



GREENFIELD SOLAR POWER MISSION BY FORTUM INDIA



Document Prepared By: LGAI Technological Center, S.A. (Applus+ Certification)

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Summary:

Verification purpose: The project undertaken by Fortum India Private Limited who has set up 250 MW solar power project in village – Luna Khurd, Luna Kala and Betina in the state of Rajasthan. The project is registered with VERRA registry¹. The project activity comprises of 250 MW solar power project which export power to the national grid. The project has contributed to reduction of GHG emissions by displacing fossil fuel dominated grid-based electricity with renewable energy – solar energy based renewable electricity.

Start date of the project activity is 19-March-2021. An undertaking has been submitted by PP for double counting confirming that no GHG reduction will be claimed in any other GHG mechanism for current monitoring period. Project activity undergoes continued operation and no major breakdown had taken place except routine maintenance/shutdown and minor breakdowns.

This is 1st verification and certification for the greenhouse gas (GHG) emission reductions reported from ‘Greenfield Solar Power Mission by Fortum India’ for the monitoring period 19-March-2021 to 31-March-2022 (Inclusive of both days), under the crediting period 19-March-2021 to 18-March-2031. Total emission reductions achieved for the project activity during the current monitoring period are 544,539 tCO₂e. An undertaking from the project participant confirms that project will not claim any other scheme benefits for the concerned monitoring period.

A risk-based approach has been followed to perform this verification activity. In the course of verification, 05 Corrective Action requests (CAR), 01 Clarification Request (CL) and 01 Forward action requests (FARs) were raised and successfully closed. The review of the Monitoring report and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided VVB with sufficient evidence to verify the fulfilment of the stated criteria of VCS.

¹ <https://registry.verra.org/app/projectDetail/VCS/2069>

LGAI Technological Center S.A. (Applus+ Certification) (Hereafter referred to as Applus+ Certification) has been appointed by 'Fortum India Private Limited' to perform the 1st periodic verification of the "Greenfield Solar Power Mission by Fortum India" under VCS standard 4.3 and project guide version 4.2. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and Final Verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular; the project's baseline, monitoring plan is assessed against the applied methodologies "ACM0002 version 19.0 – Grid-connected electricity generation from renewable resources. The project's compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS program guide 4.2 and standard, version 4.3

- CDM Validation and Verification Standard for project activities, version 03.0
- VCS standard version 4.3
- VCS program guide version 4.2

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of verified carbon units (VCUs).

The scope of the verification is the independent and objective review of the monitoring report (MR). The MR is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The verification was based on the guidance given in the CDM Validation and Verification Standard for the project activities, version 03.0, review against registered VCS-PD and Final Validation report, and VCS program guide, version 4.2 and VCS standard version 4.3.

The assessment team has employed a risk-based approach to assess the completeness and accuracy of the claims and conservativeness of the assumptions in the MR. The main focus of the assessment team is to identify the significant risks for the project implementation and the generation of VCUs. The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring report combined.

The only purpose of the verification is its usage during the issuance process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. (Applus+ Certification) can't be held liable by any party for decisions made or not made based on the verification opinion, which will go beyond that purpose. The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. No sampling procedure applied for site visit or document verifications. The entire documents checked/plant verification conducted to arrive at positive verification conclusions.

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1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. (Hereinafter referred as Applus+ Certification) has been appointed by Fortum India Private Limited to perform 1st periodic verification of the project entitled “Greenfield Solar Power Mission by Fortum India” under VCS standard version 4.3 and program guide version 4.2. The objective of this verification activity is to have an independent third party for the assessment of the project design, monitoring report and final verification report and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular; the project’s baseline and monitoring plan is assessed against applied methodologies –

- ACM0002 (version 19.0) “Grid-connected electricity generation from renewable sources”
- The project’s compliance with the requirements of Article 12 of the Kyoto Protocol, the CDM Modalities and Procedures as agreed in the Marrakech Accords under decision 3/CMP.1, the annexes to this decision, subsequent decisions and guidance made by COP/MOP & CDM Executive Board and other relevant rules, including the Host Country legislation and sustainability criteria along with VCS program guide, version 4.2 and VCS standard version 4.3.
- CDM Validation and Verification Standard for project activities, version 03.0

Verification is a requirement for all VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of estimated verified carbon units (VCUs).

1.2 Scope and Criteria

The scope is defined as an independent and objective review of the Monitoring report (MR) prepared as per the registered VCS-PD and registered approved methodologies ACM0002 version 19.0. The MR is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board and VCS standard, version 4.3 and VCS Program guide version 4.2, including the approved baseline and monitoring methodologies applied. The verification was based on the requirements in the CDM validation and verification standard for project activities, Version 03.0, VCS program guide, version 4.2 and standard version 4.3.

The verification is not meant to provide any consulting towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the Monitoring report. 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. There are no material errors, overestimation of ER, omission or misstatement. The verification team has reviewed all the documents like commissioning certificate, Energy generation records, fuel records etc.

1.3 Level of Assurance

The verification has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS. The entire documents checked/ site visit verification conducted to arrive at positive verification conclusions.

1.4 Summary Description of the Project

Fortum India Private Limited is working into the renewable energy sector with an objective to build solar power assets in India. They have set up 250 MW solar power project in Jaisalmer district, Rajasthan.

The project activity helps to reduce the supply demand gap in the state and also helps in contributing to the sustainable development by using solar energy as the source of power generation and reduction of GHG Emissions.

During the Current Monitoring Period from 19-March-2021 to 31-March-2022 (First and last date included) the project activity has supplied 581,277 MWh of electricity, and thus contributing to 544,539 tCO₂e of GHG reduction.

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process: The project assessment is based on the Clean Development Mechanism Validation and Verification Standard for project activities, version 03.0 and VCS standard 4.3 and VCS program guide, version 4.2 and is conducted using standard auditing techniques to assess the correctness of the information provided by the project participants. Before the assessment begins, members of the team covering the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the VCS project activity are appointed.

Once the project is received by the assessment team, the members of the assessment team carried out:

- A desk review of the monitoring Report against the registered PD;
- Follow-up interviews with project participant;

- The resolution of outstanding issues and the issuance of the final verification report and opinion.

The prepared verification report and other supporting documents then undergo an internal quality control at the HQ (Accredited office) before being submitted to the VCS executive board.

In order to ensure transparency, assumptions must be clear and stated explicitly and background material must also be referenced. LGAI Technological Center, S.A. (Applus+ Certification) has developed a specific checklist customized for the project. The checklist demonstrates, in a transparent manner, the project criteria (requirements), discussion on each criterion by the assessment team, and the results from verifying the identified criteria.

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
Jitendra Mohan Singh	LA/TE	YES	YES	NA	YES
Deepak Pundlik	IAiT	YES	YES	NA	YES
Denny Xue	TR	YES	YES	NA	NA

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

Document review

The Monitoring Report version 1 submitted by the PP was reviewed against the approved methodology, registered VCS PD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A

complete list of all documents and evidence material reviewed is included in this report below in appendix 1.

Follow-up interviews

A site visit was conducted by LGAI Technological Center S.A. (Applus+ Certification) who performed interviews, project activity verification with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in this report in the below sections.

Resolution of Clarification and Corrective Action Request

The objective of this phase of the Verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ Certification positive conclusion on the Monitoring report. The Corrective Action Requests and Clarification Requests raised by Applus+ Certification were resolved during communications between the Client and Applus+ Certification to guarantee the transparency of the verification process, the concerns raised and responses given are summarized below in the Appendix 2.

The final MR version 07 submitted by PP on 14-December-2022 serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main CDM/VCS objectives. The two CDM/VCS main objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Internal quality control

As final step of a verification of the final documentation including the final verification report and the checklist have to undergo an internal quality control by the technical review committee, i.e. each report has to be finally approved either by the head of the technical review committee or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one to avoid any conflict of Interest.

After confirmation of the project owners, the positive verification opinion and relevant documents are submitted to the VCS secretariat through the VCS web-platform.

2.2 Document Review

The Monitoring Report version 1 submitted by the PP was reviewed against the approved methodology, registered VCS PD, final validation report and other relevant criteria to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done. A complete list of all documents and evidence material reviewed is included in this report below in appendix 1.

2.3 Interviews

A site visit was conducted for the project activity on 02-June-2022. Technical details of the equipments, metering/monitoring arrangement was verified on-site. Supportive documents were confirmed with the actual project implementation. All the documents were cross checked to ensure conservative estimation of emission reduction.

During the site visit, the PP representatives were questioned about the implementation of the project activity. Several topics like the verification of commissioning date of equipments, generation records, and monitoring of the data and the error accountability were discussed. To cross check the information provided by PP, various documents like technical specifications, commissioning certificates, PPA, Joint Meter readings, invoices were also verified. The names of the persons interviewed during site visit are given below;

Organization	Name of Persons/Designation	Topics discussed	Team Member
Sprng Solar India Private Limited ²	Tapesh Makwana, Senior Manager	Project activity implementation Operation, Calibration, O&M practices, Joint Meter readings, Mechanical maintenance, Electrical maintenance, Project description, Invoicing practices, LSC mechanism	Jitendra Mohan Singh
Sprng Solar India Private Limited	Richpal, Assistant Manager		Deepak Pundlik
Mukesh Kuma	Villager, Luna Khurd	LSC mechanism, Grievances, SDG goal 08	
Infinite Solutions	Mr. Gauav Petakar	MR, ER calculations etc. (telephonic interview)	

During the site visit, PP representatives were questioned about Project implementation. Several topics like the verification of commissioning date of equipments, the generation, recording, and monitoring of the data and the error accountability were discussed. Various documents like the Joint Meter Readings, invoices, on-site details including Solar Panels, Transformers, meter specifications were verified to establish the current status and the implementation of the Project Activity.

² <https://www.livemint.com/companies/news/actis-to-buy-fortum-500-mw-solar-projects-for-euro-280-million-11624383028724.html> Sprng Solar manages operation and maintance of currnet 250 MW Project Activity and Fortum has permission to operate plant till 31/03/2023 which is confirmed based on document – ‘Registration and Licence to Work a Factory’ issued by Government of Rajasthan verified during site visit.

2.4 Site Inspections

Site visit: 02-June-2022				
No.	Activity performed on-site	Site location	Date	Team member
1.	Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring. Assessment team also checked that whether the monitoring plan as described in the VCS PD is actually practised onsite. Assessment team also checked any change in host country criteria which may affect the baseline of the project activity.	Luna Khurd, District Jaisalmer, Rajasthan	02-June-2022	Jitendra Mohan Singh Deepak Pundlik

2.5 Resolution of Findings

The objective of this phase of the verification was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for LGAI Technological Center S.A. (Applus+ Certification)'s positive conclusion on the project design and Monitoring report. The Corrective Action Requests and Clarification Requests raised by LGAI Technological Center S.A. (Applus+ Certification) were resolved during communications between the Client and LGAI Technological Center S.A. (Applus+ Certification) to guarantee the transparency of the validation process, the concerns raised and responses given are summarized below in the appendix 2.

The final MR version 07 submitted by project owners on 14-December-2022 serves as the basis for the final assessment presented. Additional changes to the project during the verification process are not considered to be significant with respect to the main VCS objectives. The two main VCS objectives are the reduction of anthropogenic GHG emissions and the contribution of sustainable development to the host country.

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Project Document and Monitoring report	00	01	00
Description of project activity	01	01	01
Application of selected baseline and monitoring methodology and selected standardized baseline			

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
- Applicability of methodology and standardized baseline	00	00	00
- Deviation from methodology	00	00	00
- Clarification on applicability of methodology, tool and/or standardized baseline	00	00	00
Project boundary	00	00	00
Establishment and description of baseline scenario	00	00	00
Demonstration of additionality	00	00	00
Emission reductions	00	02	00
Calibration details	00	00	00
Monitoring plan	00	00	00
No Net harm assessment	00	00	00
Local stakeholder consultation	00	00	00
Others (please specify)-	00	01	00
- Regarding double counting Declaration			
- ER Sheet			
- Supporting documents			
Total	01	05	01

The list of findings and their resolution is presented in appendix 2 of this report.

2.5.1 Forward Action Requests

This is 1st periodic verification of the project activity and a FAR was raised during validation which is addressed during current verification. The FAR is provided in appendix 2 of the report.

2.6 Eligibility for Validation Activities

This section is not applicable for present verification, as Applus+ Certification holds the accreditation for Validation of projects under this Sectoral Scope.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity was registered under VERRA with project ID – 2069³ and with 1st crediting period from 19-March-2021 to 18-March-2031.

As per the MR and undertaking provided, PP would not consider the credit from any other mechanism for the current monitoring period. The undertaking is provided to confirm that there is no any double accounting for current monitoring period. Further, assessment team confirms

³ [Verra Search Page](#)

that the project activity is not participating in any other form of environmental credits. Also, the project activity is not registered for REC benefits in India. The same was verified by checking the REC website.

3.2 Methodology Deviations

The project activity has applied correct methodology which are as per the registered VCS PD and thus no deviation is sought regarding the methodology. The project complies with all the requirement of the methodology and thus deviation to the methodology is not a requirement for the present project activity.

3.3 Project Description Deviations

During site visit, it was confirmed that the project activity is operational as per project description in the registered VCS PD and the project remains in compliance with the applied methodology and VCS requirements.

In the registered VCS PD, PP had chosen crediting period as 01-December-2020 to 30-November-2030 with expected project commissioning date as 01-December-2020. However, actual project commissioning of project happened on 19-March-2021⁴. The same is verified with the commissioning certificate issued by the state utility and found correct. PP has sought project description deviation in start date of crediting period from 19-March-2021 in line with the commissioning date of Project Activity. VVB confirmed that proposed deviation does not impact the applicability of the methodology, additionality and/or the appropriateness of the baseline scenario of the Project activity and hence found acceptable.

The geographical co-ordinates mentioned in the MR are different from registered VCS PD. At the time of registration, the project activity was not commissioned and hence there is difference between actual co-ordinates and those mentioned in the registered VCS PD. During verification site visit, the geo co-ordinates were checked and confirmed. VVB confirmed that proposed deviation does not impact the applicability of the methodology, additionality and/or the appropriateness of the baseline scenario of the Project activity and hence found acceptable.

A difference is observed in the technical specifications of the equipment's (PV module type and its capacity) used for actual installation on site and the details provided in the registered VCS PD. At the time of registration, the project was not commissioned. The technical specifications of installed and commissioned equipment's were checked and confirmed during the site visit. The revision in the specs has no impact on the project installed capacity as confirmed during the site visit. . VVB confirmed that proposed deviation does not impact the applicability of the

⁴ As per copy of commissioning certificate for 150 MW out of 250 MW Solar plant

methodology, additionality and/or the appropriateness of the baseline scenario of the Project activity and hence found acceptable.

PP has transferred project activity registry account from previous account holder “EKI Energy Services Limited” (Account ID-1851) to “Fortum India Private Limited” (Account ID-4660) and now the sole responsibility of communication and issuance lies with Fortum India Private Limited. Also, as per the declaration submitted to VERRA, all the Carbon Credits rights are now transferred from “Sprng Solar Plus Private Limited” (Formerly known as “Fortum Solar Plus Private Limited”) to “Fortum India Private Limited” and therefore “Fortum India Private Limited” will act as the project proponent for the said project activity⁵. Accordingly, name of PP is revised in the MR. VVB confirmed that proposed deviation does not impact the applicability of the methodology, additionality and/or the appropriateness of the baseline scenario of the Project activity and hence found acceptable.

Infinite Environmental Solutions LLP (Infinite Solutions) is now name as the other entity involved for the project activity replacing EKI Energy Services Limited for the role of project consultant. VVB confirmed that proposed deviation does not impact the applicability of the methodology, additionality and/or the appropriateness of the baseline scenario of the Project activity and hence found acceptable.

Finding: CAR 02 and FAR 01 were raised and successfully closed. Please refer Appendix 2 for more information.

3.4 Grouped Project

The project does not involve any addition of new project activity and thus the project do not fall under grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

During the onsite visit, it was concluded that the project is implemented as per VCS PD and this is verified from the commissioning certificate, statutory clearances submitted. During the current monitoring period, it was observed that operation of the project activity was not affected for a longer period expect few breakdowns. Scheduled maintenance was carried out as per the

⁵ Refer Appendix 3 “VERRA APPROVAL FOR PROJECT PROPONENT CHANGE” in VCS MR version 07 for reference.

instruction of the manufacturer and the same is acceptable to the assessment team. Few breakdowns⁶ were observed which are presented in appendix 5 below.

Project location is confirmed by the assessment team through GPS co-ordinates using GPS meter during the site visit and are correct. The geographical co-ordinates are 26°40'18.21"N and 71°32'7.70"E and the project site is in village Luna Khurd, Luna Kala and Betina, district – Jaisalmer, Rajasthan, India. The co-ordinates observed are different from the registered VCS PD and a deviation is sought by PP which is assessed in section 1.13 above and found appropriate and the co-ordinates are confirmed during the site visit.

The project was commissioned in two parts:

150 MW project was commissioned on 19-March-2021 which is Project Start date and remaining 100 MW was commissioned on 01-May-2021. The dates were confirmed based on the commissioning certificates submitted.

The technical specification of the project activity is as follows which is confirmed based on technical datasheet:

Make	Suntech & Jinko
PV Module type	Mono Facial (Polycrystalline) & Bifacial (Monocrystalline)
Module Capacity	Suntech- 340 & 345 Watt
	Jinko- 395 & 400 Watt
Total no. of module	9,23,134
Open Circuit Voltage (Voc)	46V, 46.2V & 48.26V, 48.35V
Short Circuit Current (Isc)	9.39A, 9.48A & 10.13A, 10.32A
Temperature Coefficient of Pmax	-0.38 %/°C & -0.35 %/°C
Inverter Make	Huawei
Inverter Capacity	160 KW
No. of Inverter	1563 Nos

⁶ VVB was observed based on the break down logs submitted that, the plant was under breakdown more than 2 continuous days very few times and thus it has negligible impact on the GHG emission reductions which is confirmed based on electricity generation data (monthly generation report and invoices) submitted.

The technical details mentioned are different from the registered VCS PD and a deviation is sought by PP which is assessed in section 1.13 above and is found appropriate as the technical specifications were confirmed during the site visit.

The start date of the project is 19-March-2021. This is the date; the 150 MW out of 250 MW was commissioned which is in line with VCS Standard version 4.3.

The assessment team confirmed through interview with O & M personnel during site visit that there are no changes into the project design during this monitoring period. It was found that the monitoring plan was implemented as per the requirement of the VCS PD & approved monitoring Plan and applied methodology. The organisational role and responsibility as mentioned in the registered VCS PD is followed onsite. Since this is 1st monitoring period, the energy meter calibration is not due and PP confirmed that same will be calibrated as per the required frequency mentioned in the VCS PD. All the emergency preparedness as mentioned in the registered VCS PD is followed onsite and no discrepancies were found regarding the same.

The Project participant contribution from the project activity towards sustainable development in accordance to host country.

As confirmed during the site visit, the project displaces electricity produced in fossil fuel-based power plants, by using clean renewable source to generate electricity and thereby contributes to sustainable development through reduction in greenhouse gas (GHG) emissions. It has also been confirmed that the project implementation has led in contribution to SDG 07, 08 and SDG 13 (as stated in section 1.11 of the submitted MR). The project supplies clean, affordable and renewable energy (581,277 MWh net electricity under the monitoring period) without reliance on fossil fuels for generation of electricity to meet the growing demands in the region. The generated electricity avoided release of 544,539 tCO₂ in to the atmosphere. The project has created job opportunities through Operation and Maintenance (O & M) work for Solar Park and has employed total 94 nos. for O & M work out of which, 54 nos. of people are from adjoining villages/town who are unskilled workers at the project site. Remaining 40 nos. are skilled workers. The employment is of full-time purpose as the plant operates in 3 shifts a day which was confirmed during the verification site visit.

The project is not involved in any other form of GHG emission program and VCU's generated from this verification will not be used for other trading program to avoid any kind of double counting. The same is confirmed by the PP during the verification site visit. Assessment team also conducted independent review regarding the same and found that the statement of the PP is accurate and project is not involved in any other kind of GHG trading for the present verifications/monitoring period.

The name of PP has changed from "Fortum Solar Plus Private Limited" to "Fortum India Private Limited" and contact details are updated.

There is a change in the other entity mentioned in the registered VCS PD and current MR. The earlier other entity was EKI Energy Services Limited while the current MR mentions the other

entity as Infinite Solutions. The other entity is responsible for preparation of MR and supporting worksheets only as confirmed during the on-site visit.

The assessment team observed that the project is in line with applied methodologies and thus no clarification/deviation is sought. However, PP has sought few deviations from the registered PD and same has been accessed and found appropriate as presented above in section 3.3 above.

Assessment team confirms following during the verification site visit:

1. Start date of the project is 19-March-2021.
2. An undertaking letter has been submitted by PP for no double counting with any other GHG program. PP also has given a written declaration that project will not claim other form of GHG credit for the concerned monitoring period.
3. Assessment team confirms that this is 1st monitoring under VCS and covers the activity from 19-March-2021 to 31-March-2022 (inclusive of both dates). VCS crediting period is of 10 years with 19-March-2021 as the start date and crediting period end date as 18-March-2031.
4. GHG credits from 19-March-2021 to 31-March-2022 will be claimed under VCS only. At any point of time during the crediting period, the project proponent will abide by the “Double Counting”.
5. Assessment team checked and found that the Project proponent of the project activity is as below for the current monitoring period:

Organization name	<i>Fortum India Private Limited</i>
Contact person	<i>Atishay Jain</i>
Title	<i>Vice President</i>
Address	<i>1A, Vandana Building 11, Tolstoy Marg, New Delhi, India, 110001</i>
Telephone	<i>+91-85276-94527</i>
Email	atishay.jain@fortum.com

The other entity involved in the project activity is as below for current monitoring period:

Organization name	<i>Infinite Solutions</i>
Role in the Project	<i>Project Consultant</i>

Contact Person	<i>Mr. Jimmy Sah</i>
Title	<i>Chief Operating Officer</i>
Address	<i>214-215, Milinda Manor, Opp. Next Treasure Island, 2 RNT Marg, Indore – 452001, India</i>
Telephone	<i>+91-9644130430</i>
Email	<i>jimmy@infisolutions.org</i>

6. The quantified emission reduction calculation for the monitoring period is correct and conservative. Assessment team also compared actual VCUs with the estimated VCUs. The project is commissioned phase wise. 150 MW of 250 MW was commissioned on 19-March-2021 and remaining 100 MW was commissioned on 01-May-2021. Considering actual working days for each phase (i. e. 378 days and 335 days) and PLF as 22% (as per the registered VCS PD), the estimated emission reductions are 280,455 tCO₂e and 165,701 tCO₂e respectively. The actual emission reductions for 150 MW and 100 MW are 343,578 tCO₂e and 200,962 tCO₂e respectively. The difference observed in estimated and actual emission reductions are as below,

Capacity (MW)	150	100	250
Estimated Emission reductions	2,80,455	1,65,701	4,46,156
Actual Emission reductions	3,43,578	2,00,962	5,44,539
Difference in Emission reductions	22.51%	21.28%	22.05%

As detailed above, the difference in emission reductions is in the range of 21% to 22.51%. The estimated values are based on PLF value as per registered VCS PD i.e. 22% and the average PLF observed during current monitoring period is 26.87%. As per registered VCS PD, if PLF value breaches 33.66% then the project is non-additional. The observed average PLF is 26.87% and is below the breaching value and hence acceptable.

Finding: CL 01, CAR 01 and 02 were raised and successfully closed. Please refer Appendix 2 for more information.

4.2 Safeguards

4.2.1 No Net Harm

No potential environment or socio-economic matter was found during the discussion with PP during site visit. The project is renewable energy project and thus no negative impact observed during on-site and as confirmed by PP during site visit.

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation. The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013⁷ clearly mentioned that solar-based power project activity operations do not result in direct air pollution, noise pollution.

However, assessment team still conducted the No net harm assessment for some of the parameters and the result is described below:

Sr. No.	Indicator	Assessment team opinion
1	Air quality	The project generates clean energy which replaces the fossil fuel intensive electricity generation. Also report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013 clearly mentioned that solar plant operations do not result in direct air pollution. Therefore, it is validated that mitigation measures were robustly implemented on ground for air quality issues project will have a positive impact on air quality.
2	Soil condition	There are negligible impacts envisaged during operation of the project activity being solar power-based power project. For mitigating the impacts during construction, various mitigation measures were taken which is validated from the plant records of PP and the interview with local villagers. It was also confirmed that, the vegetation planted at project site helps to reduce soil erosion. The same is confirmed during the discussion with stakeholders during site visit.

⁷ http://www.odishainnovationcell.nic.in/Content/SIC/Articles/RE_Development_Impacts_in_India.pdf

Sr. No.	Indicator	Assessment team opinion
		Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.
3	Biodiversity	During the verification site visit, it was observed that the condition of ground vegetation is good and no rare species is found in the around area. The project site is not on the migration route of migratory bird nor is the project affecting aquatic life. With the implementation of Project, the green cover has increased at the Project site; the biodiversity in the vicinity will be improved with the vegetation improvement.
4	Employment Generation	The project activity employed local population as skilled workers as well as security guards. The personnel employed by the project activity are also provided trainings and exposed to various awareness programs therefore a positive indicator has been accepted.
5	Livelihood of the poor	The project is associated with infrastructure development like roads in the nearby areas and promoting economic activities like grants to local school and communities' temples etc. Also, project employed local villagers as guards for the security of power project.

4.2.2 Local Stakeholder Consultation

All the stakeholders are happy with the implementation and operation of the project activity and no negative comments envisaged for the project activity. There was no change in project description from the VCS PD. Complaint/suggestion/feedback register is maintained at site as a part of ongoing communication with stakeholders in line with clause 3.16.17 of VCS Standard, ver. 4.3 and appropriate actions taken time to time by PP. Assessment team confirmed the same during the site visit and document review i. e. grievance register.

4.3 AFOLU-Specific Safeguards

Not applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Means of verification	The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR are accurate. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD and MR.		
Findings	CAR 03 and 05 were raised and successfully closed. Please refer Appendix 2 for more information.		
Conclusion	Baseline emission: The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the grid emission factor of the grid. Formula Used: - $BE_y = EG_{facility,y} \times EF_{grid,CM,y}$ Where; BE_y = Baseline emission in tCO ₂ e $EG_{facility,y}$ = net quantity of electricity generation as a result of the project activity <i>$EF_{grid,CM,y}$ = CO₂ emission factor for the electricity displaced due to the project activity during the year y in tCO₂/MWh</i> <i>Ex-ante parameters:</i>		
	Parameter	Description	Source/Justification
	$EF_{grid,OM,y}$ tCO ₂ /MWh	Operating margin CO ₂ emission factor in year y	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07” as 3-year generation weighted average using data for the years 2015-2016, 2016-2017 & 2017-2018. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 14, published by the Central Electricity Authority, Ministry of Power, Government of India. The value 0.9610 tCO ₂ /MWh is used for the calculation of the Baseline Emissions and is found to be consistent with the registered VCS PD.

	EF _{grid,BM,y} tCO ₂ /MWh	Build margin CO ₂ emission factor in year y	Calculated as per “Tool to calculate the emission factor for an electricity system, version 3.0” as the most recent data available i. e. for year 2018. The data is obtained from “CO₂ Baseline Database for Indian Power Sector” version 14, published by the Central Electricity Authority, Ministry of Power, Government of India. The value 0.8644 tCO₂/MWh is used for the calculation of the Baseline Emissions and is found to be consistent with the registered VCS PD.					
	EF _{grid,CM,y} tCO ₂ /MWh	Combined margin CO ₂ emission factor in year y	Combined margin emission factor has been calculated by the Central Electricity Authority in accordance with CDM methodology: ACM0002 and tool to calculate the emission factor for an electricity system. The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y}= EF_{grid,OM,y}* W_{OM} + EF_{grid, BM,y}* W_{BM}$ Where: EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25% The value 0.9368 tCO₂/MWh is used for the calculation of the Baseline Emissions and is found to be consistent with the registered VCS PD/03/.					
	Monitored Parameter: <table><tr><th>Parameter</th><th>Description</th><th>Source/Justification</th></tr><tr><td>EG_{facility,y}</td><td>Quantity of net electricity generation supplied by the project (Solar)</td><td>Net electricity exported to the grid is calculated based on ‘export’ and ‘import’ values which are calculated and are available in the Joint Meter Reading (JMRs). PP has submitted copies of JMRs which were checked to confirm the ‘export’ and ‘import’ values and calculation presented in</td></tr></table>			Parameter	Description	Source/Justification	EG _{facility,y}	Quantity of net electricity generation supplied by the project (Solar)
Parameter	Description	Source/Justification						
EG _{facility,y}	Quantity of net electricity generation supplied by the project (Solar)	Net electricity exported to the grid is calculated based on ‘export’ and ‘import’ values which are calculated and are available in the Joint Meter Reading (JMRs). PP has submitted copies of JMRs which were checked to confirm the ‘export’ and ‘import’ values and calculation presented in						

		plant/unit to the grid during the year y	the ER sheet confirms the net electricity export to the grid. The values from JMRs were further cross checked with the invoices submitted and found correct. PP has considered minimum of the value between JMR and invoices for emission reduction calculation and same is accepted. The monitored value for the current period is 581,277 MWh.		
	<i>The verification team has checked the entire monthly Energy generation records applicable for the monitoring period as per the project activity applied for verifications and found the monitoring parameter is monitored and recorded as per the monitoring plan in the registered VCS PD. The net electricity supplied by project activity to grid is calculated by subtracting total electricity imported by project from grid from total electricity delivered by project to grid.</i>				
	<i>The verification team has crosschecked the emission reduction sheet and monitoring report data with the energy generation reports and found all the values are matching.</i>				
	<i>The calculation of baseline emissions is as below,</i>				
	$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$ $BE_y = 581,277 \times 0.9368$ $BE_y = 544,539 \text{ tCO}_2e \text{ (round down values)}$				
	Year	Baseline emissions or removals (tCO₂e)	Project emissions or removals (tCO₂e)	Leakage emissions (tCO₂e)	Net GHG emission reductions or removals (tCO₂e)
	19-March-2021 to 31-March-2021	399,168	0	0	399,168
	01-January-2022 to 31-March-2022	145,371	0	0	145,371
	Total	544,539	0	0	544,539

	<i>Project emissions: The project activity involves harnessing solar power. Hence, in line with the applied methodology, project emissions are zero.</i> <i>Leakage emissions: The project activity involves harnessing solar power. Hence, in line with the applied methodology, leakage emissions are zero.</i> <i>Thus, Emission Reductions are:</i> <i>The emission reductions (ER_y) by the Project activity during a monitoring period is the difference between baseline emissions (BE_y), project activity emissions (PE_y) and leakage, as follows</i> $ER_y = BE_y - PE_y$ $= 544,539 - 0$ $= 544,539 \text{ tCO}_2\text{e}$ VVB confirmed that GHG reductions and removals have been quantified correctly and in line with monitoring procedure in VCS PD and applied methodology.
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4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Means of verification	The verification team checked the shutdown/break down log for the monitoring period. During the verification of site visit, the energy meters are also checked.
Findings	CAR 04 was raised and successfully closed. Please refer Appendix 2 for more information.
Conclusion	Energy generated from the solar farm is being recorded at the metering point at the HT end of the respective Pooling station which is considered as the energy for billing. 2 nos. of meters – main and check meters are installed for energy generation recording which were checked during the site visit. In normal case, energy generation recorded in the main meter is considered. In case of fault in the Main meter, check Meter reading will be considered (However no such case has been occurred). The meter reading is taken jointly by RVPN (representative of state grid) / JVVNL and the company representative every month. The Main meter reading is jointly certified by the above entity. The energy referred in the JMR is considered for raising invoice and accordingly payment will be received by PP. All the meters are calibrated once in five years through external agency. The current meters were installed at the time of project commissioning and were pre-calibrated. The energy meters of accuracy class of 0.2s.

	Based on the submitted documents and verification during the site visit, VVB confirmed that the value of net electricity exported to the grid as used in emission reduction calculation is correct. Calibration of all the meters is done as per the registered VCS PD. The current meters were installed at the time of project commissioning and were pre-calibrated. Next due calibration is five years from the commissioning. It is reported that the data will be kept for 2 years following the end of the crediting period or till the last issuance of VCUs for the project activity whichever occurs later. The responsibilities and authorities of project management, data handling and recording, measurement methods and QA/QC procedure have been systematically established and formalized and the same was verified during the site visit. Site visit and interview with site personnel also confirms that the operational and organizational chart as mentioned in registered VCS PD is as per the site practice and thus assessment team confirms that the details are correct. During site visit, VVB checked shutdown / break down reports and found that the plant undergone scheduled maintenance and break downs. Assessment team checked the routine maintenance log book and confirmed that it does not have any impact on project design and monitoring procedures. No unforced error observed. Assessment team confirmed that data/ information used for determining GHG reductions and removals were sufficient in quantity and of appropriate quality. QA/QC procedure was checked and found to be appropriate.
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4.6 Non-Permanence Risk Analysis

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Not applicable	Not applicable	Not applicable	Not applicable

5 VERIFICATION CONCLUSION

Applus+ Certification has been engaged by Fortum India Private Limited to perform 1st periodic verification of the “Greenfield Solar Power Mission by Fortum India”.

The management of the project participant/owner is responsible for the preparation of the GHG emissions data and reported/estimated GHG emissions reductions on the basis set out within the project’s Monitoring Plan in the VCS PD and MR and the approved methodologies.

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 VCS Standard version 4.3. 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 document;
- the monitoring plan is as per the applied methodology;
- the monitoring process in Monitoring Report is as per the VCS PD
- the development and maintenance of records and reporting procedures are in accordance with the monitoring plan
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.
- A reasonable level of assurance was achieved during the verification.
- No limitation observed for the present verification

Verification period: From 19-March-2021 to 31-March-2022 (first and last date included).

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

For non-AFOLU projects, use the following table:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
19-March-2021 to 31-December-2021	399,168	0	0	399,168
01-January-2022 to 31-March-2022	145,371	0	0	145,371

<i>Total</i>	544,539	0	0	544,539
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The estimated emission reduction achieved from the project activity for the current monitoring period are calculated based on phase wise commissioning of the Project activity. 150 MW out of 250 MW was commissioned on 19-March-2021 and remaining 100 MW was commissioned on 01-May-2021. Considering actual working days for each phase (i. e. 378 days and 335 days based on the monitoring period) and PLF as per the registered VCS PD i. e. 22%, the estimated emission reductions are 280,455 tCO₂e and 165,701 tCO₂e respectively. The actual emission reductions for 150 MW and 100 MW are 343,578 tCO₂e and 200,962 tCO₂e respectively. The difference observed in estimated and actual emission reductions are as below,

Capacity (MW)	150	100	250
Estimated Emission reductions	280,455	165,701	446,156
Actual Emission reductions	343,578	200,962	544,539
Difference in Emission reductions	22.51%	21.28%	22.05%

As detailed above, the difference in emission reductions is in the range of 21% to 22.51%. The estimated values are based on PLF value as per registered VCS PD i.e. 22% and the average PLF during current monitoring period is 26.87% which is below breaching value of 33.66% as per registered VCS PD and hence acceptable.

APPENDIX I: DOCUMENTS REVIEWED DURING VERIFICATION

No.	Author	Title	References to the document	Provider
1.	NA	Monitoring Report, (Initial Version) Monitoring Report, (Final Version)	Version 01, dated 03-May-2022 Version 07 dated 14-December-2022	PP
2.	NA	Emission Reduction sheet (Initial Version) Emission Reduction sheet (Final Version)	Version 01, dated 03-May-2022 Version 04 dated 13-July-2022	PP
3.	NA	Registered VCS PD Validation report	Version 02 dated 19-December-2019 Version 01 dated 30-December-2019	VERRA
4.	NA	VCS Standard VCS Program guide VCS Validation Verification Manual	Version 4.3 Version 4.2 version 3.2	VERRA
5.	NA	Technical specifications / photographs of solar project, electricity meters etc. Single line diagram and meter locations / Layout		PP
6.	NA	Power purchase agreement	03-June-2019	PP
7.	NA	Commissioning Certificates	19-March-2021 & 01-May-2021	PP
8.	NA	ACM0002: Grid-connected electricity generation from renewable sources	Version 19.0	UNFCCC
9.	NA	Site visiting for verification of measuring and monitoring procedure, • Snapshots of the project site/equipment's • Interviews and data/log review	02-June-2022	PP

No.	Author	Title	References to the document	Provider
10.	NA	Joint Meter Readings for the entire monitoring period	19-March-2021 to 31-March-2022	PP
11.	NA	Invoices raised during the monitoring period	19-March-2021 to 31-March-2022	PP
12.	NA	Organization structure/chart		PP
13.	NA	Declaration of No Double Counting	31-May-2022	PP
14.	NA	Grievance register		PP

APPENDIX 2: CORRECTIVE ACTION REQUESTS, CLARIFICATION REQUESTS AND FORWARD ACTION REQUESTS (CAR/CL/FAR)

Summary of findings	CAR	CL	FAR
	05	01	01

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

FAR ID	01	Section no.	1.8	Date: 29-November-2022
Description of FAR				
During the onsite visit it is observed that the project is yet not commissioned and EPC contract for the same is also not signed. The technical specification as mentioned in the DPR is available at this stage of Validation and hence the actual technical specification (including the module configuration and rated capacity) needed to be verified during the Verification of this project activity.				
Project participant response				Date: 30-November-2022
PP wants to clarify that the technical specification of equipment's (module configuration and rated capacity) has been revised and updated in the section 3.1-page no.12 of the VCS MR as per the actual installation.				
Documentation provided by project participant				
VCS MR_v06.				
DOE assessment				Date: 03-December-2022
VVB during the site visit has checked and observed technical specifications of the project activity. Further, EPC contract / O & M contract was also checked by the assessment team. Based on the same, VVB confirms that the technical specifications mentioned in the MR are appropriate and are as per the actual commissioning. It was further confirmed during the site visit and based on the technical specifications/module configuration observed on-site/referred in the documents, that the actual capacity commissioned is the same as mentioned in the registered VCS-PD. Hence this FAR is closed.				

Table 2. CL from this verification

CL ID	01	Section no.	4.1	Date: 06/06/2022
Description of CL				
- Section 1.11 mentions, '.... Ministry of Environment and Forests...' which is not the correct name for the said ministry. - Section 2.1 mentions, 'The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013.' However, weblink / reference not provided. Further, it mentions, 'Please refer below web link for the same' but no weblink is provided. - Section 3.1 mentions, 'Solar Power Project Technology Details' however project specific technology details are not provided and same shall be supported with evidence. - Section 4.3 under Data collection and Data Archiving mentions that, 'The period of storage of the monitored data would be 2 years after the end of crediting period or till the last issuance of CERs for the project activity whichever occurs later.' The project is under VERRA so will not lead to issuance of CERs.				
PP response				Date: 10/06/2022
- PP has corrected and updated the same in the MR sheet. - PP has updated the wording for the respective section accordingly and the same is updated in the MR sheet. - PP has added the Solar Power Project Technology Details. - PP has corrected and updated the same in the MR sheet.				
Documentation provided by PP				
PP has provided the supporting documents for the solar module and inverter technology used in the plant.				
DOE assessment				Date: 14/06/2022
- PP has revised section 1.11 to mention correct name of the ministry i. e. Ministry of Environment, Forests and Climate Change which is checked and accepted. Hence this part of CL is closed. - PP has revised section 2.1 to remove the earlier referred report and has added a new weblink which was accessed to confirm that the Solar Projects in India does not have any harm to environment. Hence this part of CL is closed. - Section 3.1 is now revised to include technology details for the solar power plant which were cross checked with technical datasheet submitted and found ok. Hence this part of CL is closed. - PP has now mentioned VCU instead of CERs which is appropriate and accepted. Hence this part of CL is closed.				
CL 01 is closed.				

Table 3. CARs from this Verification

CAR ID	01	Section no.	4.1	Date: 06/06/2022
Description of CAR				
As per VCS MR template guidelines; - Date format in the table on the 1st page shall be DD-Month-YYYY - Date format shall be consistent through the MR e.g., section 1.1 has mentioned date in both, DD-Mon-YY and DD-MM-YYYY format. - Page no. 18 of MR provided energy meter details under Appendix X which is not part of 'content' on page no. 02. - Section 1.1 mentions, '.....anthropogenic emissions of greenhouse gases (GHG's) by displacing approximately 440514.42 MWh/year amount of electricity from the....'. The thousands shall be separated by ','. - PP shall use correct Font, Font size e. g. in section 1.11 different font and font sized used in table 1. - Section 4.3 shall include line diagram to display the GHG data collection and management system.				
PP response				Date: 10/06/2022

• PP has corrected the date format and updated the same in the MR sheet • PP has corrected the date format and updated the same in the MR sheet • PP has added the Appendix to content • PP has corrected and updated the same in the MR sheet • PP has corrected and updated the same in the MR sheet • PP has added the line diagram and updated the MR sheet	
Documentation provided by PP	
Revised MR	
DOE assessment	Date: 14/06/2022
• Date format in the table on the 1st page is now in DD-Month-YYYY format which is accepted. Hence this part of CAR is closed. • PP has now used consistent date format as DD-Month-YYYY throughout the revised MR which is checked and confirmed. Hence this part of CAR is closed. • PP has revised name of the Appendix and same is now part of the 'content' on page no. 02 which is accepted. Hence this part of CAR is closed. • PP has revised section 1.1 mentioning '440,514.42 MWh/year' which is accepted. Hence this part of CAR is closed. • PP has now used consistent font and font size through out the MR which is checked and confirmed. Hence this part of CAR is closed. • PP has included line diagram in the revised MR section 4.3. Hence this part of CAR is closed.	
CAR 01 is closed.	

CAR ID	02	Section no.	4.1	Date: 06/06/2022
Description of CAR				
• Section 1.5 mentions Project start date is 19/03/2021 which is later than crediting period start date – 01/12/2020 as per section 1.6. PP shall explain why crediting period start date is earlier than the Project start date. • Section 1.6 mentions, '.... The project activity adopts a renewable crediting period of 10 years which can be renewed a maximum of 2 times....'. As per VCS Standard v4.2 para 3.8.1, For non-AFOLU projects, the project crediting period shall be either seven years, twice renewable for a total of 21 years, or ten years fixed. • The image in section 1.7 for actual project location is incorrect as the project is commissioned and same was verified during site visit. However, the image in the MR shows barren land. • Appendix number and title mentioned is incorrect. Further, appendix mentions that WTGs are connected to the substation while the current Project Activity is of Solar based renewable energy generation.				
PP response				Date: 10/06/2022
• It was expected that the plant will be commissioned on 01/12/2020, but due to the Covid-19 restrictions delay occurred in the commissioning of the plant, and the plant is commissioned on 19/03/2021. However, the PP is not claiming the credits for the date from 01/12/2020 to 19/03/2021 as the plant was not commissioned and the generation was zero. • As per section 3.8.1 VCS standard 3.7, the crediting period was 10 years which can be renewable a maximum of 2 times, and the same has been considered. • PP has corrected the actual project location and updated the same in MR. Also, the actual project location image is updated in the MR sheet. • PP has corrected the wording and updated the same in the MR sheet.				
Documentation provided by PP				
Revised MR				
DOE assessment				Date: 14/06/2022

- It is observed that this is deviation from the registered VCS PD and PP shall clarify the same. CAR is Open
- Since the renewable crediting period is in line with VCS standard 3.7 paragraph 3.8.1 which was applicable at the time of project registration with VERRA same is accepted. Hence this part of CAR is closed.
- PP has now included correct satellite image depicting the project activity in section 1.7 of revised MR. Hence this part of CAR is closed.
- PP has corrected the appendix appropriately which is checked and accepted. Hence this part of CAR is closed.

CAR 02 is open

PP response **Date:** 06/07/2022

PP has taken the project description deviation. PP has revised the crediting period start date in line with the project start date and necessary correction help made in VCS MR.

Documentation provided by PP

Revised VCS MR

DOE assessment **Date:** 06/07/2022

In the registered VCS PD, PP had chosen crediting period as 01-December-2020 to 30-November-2030 with expected project commissioning date as 01-December-2020. However, actual project commissioning happened on 19-March-2021. The same is verified with the commissioning certificate issued by the state utility and found correct. PP has sought project description deviation in start date of crediting period i. e from 19-March-2021 in line with the commissioning date of PA. VVB confirmed that proposed deviation does not impact the applicability of the methodology, additionality and/or the appropriateness of the baseline scenario of the Project activity and hence found acceptable.

CAR is closed.

CAR ID	03	Section no.	4.4	Date: 06/06/2022
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Description of CAR

- Section 4.2 parameter $EG_{facility,y}$ provided measured value as 440,514.42 MWh while ER sheet provided total generation during current MP as 581,227 MWh.
- Table under section 5.4 provides two vintages - 2021 (19/03/2021 to 01/01/2022) and 2022 (01/01/2022 to 01/04/2022) which are incorrect.
- Section 5.4 mentions, 'The minor reduction in electricity generation during the current verification period is due to certain natural conditions' whereas higher generation is observed during current MP.

PP response **Date:** 10/06/2022

- PP has corrected the $EG_{facility,y}$ in MR sheet same as ER sheet.
- PP has corrected and updated the same in the MR sheet.
- PP has corrected the wording in the MR sheet.

Documentation provided by PP

Revised MR

DOE assessment **Date:** 14/06/2022

- The parameter value is now corrected which is in line with the revised ER sheet (version 02) and hence accepted. Hence this part of CAR is closed.
- The vintages in section 5.4 of revised MR are now 19-March-2021 to 31-December-2021 and 01-January-2022 to 31-March-2022 which is appropriate. Hence this part of CAR is closed.
- PP has removed the sentence from section 5.4 which is confirmed. Hence this part of CAR is closed.

CAR 03 is closed.

CAR ID	04	Section no.	4.5	Date : 06/06/2022
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Description of CAR

In the ER sheet, the values mentioned for export and import electricity values for the month of May, 21 and March, 22 are not matching with the supporting Joint Meter Reading report.	
PP response	Date: 10/06/2022
PP has updated the values as per JMR. Also, for May'21 the excess generation was deducted due to the generation of an above load of COD and for MAR'22 the units were deducted from the invoice those units were generated during meter testing.	
Documentation provided by PP	
JMR reference document for May'21 GSS meter calibration record for the month of March'22	
DOE assessment	Date: 14/06/2022
The ER sheet is now revised and correct values are mentioned based on the main meter readings from Joint Meter Readings. PP has considered minimum value between the JMR and Invoice for emission reduction calculation which is conservative and accepted.	
CAR 04 is closed.	

CAR ID	05	Section no.	4.4	Date: 16/06/2022
Description of CAR				
There is a significant increase in ERs for the monitored period as compared to calculated value base on ex-ante estimation. PP shall submit observed PLF value and explain this increase in the ER sheet as well as in the VCS MR.				
PP response				Date: 22/06/2022
Actual emission reduction is higher (27.42%) than the estimated value, as the monitoring duration mainly comprises peak seasons of solar radiation but is within the sensitivity range the average PLF for monitoring period observed is 26.87% the corresponding IRR is 9.71% which does not breach the Benchmark equity IRR 12.97% as per the registered PDD.				
Documentation provided by PP				
PP has provided revised VCS MR and ER sheet.				
DOE assessment				Date: 23/06/2022
The revised MR and ER sheet was checked and compared with registered VCS PD and corresponding ER sheet. It was noted that as per registered VCS PD, the breaching value for the PLC achieved is 33.66% whereas actual average PLF observed over the current monitoring period is 26.87%. Thus, the rise in the PLF does not have impact on Project's additionality and hence accepted.				
CAR 05 is closed.				

Table 4. FARs from this Verification

FAR ID	01	Section No.		Date:	
Description of FAR					
PP response					Date: DD/MM/YYYY
Documentation provided by PP					
DOE assessment					Date: DD/MM/YYYY

APPENDIX 3: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Verification team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interviews	Verification findings
1.	Lead Auditor/Technical Expert	OR	Singh	Jitendra Mohan	TQC-Outsourced entity	Yes	Yes	Yes	Yes
2	Lead Auditor in Trainee	OR	Pundlik	Deepak	TQC-Outsourced entity	Yes	Yes	Yes	Yes

Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer (TR)	EI	Xue	Denny	Applus+ Certification
2.	Approver	IR	Calle de Miguel	Agustin	Applus+ Certification

Short CVs of the Team:

1. **Jitendra Mohan Singh**, has done Advanced MSc in Sustainable Energy Systems and Management from International Institute of Management, University of Flensburg, Germany and B.Tech. in Agricultural Engineering from Allahabad University, India. He has more than (18) years of working experience in different organizations like IARI, IIT Delhi, ICAR, IRADe, CAPART, SMEC and Perenia Carbon and M B Power (Madhya Pradesh) Ltd. in the area of Agriculture, Energy & Environment and Climate Change. He also worked on contract basis (adhoc) as a RIT expert in UNFCCC from 2010 to 2013. Currently, he is empanelled with Applus+ Certification since 2020 and has been involved Verifications of Pas/PoAs as Lead Auditor and Technical Expert for Renewable and non-Renewable as well as Energy Demand.

2. **Mr. Deepak Pundlik** has 15 years of experience in climate change, waste management and environmental management. After completing Masters in Environment Sciences from Pune university, He has worked in waste management field. As a GHG consultant, he handled more than 50 projects under renewable energy, waste management sectors during his stint with companies - MITCON and Thermax Limited. As a GHG auditor, he has validated/verified projects under CDM/VCS/GS and GCC mechanisms from renewable energy, energy demand, waste management sectors.
3. **Mr. Denny Xue** (Master's Degree in Environmental Engineering, Bachelor's Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment, auditing and technical review. He has more than 6 years of work experience in CDM/GS4GG/VCS project assessment and technical review with Applus+. Before he joined Applus+ LGAI, he has been working for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

APPENDIX 4: ABBREVIATIONS

Abbreviations	Full texts
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CEA	Central Electricity Authority
CL	Clarification Request
CM	Combined Margin
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
JVVNL	Jaipur Vidyut Vitaran Nigam Limited
PP	Project Participant
RPNL	Rajasthan Rajya Vidyut Prasaran Nigam Limited

APPENDIX 5: CALIBRATION AND BREAKDOWN DETAILS

Energy billing meter installed at the 400/220KV Substation, Bhensara, Jaisalmer, Rajasthan. The meters installed are pre-calibrated and are installed at the time of project commissioning. As the calibration frequency is 5 years, the calibration is not yet due.

Meter Sl. No.	Make	Class
RJB99499 (Main Meter)	Secure	0.2 s
RJB99500 (Check Meter)	Secure	0.2 s

Breakdown details:

Date	Equipment	Equipment ID	TS No	SACU No	Inverter Impacted	BD Duration (Minutes)	Description
8-September-2021	PTR-1	TS-10_SACU-01	10	1	Yes	8	Manually off for outgoing cable checking purpose
8-September-2021	PTR-2	TS-04_SACU-01	4	1	Yes	44	Manually off for outgoing cable checking purpose
14-September-2021	IDT	TS-05_SACU-01	5	1	Yes	15	Shutdown by PPC Command during PPC testing
14-September-2021	IDT	TS-15_SACU-02	15	2	Yes	5	Shutdown by PPC Command during PPC testing
21-September-2021	INVERTER	TS-11_SACU_02_I NV-03_STR-03	11	2	Yes	25	Low Insulation Resistance of string
22-September-2021	INVERTER	TS-13_SACU_01_I NV-02_STR-10	13	1	Yes	12	Low Insulation Resistance of string
23-September-2021	INVERTER	TS-03_SACU_01_I NV-02_STR-17	3	1	Yes	19	Low Insulation Resistance of string

24-September-2021	INVERTER	TS-14_SACU_01_I NV-01_STR-11	14	1	Yes	38	Low Insulation Resistance of string
25-September-2021	INVERTER	TS-05_SACU_01_I NV-01_STR-11	5	1	Yes	47	Low Insulation Resistance of string
27-October-2021	INVERTER	TS-01_SACU_02_I NV-04_STR-02	1	2	Yes	104	Internal Device fault of INVERTER
30-October-2021	INVERTER	TS-10_SACU_02_I NV-04_STR-19	10	2	Yes	56	Output DC Component Overhigh
31-October-2021	INVERTER	TS-12_SACU_02_I NV-03_STR-16	12	2	Yes	14	manually off for faulty inv replacement Work
5-November-2021	INVERTER	TS-13_SACU_01_I NV-01_STR-10	13	1	Yes	616	Low Insulation Resistance of string
6-November-2021	INVERTER	TS-07_SACU_02_I NV-03_STR-19	7	2	Yes	624	Low Insulation Resistance of string
6-December-2021	STRING	TS-04_SACU_02_I NV-12_STR-07	4	2	no	6	Manually disconnected for low voltage module replacement
9-December-2021	INVERTER	TS-07_SACU_02_I NV-07	7	2	Yes	543	String cable Theft of INV in night
13-December-2021	STRING	TS-17_SACU_02_I NV-09_STR-04	17	2	No	8	Manually disconnected for low voltage module replacement
15-December-2021	STRING	TS-17_SACU_02_I NV-5_STR-5	17	1	No	4	Manually disconnected for low voltage module replacement
16-December-2021	STRING	TS-20_SACU_02_I NV-13_STR-22	20	2	No	4	Manually disconnected for low voltage

							module replacemen t
19-December-2021	STRING	TS-03_SACU_02_I NV-17_STR-5	3	2	No	4	Manually disconnecte d for low voltage module replacemen t
22-December-2021	STRING	TS-05_SACU_02_I NV-15_STR-22	4	2	NO	5	Manually disconnecte d for low voltage module replacemen t
25-December-2021	STRING	TS-01_SACU_02_I NV-19_STR-17	1	2	NO	5	Manually disconnecte d for low voltage module replacemen t
27-December-2021	INVERTER	TS-12_SACU_01_I NV-08	12	1	YES	17	Due to Output Overcurrent
2-January-2022	INVERTER	TS-14_SACU_02_I NV-20	14	2	YES	55	MCCB Trip due to Ground Fault
6-January-2022	STRING	TS-06_SACU_02_I NV-18_STR-18	6	2	No	4	Manually disconnecte d for low voltage module replacemen t
10-January-2022	IDT	TS-14_SACU_01	14	1	YES	3	33 KV OG-1 trip due to Overcurrent
14-January-2022	STRING	TS-16_SACU_02_I NV-18_STR-8	16	2	No	4	Manually disconnecte d for low voltage module replacemen t
16-January-2022	STRING	TS-20_ACDB_04_I NV-18_STR-7	20	2	No	5	Manually disconnecte d for low voltage module replacemen t

18-January-2022	STRING	TS-5_ACDB_01_IN V-15_STR-13	5	1	No	7	Manually disconnected for low voltage module replacement
20-January-2022	STRING	TS-13_ACDB_04_I NV-18_STR-7&8	13	2	No	5	Manually disconnected for low voltage module replacement
25-January-2022	STRING	TS-02_ACDB_3_IN V-04_STR-11	2	2	Yes	5	Manually disconnected for low voltage module replacement
30-January-2022	INVERTER	TS-19_SACU_01	19	1	Yes	4	Manually shutdown taken for I-V Curve
30-January-2022	INVERTER	TS-19_SACU_01	19	1	Yes	4	Manually shutdown taken for I-V Curve
1- February-2022	STRING	TS-10_SACU_02_I NV-2_STR-14	10	2	No	4	Manually disconnected for low voltage module replacement
4- February-2022	STRING	TS-14_SACU_02_I NV-3_STR-3	14	2	No	5	Manually disconnected for low voltage module replacement
5-February-2022	STRING	TS-11_SACU_02_I NV-12_STR-2	11	2	No	5	Manually disconnected for low voltage module replacement
7-March-2022	INVERTER	TS-09_SACU_02	9	2	Yes	4	Manually shutdown taken for I-V Curve

11-March-2022	INVERTER	TS-20_SACU_01_I NV-7	20	1	Yes	557	String cable Theft of INV in night
11-March-2022	INVERTER	TS-20_SACU_02_I NV-10	20	2	Yes	136	String cable Theft of INV in night
12-March-2022	STRING	TS-20_SACU_01_I NV-08	20	1	No	681	String cable Theft of INV in night
14-March-2022	INVERTER	TS-11_SACU_02	11	2	Yes	5	Manually shutdown taken for I-V Curve
15-March-2022	INVERTER	TS-05_SACU_02_I NV-11	5	2	Yes	219	INV off due to internal device fault
15-March-2022	INVERTER	TS-14_SACU_02	14	2	Yes	5	Manually shutdown taken for I-V Curve