

**GOLD STANDARD FOR THE GLOBAL GOALS (GS4GG)
REPORT
-
VERIFICATION**



Project Title: 30 MW Solar PV Project by Nirosha Solar Power Private Limited
Monitoring Period: 01/07/2020 to 19/09/2021 (Both days included)
GS project ID: GS 5699
Internal ID: A+SH_SYST_TQC_GS_VER_RCP_8921
Customer: Nirosha Solar Power Private Limited
Date: 11/03/2022
Revision: 01

SUMMARY			
Reference No.	Date (first version)	Version No.	Date (last version)
A+SH_SYST_TQC_GS_VER_RCP_8921	11/03/2022	01	11/03/2022
GS4GG Verification			
GS4GG Certified Product (sought):		GS VER	
GS4GG SDG Impact Statement (sought):		Impact Certification	
General Information			
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	Bendo Village, Mahoba District, Uttar Pradesh state, India		
Contact Person	Ms. Dhriti Pande		
Monitoring Period:	01/07/2020 to 19/09/2021 (Both days included)		
GS4GG Version: GS4GG Principles and Requirements 1.2 GS4GG Activity Requirements: RE Activity Requirements, version 1.4 Applied Methodology Version: ACM0002 "Grid-connected electricity generation from renewable sources" Version 17.0 Current Methodology Version: ACM0002 "Grid-connected electricity generation from renewable sources" Version 20.0		GS4GG Sectoral Scope: 2 UNFCCC CDM Sectoral Scope: 1 Technical Area: 1.2	
Monitoring Report Version: 01 Date: 24/01/2022		Final Monitoring Report Version: 02 Date: 18/02/2022	
Certified Project Design Document Version: Assessment team checked the registered CDM PDD version 03 dated 17/02/2018 ^{/03/} GS Passport version 03, dated 17/02/2018 ^{/03/} GS4GG Transition annex dated 16/01/2018 ^{/03/}			
Estimated values for the Monitoring period for all SDG:			
SDG	SDG	Values	
7	Renewable Electricity Generated	58,510 MWh electricity generation	
8	Trainings provided to O&M staff	01 Trainings/annum provided to O&M Staff	
8	Number of Jobs generated	10 employments/annum	
13	Emission Reduction	57,204 tCO ₂ e	

SUMMARY

Actual values for the Monitoring period for all SDG:

SDG	SDG	Actual values for this monitoring period
7	Renewable Electricity Generated	63,212 MWh electricity generation
8	Trainings provided to O&M staff	04 Trainings provided to O&M Staff
8	Number of Jobs generated	20 employments created
13	Emission Reduction	61,802 tCO ₂ e

Selected Sustainable Development Goals (SDGs): 7; 8; 13

Verification Summary

LGAI Technological Center, S.A. (hereafter referred to as Applus+ Certification) has been contracted by Nirosha Solar Power Private Limited to perform the 3rd periodical verification of "30 MW Solar PV Project by Nirosha Solar Power Private Limited" (Ref. No. GS5699) 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.

A desk review and an interview have been conducted to verify the data submitted in the monitoring report. Applus+ Certification confirms the following have been reviewed:

- a. The registered CDM PDD including the monitoring plan; ^{/03/}
- b. Monitoring report(s); ^{/01/}
- c. The applied monitoring methodology; ^{/04/}
- d. Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- e. GS4GG guidelines and related Annexes of GS guidelines; ^{/06/}
- f. All information and references relevant to the project activity's resulting in emission reductions.

Nirosha Solar Power Private Limited is the promoter of the project activity and involves installation of installation of 30 MW (AC) solar power project in Uttar Pradesh state, India. Electricity generated from the project activity is sent to Indian grid of India. As per CDM PDD^{/03/} and Transition annex^{/03/}, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 46,815 tCO₂e per annum, thereon displacing 47,884 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian electricity grid, which is mainly dominated by thermal/ fossil fuel-based power plant. The project activity is commissioned on 20/09/2016^{/11/}.

The monitoring of emission reduction and sustainable development indicators has been carried out in accordance to respective registered PDD^{/03/}.

Applus+ Certification confirms that the project is implemented in accordance with the validated and registered PDD. The monitoring plan complies with the applied methodology ACM0002 Version 17.0^{/04/} and the GS4GG guideline^{/06/} 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 61,802 tCO₂e emission reductions during period 01/07/2020 to 19/09/2021 (Both days included)

ASSESSMENT TEAM		
Team Members	Type of Resource ¹	Organization (for OEs)
Lead Auditor: Dr. Atul Takarkhede	<input type="checkbox"/> IR <input type="checkbox"/> EI <input checked="" type="checkbox"/> OE	M/s True Quality Certifications Private Limited
Technical Expert: Dr. Atul Takarkhede	<input type="checkbox"/> IR <input type="checkbox"/> EI <input checked="" type="checkbox"/> OE	M/s True Quality Certifications Private Limited
Technical Reviewer: Mr. Simon Shen	<input type="checkbox"/> IR <input checked="" type="checkbox"/> EI <input type="checkbox"/> OE	Applus+ Certification

Note: In line with the GS Rule Update RU 2020 PR – PR V1.2 dated on 02/04/2020, the VVB hereby discloses that the VVB has performed Validation of this project with different team members than in this verification.

ABBREVIATIONS	
ACM	Approved Consolidated Methodology
AM	Approved Methodology
AMS	Approved Small Scale Methodology
Applus+ LGAI / Applus+	LGAI Technological Center, S.A. (Applus+ Certification)
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CDM VVS version 03	CDM validation and verification standard for project activities, Version 03.0
CER	Certified Emission Reduction
CL / CR	Clarification Request
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GS4GG (or GS)	Gold Standard for Global Goals
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
UPPTCL	Uttar Pradesh Power Transmission Corporation Limited

¹ IR (Internal Resource); EI (External Individual); OE (Outsourced Entity)

MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-Governmental Organization
SDG	Sustainable Development Goal
TAC	Gold Standard Technical Advisory Committee
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
SECIL	Solar Energy Corporation of India Limited
UNFCCC	United Nations Framework Convention for Climate Change
VVB	Validation and Verification Body
VVS	Validation and Verification Standard

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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 3rd periodical verification of “30 MW Solar PV Project by Nirosha Solar Power Private Limited” applying the methodology ACM0002 Version 17.0^{/04/} and GS4GG guideline^{/06/}. 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 assess the compliance with the requirements of paragraph 62 of the CDM Modalities and Procedures as well as the GS4GG guidelines^{/06/} and relevant Principles and Requirements. According to this assessment Applus+ Certification shall:

- Ensure that the project activity has been implemented and operated as per the registered PDD 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 CDM validation and verification standard for project activities, Version 03.0^{/05/} and Gold Standard^{/06/} (i.e., applicable GS4GG requirements);
- Ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology^{/04/};
- Evaluate the data recorded and stored as per the ACM0002 Version 17.0^{/04/}.

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, registered PDD^{/03/} and registered Passport^{/03/} as well as its validation report, the applied monitoring methodology, relevant decisions, clarifications and guidance from the CMP and the EB, GS4GG guideline 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,

GS4GG guideline^{06/} and relevant Principles and Requirements, as well as their related rules and guidance.

Based on the requirements in the CDM validation and verification standard for project activities, Version 03.0 for the project activities as well as the GS4GG guidelines, 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 SDG goals as per the requirement of GS4GG guideline^{06/}.

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

Nirosha Solar Power Private Limited is the promoter of the project activity and involves installation of installation of 30 MW solar power project in Uttar Pradesh. Electricity generated from the project activity is sent to Indian grid of India. As per CDM PDD^{03/} and Transition Annex^{03/}, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 46,815 tCO₂e per annum, thereon displacing 47,884 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian electricity grid, which is mainly dominated by thermal/ fossil fuel-based power plant. The project activity is commissioned on 20/09/2016^{11/}.

The details of the project are mentioned in the table:

SPV Name	Capacity	Location & Co-ordinates	Commissioning Date
Nirosha Solar Power Private Limited	30 MW	Bendo Village, Mahoba district , Uttar Pradesh 25.42 N & 79.44 E	20/09/2016

The monitoring of emission reduction and sustainable development indicators has been carried out in accordance to respective registered PDD^{03/}.

2. 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 project's 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.

2.1 Appointment of the 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
Dr. Atul Takarkhede	LA/TE	YES	YES	NA	YES
Mr. Simon Shen	TR	YES	YES	NA	NA

The complete list of CVs is included as Appendix 3 of this report.

2.2 Document review

The Monitoring Report version 01 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, 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.
- Please check reference 4 of this report for detail of the documents checked.

2.3 On site assessment and follow up interviews

In the context of verification, the GS4GG principles and requirements version 1.2, para 5.1.26 requires VVB to conduct a site visit including the assessment of the monitoring report and all supporting evidence and documents included by the Project Developer to demonstrate conformity.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Pande	Ms. Dhirti	PP representative	10/02/2022	Project implementation, Baseline emissions, ER calculations, Sustainable monitoring, Grievance mechanism etc.	Dr. Atul Takarkhede
2.	-	Mr. Lalchand	Plant Head	10/02/2022	Employment opportunities, Trainings, Salaries etc.	
3.	Tiwari	Mr. Raghavendra	Local stakeholder	10/02/2022	Stakeholder meeting- Employment opportunities, Standard of Livings etc.	
4.	singh	Mr. Bharat	Local stakeholder	10/02/2022		
5.	Das	Mr. Kingshuk	Consultant	10/02/2022	MR and ER calculation.	

2.4 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 02⁰¹. 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.

2.5 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:

- 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;
- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- 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 /CRs/ FARs 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.

Please refer Appendix 1 of this report. Total numbers of CARs: 03, CLs: 01, FARs: 00.

2.6 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. This approval process also includes another quality assurance check in terms of Administrative Review. In case one of these two persons is part of the assessment team, the final 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.

3. VERIFICATION FINDINGS

3.1 FARs from Validation / Previous Verification

This is 3rd periodic verification for the project activity and No FAR is raised during validation & previous verification.

3.2 Project Implementation in accordance with the registered Project Design Document

The project activity was fully implemented according to the description presented in the registered CDM PDD^{/03/}. The assessment team confirms, through the site visit that all physical features of the project activity including data collecting systems and storage have been implemented in accordance with the registered CDM PDD^{/03/}, GS4GG Transition annex ^{/03/} and Passport^{/03/}.

The technical features of the equipment's have been verified by the assessment team by reviewing following documentation:

- Interviews of onsite personnel's during Site Visit
- Technical detail analysis of the power plant from the documents submitted by the manufacturer.
- Commissioning certificates of the plant
- PPA for the project activity
- Nirosha Solar Power Private Limited has installed solar power project at Bendo Village, Mahoba District, Uttar Pradesh, India with capacity of 30 MW.
- Technical details are as follows:

The details of equipment installed at project activity are as follows:

Technical detail of the equipment	Remark
Technology	Polycrystalline modules on Seasonal Tilt at 25 degree and 5 degrees.
Solar photovoltaic module	Total Capacity: 34.886 MW Module Capacity: 260 Wp & 265 Wp Module make: Suntech
No. of modules	132,384
Total Number of Inverters	38 Units
Details of Inverters	680 KW , Schneider Electric
Power transformer	1 No. of 25/31.5 MVA, 11/132 KV Make: Schneider Electric
Inverter Transformer	1. 1 No. of 4 MVA Transformer; 380/11000 V, Make: Sudhir 2. 8 Nos. of 2.8 MVA Transformers; 380/11000 V, Make: Sudhir
Auxiliary Transformer	1 No. of 100 KVA Transformer; 415/11000 V
Technical & Operational Lifetime	25 years

Technical specifications of the Solar PV module are provided in the section B.1 of the MR^{/01/}. Same are conformed during the interviews with PP and Specification document^{/19/} , commissioning certificates^{/11/}, validation report^{/03/} & previous verification reports^{/03/} and found correct.

The project activity was commissioned in phased manner as stated in table above and same was verified from the commissioning certificate issued by UPPTCL^{/11/}.

The project activity was in normal operational during the monitoring period and the same has been confirmed during interviews with PP and crosschecked from review of JMR^{/09/} & breakdown records^{/12/} submitted by PP. Power plant was working throughout the monitoring period and same have been conformed from JMR values. No unusual activates observed during the monitoring period and plant was undergone scheduled as well as emergency maintenance as per the recommendation of the manufacturers. No forced breakdown observed and the same is confirmed by the assessment team with the plant log details and JMRS.

The verification team has reviewed the commissioning certificates^{/11/} & PPA^{/17/} to conclude that the capacity of the project is same as mentioned in the registered PDD and explained by PP during site visit. The capacity of the project activity does not change after the registration of the project activity and same have been confirmed from the commission certificate, PPA and JMRS issued by State Utility and Invoices raised by the PP towards state utility.

Also, from review of other documents such as Commissioning certificate^{/11/}, PPA^{/17/} & JMR^{/09/}, it was observed that the rated capacity of the project is 30 MW. The capacity of the project is more than 15 MW and thus the same qualifies as large-scale project activity.

Plant is located in Uttar Pradesh state of India. Assessment team also checked the locations of the project activity in the registered PDD, validation report. Thus, location provided in MR are found in line with registered documents of the project activity and are as stated in table above.

The project is connected to National grid^{/17/} (as per the grid structure of India) and the same is found correct by the assessment team during the review of commissioning certificate^{/11/}, PPA^{/17/} and interviews with PP. 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. Assessment team noted that the project activity has entered a power purchase agreement with the UPPTCL^{/17/}. The electricity is fed in the Integrated Indian grid.

Thus, assessment team confirms that the project is implemented as per the registered PDD^{/03/} and no change in project design is envisaged for the present monitoring period.

The amount of GS-VERs achieved during the present monitoring period are 8.04%^{/02/} higher than the estimated value in the PDD^{/03/}. This is due to the higher PLF months during the monitoring period. The PLF achieved during this monitoring period is 19.68% & same is found within the sensitivity analysis, thus do not have impact on additionality.

Assessment team also checked the metering details of the connected solar plant and found the same to be appropriate. Feeder details were confirmed from the interviews with PP, and commissioning certificate submitted by PP.

Assessment team also checked that the project is not registered under the REC mechanism of India and the same can be cross-checked at <https://recregistryindia.nic.in>. Also, International REC (I-REC) registry (<https://evident.services/device-register>) is cross-checked and found that this project is not under I-REC as well. Thus, double counting for the current monitoring period is ruled out.

Assessment team also checked the other registry like UNFCCC and VCS and found that project is not registered with UNFCCC or VCS.

Grievance Mechanism:

During the interviews with PP, the verification team confirmed that there is a grievance book/form with GS contact information at the project site office and are accessible to local stakeholders. By checking grievance book submitted by PP, it was able to confirm there are no

comments received from the local people for the present monitoring period towards project activity. Local people are happy with the implementation of the project activity as it entrusts employment and improve living standard of local people and villagers.

Materiality adopted in Verification:

Consideration of materiality in planning the verification

No.	Risk that would lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk levels	Justification	
1	Human errors: Readings from Meters (if not automatic)	LOW	Human error is likely to occur if the monitoring personnel are not trained well or inexperienced in data recording procedures and monitoring processes.	All the personal are well trained to monitor and collect data and thus risk associated with Human error is minimized. Assessment team checked the training records to confirm that all the personal are well trained to handle the activities related to monitoring. Assessment team checked the training records for the complete monitoring period and confirm that the personal are well trained to monitor and collect data for the project activity.
2	Human error: Quantification of emission reduction	LOW	Use of spread sheets without adequate data control, changes/updates, version tracking, traceability and security	All the energy statement i.e. JMR sheets and the invoices for the complete monitoring period are checked and thus the assessment team confirms that the ER value is conservative and correct.

Consideration of materiality in conducting the verification

In line with Guidelines for Application of materiality in verifications, the verification team has conducted a complete verification of all the information presented in the monitoring report and data monitored as presented in the emission reduction calculation spread sheet. It follows the paper trail back to the raw data such as meter reading records and invoices. There are no material errors, overestimation of ER, omission or misstatement.

3.3 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^{04/}, applied by the GS project activity.

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

3.4 Completeness of Monitoring

The monitoring has been carried out in accordance with the monitoring plan contained in the GS PDD. All parameters were monitored and determined as per the monitoring plan of the GS PDD as follows:

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

$EF_{grid,OM,y}$, $EF_{grid,BM,y}$ & $EF_{grid,CM,y}$ was mentioned as ex-ante fixed parameter.

The values considered ex-ante for this monitoring period were cross-checked with registered PDD/1/, and their respective sources. The summary of all the ex-ante parameters has been given below:

Parameter/ Description	Value applied	MoV
SDG 13: Climate Action $EF_{grid,OM,y}$ Operating Margin CO ₂ emission factor in year y	0.9941 tCO ₂ /MWh	The value of the parameter was checked from registered PDD/1/. The value of the parameter was sourced from CEA database version 11/3/.
SDG 13: Climate Action $EF_{grid,BM}$ Build Margin CO ₂ emission factor in year y	0.9285 tCO ₂ /MWh	The value of the parameter was checked from registered PDD/1/. The value of the parameter was sourced from CEA database version 11/3/.
SDG 13: Climate Action $EF_{grid,CM,y}$ Combined Margin CO ₂ emission factor in year y	0.9777 tCO ₂ /MWh	The value of the parameter was checked from registered PDD/1/. The value of the parameter was calculated using CEA database version 11/3/.

The value mentioned in the Monitoring Report and Emission Reduction Spreadsheet are consistent with the registered PDD. The applied value is correct and justified.

b. Data and parameters monitored

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

Relevant SDG indicators = 7.2.1 Affordable and Clean Energy

1. $EG_{Facility,y}$: Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh

The parameter $EG_{PJ,y}$ is calculated based on the difference between values of “export” and “import” on the energy meter at the 132 KV sub-station. The Meter Reading Statement (JMR

sheets^{09/}) 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 project activity includes metering at the substations managed by State Utilities & PP/O&M Contract^{18/}. The electricity exported & imported are measured by Energy meters (main meter) installed at each line in substation. The reading is recorded and the difference from last month reading gives the number of units imported/exported. Meters are of Larson and Toubro Limited make and of 0.2s accuracy class. The export and import reading are 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 interviews with PP. 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. Moreover, as per the requirement of the approved methodology and registered PDD^{03/}, assessment team cross checked the net electricity value as presented in the JMR^{09/} with the invoice^{09/} raised and found the values match with each other. The same is thus acceptable to the assessment team and thus emission reduction calculation is correct.

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 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 calibration details such as make, accuracy class serial number is as per the meter available onsite and checked during verification Site Visit interviews. The Calibration details^{10/} are presented in Appendix 2 of this report. Calibration^{10/} of meters carried out by a NABL accredited company 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.

3.5 SDG Outcomes Monitoring

In the Registered PDD indicators are chosen for the monitoring of sustainable monitoring:

Meth/tool	Relevant indicator	SDG	GS PDD	MR	Compliance
Quantity of net electricity supplied to the grid	SDG 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix		Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh	Yes
• Quantitative	8.6: By 2030, achieve		• Training of Staff	• Training of Staff	Yes

Meth/tool	Relevant indicator	SDG	GS PDD	MR	Compliance
employment, <ul style="list-style-type: none"> Quality of employment Income generation 	full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value		<ul style="list-style-type: none"> Quantitative employment and income generation. 	<ul style="list-style-type: none"> Quantitative employment and income generation. 	
Take urgent action to combat climate change and its impacts	SDG 13: Take urgent action to combat climate change and its impacts		Emission reductions achieved per year	Emission reductions achieved per year	Yes

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

Relevant SDG Indicator	SDG 7.2.1: Affordable and Clean Energy
Data/parameter:	EG _{facility,y}
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data checked by the assessment team	Monthly JMR provided by State Utility ^{/09/}
Value(s) of monitored parameter	63,212 MWh
Means of verification:	<p>The parameter EG_{facility,y} is calculated based on the difference between values of "export" and "import" on the energy meter at the sub-station (evacuation point). The Meter Reading Statement (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 project activity includes metering at the substations managed by UPPTCL & PP/O&M Contractor. The electricity exported & imported are measured by Energy meters (main meter) installed at each line in substation. The reading is recorded and the difference from last month reading gives the number of units imported/exported. The installed meters are of 0.2s accuracy class. The export and import reading are continuous and recording frequency is monthly. The QA/QC procedure is as per the requirement of the registered PDD and onsite practice. Assessment team confirms the same during the interviews with PP. 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. Moreover, as per the requirement of the approved methodology and registered PDD, assessment team cross checked the net electricity value as presented in the JMR with the invoice raised and found the values match with each other. The same is thus acceptable to the assessment team and thus emission reduction calculation are correct.</p> <p>The details of the Meters are provided in appendix 2 of the report.</p>
Cross check mechanism	The JMR is cross-checked with the invoice copies. Emission reduction calculated in thus correct and accurate. The cross-check mechanism is presented in the emission reduction calculation sheet and the same is found correct.

Relevant SDG Indicator	SDG 13.2.1: Climate Action
Data/parameter:	ER_y
Unit	tCO ₂
Description	Emission reductions achieved per year
Source of data checked by the assessment team	Emission reduction sheet ^{/02/}
Value(s) of monitored parameter	61,802
Means of verification:	Assessment team checked that the parameter is calculated. The electricity exported & imported measured by Energy meter installed at substation. The JMR is cross-checked with the invoice copies. Emission reduction calculated in thus correct and accurate.
Cross check mechanism	All the formulas are applied in line with the registered PDD

Relevant SDG Indicator	SDG 8.5.1: Decent Work and Economic Growth
Data/parameter:	Quality of employment
Unit	-
Description	Training of Staff ^{/07/}
Source of data checked by the assessment team	Plant records or the training records ^{/07/} for all the employees/DOE interview with employees, local stakeholders etc.
Value(s) of monitored parameter	Assessment team checked Number of Trainings provided to employees & O&M staffs. A total of 4 training programmes ^{/7/} to its employees and O&M staffs. The training records for the monitoring period is checked by the assessment team and found correct.
Means of verification:	The value for this parameter is taken from Plant records. Verification team interviewed some employees & local stakeholders.
Cross check mechanism	Not applicable

Relevant SDG Indicator	SDG 8.5.1: Decent Work and Economic Growth												
Data/parameter:	Quantitative employment and income generation												
Unit	-												
Description	Quantitative employment and income generation.												
Source of data checked by the assessment team	Employment records ^{/20/} for project activity/ Letter from O&M contractor ^{/13/} for employment generation/ DOE interview with employees, local stakeholders etc												
Value(s) of monitored parameter	Assessment team checked that for Quantity of employment and income generation. Employment is given in office work, O&M, Security etc. A total of 20 employment and INR 77.36 hourly income given during monitoring period. The employment records for the monitoring period are checked by the assessment team and found correct. Breakup is as follows: <table border="1"> <thead> <tr> <th>Year</th> <th>Skilled</th> <th>Unskilled</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>2020</td> <td>5</td> <td>5</td> <td>10</td> </tr> <tr> <td>2021</td> <td>5</td> <td>5</td> <td>10</td> </tr> </tbody> </table>	Year	Skilled	Unskilled	Total	2020	5	5	10	2021	5	5	10
Year	Skilled	Unskilled	Total										
2020	5	5	10										
2021	5	5	10										
Means of verification:	The value for number of employments created is taken from Plant employment records ^{/13/} , and PP declaration. The value for Cost Spent for salaries is taken from HR records. Verification team interviewed some employees and Local stakeholders.												
Cross check mechanism	Not applicable												

Relevant SDG outcome has been included in ER sheet and have been found correct.

During the interviews with PP, the verification team confirmed that there is a grievance book^{/15/} at project site. Every stakeholder has access to the grievance register and can lodge grievance any time. Same if any is resolved as per the standard operating procedures of the company. By checking grievance book^{/15/} submitted by PP, it was able to confirm there are no negative comments received from the local people for the present monitoring period. Staff complaints/grievances were addressed as per the company policies. Local people are happy with the implementation of the project activity as it entrusts employment and improve living standard of local people and villagers.

Assessment team also checked the Indian domestic REC web site (<https://recregistryindia.nic.in/>) & International REC device registry (<https://evident.services/device-register>) and confirms that the project is not undertaking any REC benefits at present nor intended to take it in near future.

Assessment team also checked the other registry like UNFCCC and VCS and found that project is not registered with both mechanisms.

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 verification process Mr. Vineet Kumar, 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.

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 GS4GG guideline.

Summary of ex-post values of each SDG outcome for the current monitoring period

Item	Baseline estimate	Project estimate	Net benefit
SDG 7: Affordable and Clean Energy	0 MWh	63,212 MWh	63,212 MWh
SDG 8: Decent Work and Economic Growth	0 Training provided to O&M Staff 0 employment generation	4 Trainings provided to O&M Staff 20 employments generation	No. of trainings conducted: 4 Trainings No. of employment opportunities created: 20 employments
SDG 13: Climate Action	0 tCO ₂ e	61,802 tCO ₂ e	61,802 tCO ₂ e

Comparison of actual value of outcomes with estimates in approved GS PDD

Item	Values estimated in ex ante calculation of approved PDD	Actual values achieved during this monitoring period
SDG 7: Affordable	58,510 MWh	63,212 MWh

and Clean Energy		
SDG 8: Decent Work and Economic Growth	01 trainings provided to O&M Staff 10 employment generation	4 Trainings provided to O&M Staff 20 employments generation
SDG 13: Climate Action	57,204 tCO ₂ e	61,802 tCO ₂ e

3.6 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 01^{/01/} & Monitoring report Version 02^{/01/} and corresponding ER calculation spread-sheets and are consistent with the applied methodology ACM0002 Version 17.0 and the monitoring plan contained in the registered PDD. 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 01 & Monitoring report Version 02^{/01/} and corresponding ER calculation spread-sheets. The verification process for the same has been clearly described in above section of the report. See below for the detailed data:

Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as:

The baseline emission is using equation below:

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

$$; EG_{PJ, y} = EG_{facility, y}$$

$$BE_y = 63,212 \times 0.9777$$

$$= 61,802 \text{ tCO}_2\text{e (round down figure)}$$

Thus, the baseline value of each SDG outcome is summarised as follows;

Item	Baseline value
SDG 7: Affordable and Clean Energy	No Activities in the baseline
SDG 8: Decent Work and Economic Growth	No Activities in the baseline
SDG 13: Climate Action	No Activities in the baseline

Project emissions:

The project is a solar power project, no fossil fuel is be consumed according to the methodology ACM0002 Version 17.0 & according to registered PDD, PE_y = 0 tCO₂e

Leakage:

As per ACM0002 Version 17.0, No leakage emission needs to be considered.

Emission reductions:

Thus, the emission reductions are:

$$\begin{aligned}ER_y &= BE_y - PE_y \\ &= 61,802 - 0 \\ &= 61,802 \text{ tCO}_2\text{e}\end{aligned}$$

The amount of GS-VERs achieved during the present monitoring period are 8.04% higher than the estimated value in the PDD. This is due to the higher PLF months during the monitoring period. The PLF achieved during this monitoring period is 19.68 % & same is found within the sensitivity analysis, thus do not have impact on additionality.

3.7 Management and Operational System

The responsibilities of data measurement, collection, verifying, archiving etc. have been clearly defined in the registered PDD. The same practice is followed onsite and it is confirmed by the assessment team during the interviews with PP. The data related to ER calculation^{02/} 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 interviews with PP & document review, the monitoring procedure as well as the internal quality management and control procedures 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, is 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.

4. REFERENCE

LIST OF DOCUMENTS	
S. No.	Document/Evidence/Reference/Web link, Version, Date
1.	Monitoring Report Version 01 dated 24/01/2022, Final Monitoring report version 02 dated 18/02/2022
2.	ER sheets Version 01 dated 24/01/2022 Final ER Sheets version 02 dated 18/02/2022
3.	Registered CDM PDD Version 03 dated 17/02/2018, GS4GG Transition Annex dated 16/01/2018 GS Passport version 03, dated 17/02/2018 Final GS Validation report version 01 dated 06/09/2017 Verification Report (1 st Verification), version 01 Dated 14/05/2018 Verification Report (2 nd Verification), version 02 Dated 29/07/2021 GS Design & performance review documents
4.	ACM0002: Grid-connected electricity generation from renewable sources, Version 17.0
5.	CDM validation and verification standard for project activities, Version 03.0
6.	GS4GG guideline
7.	Training records of the employees (both skilled/non-skilled)
8.	O&M policy
9.	Monthly reports issued by state utility and invoices raised by PP for the complete monitoring period
10.	Calibration certificates of the complete monitoring period
11.	Commissioning certificates for power plant
12.	Log book records for scheduled maintenance of the power plant for the complete monitoring period
13.	Sample work contract for both skilled and non-skilled manpower
14.	CSR report
15.	Grievance register
16.	HSE procedures
17.	Power purchase agreement
18.	O&M agreement
19.	Technical manual from the Manufacturer
20.	Employment records

5. FINAL VERIFICATION STATEMENT

Applus+ Certification has been engaged by Nirosha Solar Power Private Limited to perform the 3rd periodical verification of the “30 MW Solar PV Project by Nirosha Solar Power Private Limited” (GS Ref. No. GS5699).

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 and the applied methodology ACM0002 Version 17.0.

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. A reasonable level of assurance has been achieved during this verification. The verification can confirm that:

- the project is operated as planned and described in the project design document and PDD 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 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 01/07/2020 to 19/09/2021 (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: 01/07/2020 to 19/09/2021 (Both days included)

Verified emissions in the above reporting period:

Leakage emissions	0 tCO ₂ e equivalents
Project emissions	0 tCO ₂ e equivalents
Baseline emissions	61,802 tCO ₂ e equivalents
Emission reductions	61,802 tCO ₂ e equivalents

Vintage wise breakup of verified emission reduction is given below:

Year	Baseline emission (tCO ₂)	Project Emission (tCO ₂)	Emission Reduction (tCO ₂)
01/07/2020 to 31/12/2020	24,306	0	24,306
01/01/2021 to 19/09/2021	37,496	0	37,496
Total	61,802	0	61,802

Date: 11/03/2022


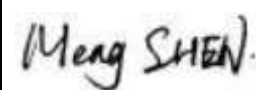
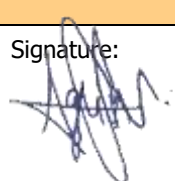
Lead Auditor: Dr. Atul Takarkhede

Tech. Expert: Dr. Atul Takarkhede

Tech. Reviewer: Mr. Simon Shen

Approver (*Applus+ Certification VVB Technical Manager*)

Mr. Agustín Calle de Miguel

ASSESSMENT TEAM	
Lead Auditor: Dr. Atul Takarkhede	Technical Reviewer: Mr. Simon Shen
Signature: 	Signature: 
Approver: Mr. Agustín Calle de Miguel	
Signature: 	



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Appendix 1: Corrective Action Request/Clarification Request/Forward Action Request resolution table

Type:	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL/CR <input type="checkbox"/> FAR	Number:	01
Raised by:	Atul Takarkhede	Ref. to checklist in above tables:	3.2
Description of the audit finding		Date:	11/02/2022
PP requested to submit following documents; <ol style="list-style-type: none"> 1. Performance review by GS for previous verification, 2. Commissioning certificate, 3. PPA, 4. O&M contract. 			
Project Participant's response		Date:	18/02/2022
The following documents are now submitted to the DOE assessment team. <ol style="list-style-type: none"> 1. Performance review closure by GS for previous verification 2. Commissioning Certificate 3. PPA 4. O&M Contract 			
Documentation provided as evidence by Project Participant			
<ol style="list-style-type: none"> 1. Performance review closure by GS for previous verification 2. Commissioning Certificate 3. PPA 4. O&M Contract 			
Auditor's assessment comment		Date:	09/03/2022
PP have submitted supporting documents; commissioning certificates, technical specifications & PPA. Information in the MR found inline with the documents submitted. CAR thus closed.			

Type:	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL/CR <input type="checkbox"/> FAR	Number:	02
Raised by:	Atul Takarkhede	Ref. to checklist in above tables:	3.5
Description of the audit finding		Date:	11/02/2022
PP has requested to submit supporting documents for achieved values for all SDG ex-post parameter mentioned in section D.2 of MR till CAR is raised and Monitored values are reserved.			
Project Participant's response		Date:	18/02/2022
The supporting documents for all SDG parameters as per section D.2 of the GS MR are now submitted to the DOE assessment team.			
Documentation provided as evidence by Project Participant			
Supporting documents for all SDG parameters as per section D.2 of the GS MR			
Auditor's assessment comment		Date:	09/03/2022
PP have submitted supporting documents for electricity generation records and breakup of employees and values and same found consistent with revised MR. PP also submitted sample salary sheets of the employees & found that salaries are inline with the industry standard. CAR thus closed.			

Type:	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL/CR <input checked="" type="checkbox"/> FAR	Number:	03
Raised by:	Atul Takarkhede	Ref. to checklist in above tables:	NA
Description of the audit finding		Date:	11/02/2022
As per the GS PDD/MR a grievance register is placed at site and is being monitored continuously for any comments from Stakeholder. However, the records are not submitted to the assessment team. Corrections sought.			
Project Participant's response		Date:	18/02/2022
The grievance register is now submitted to the DOE assessment team.			
Documentation provided as evidence by Project Participant			
Grievance Register			
Auditor's assessment comment		Date:	09/03/2022
PP has submitted copy of grievance register to the assessment team and found no major grievance to the project activity and PP. thus accepted and CAR is closed.			

Type:	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL/CR <input type="checkbox"/> FAR	Number:	04
Raised by:	Atul Takarkhede	Ref. to checklist in above tables:	NA
Description of the audit finding		Date:	11/02/2022
In Annexure 1 of monitoring report, Details related to Monitoring equipment and its calibration is mentioned. However, to verify the same, supporting documents is missing. Thus, corrective action sought.			
Project Participant's response		Date:	18/02/2022
The calibration reports of the energy meters are now submitted to the DOE assessment team.			
Documentation provided as evidence by Project Participant			
Calibration Reports			
Auditor's assessment comment		Date:	09/03/2022
Copies of calibration certificates has been submitted to assessment team by PP. and during review of the same, team observed energy meters are scheduled calibrated. Thus accepted. However, the amount of GS-VERs achieved during the present monitoring period are 8.04% higher than the estimated value in the PDD. This is due to the higher PLF months during the monitoring period. The PLF achieved during this monitoring period is 19.68% & same is found within the sensitivity analysis, thus do not have impact on additionality. Thus, accepted and CAR is closed.			

Appendix 2: Calibration details of monitoring meters

Details of Meter Calibration:

Meter SI. No.	Meter Make	Accuracy Class	Date of Calibration	Due date for Calibration	Calibration Compliance
15625430 (Main Meter)	Larson and Toubro Limited	0.2 s	01/12/2017	01/12/2022	No delay Observed
15199969 (Check Meter)	Larson and Toubro Limited	0.2 s	01/12/2017	01/12/2022	

Appendix 3: Audit Team CVs

Name	SHORT CV. BACKGROUND INFORMATION
Dr. Atul Takarkhede	<p>Dr. Atul Takarkhede is Ph.D. (Environmental Sciences) from Institute of Science, RTM Nagpur University, Nagpur, and he has already published different technical papers related to environmental sciences.</p> <p>He counts with more than 11 years of experience in field of Environmental Auditing, consulting and accreditation. He is an expert in ISO 9001-14001, CO2/GHG Reporting, Carbon Foot Print, Energy, Water and Waste Management reporting for organizations' environmental performance.</p> <p>His professional portfolio is mainly related with carrying out EIA, conducting QA/QC of EIA Reports; conducting environmental/water audits; NABET requirements appliance, functional area expert in Water Pollution & Solid & Hazardous Waste management among others.</p> <p>Furthermore, he counts with solid experience on CDM-VCS-GS consultancy and auditing. Currently he is associated with True Quality Certifications Private Limited and empanelled with Applus+ Certification to carry out GHG audits in the aforementioned schemes.</p>
Mr. Simon Shen	<p>Mr. 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.</p>