexure -2, MoEF&CC, OM on J-11013/41/2006-IA.II (I) dated 7th July 2017) also confirms that Solar PV Power Projects are not covered under the ambit of ESIA. Thus, the proposed project activity does not fall under the listed categories and hence not required an EIA to be done.

However, as a part of internal reporting and interest, PP has conducted an ESIA assessment for the entire project capacity. The ESIA report/32/ has been submitted to DOE for reference. Validation team has reviewed the report which also includes all NOCs and approvals related to the project activity. The report confirms that the required assessment for environmental and social impacts has been carried out by PP. Thus, the validation team is of the opinion that the project complies with environmental regulations in India; also 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.

4.3 Local Stakeholder Consultation

The local stakeholder consultation process has been described in detail, by the PP, in section 5.3 of the VCS PD 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 through inviting the relevant stakeholders to comment on the project activity. The Local Stakeholder Meeting was held on 20/11/2019 at the project site.

Stakeholders were invited through public notice. The documentary evidence provided as proof of date of the invitation, meeting; and mode of invitation/8/ 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 attendance sheet, feedback forms etc./8/ have been submitted by PP.

Based on the supporting documents of stakeholder consultation, the validation team was convinced that the process of stakeholder consultation was carried out as described in the VCS PD. During the on site visit, validation had interacted with the localities in the project region, the villagers confirmed that they were invited for the meeting through public notice and a proper consultation was done by PP. This was found to be consistent with the invitation process mentioned in the VCS PD/01/.

Thus overall, there was an understanding among the stakeholders that the proposed 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 local people. The local stakeholders interviewed during the site visit endorsed this view.

4.4 Public Comments

In accordance with the requirement in clause 3.16.5 of the VCS standard version 4.0 “All VCS projects are subject to a 30-day public comment period. The date on which the project is listed on the project pipeline marks the beginning of the project’s 30-day public comment period”.

The PP listed their project activity in the VCS pipeline for 30 days from 20/11/2019 to 20/12/2019 (https://www.vcsprojectdatabase.org/#/pipeline_details/PL2017) for public comments.

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

5 VALIDATION CONCLUSION

WeAct Pty Ltd. has contracted the Earthood Services Private Limited (also referred to as ESPL) to validate and verify the project: “Karnataka Pavagada-II Solar Project by Avaada (150 MW).” with regard to VCS Version 3 requirements and the information provided by the project proponent related to the project design, operation, monitoring and reporting.

A risk-based approach has been followed to perform this validation and verification. In the course of the joint validation & verification 04 Corrective Action Requests (CARs), 01 Clarification requests (CLs) and 01 Forward Action Request (FAR) 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 PPA under BESCO, 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 VCS PD.
- The monitoring plan is transparent and adequate and in line with applied baseline and monitoring methodology of ACM0002, version 19.0.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 3,058,709 tCO₂e/year is most likely to be achieved during the 10 years (renewable) of crediting period.
- 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.

Approved by



Dr. Kaviraj Singh

Managing Director

Earthood Services Privated Limited

Date: 23/12/2019

Place: Gurgaon, Haryana

APPENDIX 1: Document Reference

Ref. No	Title of Document	Version	Date
1	VCS Project description (VCS PD)	1.1	16/11/2019
		2.0	21/12/2019
2	Emission Reductions Calculation Spread sheet	01	07/11/2019
		02	02/12/2019
3	Combined IRR and Benchmark Analysis Spread sheet	01	05/11/2019
		02	02/12/2019
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/PL2017	-	-
7	Power purchase agreement (PPAs) signed by PP with BESCO	-	07/11/2018
8	Local stakeholder documents – • Public notice • Attendance sheet • Comments sheet • Photographs	-	20/11/2019
9	Clean Development Mechanism Validation and Verification Standard	02.0	29/11/2018
10	Tool for the demonstration and assessment of additionality	07.0.0	EB 70, Annex 8
11	TOOL27 Methodological tool: Investment analysis	09.0	EB 101, Annex 11
12	Technical specifications of the project (Certified declaration)	-	-
13	Detailed Project Report (DPR)	Final approved	29/01/2019
14	Approvals and Clearances for project activity	Part of ESIA	-
15	Financial Data, Information and supporting documents applicable to the project activity, important dates of chronological events etc. (Certified Declaration from PP)	-	25/10/2019
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://www.cercind.gov.in/2016/orders/SORE.pdf	-	-
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	-	-

	https://www.incometaxindia.gov.in/layouts/15/dit/mobile/viewer.aspx?path=https://www.incometaxindia.gov.in/charts++tables/tax+rates.htm&k&lsDIg=0 Good & Service tax rate (GST): http://gstcouncil.gov.in/central-tax-rate https://www.taxmanagementindia.com/web/View_discussions_detail.asp?ID=114897		
21	Inflation forecast (CPI Combined Mean) as per RBI for 10yrs 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	Common Practice analysis tool	Version 3.1	03/06/2015
24	VCS Standard	Version 4.0	19/09/2019
	VCS Program Guide	Version 4.0	19/09/2019
	VVS, latest version by CDM	Version 02.0	29/11/2018
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	-	25/10/2019
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
	CERC Regulation (2016) http://www.cercind.gov.in/2016/regulation/124_1.pdf	-	06/04/2016
27	JMR copy for the month of November for reference purpose	-	-
28	Site visit attendance sheet, photographs	-	03/12/2019
29	VCS Listing Representation	-	07/11/2019
30	Communication Agreement for VCS representation	-	05/11/2019
31	PLF assessment details	-	03/12/2019
32	ESIA Report by PP	-	-
33	Ministry of Environment and Forest notification dated 14/09/2006		14/09/2006
34	EIA Notification, 2006 (Annexure -2, MoEF&CC, OM on J-11013/41/2006-IA.II (I) dated 7th July 2017)	-	07/07/2017
35	Commissioning Certificates	Block 39 Block 40A Block 22	08/11/2019 21/11/2019 27/11/2019
36	Common Practice Analysis Sheet (150MW KA-II)	-	07/11/2019

APPENDIX 2: Abbreviations

ABT	Availability Based Tariff
ACM	Approved Consolidated Methodology
BESCOM	Bangalore Electricity Supply Company Limited
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CL	Clarification Request
DISCOM	Distribution company
DPR	Detailed Project Report
EB	Executive Board
EIA	Environmental Impact Assessment
EPC	Engineering and Procurement Contractor
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse Gases
ISO	International Organization for Standardization
JMR	Joint Meter Readings
LCS	Local Controller System
MGRs	Monthly Generation Reports
MoEF	Ministry of Environment and Forest
MP	Monitoring Period
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
tCO ₂	Tonnes of Carbon Dioxide
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard

VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit

APPENDIX 3: Competency Statement

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

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

Reviewed by	Shreya Garg	Date	12/03/2019
Approved by	Kaviraj Singh	Date	12/03/2019

APPENDIX 4: Findings Overview

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

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

Table 2. CL from this validation

CL ID	1	Section no.	PD	Date :24/11/2019
Description of CL				
PP is requested to submit following documents: - ER sheet - IRR sheet - EF calculation sheet - PPA - EPC construction contract - Technical specification of Solar Panel and Invertor - Stakeholder consultation documents				
Project participant response				Date : 21/12/2019
PP has submitted the required documents to DOE during the site visit. Also the documents are being submitted to DOE along with these responses.				
In case IRR sheet, the default value for benchmark has been updated as per latest tool. Also, the project commissioning details are updated as per actual dates of commissioning.				
The EPC contract copy was provided to DOE during the site audit; but due to confidentiality extra copy is not submitted separately. However, certified declarations related to project financials, all relevant dates, technical specifications etc. are submitted to DOE.				
The stakeholders consultation documents are submitted to DOE, also the relevant details are included under the Annex 1 of the VCS PD for reference.				
Documentation provided by project participant				
ER sheet, version 01, dated 5 Nov 2019 ER sheet, version 02, dated 2 Dec 2019 IRR sheet, version 01, dated 5 Nov 2019 IRR sheet, version 02, dated 2 Dec 2019 Certified Financial Info -150 MW II (dated 25 Oct 2019) Certified declaration-Technical Specifications Stakeholders Consultation Documents				
DOE assessment				Date: 23/12/2019

Assessment team confirm receipt of all documents, all documents inline with requirement. Hence accepted.

CL#1 Closed

Table 3.CAR from this validation

CAR ID	01	Section no.	PD	Date :24/11/2019
Description of CAR				
PP is requested to include technical details of Modules and inverter in section 1.8 of PD.				
Project participant response				Date :21/12/2019
The technical details of the Solar PV modules and inverter are included under the section 1.8 of the VCS PD. The supporting details of the technical specs are also submitted to DOE. During the site visit also, the tech specs are physically verified.				
Documentation provided by project participant				
Revised VCS PD, version 02, dated 21 Dec 2019. Certified declaration-Technical Specifications				
DOE assessment				Date: 23/12/2019
Assessment team confirm that PP has included technical details of the Solar PV modules and inverter are included under the section 1.8 of the VCS PD. These information were verifiable in conformity with the details verified by DOE during the site visit. Hence accepted.				
CAR#1 Closed				

CAR ID	02	Section no.	PD	Date :24/11/2019
Description of CAR				
PP is requested to include link of CEA database version 14.				
Project participant response				Date : 21/12/2019
The weblink for CEA database version 14 has been included in the relevant sections of the VCS PD.				
Documentation provided by project participant				
Revised VCS PD, version 02, dated 21 Dec 2019.				
DOE assessment				Date: 23/12/2019
Assessment team confirm that PP has included weblink for CEA database version 14 in VCS PD. Weblink is operational and navigates to the official website of CEA.				
CAR#2 Closed				

CAR ID	03	Section no.	PD	Date :24/11/2019
Description of CAR				
PP is requested to include calculation method of electricity apportioning in section 4.3 monitoring plan. PP is requested to include sample baseline emission calculation in section 3.1 of PD.				
Project participant response				Date : 21/12/2019

PP has updated the section 4.3 of the monitoring plan to include the single line diagram of the entire project capacity (all three phases) which includes all metering points, feeders, connected substation etc. Also, the details of energy meters are included in the section.

The billing cycle is considered from the start and end date of each month, hence no separate apportioning procedure is prescribed. However, there is an apportioning practice adopted by Discom to account for the line losses, which is calculated by authority directly and PP has no direct control on this. As source of monitoring data is referred from the monthly B-forms, which already accounts for such line losses, export, import data etc. therefore no separate calculation is prescribed under the monitoring plan. Thus, for the monitoring parameter (i.e. net electricity supplied to grid), the monthly B-forms are the source documents which does not require any further calculation or apportioning.

The sample baseline emission calculation has been included in the section 3.1 of PD. Same can be also referred in the ER sheet, version 02.

Documentation provided by project participant

Revised VCS PD, version 02, dated 21 Dec 2019.

DOE assessment

Date: 23/12/2019

Assessment team accepted PP response on electricity apportioning and verify the same during site visit as mentioned in section 4.3 monitoring plan.

Assessment team confirm that PP has included sample baseline emission calculation in section 3.1 of PD. This calculation is consistent with the information submitted in the ER sheet.

CAR#3 Closed

CAR ID	04	Section no.	PD	Date	:24/11/2019
Description of CAR					
PP is requested to clarify how energy meter calibration frequency taken as 5 year.					
Project participant response					Date : 21/12/2019
PP would like to clarify that the energy meters at the feeders are maintained and owned by BESCOM. 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. As per ongoing practice in the region, the meters are being tested/calibrated by authority in every quarter or at once in six months. However, as PP do not have control over this practice, therefore in line with the CEA order dated 17 Mar 2016 (para 18(b)), PP proposes that the meters will be calibrated by the authority at-least once in five years. This information is also incorporated in the section 4.3 of the PD.					
Documentation provided by project participant					
Revised VCS PD, version 02, dated 21 Dec 2019.					
DOE assessment					Date: 23/12/2019
Assessment team accepted PP response on calibration frequency which is inline with CEA guideline.					
CAR#4 Closed					

Table 4. FAR from this validation

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