

VERIFICATION REPORT AND CERTIFICATION STATEMENT

Of

30 MW Solar PV Project by Nirosha Solar Power Private Limited

(GS Ref. No.5699)

**Monitoring period #1: 20/09/2016 to 31/03/2018 (Both
days included)**

Report No. 5699 GS VER

Client: Nirosha Solar Power Private Limited

DATE: 14/05/2018

Report No.	Date of first issue	Revision No.	Date of this revision
5699 GS VER	14/05/2018	1.0	14/05/2018
Subject	GS 1 st periodic Verification		
Client	Nirosha Solar Power Private Limited		
Project Title	30 MW Solar PV Project by Nirosha Solar Power Private Limited		
Project Participants	Nirosha Solar Power Private Limited		
Project Location	The project is located in Mahoba District in the state of Uttar Pradesh, India		
Contact Person	Ms. Krishna Vijay		
Monitoring period:	20/09/2016 to 31/03/2018 (Both days included)		
Initial Monitoring Report (version/date)	Version 1.0; 10/04/2018		
Final Monitoring Report (version/date)	Version 2.0; 10/05/2018		
Applied Methodology/Version	ACM0002- Grid-connected electricity generation from renewable sources - Version 17.0		
Scope	1		
Technical Area	1.2		
Registered PDD:	https://mer.markit.com/br-reg/public/project.jsp?project_id=104000000012396 Registered PDD version 03 dated 17/02/2018		
Registered Passport	Registered Passport : version 03 dated 17/02/2018		
Summary:			
<p>LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by Nirosha Solar Power Private Limited to perform the first periodical verification of "30 MW Solar PV Project by Nirosha Solar Power Private Limited" (Ref. No. 5699) applying the methodology ACM0002 version 17.0. The management of Nirosha Solar Power Private Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.</p> <p>A desk review and a site visit have been conducted to verify the data submitted in the monitoring report. Applus+ Certification confirms that the following has been reviewed:</p> <p>a. The registered PDD and Passport, including the monitoring plan and the corresponding validation report;</p>			

- b. Monitoring report(s);
- c. The applied monitoring methodology;
- d. Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- e. The Gold Standard Toolkit Version 2.2 and related Annex.
- f. All information and references relevant to the project activity's resulting in emission reductions.

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. Nirosha Solar Power Private Limited is the promoter of the proposed project activity. The project activity involves installation of 30 MW (AC) solar power project at Village: Bendo, District: Mahoba, Uttar Pradesh. The project replaces anthropogenic emissions of greenhouse gases (GHG's), thereon displacing certain amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant. The project activity is connected to 132 KV substation.

The details of the project and the state of installation are mentioned in the table:-

Project Promoters' Name	Capacity in MW	Connection with Grid	State	Usage of Electricity
Nirosha Solar Power Private Limited	30 MW (AC)	Indian Grid	Uttar Pradesh	Sale to Grid

Applus+ Certification confirms that the project is implemented in accordance with the validated and registered PDD and Passport. The monitoring plan complies with the applied methodology ACM0002 version 17.0 and the Gold Standard Toolkit Version 2.2, the monitoring has been carried out in accordance with the monitoring plan. 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 reviewed and evaluated Applus+ Certification confirms that the implementation of the project has resulted in 78,149 tCO₂e emission reductions during period 20/09/2016 to 31/03/2018 (Both days included)

Assessment team	Role	Organization
Sukanta Das	LA/TE	True Quality Certifications private Limited-Outsourced entity
Reviewer team	Role	Organization
Simon Shen	TR	Applus+ Certification

ABBREVIATIONS

ACM	Approved Consolidated Methodology
Applus+ Certification	LGAI Technological Center, S.A. (Applus)
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GS	Gold Standard
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organization
TAC	Gold Standard Technical Advisory Committee
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
UNFCCC	United Nations Framework Convention for Climate Change
VVS	Validation and Verification Standard

TABLE OF CONTENT

1. INTRODUCTION 5

1.1.- Objective5

1.2.- Scope5

1.3.- Description of the Project Activity:6

1.4.- Review of Documentation7

1.5.- On-site Assessment and follow-up Interviews.....8

1.6.- Quality of Evidences8

1.7.- Reporting of Findings.....9

1.8.- Internal Quality Control.....9

2. VERIFICATION FINDINGS..... 9

2.1.- FARs from Validation / Previous Verification9

2.2.- Project Implementation in accordance with the registered Project Design Document ..9

2.3.- Compliance of the Monitoring Plan with the Monitoring Methodology 11

2.4.- Completeness of Monitoring 11

2.5.- Assessment of Data and Calculation of Greenhouse Gas Emission Reductions 13

2.6.- Management and Operational System..... 14

2.7.- Assessment of Sustainable Monitoring 14

3. SUMMARY OF FINDINGS..... 17

4. REFERENCE 18

5. VERIFICATION STATEMENT 20

1. INTRODUCTION

1.1.- Objective

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by Nirosha Solar Power Private Limited to perform the 1st periodical verification of "30 MW Solar PV Project by Nirosha Solar Power Private Limited" applying the methodology ACM0002 version 17.0 and the Gold Standard Toolkit Version 2.2/08/. Gold Standard projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Gold Standard VERs.

The objective of the verification work is to comply with the requirements of paragraph 62 of the CDM Modalities and Procedures as well as the Gold Standard Toolkit Version 2.2/08/. According to this assessment Applus+ Certification shall:

- Ensure that the project activity has been implemented and operated as per the registered PDD/03/ and Passport/04/ and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place;
- ensure that the published MR and other supporting documents provided are complete, verifiable and in accordance with applicable VVS version 01 for the project activity and Gold Standard Toolkit Version 2.2 requirements/08/;
- ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology;
- Evaluate the data is recorded and stored as per the ACM0002 version 17.0.

1.2.- Scope

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification is based on the submitted monitoring report, the validated and registered PDD/03/ and registered Passport/04/ as well as its validation report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB, The Gold Standard Toolkit Version 2.2 and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures, The Gold Standard Toolkit Version 2.2/08/and related rules and guidance.

Based on the requirements in the VVS version 01 for the project activity/07/ as well as the Gold Standard Toolkit Version 2.2 /08/,Applus+ Certification has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.

The verification considers both quantitative and qualitative information on emission reductions. The verification also considers the monitoring of sustainable parameters.

The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3.-Description of the Project Activity:

Project activity:	30 MW Solar PV Project by Nirosha Solar Power Private Limited
Gold Standard registration number:	GS 5699
Project Participants:	Nirosha Solar Power Private Limited
Location of the project:	The project is located in Mahoba District in the state of Uttar Pradesh, India

The purpose of the proposed project is to generate electricity by utilizing clean solar energy and to reduce the greenhouse gas emissions, which otherwise would have been emitted by the existing fossil fuel based power plants connected to the National grid in India or the addition of similar kind of fossil fuel based power plants.

METHODOLOGY

Applus+ Certification approach to the verification is a two-stage process.

In the 1st stage, Applus+ Certification completed a strategic review and risk assessment of the projects activities and processes in order to gain a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

Applus+ Certification used a periodical Verification Checklist which, based on the risk-based assessment of the parameters and data collection and handling processes for each of those parameters, describes the verification approach and the sampling plan.

In the 2nd stage, using the Verification Checklist, Applus+ Certification verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the Monitoring Report. This Verification Report describes the findings of this assessment.

Assessment team

According to the sectoral scope / technical area and experience in the sectoral or national business environment, LGAI Technological Center, S.A. (Applus+ Certification) has composed a project assessment team in accordance with the appointment rules in the internal Quality Management System of LGAI Technological Center, S.A. (Applus+ Certification).

The composition of audit team shall be approved by the LGAI Technological Center, S.A. (Applus+ Certification) ensuring that the required skills are covered by the team.

The four qualification levels for team members that are assigned by formal appointment rules are as presented below:

- Lead Auditor (LA).
- Auditor (A) / Auditor in Training (AiT).
- Technical Expert (TE).

- Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be covered by the assessment team.

Name	Role	SS Coverage	TA Coverage	Financial aspect	Host country experience
Mr. Sukanta Das	LA/ TE	YES	YES	YES	YES
Mr. Simon Shen	TR	YES	YES	NA	NA

The curricula vitae of the DOE's Verification team members are provided below:

1. **Mr. Sukanta DAS**, has done M. SC in (Electronics and Photonics) and M. Tech in (Energy technology) from Tezpur Central University/ Indian Institute of technology Bombay in India. He is a certified lead auditor for ISO 14001 EMS LA and ISO 9001 QMS LA from International registry for Certified Auditors (IRCA) and Certified Lean Management practitioner from Quality Council of India (QCI). He has more than Nine years of working experience at TUV NoRD/ Re-consult/CRA/APPLUS+ certifications under various categories of projects stating from Renewable to waste to supercritical projects. He was JI/ CDM Lead Assessor in TUV NoRD and was involved in more than 100 CDM validation and verifications activities in Gold Standard, VCS, CDM projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1, 13 technical areas 1.2/1.1/13.1. Currently he is associated with True Quality Certifications Private Limited and is empanelled with APPLUS+ certification to carry out GHG audit.
2. **Meng (Simon) Shen** (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Assessment team and ISO 9001/14001 Lead Auditor for 3.5 years

1.4.-Review of Documentation

The Monitoring Report version 1.0 was submitted to DOE before the verification activities started. The MR was assessed based on all the relevant documents. The aim of the assessment in the desk review was to:

- verify the completeness of the data and the information presented in the MR;
- Check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD/[03](#)/and Passport/[04](#)/, verify that the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures of the power plant was checked by the assessment team.
- Evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

A complete list of documents reviewed is available in chapter 4 of this report.

1.5.-On-site Assessment and follow-up Interviews

As a part of the verification, the on-site inspection in the state of Uttar Pradesh has been performed by the assessment team.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Krishna	Vijay	PP representative	12/04/2018	Project implementation, Baseline emissions, ER calculations, Sustainable monitoring etc.	Mr. Sukanta Das
2	Kumar	Rajesh	Local stakeholder	12/04/2018	Stakeholder meeting- Employment opportunities, Standard of Livings etc.	Mr. Sukanta Das
2	-	Amit	Local stakeholder	12/04/2018	Stakeholder meeting- Employment opportunities, Standard of Livings etc.	Mr. Sukanta Das

The objective of the on-site assessment is to:

- Confirm the implementation and operation of the project;
- Review the data flow for generating, aggregating and reporting the monitoring parameters;
- confirm the correct implementation of procedures for operations and data collection;
- Cross-check the information provided in the MR documentation with other sources;
- Check the monitoring equipment against the requirements of the PDD, Passport and the approved methodology, including calibrations, maintenance, etc.;
- Review the calculations and assumptions used to obtain the GHG data and ER;
- Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.
- Confirm the Sustainability monitoring plan as per the registered Passport
- To understand grievance (if any) from the villagers during the monitoring period.

1.6.-Quality of Evidences

Sufficient evidence covering the full verification period in the required frequency is available to verify the figures stated in the final MR Version 2.0. The source of the evidences will be discussed in section 3 of this report. Specific cross-checks have been done in cases that further sources were available. The monitoring report's figures were checked by the assessment team against the raw data. The data collection system meets the requirements of the monitoring plan as per the methodology.

1.7.-Reporting of Findings

As an outcome of the verification process, the assessment team can raise different types of findings.

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

- a) Non-compliance with the monitoring plan or methodology 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) Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

The assessment team shall raise a Clarification Request (CR) if information is insufficient or not clear enough to determine whether the applicable CDM/GS requirements have been met.

All CARs and CRs raised during verification shall be resolved prior to submitting a request for issuance.

Forward Action Requests (FARs) may be raised during verification for actions where the monitoring and reporting require attention and/or adjustment for the next verification period.

All CARs, CRs and FARs for this verification period are included in Section 3 of the verification report.

1.8.-Internal Quality Control

As a final step of verification, the final documentation including the verification report has to undergo an internal quality control by the Technical Reviewer. Each report has to be finally approved either by the DOE's Technical Manager or the Deputy. In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team. If the documents have been satisfactorily approved, the Request for Issuance is submitted to the GS Registry along with the relevant documents.

2. VERIFICATION FINDINGS

In the following sections, the results of the verification are stated. The verification results related to the project performance as documented and described in the registered PDD (Version 03, 17/02/2018/[03](#)/, registered Passport (Passport Version 03 dated 17/02/2018)/[04](#)/and Monitoring Report (Version 1.0, dated 10/04/2018/[01](#)/). The verification findings for each verification subject are presented below.

2.1.-FARs from Validation / Previous Verification

This is the first periodical verification, after checking validation report, there are no FARs requested.

2.2.-Project Implementation in accordance with the registered Project Design Document

The project activity was fully implemented according to the description presented in the registered PDD/[03](#)/ and registered Passport/[04](#). The assessment team confirms, through the visual inspection that all physical features of the proposed project activity including data

collecting systems and storage have been implemented in accordance with the registered PDD/[03](#)/and registered Passport/[04](#)/.

The technical features of the equipment's have been verified by the assessment team during site visit by checking nameplate of Solar Panels and also cross checked with manufacturers technical manual which is detailed listed below:

Technical detail of the equipment	Remark
Technology	Polycrystalline modules on Seasonal Tilt at 25 degree and 5 degree.
Solar photovoltaic module	(255 Wp,260 Wp Module make: BYD) (260 Wp,265 Wp Module make: Suntech)
No. of modules	132384
Total Number of Invertors	38 Units
Transformer	Power transformer: 31500 KVA (1 Nos), Aux. transformer: 100 KVA(1 Nos), Inv. transformer.: 4080 KVA (1 Nos),2800 KVA (8 Nos), Aux transformer. ICR: 5 KVA (5 Nos)
Central inverters of nominal AC power output	680 KW , Schneider-total 38 invertors
Technical & Operational Lifetime	25 years

Assessment team checked the relevant dates for the project activity and found the same to be appropriate. The details are as below:

The Commissioning dates, capacity, location number, location for the panels of the project activity for solar Panels is provided in table below:

Project Name	Promoters'	Capacity in MW	Connection with Grid	State	Usage of Electricity
Nirosha Solar Power Private Limited		30 MW (AC)	Indian Grid	Uttar Pradesh	Sale to Grid

The project activity was in normal operational during the monitoring period and the same has been confirmed on-site. No unusual activates observed during the monitoring period and plant was undergone scheduled maintenance as per the recommendation of the manufactures. No forced breakdown observed and the same is confirmed by the assessment team with the plant log details.

The verification team has reviewed the commissioning certificates to conclude that the capacity of the project is same as mentioned in the registered PDD/[03](#)/. The capacity of the project activity does not change after the registration of the project activity.

Also during the onsite visit, it was observed that the rated capacity of the solar project is 30 MW (AC). The capacity of the project is more than 15 MW and thus the same qualifies as large scale project activity.

Assessment team also checked the locations of the project activity during the onsite visit with the GPS meters and also cross checked the same with Google Map. The location as mentioned

in the registered PDD/passport and Monitoring report version 2.0 is thus correct. The detail location of the project activity is as below:

Geographical coordinates of the Solar Panels are given below:

Project Promoters' Name	Latitude	Longitude	Date of Commissioning
Nirosha Solar Power Private Limited	25.42 N	79.44 E	20/09/2016

The project is connected to National grid (as per the grid structure of India) and the same is found correct by the assessment team during the verification site visit. The grid structure as mentioned in the PDD/[03](#)/ is still applicable for the project and ex-ante emission factor as proposed in the PDD/[03](#)/ is used for emission reduction calculation.

The commissioning details as provided in the MR Version 1.0 and 2.0/[01](#)/were checked with the commissioning certificates/[13](#)/ provided by the project participant. The commission certificates were issued by "Govt agencies" which is a third party government firm and thus the commissioning dates are acceptable to the assessment team.

The amount of GS-VERs achieved during the present monitoring period is higher than the estimated value in the PDD/[03](#)/. This is due to the higher PLF months during the monitoring period. There is no any adverse impact on additionality due to this high PLF of project activity for current monitoring period.

Moreover, there were no changes in host country regulations which may impact either baseline or additionality of the project. Thus assessment team confirms that the project is implemented as per the registered PDD/[03](#)/ and no change in additionality/baseline is envisaged for the present monitoring period.

Assessment team also checked the Feeder details of the connected Solar Panels and found the same to be appropriate. Compliance of the Monitoring Plan with the Monitoring Methodology

The verification team is able to confirm that the monitoring plan is in accordance with the approved methodology ACM0002 version 17.0 /[06](#)/, applied by the proposed GS project activity.

No deviation, correction or permanent change to the monitoring plan has been requested or observed.

2.3.-Completeness of Monitoring

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD/[03](#)/ and Passport/[04](#)/. All parameters were monitored and determined as per the monitoring plan as follows:

a. Data and parameters fixed ex ante or at renewal of crediting period

$EF_{grid,OM,y}$, $EF_{grid,BM,y}$, $EF_{grid,CM,y}$ were mentioned as ex-ante fixed parameter. Assessment team checked the values, source of data, choice of data, purpose of the data mentioned in the MR from the registered PDD/[03](#)/and confirms that the similar approach was considered for the current monitoring period also.

The value for $EF_{grid,OM,y}$, $EF_{grid,BM,y}$, $EF_{grid,CM,y}$ was considered from the CO₂ baseline database published by Central Electricity Authority (CEA) version 11.0. The default value as mentioned in the registered PDD/[03](#)/ and MR /[01](#)/are same. The value of combined margin in India is being given by CEA (= Central Electricity Authority, Govt of India) and thus assessment team concludes that the value is correct and appropriate. The default value in turn is used for

baseline calculation as per the formula given in the registered PDD/[03](#)/for the current monitoring period.

The ex-ante fixed values as per registered PDD are as below. The same values are used for the current monitoring period for the calculation of baseline emission.

$$EF_{\text{grid,OM,y}} = 0.9941 \text{ tCO}_2\text{/MWh}$$

$$EF_{\text{grid,BM,y}} = 0.9285 \text{ tCO}_2\text{/MWh}$$

$$EF_{\text{grid,CM,y}} = 0.9777 \text{ tCO}_2\text{/MWh}$$

b. Data and parameters monitored

As per the registered monitoring plan and requirement of the registered methodology following parameters needs to be monitored:

$EG_{\text{facility,y}}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh

The parameter $EG_{\text{facility,y}}$ is calculated using the difference of export and import value measured from the electricity meter. Net electricity supplied to the grid for individual project activity is then calculated as export-import. The Meter Reading Statement (i.e. JMR sheets) issued by State board which provide the values of export and import for the month. The same is thus used for emission reduction calculation. The total energy exported/imported to/from the grid by project is measured by State electricity board via (electronic tri-vector main meter which measures both export & import concurrently) connected to the solar panels. For billing purpose, the meter readings shall be measured on monthly basis jointly by the representative of State electricity board and the Project Participant and the PP has no control over the process. On the basis of this reading, Quantity of net electricity supplied to the grid shall be calculated and the statement shall be issued to Project Participant. Based on the statement the Invoice is raised by PP to State electricity board. The practice followed onsite is as per the registered PDD and registered Passport. The meter reading is taken during a fixed billing cycle of every month and representative of state electricity board and Operation and maintenance personal onsite present during the process. The export and import reading is continuous and recording frequency is monthly. The QA/QC procedure is as per the requirement of the registered PDD/[03](#)/and onsite practice. Assessment team confirms the same during the project visit. Assessment team checked all the values of calculated Net electricity supplied to the grid from the Meter reading statement (provides the value of export and import) issued by State electricity board.

c. Implementation of sampling plan

PP did not apply sampling plan to determine data and parameters monitored during this monitoring period. The verification team has checked all the documents such as JMR issued by State electricity board /Invoices/[11](#)/etc. and hence sampling plan was not required. The verification team hereby confirms that has checked all the documents.

d. Compliance with the calibration frequency requirements for measuring instruments

The metering arrangement is tri-vector bi-directional energy meters (main and check) at the substation. These meters record several parameters including electricity exported & imported. These electricity meters are being used by state officials to obtain the value of export and import and hence Net electricity supplied is calculated based on these values.

The calibration details/[12](#)/ such as make, accuracy class serial number is as per the meter available onsite and checked during verification site visit.

All the energy meters will be as per the registered PDD and will be calibrated once in five years by the State electricity board officials, as per the provisions of the PPA, signed between the PP and the State electricity board. PP has not control whatsoever over the processes related to State board meters. The joint meter reading can be cross checked against the credit note on energy generation from the panels, issued monthly by the State Board.

The Calibration details are as follows:

Meter Serial Number	15625430
Make	Larson and Toubro Limited
Accuracy Class	0.2s
Calibration On	01-12-2017
Due date of calibration	01-12-2022

At the time of commissioning, the meters are calibrated and installed by state electricity board. However, PP do not have these calibration certificates available with them. Thus, conservatively delay in calibration is considered till Nov 2017 and applied error factor conservatively. Assessment team checked the emission reduction calculation and found the same to be correct and appropriate.

The calibration is done by State nodal agency (Meter Testing division), state board, India which is accredited Laboratory from National Accreditation Board for Testing and Calibration, Govt of India (<http://www.nabl-india.org/>) to carry out calibration.

Assessment team checked the same and found that the calibration is appropriate and correct as traceability is ensured. The meters were calibrated as per the norms of NABL and the meters are within the permissible error limit.

2.4.-Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

As a result of verification of the ER calculation process, the assessment team confirmed that all the parameters required for the determination of the emission reductions have been included in the Monitoring report Version 1.0 & Monitoring report Version 2.0 /[01](#)/and corresponding ER calculation spreadsheets and are consistent with the applied methodology ACM0002 version 17/[06](#)/and the monitoring plan contained in the registered PDD/[03](#)/. The parameters are complete in this monitoring period.

After verifying the reported figures with the raw data sources, it's confirmed that the values of the parameters from the raw data sources are consistent with those quoted in the Monitoring report Version 1.0 &Monitoring report Version 2.0 /[01](#)/and corresponding ER calculation spreadsheets/[02](#)/. The verification process for the same has been clearly described in section 3.4 of the report. See below for the detailed data:

The baseline emissions are the product of electrical energy baseline $EG_{p,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.

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

Where,

$EG_{facility,y}$ = Total quantity of net electricity delivered to the INDIAN grid

$EF_{grid,CM,y}$ = Baseline emission factor
= 0.9777 tCO₂/MWh

$$BE_y = 79,932.35 * 0.9777$$

$$= 78,149 \text{ tCO}_2/\text{year}$$

Project emissions:

The project is a solar power project, no fossil fuel will be consumed according to the methodology ACM0002 version 17/06/ & according to registered PDD/03/, $PE_y = 0 \text{ tCO}_2e$

Emission reductions:

Thus the emission reductions are:

$$ER_y = BE_y - PE_y$$

$$= 78,149 - 0 \text{ (tCO}_2e)$$

$$= 78,149 \text{ (tCO}_2e) \text{ (Rounded down)}$$

2.5.- Management and Operational System

The responsibilities of data measurement, collection, verifying, archiving etc. have been clearly defined in the registered PDD/03/. The same practice is followed onsite and it is confirmed by the assessment team during the verification site visit. The data related to ER calculation as well as data monitoring, collection process etc. have been internally reviewed by the management of the Monitoring team regularly. The responsibility of each function is consistent with the monitoring plan in the registered PDD/03/.

The information flow of each parameter has been verified by the assessment team via interviewing with responsible personnel.

It's verified during the on-site verification the monitoring procedure as well as the internal quality management and control procedures that are stipulated in the PDD/03/. The monitoring personnel have been interviewed by the assessment team and it's confirmed that the monitoring is implemented as per the procedure. Also the training record has been checked by the assessment team and it is confirmed that the monitoring personnel are get sufficient train to perform the monitoring.

All the data and documents, either hard copies or soft copies, will be kept for two years after the end of the last crediting period or the last issuance of GS VERs for this Project, whichever occurs later.

2.6.-Assessment of Sustainable Monitoring

In the Registered Passport Version 03 dated 17/03/2018 indicators are chosen for the monitoring of sustainable monitoring:

Meth/tool	Passport	MR	Compliance?
-----------	----------	----	-------------

Meth/tool	Passport	MR	Compliance?
Quality of employment	Quality of employment	Quality of employment	Yes
Quantitative employment and income generation	Quantitative employment and income generation	Quantitative employment and income generation	Yes

The verification of the parameters required by the monitoring plan is provided as follows:

Indicator:	Quality of employment
Chosen parameter 1:	Training provided to employees
Parameter value:	Not applicable
Mitigation Measures:	Not applicable as indicator scored positive as per the registered Passport
Data Source:	Training Record
Baseline situation of parameter 1:	In the baseline, local people have no such opportunities to be trained on the technology and the monitoring of the plant operation, and the emergency and safety procedures.
Target achieved?	Yes, the staffs have accepted a series of training on the technology and the monitoring of the plant operation, and the emergency and safety procedures. The safe and healthy working condition was provided to the staffs.
Procedure of monitoring:	Checked training record (both HSE- health safety and environment and HR- Human resource training records)and certificates
Means of verification:	By checking all the training records and certificates, it is confirmed that the project proponent provided sufficient training for the employee/local people for skill and operation of the power plant. Also some interviews were made with employee/local people and they confirmed that they are receiving a lot of trainings. The training not only improves the operation level of the Project, and also enhances the technical skill of the staff. The safe and healthy working condition was provided to the staffs of the Project confirmed by site visit.
Cross-check:	Not applicable

Indicator:	Quantitative employment and income generation
Chosen parameter:	Number of O&M staffs (skilled) and non-skilled staff involved in the project
Parameter value:	More than 10 skilled and non –skilled staff are involved in the project
Data Source:	Plant employment records. Attendance register and pay slips are also checked to confirm the on rolled employment.
Mitigation Measures:	Not applicable
Baseline situation of parameter:	In the baseline, local people have no such job opportunities from the project, and their income has no increase. Most of the non- skilled i.e. local villagers are involved in Labour work in the agricultural field with no fixed income.
Target achieved?	Yes. More than 10 fulltime work positions for local people have been created
Procedure of monitoring:	PP has employment records for the people working in skilled O&M team and also local villagers working as non- skilled jobs like Security guards, peon etc.

Means of verification:	<p>After checking daily attendance register and employment records assessment team confirms that More than 10 skilled and non –skilled staff are involved in the project</p> <p>The parameter has a positive impact as the project results in direct employment and income generation.</p> <p>Assessment team confirms that the monitoring parameter target is achieved for the present monitoring period.</p>
Cross-check:	Not applicable

During the site visit, the verification team confirmed that there is a grievance book with GS contact information in the lobby of the project owner’s office. By checking grievance book, it was able to confirm there are no comments received from the local people for the present monitoring period. Local people are happy with the implementation of the project activity as it entrust employment and improve living standard of local people and villagers.

Assessment team also checked that the projects are not registered under the REC mechanism of India and the same can be cross-checked at <https://recregistryindia.nic.in>. Thus double counting for the current monitoring period is ruled out.

Also during the site visit, Applus+ Certification conducted an interview with the project owner and local stakeholders please find the summary of the interview as below:

Sections	Debriefing
Trainings & salaries of the employees	During site visit Ms. Krishna, of PP representative team was interviewed. It was noted that regular technical & nontechnical trainings were conducted and the salaries are in line with the industry standard.

Local stakeholder meeting details:

Name of the stakeholder	Rajesh Kumar
Occupation	Farmer
<p>DOE QUESTION: Did PP promised employment opportunity?</p> <p>Answer: Yes, PP told us that employment will be generated and the locals will be given priority. DOE also like to conclude that during the site visit it was observed that local people were employed for security and operation related work like water spraying, vegetation improvement and other unskilled work. DOE also found that skilled local persons were also employed by the organization for the operation and maintenance of the power plant.</p>	

Name of the stakeholder	Amit
Occupation	Villager
<p>DOE questions: Did the power plant discharge any harmful pollutants?</p> <p>Answer: NO the plant does not discharge any harmful pollutants.</p> <p>DOE questions: Did the power plant destroy any crop fields?</p> <p>Answer: The plant is implemented in barren land and there were no any fertile land or crop which is damaged.</p>	

In Summary, it is Applus+ Certification’s opinion that the monitoring of the project owner regarding to sustainability is in line with requirement of the Gold Standard Toolkit Version 2.2.

3. SUMMARY OF FINDINGS

The assessment team can confirm that the Initial MR /01/and related documents are complete and verifiable in accordance with the GS requirements. All the findings that were raised by the assessment team, the responses by the PPs and the conclusion from the team are presented below. The means of verification and resulting changes in the MR/01/ or related documents are identified in the following tables:

Compilation and Resolutions of CARs, CRs and FARs

Type:	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL/CR <input type="checkbox"/> FAR	Number:	01
Raised by:	Sukanta Das	Ref. to checklist in above tables:	NA
Description of the audit finding		Date:	05/05/2018
<p>The Monitoring report is presented in GS4GG format however the project is undergoing verification under version 2.2. Corrective action is sought for the same.</p> <p>The feeder wise details of the solar plant are also missing.</p> <p>Based on the above observation corrective action is sought in MR and ER sheet</p>			
Project Participant's response		Date:	10/05/2018
<p>The Monitoring report in CDM format is submitted now to complete the GS verification under version 2.2.</p> <p>The solar project activity is connected to 132 KV substation and the same is mentioned in GS MR.</p>			
Documentation provided as evidence by Project Participant			
Revised GS MR version 02 and ER sheet version 02			
Auditor's assessment comment		Date:	14/05/2018
<p>The monitoring report format is now changed to version 2.2. The same is thus acceptable to the assessment team.</p> <p>The feeder details of the solar project is now provided. The details are acceptable to the DOE. CAR is thus closed.</p>			

Type:	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL/CR <input type="checkbox"/> FAR	Number:	02
Raised by:	Sukanta Das	Ref. to checklist in above tables:	NA
Description of the audit finding		Date:	05/05/2018
<p>As per registered Passport for parameter "Quantitative employment and income generation" the way of measure also includes pay slips of the employees. The same is missing as document evidence and hence the parameter is reserved till further submission.</p>			
Project Participant's response		Date:	10/05/2018
<p>For parameter "Quantitative employment and income generation", the Muster Roll is submitted which clearly mention about wages given to employees.</p>			
Documentation provided as evidence by Project Participant			
Muster Roll supporting evidence for wages of employees.			
Auditor's assessment comment		Date:	14/05/2018

The Muster roll supporting evidence for wages of employees is checked and found correct by the assessment team. The monitoring source for the parameter is thus acceptable to the assessment team and thus CAR is closed.

Type:	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL/CR <input type="checkbox"/> FAR	Number:	03
Raised by:	Sukanta Das	Ref. to checklist in above tables:	NA
Description of the audit finding		Date:	05/05/2018
The grievance register records are missing and not submitted to the assessment team. Break down details of the power plant is not detailed out. Supporting log sheets are also missing. Corrective action sought.			
Project Participant's response		Date:	10/05/2018
The grievance register and break down details are submitted now			
Documentation provided as evidence by Project Participant			
Grievance register and break down details			
Auditor's assessment comment		Date:	14/05/2018
The grievance register is checked and found correct by the assessment team. No complain received from the stakeholders during the operation of the project activity. The stakeholders are happy with the implementation of the project activity. CAR is thus closed.			

4. REFERENCE

/01/	Monitoring Report Version 1.0 dated 10/04/2018, Monitoring report version 2.0 dated 10/05/2018
/02/	ER sheets version 1.0 ER Sheets version 2.0
/03/	Registered PDD Version 03 dated 17/02/2018
/04/	Registered Passport Version 03 dated 17/02/2018
/05/	GS Validation Report
/06/	ACM0002 version 17.0
/07/	CDM Validation and Verification Standard Version 01.0
/08/	The Gold Standard Toolkit Version 2.2
/09/	Training records of the employees (both skilled/non skilled)
/10/	O&M policy
/11/	Monthly reports i.e. JMR sheets issued by state utility and invoices raised by PP for the complete monitoring period
/12/	Calibration certificates of the complete monitoring period

/13/	Commissioning certificates for power plant
/14/	Log book records for scheduled maintenance of the power plant for the complete monitoring period
/15/	Sample work contract for both skilled and non-skilled manpower
/16/	Seminars and training records
/17/	Grievance register

5. VERIFICATION STATEMENT

Applus+ Certifications has been engaged by Nirosha Solar Power Private Limited to perform the first periodical verification of the "30 MW Solar PV Project by Nirosha Solar Power Private Limited" (GS Ref. No. 5699).

The management of Nirosha Solar Power Private Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's Monitoring Plan in the registered PDD, registered Passport and the applied methodology ACM0002 version 17.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board and Gold Standard. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is operated as planned and described in the project design document and passport approved by the EB and GS;
- the monitoring plan is as per the applied methodology;
- the monitoring in Monitoring Report is as per the PDD and Passport and the monitoring plan approved by the EB and GS;
- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for "30 MW Solar PV Project by Nirosha Solar Power Private Limited" for the monitoring period 20/09/2016 to 31/03/2018 (Both days included) as reported in Monitoring Report, prepared on the basis of the project's Monitoring Plan are fairly stated.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period: 20/09/2016 to 31/03/2018 (Both days included)

Verified emissions in the above reporting period:

<i>Leakage emissions</i>	<i>0 tCO₂ equivalents</i>
<i>Project emissions</i>	<i>0 tCO₂ equivalents</i>
<i>Baseline emissions</i>	<i>78,149 tCO₂ equivalents</i>
<i>Emission reductions</i>	<i>78,149 tCO₂ equivalents</i>

Signature



Date: 14/05/2018

Assessment team: Mr. Sukanta Das (Team Leader / Leader Auditor)

Technical Reviewer: Mr. Simon Shen

Meag SHEN.

DOE Representative Applus+ Certification BU Managing Director: Mr. Juan Sendín Caballero

