

“216 MWAC KAMUTHI SOLAR POWER PROJECT”

Document Prepared By Earthood Services Private Limited

Project Title	216 MWac Kamuthi Solar Power Project
Version	01
Report ID	VCS.VER.19.43

Report Title	Verification Report of “216 MWac Kamuthi Solar Power Project”
Client	Kamuthi Solar Power Limited
Pages	24
Date of Issue	22/10/2019
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Summary:

Earthood has performed the VCS second verification of the project “216 MWac Kamuthi Solar Power Project” (VCS Ref. Number 1768).

The scope of verification includes confirming the implementation of the monitoring plan of the registered VCS PD (version 02) and the application of the monitoring methodology Approved consolidated baseline and monitoring methodology ACM0002 (Version 18.1)

The verification is consisted of three phases: i) desk review of the project; ii) follow-up onsite visit and interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted following Earthood internal quality procedures.

The project deals with utilisation of solar energy for the generation of electricity. The project activity involves installation of 216 MWac (corresponding 261 MWp) solar power project in Tamil Nadu. In this process there is no consumption of any fossil fuel and hence the project does not lead to any greenhouse gas emissions. Electricity generated from such renewable sources of energy will help displace the energy produced from non-renewable sources of energy such as fossil fuels. Hence will lead to emission reductions of mainly GHGs. Benefits arising from such emission reduction will also lead to optimal usage of energy source.

During the verification process 06 CARs, 01 CL and 00 FARs were raised and are discussed in detail in Appendix 4. Therefore, the emission reductions from the project activity “216 MWac Kamuthi Solar Power Project” in India during the period 28/03/2018 to 30/09/2019 (including both days) could be verified.

Vintage wise representation of the emission reductions is as follows:

Period	Baseline Emissions (tCO2e)	Project Emissions (tCO2e)	Leakages (tCO2e)	Emission Reductions (tCO2e)
28/03/2018 to 31/12/2018	267,561	0	0	267,561
01/01/2019 to 31/09/2019	298,587	0	0	298,587
Total	566,148	0	0	566,148

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1 INTRODUCTION

1.1 Objective

Kamuthi Solar Power Limited has commissioned Earthood Services Private Limited (Earthood) to perform second verification of the “216 MWac Kamuthi Solar Power Project” (hereafter called project) for the monitoring period 28/03/2018 to 30/09/2019 with VCS Ref number 1768. The objective of this verification is a thorough and independent verification for the emission reductions reported for “216 MWac Kamuthi Solar Power Project” and managed by Kamuthi Solar Power Limited.

The verification is the periodic independent review and ex post determination by Earthood Services private limited of the monitored reductions in GHG emissions that have occurred as a result of the registered VCS project activity during a defined monitoring period. Certification is the written assurance by Earthood that, during a specific period in time, a project activity achieved the emission reductions as verified.

1.2 Scope and Criteria

The scope of the verification is to establish and verify that;

- a) The project activity has been implemented and operated as per the registered PD or any approved revised PD, and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- b) The monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of the completeness checklist for requests for issuance of VERs, verifiable, and in accordance with applicable VCS requirements;
- c) The actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan, any revised approved monitoring plan, the approved methodology including applicable tool(s) and/or, where applicable, the approved standardized baseline;
- d) The data recorded and stored as per the monitoring methodology including applicable tool(s) and, where applicable, the standardized baseline

1.3 Level of Assurance

A draft verification report that is prepared by assessment team will be reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by Earthood were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable VCS and CDM (Clean Development Mechanism) requirements as appropriate. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the validation team. The report approved by Quality Manager is endorsed by Managing Director, who is overall responsible to ensure quality, before final release. The further details of applicable procedures and responsibilities about Earthood Quality Management System (QMS) are available on its website (www.earthood.in).

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

In our opinion the GHG emissions reductions reported for the project activity for the period 28/03/2018 to 30/09/2019 are fairly stated in the Monitoring Report Version 02 dated 22/10/2019^{2/}. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, Version 18.1^{7/}, and the VCS standard^{14/}.

For more information, please refer to section 6 of this verification report.

1.4 Summary Description of the Project

This greenfield project activity involves the use of solar energy to generate electricity with the help of total installed capacity of 216 MW_{AC}^{10/}; which involves operation of Solar Power plant in the state of Tamilnadu.

The proposed 216 MW_{AC} solar PV Plant site is located near Kamuthi village of Ramathapuram district, in the Indian state of Tamil Nadu. The site lies around the coordinates- 9°18'21" N, 78°24'14" E.

The technology employed, converts solar energy to electrical energy. Solar power generation technology is environment friendly technology since there are no GHG emissions associated with the electricity generation.

Total capacity of the project activity is 216 MW as per the registered PD^{11/}. Duration of this second periodic verification of the project activity is from 28/03/2018 to 30/09/2019 and total emission reductions achieved during this monitoring period is 566,148 tCO_{2e}.

The commissioning details of the solar plant mentioned in MR was verified from the commissioning certificates provided^{10/} by the PP. Project activity has installed modules of Canadian Solar International Limited, Trina Solar, Hanwha and Suntech with module type Poly C-Si. Technical description was found to be consistent with the on-site observation^{9/} and registered VCS PD^{11/}.

Details are as follows:

Module Supplier	Module Type	Capacity (p)	Number	Total Capacity (MWp)
Canadian Solar International Limited	Poly C-Si	310	83,680	25.9408
		315	326,400	102.816
		320	155,040	49.6128
Trina Solar	Poly C-Si	310	56,000	17.36
		315	70,720	22.2768
Hanwha	Poly C-Si	310	46,080	14.2848
		315	33,920	10.6848
Suntech	Poly C-Si	310	26,880	8.3328
		315	23,040	7.2576

Total	261.024
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2 VERIFICATION PROCESS

The registered VCS project is undergoing second verification, the approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Earthood internal procedures.

The Project was verified against the latest requirements and guidance set out in VCS and CDM standards.

No sampling approach has been applied by the verification team as all the monthly reported figures in the MR^{2/} and the ER sheet^{3/} were checked from the actual records.

2.2 Document Review

The verification is performed primarily as a document review of the documents submitted at various stages of assessments. The review is performed by assessment team using dedicated protocols. The assessment team cross checks the information provided in the documents (PDD, MR, validation report) and information from sources other than those used, if available, and also conducts independent background investigations. Earthood conducted a desk review as under;

- a) A review of the data and information presented to verify their completeness.
- b) A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures.
- c) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

2.3 Interviews

Earthood performed an on-site visit and interviews on 21/10/2019 with project stakeholders to confirm selected information and to resolve issues identified in the document review. During the on-site visit, the PP representatives of were interviewed.

No.	Interviews			Date	Subject	Team Member
	Last Name	First Name	Affiliation			
1.	Narayanan	Sankara	DGM, O&M, KSPL	11/07/2019	Project implementation, Equipment's, Operation and monitoring, JMR, Calibration etc	Dr. Atul Takarkhede

No.	Interviews			Date	Subject	Team Member
	Last Name	First Name	Affiliation			
2.	H.	Muruganan	Plant Head, KSPL	11/07/2019	Project implementation and management	
3.	D.	Ganapatra	Sr. Manager (Maintenance), KSPL	11/07/2019	SCADA, O&M	
4.	Subramanian	Vinoth	Associate Manager, O&M, KSPL	11/07/2019	O&M	

In addition, the location specified for the plant was verified from the registered PD^{/1/} along with the help of mobile GPS. The operation of the Solar Plant was checked through the JMRs^{/6/} issued from the government authorities. Based on the site visit and desk review, the verification team is sufficiently confident of the implementation of the project activity as per registered PD^{/1/} except mis-match of geo-coordinates of the project location.

2.4 Site Inspections

A site visit was undertaken by Earthood from on 21/10/2019 to carry out following;

- An assessment of the implementation and operation of the registered project activity as per the registered PD^{/1/}.
- A review of information flows for generating, aggregating and reporting the monitoring parameters.
- Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the monitoring plan in the PD^{/1/}.
- A cross check between information provided in the monitoring report and data from other sources such as invoices.
- A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PD, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline.
- A review of calculations and assumptions made in determining the GHG data and emission reductions.
- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

Technical descriptions as seen on site was found to be in line with the registered VCS PD^{/1/}. The Solar plant was visited by the DOE and their location was recorded through mobile application of Google earth^{/17/}. However, the geo-coordinates were not found accurate and hence CAR 04 was raised and resolved. The site lies around the coordinates of 9°18'21" N & 78°24'14" E^{/17/}.

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and onsite assessment. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and nonconformities, which may be of following types;

CAR (Corrective Action Request) is raised if one of the following occurs:

- a) Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient
- b) Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants
- c) Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions
- d) Change to the key sustainable development indicators
- e) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable requirements have been met. All CARs and CLs raised by the Earthhood during verification shall be resolved prior to submitting a request for issuance.

FAR (Forward Action Request) is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

A total of 06 CAR and 01 CL were raised in the current verification. All the findings that are raised and communicated to project participant during the verification are included under Appendix 4. The section also includes the response, if provided, by the project participants and an assessment by the verification team if it was closed out or otherwise

2.5.1 Forward Action Requests

Not Applicable

2.6 Eligibility for Validation Activities

Not Applicable

3 VALIDATION FINDINGS

Not Applicable

3.1 Participation under Other GHG Programs

This section is not applicable for present verification.

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period.

3.3 Project Description Deviations

The geo-coordinates of the project activity was not found exactly correct and same are now corrected as 9°18'21" N & 78°24'14" E¹⁸.

The changes in the project description were found acceptable to the assessment team as the changes have no impact on the physical implementation of project activity, applicability of the methodology or additionality of the project, or on the appropriateness of the baseline scenario. The changes were found conformance to VCS 3.4 requirements and therefore the changes were founding acceptable.

3.4 Grouped Project

Not Applicable

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

This project activity involves installation of 216 MW_{ac} (corresponding 261 MW_p) solar power project in Tamil Nadu which was verified on site^{/9/} and through commissioning certificates^{/10/}.

The proposed 216 MW_{ac} solar PV Plant site is located near Kamuthi village of Ramathapuram district, in the Indian state of Tamil Nadu. The site lies around the coordinates- 9°18'21" N, 78°24'14" E.

The technology employed, converts solar energy to electrical energy. Solar power generation technology is environment friendly technology since there are no GHG emissions associated with the electricity generation.

The installation and specification of power plant have been checked with commissioning certificates^{/10/} and during on-site assessments^{/9/}. There was no major breakdown or shut downs during the monitoring period which might affect the applicability of methodology or might cause material errors in emission reductions.

Assessment team concludes the following:

- a) The implementation status of project activity was found to be in compliance with registered PD^{/1/}.
- b) DOE has conducted the on-site visit to confirm the implementation status of the project^{/9/}.
- c) The commissioning date of the project activity was found to be accurately and consistently recorded^{/10/}.
- d) The actual operation of project activity was found to be in compliance with the flow diagram provided in registered PD^{/1/}.
- e) The emission reductions achieved during the current monitoring period are 566,148 tCO_{2e}.

The project activity contributes to the sustainable development by utilising solar energy for generating electricity which otherwise would have been generated through fossil fuels. Thereby reduction in usage of non-renewable sources used to generate energy.

Further the GHG emission reductions generated by the project activity has not been included by any other an emissions trading program or any other mechanism that includes GHG allowance trading. Also the project has not received any other form of environmental credit and has not been participated/rejected under any other GHG programs.

Sustainable Development- The project will contribute to the sustainable development in the following ways

1. Environmental: Since the project activity leads to cleaner production of energy, it is leading to displacement of fossil fuel based energy.
2. Social: Setting up of the project activity has created new job openings hence is supporting employment of the local people around.
3. Cleaner Air: Since the project activity leads to lesser GHG emission it results in better air quality.

Further the project has been implemented as described in the Project Description^{/1/}.

The total emission reductions achieved in this monitoring period i.e. from 28/03/2018 to 30/09/2019 are 566,148 tCO₂e.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The project monitoring has been carried in accordance with the registered VCS PD^{/1/} and the monitoring report^{/02/}. The monitoring plan laid in the registered PD is being followed at the site^{/9/}. The assessment team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting for these parameters including the values) in the MR^{/2/}.

The emission reductions are purely based on the net electricity generated and exported from the plant. PP has provided all the sufficient data for current monitoring period. The values of the parameter EG_{PJ,y} used in deriving the GHG emission reduction could be very well correlated between the data sets and ER spreadsheet^{/3/} provided by PP. the verification of each monitoring parameter has been discussed later in section 4.3.

The calculation method and formulae used in calculating baseline emission is in compliance to the methodology used i.e. ACM0002 version 18.1^{/7/}. Since project activity is a solar power project, leakage emission and project emission has been considered as zero.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

The below tables describe how the parameter, that is to be measured according to the monitoring plan, has been verified to confirm that the actual monitoring complies with the monitoring plan, monitoring data has been thoroughly assessed and that the calibration requirements are fulfilled.

Parameter	EG_{PJ,y} (MWh) Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	
Means of verification	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	The parameter is continuously measured and monthly recorded as JMR ^{/6/} i.e. Monthly Credit Report by TANGEDCO.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PD ^{1/} and monitoring methodology ^{7/} .
	Monitoring equipment	Dedicated meters located at the sub-station
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Accuracy class of the equipment is 0.2s, which is in line to registered PD ^{1/} and consistent with calibration certificate ^{4/} as well. Information was found consistent onsite ^{9/} .
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Accuracy class is valid for entire range.
	Calibration frequency /interval:	The meters are calibrated by respective State Utility/Authorized agency once in five years ^{1/} . Details of the calibration are provided in FVR and revised MR.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, Pending until the findings are closed, or as per the manufacturer's specifications?	Yes
	Is the calibration of measuring equipment carried out by an accredited person or institution?	The meters are calibrated by respective State Utility's testing division/Authorized agency once in five years ^{4/} .

	Is(are) calibration(s) valid for the whole reporting period?	Yes. The calibration dates are presented in appendix 5 of this report. The dates have been checked from the calibration certificates ^{4/} . Thus, it is valid for the whole monitoring period.
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes
	How were the values in the monitoring report verified?	A value of Net Electricity export by the project activity for the monitoring period verified from monthly joint meter reading issued by State Utility ^{9/} i.e. Monthly Credit Report. The value was found to be consistently reported in MR ^{2/} and ER sheet ^{3/} .
	If applicable, has the reported data been cross-checked with other available data?	The readings were cross checked with the monthly bills raised by PP to respective State Utility ^{5/} .
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the calibration of the monitoring meters is done by state utility periodically. Check meters also help in verifying main meter readings.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR 06 was raised and resolved.	
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in	

	<p>the monitoring plan.</p> <p>The implementation of the project is as per the registered PD^{1/} could be confirmed by the verification team.</p>
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Parameters fixed ex ante:

EF_{grid,OM,y}: tCO₂e/MWh: It is the operating margin emission factor of Indian grid at the time of project registration the mentioned value of 0.9843 tCO₂e/MWh is consistent with the registered PD^{1/}.

EF_{grid,BM,y}: tCO₂e/MWh: it is build margin emission factor of Indian grid fixed and at the time of project registration the mentioned value of 0.9083 tCO₂e/MWh is consistent with the registered PD^{1/}.

EF_{grid,CM,y}: tCO₂e/MWh: it is the combined margin emission factor of Indian grid fixed at the time of project registration the mentioned value of 0.9653 tCO₂e/MWh is consistent with the registered PD^{1/}.

Calibration of meters:

During the verification assessment of the project activity, accuracy of all the metering were checked. The installation and working conditions of the meters were checked during the on-site inspection. Calibration details of the meter is given in Appendix of this report.

In line with the registered PD, calibration frequency of the billing meters is once in five years and no delay in calibration has been observed in this periodic verification. Further, there was not any significant period of shut-down or break-down period during this monitoring period.

GHG Calculations

The emission reduction as per the applied methodology equals the baseline emissions (project emissions and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

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

Where:

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

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

EF_{grid, CM, y}: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂e/MWh)

Baseline emissions (BE_y) are calculated as follows:

$$\begin{aligned} BE_y &= EG_{PJ, y} * EF_{grid, CM, y} \\ &= 586,500 \times 0.9653 \\ &= 566,148 \text{ tCO}_2\text{e} \end{aligned}$$

Baseline Emissions for Project activity:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
28/03/2018 to 31/12/2018	267,561	0	0	267,561
01/01/2019 to 31/09/2019	298,587	0	0	298,587
Total	566,148	0	0	566,148

4.4 Non-Permanence Risk Analysis

Not applicable.

5 SAFEGUARDS

5.1 No Net Harm

Not applicable

5.2 Local Stakeholder Consultation

Local stakeholder consultation has been conducted at the time of project registration hence not applicable in the current monitoring period.

6 VERIFICATION CONCLUSION

Earthood Services Private Limited (Earthood), contracted by Kamuthi Solar Power Limited, has performed the independent verification of the emission reductions for the VCS project activity reference number 1768 “216 MWac Kamuthi Solar Power Project” in India for the monitoring period 28/03/2018 to 30/09/2019 reported in the Monitoring Report Version 02 dated 22/10/2019.

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

Earthood commenced the verification on the basis of the baseline and monitoring methodology ACM0002 (Version 18.1), the monitoring plan contained in the PD Version 02 and VCS guidelines

version 3.7, Monitoring Report Version 02 dated 22/10/2019 as per the process described under Section 2 of this report.

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

In our opinion the GHG emissions reductions reported for the project activity for the period 28/03/2018 to 30/09/2019 are fairly stated in the Monitoring Report Version 02 dated 22/10/2019. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002 (Version 18.1) and the VCS standard.

Monitoring period: 28/03/2018 to 30/09/2019 (both days inclusive)

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
28/03/2018 to 31/12/2018	267,561	0	0	267,561
01/01/2019 to 31/09/2019	298,587	0	0	298,587
Total	566,148	0	0	566,148

Approved by



Kaviraj Singh
Managing Director
Earthood Services Privated Limited

Date: 30/10/2019
Place: Gurgaon, Haryana

APPENDIX 1: References

S.No	Title of Document	Version	Date
1.	Registered VCS PD	02	15/07/2018
2.	VCS Monitoring Report	02	22/10/2019
3.	ER spreadsheet (corresponding to the final monitoring report)	02	22/10/2019
4	Certificates of Calibration for all the meters belongs to project activity	-	16/09/2016
5.	Invoice issued by PP for the duration of 28/03/2018 to 30/09/2019	-	-
6.	Joint Meter Readings/ Monthly Credit Report by TANGEDCO for the duration of 28/03/2018 to 30/09/2019	-	-
7.	"Consolidated baseline methodology for grid-connected electricity generation from renewable sources", ACM0002,	18.1	-
8.	CO ₂ Baseline Database for the Indian Power Sector published by the Central Electricity Authority (CEA), Ministry of Power, Govt.	version 12	-
9.	On-site assessment, interviews of plant staff	-	21/10/2019
10.	Commissioning certificate for project activity	-	30/09/2016
11.	Power Purchase Agreements	-	-
12.	VCS webpage for the project, VCS ID 1768; https://www.vcsprojectdatabase.org/#/project_details/1768	-	Last accessed on 22/10/2019
13.	O&M contract for all project sites	-	-
14.	VCS Standard	Version 3.7	Last accessed on 22/10/2019
15.	VCS Program Guide	Version 3.7	Last accessed on 22/10/2019
16	Letter of declaration dated from PP regarding not having created or sought any other form of environmental credit for the same period and double counting	-	17/10/2019
17	Google Earth desktop/Mobile application	-	Last accessed on 21/10/2019

APPENDIX 2: Competency Statement

Competence Statement			
Name	Atul Takarkhede		
Education	Ph.D. Environmental Science		
Experience	12 years		
Field	Climate Change and environment		
Approved Roles			
Team Leader	YES		
Validator	NO		
Verifier	NO		
Methodology Expert	NO		
Local expert	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (1.2)		
Reviewed by	Shreya Garg	Date	24/04/2019
Approved by	Anshika Gupta	Date	25/04/2019

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

APPENDIX 3: Abbreviations

BEF	Baseline Emission Factor
BM	Build Margin
CAR	Corrective Action Request
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CL	Clarification Request
CMS	Central Monitoring System
CO2	Carbon dioxide
EB	Executive Board
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Standards Organization
JMR	Joint Meter Reading
kW	Kilowatt
kWh	Kilowatt hour
MR	Monitoring Report
MW	Megawatt
MWh	Megawatt-hour
NEWNE	Northern Eastern Western Northern-Eastern
PD	Project Description
PP	Project Proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance and Quality Control
TANGEDCO	Tamil Nadu Generation and Distribution Corporation Limited
VCS	Voluntary Carbon Standard
VCSA	Voluntary Carbon Standard Association
VCS PD	VCS Project Description
VCUs	Voluntary Carbon Units

APPENDIX 4: Verification Findings

Remaining FAR from validation and/or previous verification

FAR ID	01	Section no.		Date : DD/MM/YYYY
Description of FAR				
<i>There is no FAR from the previous verification.</i>				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

Table 1. CL from this verification

CL ID	02	Section no.		Date 21/10/2019
Description of CL				
<i>PP requested to submit following documents of the project activity:</i>				
<ol style="list-style-type: none"> 1. Commissioning Certificate 2. Copy of PPA. 3. Declaration by PP regarding participation in other GHG programs and avoidance of double counting of emission reductions achieved. 				
Project participant response				Date : 22/10/2019
<p>The following documents shall be submitted along with this submission:</p> <ol style="list-style-type: none"> 1. Commissioning certificates 2. PPA 3. Declaration by PP regarding participation in other GHG programs and avoidance of double counting of emission reductions achieved 				
Documentation provided by project participant				
<ol style="list-style-type: none"> 1. Commissioning certificates 2. PPA 3. Declaration by PP regarding participation in other GHG programs and avoidance of double counting of emission reductions achieved 				
DOE assessment				Date: 22/10/2019
Assessment team checked the documents submitted by the PP and found inline & complete.				

Table 2. CAR from this verification

CAR ID	03	Section no.	4.1	Date: 21/10/2019
Description of CAR				
<i>Monitoring period is not clear about inclusion of first and last dates. Corrections requested</i>				
Project participant response				Date: 22/10/2019
Both the dates are inclusive in the monitoring period and so the MR is revised accordingly.				
Documentation provided by project participant				
Revised MR.				
DOE assessment				Date: 22/10/2019
The MR is revised and inclusion of first & last date included appropriately. Thus CAR closed.				

CAR ID	04	Section no.	4.1	Date : 21/10/2019
Description of CAR				
<i>Geo-coordinates of the project activity are not matching exactly with the actual site coordinates. Corrections requested in the MR as per the guidelines.</i>				
Project participant response				Date : 22/10/2019
The actual Geo-coordinates of the project activity are 9°18'21" N, 78°24'14" E which is now corrected in section 1.7 Project Location and also been mentioned in the Project deviation section 2.2.2 of the revised MR.				
Documentation provided by project participant				
<i>Revised MR</i>				
DOE assessment				Date: 22/10/2019
PP have submitted revised MR with corrected geo-coordinates of the project activity. The changes in the project description were found acceptable to the assessment team as the changes have no impact on the physical implementation of project activity, applicability of the methodology or additionality of the project, or on the appropriateness of the baseline scenario. CAR closed.				

CAR ID	05	Section no.	4.1	Date : 21/10/2019
Description of CAR				
<i>Under Section 1.10 of the MR, Economic Well-being contains environmental aspects. Correction requested.</i>				
Project participant response				Date : 22/10/2019
Section 1.10 Sustainable Development' has been corrected now.				
Documentation provided by project participant				
<i>Revised MR</i>				
DOE assessment				Date: 22/10/2019
Respective section now corrected appropriately. CAR closed.				

Accuracy of GHG Emission Reduction and Removal Calculations

CAR ID	06	Section no.	4.2	Date : 21/10/2019
Description of CAR				
<i>PP requested to submit JMR and invoices for the month of July & September 2019 for verification of export and import values.</i>				
Project participant response				Date : 22/10/2019
JMR and invoices for the month of July & September 2019 for verification of export and import values shall be submitted along with this submission				
Documentation provided by project participant				
JMR & Invoice of Jul'19 & Sep'19.				
DOE assessment				Date: 22/10/2019
JMR for the month of July 2019 and Sept. 2019 have been submitted. Export & import values mentioned in the ER sheet found correct. CAR closed.				

CAR ID	07	Section no.	4.2	Date : 21/10/2019
Description of CAR				
<i>PP requested to provide remarks on the higher emission reductions achieved during this monitoring period against estimated emission reductions along with impact of the increased PLF on the additionality of the project activity.</i>				
Project participant response				Date : 22/10/2019
The actual emission reductions for the current monitoring period is 7.54% higher than the estimated values in the registered VCS PD corresponding to the similar period. This is because of higher PLF				

observed. The Values are within the sensitivity analysis carried out for the project activity and hence no impact of the increased PLF on the additionality of the project activity.
Documentation provided by project participant
Revised MR
DOE assessment Date: 22/10/2019
As the slight increase in PLF is not breaching the benchmark, remarks on increased ER accepted by the assessment team.

Quality of Evidence to Determine GHG Emission Reductions and Removals

CAR ID	08	Section no.	4.3	Date : 21/10/2019
Description of CAR				
<i>The details of the monitoring meters present onsite are missing in the monitoring report. Further, PP requested to submit the calibration records for the main, check & standby meters installed at site. Also, calibration frequency is not consistent in the monitoring report. Correction requested.</i>				
Project participant response				Date : 22/10/2019
The details of the monitoring meters are incorporated in the revised report. Further, the calibration records for the main, check & standby meters installed at site shall be submitted along with this submission.				
Also, in the section 4.2 of registered PD 'Description of measurement methods and procedures applied' specifies calibration frequency as once in 5 years and in 'QA/QC procedures applied' it is written that the meter(s) will be calibrated annually in accordance with national standards and procedures; which is inconsistent. Therefore, the section 'QA/QC procedures applied' in the MR is revised by deleting the calibration details and is following the calibration frequency mentioned in Description of measurement methods and procedures to be applied i.e. once in 5 years.				
<i>The MR is also revised</i>				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 22/10/2019
PP has submitted calibration certificates and no calibration delay found. Inconsistency of the calibration frequency in the MR have been now removed. CAR closed.				

Table 3. FAR from this verification

FAR ID	09	Section No.		Date : DD/MM/YYYY
Description of FAR				
<i>there is no FAR from this verification.</i>				
Project participant response				Date : DD/MM/YYYY
NA				
Documentation provided by project participant				
NA				
DOE assessment				Date: DD/MM/YYYY
NA				

APPENDIX 5: Calibration Details of the Meters

Sr.	Meter	Meter Sr. No	Date of Calibration	Calibration Due	Compliance of Calibration Frequency
1.	Main	TNG64528	16/09/2016	15/09/2021	Yes
2.	Check	TNG64529	16/09/2016	15/09/2021	Yes
3.	Standby	TNG64484	16/09/2016	15/09/2021	Yes

The calibration frequency of the energy meter is once in 5 year as per the registered VCS PD^{1/}. Thus, during the current Monitoring Period, there is no delay is calibration observed.