140 MW Solar Photovoltaic Project in Rajasthan

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Work Carried Out By	Mr. Sukanta Das-Lead Auditor/Technical expert

Summary:

OBJECTIVE:

LGAI Technological Center S.A. has been appointed by "Rising Bhadla 1&2 Private Ltd" to perform the validation of the project entitled "140 MW Solar Photovoltaic Project in Rajasthan" under VCS standard and guideline version 3.7. The objective of this validation activity is to have an independent third party for the assessment of the project design, ER sheet and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

- the project's baseline is assessed against "ACM 0002 version 17.0"
- the project's monitoring plan is assessed against "ACM0002 v17"
- the projects 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 guideline and standard version 3.7
- CDM Validation and Verification Standard version 09
- CDM Project Standard version 09
- CDM Project Cycle Procedure version 09
- VCS standard v3.7
- VCS guideline v3.7

Validation 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 emission reductions (VERs).

SCOPE:

The scope of the validation is the independent and objective review of the Project Design document. The PD is reviewed against the relevant criteria (see 1.1) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The validation was based on the guidance given in the CDM Validation and Verification Standard version 09, review against PD and Emission reduction calculation sheet, CDM Project Standard version 09, CDM Project Cycle Procedure version 09 and VCS guideline and standard version

3.7.

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 PD. The main focus of the assessment team is to identify the significant risks for the project implementation and the estimation of VERs. The validation 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 PD.

The only purpose of the validation is its usage during the registration process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. can't be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose

LEVEL OF ASSURANCE:

The validation has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS.

Validation Scope: The scope is defined as an independent and objective review of the project design document (PDD). The PDD 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, including the approved baseline and monitoring methodology ACM0002/ Version 17.0, EB 89, "Grid-connected electricity generation from renewable sources". The validation was based on the requirements in the Validation and Verification Standard (VVS version 09), VCS standard version 3.7 and guideline version 3.7.

The validation 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 project design document.

The PD was listed on VCS web site for Global stake holder comments and the details of the Global stake holder Consultation are included in this report.

Validation Process: The project assessment is based on the "Clean Development Mechanism Validation and Verification Standard version 09.0, VCS standard version 3.7 and guideline version 3.7 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 CDM project activity are appointed.

Once the project is made available for the global stakeholder consultation process, the members of the assessment team carried out:

I A desk review of the project design documentation;

II Follow-up interviews with project stakeholders;

III The resolution of outstanding issues and the issuance of the final validation report and opinion.

The prepared validation report and other supporting documents then undergo an internal quality control at the HQ

(Accredited office) before being submitted to the VCS board.

Appointment of the assessment team

According to the sectoral scope / technical area and experience in the sectoral or national

business environment, Applus+ LGAI has composed a project assessment team

in accordance with the appointment rules in the internal Quality Management System of Applus+ LGAI

The composition of audit team shall be approved by the Applus+ LGAI 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.

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

Document review

The Project Design Document submitted by the Client was reviewed against the approved methodology 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 below in the report.

Follow-up interviews

A site visit is conducted by Applus+ LGAI performed interviews, telephone conferences, and physical site inspection with project stakeholders to confirm selected information and to resolve issues identified in the document review. The detail is provided in section below of this report

Resolution of Clarification and Corrective Action Request

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ LGAI's positive conclusion on the project design document. The Corrective Action Requests and Clarification Requests raised by Applus+ LGAI were resolved during

communications between the Client and Applus+ LGAI to guarantee the transparency of the validation process, the concerns raised and responses given are summarized in below in the report.

The final PD version 02 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the validation process are not considered to be significant with respect to the main VCS objectives. The two 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 validation of the final documentation including the validation report 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 PP the validation opinion and relevant documents are submitted to the VCS board through the VCS web-platform.

Conclusion

Applus+ LGAI has performed a validation of the "140 MW Solar Photovoltaic Project in Rajasthan". The validation was performed on the basis of UNFCCC/VCS criteria and host country criteria, as well as criteria, e.g. ACM 002 version 17, given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided Applus+ LGAI with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC/VCS requirements for the CDM/VCS and all relevant host country criteria. The project will hence be recommended by Applus+ LGAI for registration with the VCS.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 241,573 tCO_2e per year, thereon displacing 250,258 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The validation has been performed following the requirements of the latest version of the CDM VVS version 09, VCS standard and guideline version 3.7 and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the VCS project cycle.

Validation purpose: The main purpose of this project activity is to generate clean form of electricity through renewable energy sources. The proposed project activity involves the installation of Solar PV project. The total installed capacity of the project is 140 MW; which involves operation of two units of 70 MW of Solar PV plant each located at Rajasthan state in India. The project is promoted by **Rising Bhadla 1 Private Ltd and Rising Bhadla 2 Private Ltd** which are the group companies of Rising Sun Energy Pvt Ltd.

The Project activity is a new facility (Greenfield) and the electricity generated by the Project will be exported to the Indian electricity grid. The Project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the Project. In the Pre- project scenario the entire electricity, delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 241,573 tCO_2e per year, thereon displacing 250,258 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

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

Project Proponents Name	**Capacity in MW (AC)**	**COD**	**Connection with Grid**	**State**	**Usage**
Rising Bhadla 1 Private Ltd.	40 MW	18/07/2017	Indian Grid	Rajasthan	Sale to Grid
	30 MW	29/09/2017			
Rising Bhadla 2 Private Ltd.	40 MW	29/08/2017			
	30 MW	30/11/2017 (expected)			Sale to Grid

Project crediting period Date

Assessment team confirms that the crediting period dates for the project is as below:

Crediting Period Start date: 18-July-2017

Crediting Period End date: 17-July-2027

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times

A risk based approach has been followed to perform this validation activity. In the course of validation, 05 Corrective Action request (CAR) and 00 Clarification Requests (CLs) were raised and successfully closed. The review of the PD and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and PP have provided APPLUS with sufficient evidence to verify the fulfilment of the stated criteria of VCS. .

Table of Contents

CONTENTS

1 INTRODUCTION

1.1 Objective

LGAI Technological Center S.A. has been appointed by “Rising Bhadla 1&2 Private Ltd” to perform the validation of the project entitled “140 MW Solar Photovoltaic Project in Rajasthan” under VCS standard and guideline version 3.7. The objective of this validation activity is to have an independent third party for the assessment of the project design, ER sheet and to ensure a thorough assessment of the proposed project activity against the applicable CDM and VCS requirements. In particular;

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- CDM Validation and Verification Standard version 09
- CDM Project Standard version 09
- CDM Project Cycle Procedure version 09
- VCS standard v3.7[1]
- VCS guideline v3.7

Validation 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 emission reductions (VERs).

1.2 Scope and Criteria

The scope of the validation is the independent and objective review of the Project Design document. The PD is reviewed against the relevant criteria (see 1.1) and decisions by the CDM Executive Board and VCS executive board, including the approved baseline and monitoring methodology. The validation was based on the guidance given in the CDM Validation and Verification Standard version 09, review against PD and Emission reduction calculation sheet, CDM Project Standard version 09, CDM Project Cycle Procedure version 09 and VCS guideline and standard version 3.7

[1] http://www.v-c-s.org/project/vcs-program/rules-and-requirements/

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 PD. The main focus of the assessment team is to identify the significant risks for the project implementation and the estimation of VERs. The validation 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 PD.

The only purpose of the validation is its usage during the registration process as part of the VCS project cycle. Therefore, LGAI Technological Center S.A. can't be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose

1.3 Level of Assurance

The validation has been planned and organized to achieve a Reasonable Level of assurance as per the requirement of VCS.

1.4 Summary Description of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable energy sources. The proposed project activity involves the installation of Solar PV project. The total installed capacity of the project is 140 MW; which involves operation of two units of 70 MW of Solar PV plant each located at Rajasthan state in India. The project is promoted by **Rising Bhadla 1 Private Ltd and Rising Bhadla 2 Private Ltd** which are the group companies of Rising Sun Energy Pvt Ltd.

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The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 241,573 tCO_2e per year, thereon displacing 250,258 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

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	30 MW	29/09/2017			
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	30 MW	30/11/2017 (expected)			Sale to Grid

2 VALIDATION PROCESS

2.1 Method and Criteria

Validation Scope: The scope is defined as an independent and objective review of the project design document (PDD). The PDD 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, including the approved baseline and monitoring methodology ACM0002/ Version 17.0, EB 89, "Grid-connected electricity generation from renewable sources". The validation was based on the requirements in the Validation and Verification Standard (VVS version 09), VCS standard version 3.7 and guideline version 3.7.

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Once the project is made available for the global stakeholder consultation process, the members of the assessment team carried out:

I A desk review of the project design documentation;

II Follow-up interviews with project stakeholders;

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Appointment of the assessment team

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

The composition of audit team shall be approved by the Applus+ LGAI ensuring that the required skills ar e covered by the team.

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

●Lead Auditor (LA).

●Auditor (A) / Auditor in Training (AiT).

●Technical Expert (TE).

●Technical Reviewer (TR).

The sectoral scope / technical area knowledge linked to the applied methodology/ies shall be

Covered by the assessment team.

Name	**Role**	**SS Coverage**	**TA Coverage**	**Financial aspect**	**Host country experience**
Mr. Sukanta Das	TL	YES	YES	YES	YES
Mr. Simon Shen	TR	YES	YES	YES	NA

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

Document review

The Project Design Document submitted by the Client was reviewed against the approved methodology 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 below in the report.

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The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified for Applus+ LGAI's positive conclusion on the project design document. The Corrective Action Requests and Clarification Requests

raised by Applus+ LGAI were resolved during communications between the Client and Applus+ LGAI to guarantee the transparency of the validation process, the concerns raised and responses given are summarized in below in the report.

The final PD version 02 submitted by PP serves as the basis for the final assessment presented. Additional changes to the project during the validation process are not considered to be significant with respect to the main VCS objectives. The two 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 validation of the final documentation including the validation report 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.

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Conclusion

Applus+ LGAI has performed a validation of the "140 MW Solar Photovoltaic Project in Rajasthan". The validation was performed on the basis of UNFCCC/VCS criteria and host country criteria, as well as criteria, e.g. ACM 002 version 17, given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided Applus+ LGAI with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC/VCS requirements for the CDM/VCS and all relevant host country criteria. The project will hence be recommended by Applus+ LGAI for registration with the VCS.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 241,573 tCO_2e per year, thereon displacing 250,258 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The validation has been performed following the requirements of the latest version of the CDM VVS version 09, VCS standard and guideline version 3.7 and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the VCS project cycle.

2.2 Document Review

The details of the document observed during the verification process are listed below in Appendix 1 of this report

2.3 Interviews

The site visit for the project activity were carried out from 21-22/09/2017 which covers entire site (includes all the locations) in Jodhpur, Rajasthan in Republic of India. No sampling procedures were adopted either in document verification and all the document were cross checked to ensure conservative estimation of emission reduction. . Kindly find below name of the person interviewed (during onsite) for the site:

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Bhargava	Aysuh	Asst. Manager Projects	21/09/2017	Project implementation status, baseline and additionality determination, Emission reduction calculation and monitoring aspects.	Mr. Sukanta Das
2	-	Rakesh	Shopkeeper	22/09/2017	Local stakeholder consultation	Mr. Sukanta Das
3	-	Ghanshyam	Vegetable seller	22/09/2017	Local stakeholder consultation	Mr. Sukanta Das
4	-	Sadheyadagi	Shopkeeper	22/09/2017	Local stakeholder consultation	Mr. Sukanta Das

2.4 Site Inspections

<table>
<tr><th colspan="5">Duration of on-site inspection: 21/09/2017 to 22/09/2017</th></tr>
<tr><th>No.</th><th>Activity performed on-site</th><th>Site location</th><th>Date</th><th>Team member</th></tr>
<tr><td>1.</td><td>Assessment team checked the implementation of the project, Baseline emission, Emission reduction calculation, technical description of the project and Monitoring.</td><td>Both the solar plant of respective project investor are located at a single region and the details are as follows[2]:
<table><tr><td>Location of the Plant</td><td>Village - Bhadla,
Tehsil - Phalodi,
District- Jodhpur,
State-Rajasthan
Country- India</td></tr><tr><td>Location details</td><td>Latitude :27°29’ N
Longitude :71°54’E</td></tr></table></td><td>21/09/2017 to 22/09/2017</td><td>Mr. Sukanta Das</td></tr>
</table>

2.5 Resolution of Findings

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

The Final PD Version 03 submitted by PP on 26/12/2017 respectively serves as the basis for the final assessment presented. Additional changes to the project during the validation 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.

Areas of validation and verification findings	No. of CL	No. of CAR	No. of FAR
Project design document/Matter related to double counting	00	01	00

[2] Sourced from DPR of the project activity and also confirmed during the site visit.

Description of project activity	00	00	00
Application of selected baseline and monitoring methodology and selected standardized baseline			
- 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
- Demonstration of additionality	00	01	00
- Emission reductions	00	01	00
- Monitoring plan	00	00	00
Others (please specify)- **Validation process** 1. Findings related to No Net Harm assessment 2. Findings related to Local stake holder consultation process	00	02	00
Total	00	05	00

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

2.5.1 Forward Action Requests

No forward action request is raised during the validation process of this project activity.

3 VALIDATION FINDINGS

3.1 Project Details

The purpose of the grouped project activity *(hereafter referred as "proposed project activity")* is to generate power using renewable energy source (Solar energy) and sell the power generated to the state grid.

The main purpose of this project activity is to generate clean form of electricity through renewable energy sources. The proposed project activity involves the installation of Solar PV project. The total installed capacity of the project is 140 MW; which involves operation of two units of 70 MW of Solar PV plant each located at Rajasthan state in India. The project is promoted by **Rising Bhadla 1 Private Ltd and Rising Bhadla 2 Private Ltd** which are the group companies of Rising Sun Energy Pvt Ltd.

The Project activity is a new facility (Greenfield) and the electricity generated by the Project will be exported to the Indian electricity grid. The Project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the Project. In the Pre- project scenario the entire electricity, delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 241,573 tCO_2e per year, thereon displacing 250,258 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

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

Project Proponents Name	Capacity in MW (AC)	COD	Connection with Grid	State	Usage
Rising Bhadla 1 Private Ltd.	40 MW	18/07/2017	Indian Grid	Rajasthan	Sale to Grid
	30 MW	29/09/2017			
Rising Bhadla 2 Private Ltd.	40 MW	29/08/2017			
	30 MW	30/11/2017 (expected)			Sale to Grid

Assessment team checked the technical details of the project activity from the manufactures specification and the detail are as follow:

Solar PV Project Technology Details –

The project activity aims to harness solar energy through installation of PV with total installed capacity of 140 MW (AC).

The technical specification of 40 MW plant interconnection with grid on 18/07/2017 at Rising Bhadla 1 Private Ltd are as follows:

Sl. No.	Technical details of the equipment[3]	Comments
1	Technology Used	Multi Crystalline
2	Rating of each module (Wp)	315 Wp to 330 Wp
3	Angle from horizontal at which array is installed	5 ˚Angle
4	Number of modules installed of each type	315 Wp- 3120 Number 320 Wp 36192 Number 325 Wp- 53040 Number 330 Wp- 61152 Number
5	Sources(s) of the modules installed of each type	Canadian Solar

[3] The present module configuration at this time of validation is presented as per the manufacturer specification which DOE confirmed the same during the validation site visit. However, as discussed during the site visit it is to be noted that in future there is possibility of change in module configuration; however project capacity will remain same as140 MW.

		315 Wp, 320 Wp 325 Wp, 330 Wp
6	Number of the Power Conditioning Units (PCUs) installed	1000 KW- 70 Number
7	Sources of PCUs (Name of Supplied)	ABB India Limited

30 MW of Rising Bhadla 1 Private limited is being commissioned on 29/09/2017 and the technical details are as follows:

Sl. No.	**Technical details of the equipment**[4]	**Comments**
1	Technology Used	Multi Crystalline
2	Rating of each module (Wp)	315 Wp to 330 Wp
3	Angle from horizontal at which array is installed	5 ˚Angle
4	Number of modules installed of each type	315 Wp- 4,800 Number 320 Wp 10,848 Number 325 Wp- 85,920 Number 330 Wp- 14,848 Number.
5	Sources(s) of the modules installed of each type	Canadian Solar 315 Wp, 320 Wp 325 Wp, 330 Wp
6	Number of the Power Conditioning Units (PCUs) installed	1000 KW- 30 Number
7	Sources of PCUs (Name of Supplied)	ABB India Limited

[4] The present module configuration at this time of validation is presented as per the manufacturer specification which DOE confirmed the same during the validation site visit. However, as discussed during the site visit it is to be noted that in future there is possibility of change in module configuration; however project capacity will remain same as140 MW.

8	Invertor Transformers	8 Nos. (4 MVA & 2 MVA)
9	Power Transformer	2 Nos. (36 MVA)

Also, Rising Bhadla 2 Private limited project out of 70 MW, 40 MW is being commissioned on 29/08/2017 and balance 30 MW is in final completion phase and is expected to be completed by 30/11/2017.

40 MW of Rising Bhadla 2 Private limited is being commissioned on 29/08/2017 and the technical details are as follows:

Sl. No.	**Technical details of the equipment[5]**	**Comments**
1	Technology Used	Crystalline
2	Rating of each module (Wp)	320 Wp to 330 Wp
3	Angle from horizontal at which array is installed	5 ˚Angle
4	Number of modules installed of each type	320 Wp 78,400 Nos. 325 Wp- 46,320 Nos 330 Wp- 30,400 Nos.
5	Sources(s) of the modules installed of each type	Canadian Solar 320 Wp, to 330 Wp JA Solar 320 Wp, 325 Wp
6	Number of the Power Conditioning Units (PCUs) installed	1000 KW- 40 Nos
7	Sources of PCUs (Name of Supplied)	ABB India Limited
8	Invertor Transformers	7 Nos. (4 MVA & 2 MVA)
9	Power Transformer	2 Nos. (36 MVA) Crompton Greaves

[5] The present module configuration at this time of validation is presented as per the manufacturer specification which DOE confirmed the same during the validation site visit. However, as discussed during the site visit it is to be noted that in future there is possibility of change in module configuration; however project capacity will remain same as140 MW.

Assessment team checked onsite and confirms that the details of the project proponent is as below:

Organization name	Rising Bhadla 1 Private Ltd
Contact person	Ayush Bhargava
Title	Assistant Manager- Project Management
Address	S-18 Second Floor Green Park Extension Delhi-110016 India
Telephone	-
Email	ayush.bhargava@risingsunenergy.in

Organization name	Rising Bhadla 2 Private Ltd
Contact person	Ayush Bhargava
Title	Assistant Manager- Project Management
Address	S-18 Second Floor Green Park Extension Delhi-110016 India
Telephone	-
Email	ayush.bhargava@risingsunenergy.in

Assessment team checked onsite and confirms that the details of the other entity involved is as below:

Organization name	EKI Energy Services Limited
Role in the project	Project Consultancy
Contact person	Mr. Bhaskar Dutta
Title	Manager
Address	Office No. 201, Enking Embassy, Plot No. 48, Scheme No. 78, Part II, Vijay Nagar INDORE – 452010.
Telephone	+91-731-4289086
Email	bhaskar@enkingint.org

Project Start Date

Assessment team confirms that the Start date of the project activity is the foremost date of interconnection with the grid i.e. 18-07-2017. This is the date of commissioning of 40 MW out of proposed 2 x 70 MW i.e. 140 MW which is the total capacity of the project activity. The chosen date is as per the requirement of VCS and thus acceptable to the assessment team.

Project crediting period Date

Assessment team confirms that the crediting period dates for the project is as below:

Crediting Period Start date: 18-July-2017

Crediting Period End date: 17-July-2027

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

Project Scale and Estimated GHG Emission Reductions or Removals

Assessment team confirms that the project is a large scale project that involves setting up of 140.0 MW of Solar power project.

Project Scale	
Project	✓
Large project	

As the estimated GHG emission reductions or removal per year is 241,573 tCO_2e which is less than 300,000 tonnes of CO_2e per year, thus the project falls in the category of Project.

Year	Estimated GHG emission reductions or removals (tCO_2e)
Year 1	242,688
Year 2	241,474
Year 3	241,468
Year 4	241,462
Year 5	241,456
Year 6	241,450
Year 7	241,443
Year 8	241,437
Year 9	241,431
Year 10	241,425
Total estimated ERs	2415,734
Total number of crediting years	10 years
Average annual ERs	241,573

The above estimated emission reduction is confirmed by assessment team via emission reduction calculation spreadsheet. The calculation is conservative and this acceptable to the assessment team.

Project location

Assessment team during the validation site visit confirms that both the solar plant of respective project investor are located at a single region and the details are as follows[6]:

Location of the Plant	Village - Bhadla, Tehsil - Phalodi, District- Jodhpur, State-Rajasthan
Location details	Latitude :27°29' N Longitude :71°54'E Elevation :180 m above MSL
Distance from District Headquarter	159 km from Jodhpur
Access by Road	Connected by Road- NH65
Access by Rail	Nearest Railway station- Phalodi: 83 km
Access by Air	Nearest Airport – Jodhpur
Telecommunication	Fairly available
Land	Approximately 140ha land available for 70 MW Solar PV plant.
Climate	Annual Rainfall – 3 mm Max Temp: 50°C 13 Min Temp: -3°C Max Relative Humidity: 100 % Min Relative Humidity: 5%

[6] Sourced from Detail Project Report of the project activity. The same is checked during the validation site visit via GPS meters

	Wind Speed: 1.4 M/s (Min) to 5.7 M/s (Max)

Conditions prior to project initiation

Assessment team during the desk review and onsite visit confirms that the project is a Greenfield solar power project and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. The baseline as described in section 3.2.4 of this report will continue to be the baseline in the absence of project activity.

Project compliance with applicable laws, statutes and other regulatory frameworks

Assessment team confirms that the Project has received necessary approvals for development and commissioning for the proposed 2 x 70 MW Solar PV project from the state Nodal agencies and is in compliance to the local laws and regulations. Assessment team checked the Commissioning certificates, power purchase agreement with state board, Installation report for Solar Plant in the name of respective PP issued by Rajasthan Renewable Energy Corporation Limited (=RRECL, Govt of Rajhsthan, Republic of India), Jodhpur to confirm the project capacity and its relevant statutory requirements as per the host country regulations.

Assessment team noted that the project fulfils the norms put down by Central pollution control board norms. As per Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India), final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (February 29, 2016).

Being a renewable power project it falls under the category of White and thus this projects do not need clearance for Consent to operate and only needs to inform the relative State pollution control board. The same is done for the project and thus it can be confirmed that it follows the local laws of the host country.

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using wind energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage wind power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.

- There is no legal requirement on the choice of a particular technology for power generation.

Thus assessment team confirms that the project activity follows the National and local law and regulation of the host country. **Project Ownership**

The Project is owned by **Rising Bhadla 1 Private Ltd** and **Rising Bhadla 2 Private Ltd**, hence it possess right of use of VER credits. The Ownership is demonstrated through the following documents.

1) Installation report for Solar Plant in the name of respective PP issued by Rajasthan Renewable Energy Corporation Limited (=RRECL), Jodhpur (http://energy.rajasthan.gov.in/rrecl)

2) Power Purchase Agreement with National Thermal power corporation Limited (=NTPC) (http://www.ntpc.co.in/)(NTPC has been identified by the Government of India as implementation agency for setting up of Grid- connected Solar PV Power Projects) for sale of electricity by the respective PP.

Assessment team checked the above 2 documents and confirms that the Project is owned by **Rising Bhadla 1 Private Ltd** and **Rising Bhadla 2 Private Ltd**, hence it possess right of use of VER credits

Emissions trading programs and other binding limits

Assessment team confirms that the Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

Other forms of environmental credit sought or received and eligible to be sought or received

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

Renewable energy certificates are available for trading in the host country However, the same can be verified with the REC accreditation body of India[7] and thus can be checked during the verification of this project activity.

Participation under other GHG programs

The project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program. A declaration for the same dated 11/10/2017 is checked and found correct by the assessment team. Also assessment team checked the following registry to confirm the same. The detail of the registry checked are as follows:

1. https://www.recregistryindia.nic.in/
2. http://cdm.unfccc.int/
3. http://www.goldstandard.org/

[7] https://recregistryindia.nic.in/index.php/general/publics/accredited_regens_pdf

Rejection by other GHG programs

The Project is not rejected by other GHG programs. A declaration for the same dated 11/10/2017 is checked and found correct by the assessment team. A declaration for the same dated 11/10/2017 is checked and found correct by the assessment team. Also assessment team checked the following registry to confirm the same. The detail of the registry checked are as follows:

1. https://www.recregistryindia.nic.in/
2. http://cdm.unfccc.int/
3. http://www.goldstandard.org/
4. www.v-c-s.org

Additional Information Relevant to the Project

Eligibility Criteria

This is not a grouped project activity. Thus, this section is not applicable for this project.

Leakage Management

Not applicable to the project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description. The details are presented transparently to the assessment team for analysis which lead to positive conclusion for this validation.

Sustainable Development

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. Assessment team found that the project contributes to sustainable development using the following ways.

Social well-being: The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.

The project activity will generate power using zero emissions Solar PV based power generation which helps to reduce GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities.

Technological well-being: The successful operation of project activity would lead to promotion of Solar based power generation and would encourage other entrepreneurs to participate in similar projects

Environmental well-being: Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions.

3.2 Application of Methodology

3.2.1 Title and Reference

Assessment team confirms the following:

Title: Grid-connected electricity generation from renewable sources

Reference: The project activity meets the eligibility criteria of large scale project as it is more than 15 MW

Methodology : ACM0002: Grid-connected electricity generation from renewable sources - Version 17.0[8]

Type I : Energy industries (renewable / non-renewable sources)

Category: Approved Consolidated Methodology (ACM0002)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system[9] - Version 05.0 (EB 87, Annex 09)
- Methodological Tool- Tool for the demonstration and assessment of additionality[10] - Version 07.0.0 (EB 70, Annex 08)

3.2.2 Applicability

The applied baseline methodology is justified as it has been demonstrated that the proposed project activity is:

Applicability 1: The project activity is installation of a new grid connected solar power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant) and hence this criterion is applicable.

[8] http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN

[9] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v5.0.pdf

[10] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

Applicability 2: The proposed project activity is an installation of a new grid connected solar power plant and hence this condition is met.

Applicability 3: The project does not involve any capacity additions, retrofits or replacements and therefore this condition is not applicable

Applicability 4: The project activity is a grid connected solar power project and not a hydro power plant. Therefore, these criteria are not applicable for the project activity.

Applicability 5: The project is solar power project and thus the criterion is not applicable to this project activity.

Applicability 6: The project is solar power project and thus the criterion is not applicable to this project activity.

Applicability 7: The project activity is installation of a new grid connected solar power project and does not involve switching from fossil fuel to renewable energy and hence this criterion is not relevant to the project activity.

&

This is a solar power plant and not a biomass fired plant and hence this applicability criterion is not applicable to the project activity.

Applicability 8: The project activity is a new grid connected solar power plant and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.

Applicability conditions of "Tool to calculate the emission factor for an electricity system"

- OM, BM and CM are estimated using the tool for calculating baseline emissions.
- The project activity is grid connected and thus emission factor is calculated and thus OM, BM and CM are estimated using the tool for calculating baseline emissions.
- The project activity is located in India, a non-Annex I country. Therefore, tool is applicable for the project activity.
- The project is a solar project and there is no involvement of biofuels. Therefore, this criterion is not applicable for the project activity.

Applus+ LGAI confirms that the application of the baseline methodology is transparent and conservative, and confirms that the chosen baseline and monitoring methodology i.e. ACM 002 version 17 is applicable to the project activity.

The project activity qualifies as Type I during every year of the crediting period in accordance with applicable provisions for project activity eligibility as discussed above. Also the total installed capacity of project activity is 140 MW which is applicable as per large scale project activities methodology ACM0002: Grid-connected electricity generation from renewable sources Version 17.0. The project capacity will be

always remain the same and hence the project activity will always be large scale project activities throughout the crediting period and thereafter.

3.2.3 Project Boundary

Project boundary has been ascertained and confirmed during the site visit using para 21 of ACM0002 (Version 17.0) – "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".

Hence the project boundary includes the renewable energy power generation, sub-stations, grid and all power plants connected to grid. The proposed project activity instances will evacuate power to the grid. The boundary also extends to the project power plant and all power plants connected physically to the electricity system that the VCS project power plant is connected to".

The calculation of net electricity supplied to grid is under purview of state electricity board and project activity instances Owner or project activity instances Implementer does not have any control on it. Thus for project activity instances, net electricity supplied to grid is the monitoring parameter which is used for ER calculations.

It is to be noted that metering arrangement is under control of state electricity board and PP do not have any control on it.

The sources and GHG gases involved for proposed Project activity instances are as below

Source		Gas	Included	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO_2	Yes	Major emission sources.
		CH_4	No	Excluded for simplification. This is conservative
		N_2O	No	Excluded for simplification. This is conservative
Project activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	A project activity instance does not involve any Geothermal Power plant. Hence not applicable
		CH_4	No	A project activity instance does not involve any Geothermal Power plant. Hence not applicable
		N_2O	No	A project activity instance does not involve any Geothermal Power plant. Hence not applicable

Source		Gas	Included	Justification/Explanation
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	A project activity instance does not involve solar thermal or geothermal power plants. Hence not applicable
		CH_4	No	A project activity instance does not involve solar thermal or geothermal power plants. Hence not applicable
		N_2O	No	A project activity instance does not involve solar thermal or geothermal power plants. Hence not applicable
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	A project activity instance does not involve hydro power plants. Hence neglected

3.2.4 Baseline Scenario

Assessment team confirms that being a grid connected solar energy generation project, PP developed the project based on the Methodology ACM 0002 version 17. As per methodology *if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:*

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system

As per VVS version 09, "where the baseline scenario is not prescribed in the approved methodology, the DOE shall assess the list of identified credible alternatives to the project activity in the PD selected to determine the most realistic baseline scenario." Thus, PD should mention the credible alternatives to the project activity in order to determine the most realistic baseline scenario. As the selected large scale methodology clearly mention the baseline scenario and the same has been opted in this project, therefore, no further analysis on baseline is required.

Validation Team, therefore, concludes that the PD conforms to the guidance given by EB via VVS version 09 and VCS via VCS standard version 3.7.

The project activity involves setting up of solar projects to harness the power of sun to produce electricity and supply to the grid. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants.

In the absence of the project activity, the equivalent amount of power would have been drawn from the Indian grid. Hence, the baseline for the project activity is the equivalent amount of power from the Indian grid.

The combined margin ($EF_{grid, CM, y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) and build margin (BM). Calculations for this combined margin must be based on data from an official source (where available) and made publically available. The Central electricity authority (=CEA) database version 12 is the latest available data at the time of PD submission to DOE for validation, hence same is considered for emission factor calculations.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,y}$	0.9653 tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO_2 Emission Database, Version 12.0, May 2017 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9843 tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system in year y	Calculated as the last 3 year (2013-14, 2014-15, 2015-16) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 12.0, May 2017 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,BM,y}$	0.9083 tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system in year y	Baseline CO_2 Emission Database, Version 12.0, May 2017 published by Central Electricity Authority (CEA), Government of India

Moreover, Annex 3 of the EB 22 states that national and/or sectoral policies and circumstances have to be accounted for when considering the baseline scenario. Paragraph 7(a) states that, only those national and/or sectoral policies or regulations under paragraph 6(a), i.e., type E+ policy that increase GHG emissions, that have been implemented before adoption of the Kyoto Protocol by the COP (decision 1/CP.3, 11 December 1997), shall be taken into account when developing a baseline scenario. The Electricity Act of 2003 promoted cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity (Refer Section 86(1) of Electricity Act 2003). Therefore, it could be seen that the provincial and sectoral policies are E- i.e., policies that decrease GHG emissions and are after November 2001.Hence the baseline scenario of electricity generation by grid connected fossil fuel dominated power plants is in accordance with Annex 3 of EB 22.

Assessment team thus confirmed that baseline is selected as per the applied methodology and combined margin is calculated as per the tool and thus acceptable to the assessment team.

3.2.5 *Additionality*

During conceptualization of the project activity, board of directors of the project proponents considered the VCS revenue to improve the project financials. During the board meeting dated 16/11/2015 for board of Directors decided that they would consider VCS revenue for their project activity. In continuation to the board decision, PP issued the respective purchase order for the supply of Solar Panels. The detail of project commission is as follows:

Project Proponents Name	**Capacity in MW (AC)**	**COD**	**Connection with Grid**	**State**	**Usage**
Rising Bhadla 1 Private Ltd.	40 MW	18/07/2017	Indian Grid	Rajasthan	Sale to Grid
	30 MW	29/09/2017			
Rising Bhadla 2 Private Ltd.	40 MW	29/08/2017			
	30 MW	30/11/2017 (expected)			Sale to Grid

Assessment team confirms that the Start date of the project activity is the foremost date of interconnection with the grid i.e. 18/07/2017. This is the date of commissioning of 40 MW from 1st phase of implementation of 70 MW. Out of rest 70 MW (Phase 2) 40 MW is commissioned on 29/08/2017 and rest 30 MW would be commissioned on 30/11/2017 as confirmed by the project participant. The chosen start date is as per the requirement of VCS and thus acceptable to the assessment team.

PD mentioned that the project would not be economically or financially feasible without the revenue from the sale of Verified emission reductions (VERs). The claim of the project developer has been assessed by the Validation Team through the following steps

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

The proposed project activity is not the first-of-its-kind. Hence not applicable.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a: Define alternatives to the project activity:

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed VCS project activity.

The purpose of the project activity is to generate electrical power using solar energy and feed the electricity generated to the grid. Hence, the following alternatives are considered:

Alternative 1: The proposed project activity without VCS benefit;

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

Having regard to the fact that the project activity under consideration is a solar power project validation team is convinced that there are no other realistic and credible alternatives. Both the alternatives are in compliance with all applicable legal and regulatory requirements as;

- the implementation of project activity is a voluntary initiative and is not mandatory or a legal requirement;
- the applicable environmental regulations do not restrict the use of solar energy; and
- There is no legal requirement on the choice of a particular technology.

Assessment team noted that the project fulfils the norms put down by Central pollution control board norms. As per Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India), final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (February 29, 2016).

Being a renewable power project it falls under the category of White and thus this projects do not need clearance for Consent to operate and only needs to inform the relative State pollution control board. The same is done for the project and thus it can be confirmed that it follows the local laws of the host country.

However, of the two alternatives identified, alternative (i) cannot be considered realistic as further analysis in the following paragraph reveals that it is not economically feasible option. Hence, alternative (ii) alone could be justified as realistic, credible and plausible alternative to the PP.

Validation team is, therefore, convinced that the project developer has taken into consideration all realistic and credible alternatives (having regard to the governing methodologies) including the project being undertaken as a non-VCS activity and continuation of current scenario. The identification of alternatives is in conformity with the guidance given by the tool.

Outcome of Sub-step 1a: All the realistic alternatives for the project activity have been enlisted above.

Sub-step 1b: Consistency with mandatory laws and regulations:

The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution. (This sub-step does not consider national and local policies that do not have legally-binding status.)

Both the alternatives are in compliance with all applicable legal and regulatory requirements as;

- the implementation of project activity is a voluntary initiative and is not mandatory or a legal requirement;
- the applicable environmental regulations do not restrict the use of solar energy; and
- There is no legal requirement on the choice of a particular technology.

Moreover,

Outcome of Sub-step 1b: Hence, both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or

country and EB decisions on national and/or sectoral policies and regulations. However, Alternative 2 has been selected as the appropriate baseline alternative for this project activity.

Step 2: Investment analysis

Determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified in step 1, without the revenue from the sale of emission reductions credits. To conduct the investment analysis, use the following sub-steps:

Sub-step 2a: Determine appropriate analysis method and Sub-step 2b (Option III): Apply benchmark analysis

a) Suitability of investment analysis, financial indicator and benchmark:

Project developer had demonstrated that the financial returns of the proposed VCS project activity would be insufficient to justify the required capital investment as per VVS version 09.0. In the Initial PD version 01 PP has adopted a conservative approach to identify the benchmark for the project activity. The project is earning revenue from the installation of the project activity. Thus simple cost analysis (Option I) is not appropriate. Also in the absence of the project activity grid electricity would have been the obvious choice for the Project which requires no investment. Hence investment comparison analysis (Option II) is also not appropriate for the project activity. Therefore, benchmark analysis (Option III) is used for the project activity as per project type and decision-making context. Therefore, the Expected return on equity is considered appropriate benchmark. Accordingly, the post-tax Equity IRR has been considered as the relevant financial indicator for the project activity which is acceptable to the assessment team. Moreover, the financial indicator selected by the PP is correct based on the fact that tool do not restrict the PP to either use project IRR or Equity IRR. This is under the prerogative of the PP to select appropriate indicator based on his preferences to know the IRR based on his equity investment or debt investment. The same is this acceptable to the assessment team. Assessment team however checked the Equity IRR calculation and thus found that input assumptions used for the calculation of Equity IRR is applicable at the time of investment decision of the project and thus is in accordance with the relevant guideline of the tool.

As per EB 92 Annex 5, “In situations where an investment analysis is carried out in nominal terms and the available IRR benchmarks are in real terms, project participants shall convert the real term values of benchmarks to nominal values by adding the inflation rate. The inflation rate shall be obtained from the inflation forecast of the central bank of the host country for the duration of the crediting period. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used”.

The investment analysis has been carried out in Nominal terms. Accordingly, Default value has been adjusted by adding suitable forecasted inflation rate taken from RBI (Central Bank, India). PROJECT OWNERS has calculated Benchmark based on WPI mean inflation rate. As per Para 17 of appendix of EB 92, Annex 05, the inflation forecast should be for the duration of the crediting period. However, since RBI provides forecast inflation only for 5 & 10 years, the project investor has calculated benchmark using 10 years durations and the same is considered as Benchmark for the project activity.

As per para 20 of EB 92, Annex 5 the cost of equity is determined by selecting the values provided in the Appendix, i.e. Default values for cost of equity (expected return on equity) is presented below:

Appendix in EB 92, Annex 5 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 11.06%

The Required return on equity (benchmark) was computed in the following manner:

Nominal Benchmark[11] = {(1+Real Benchmark)*(1+Inflation rate)}-1

Where:

- Default value for Real Benchmark = 11.06% (as per Appendix of EB 92, Annex 5)

- Inflation Rate forecast for by Reserve Bank of India (RBI) (i.e. Central Bank of India) for India & in case where RBI Inflation forecast was not available Average Inflation rate forecast for India has been sourced from IMF web site.

Benchmark estimation:
Appendix in EB 92, Annex 5 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = 11.06%

Inflation Forecast for India as per RBI website[12]:

Since RBI publishes the inflation forecast for 5 years and 10 years, PP has considered the maximum 10 year inflation considering the renewable crediting period of total 21 years.

Project Investor	Inflation Forecast	Benchmark
	10 Years	10 Years
Rising Bhadla 1 Private Ltd.	3.6%	15.06%
Rising Bhadla 2 Private Ltd.	3.6%	15.06%

Thus benchmark of 15.06%has been selected for this project activity.

b) Parameters and assumptions used:

The project activity is a renewable source of electricity generation and supplies the electricity to the INDIAN Electricity grid. The key parameters which determine the Equity IRR of the project activity are project cost, PLF and profitability estimates.

In the revised PD version 02, the project cost is based on the DPR (=Detailed project report) dated 10/11/2015.DPR report has been submitted to validation team. The cost of Panel is 61.38MN/MW for

[11] As per Fisher Equation, https://en.wikipedia.org/wiki/Fisher_equation

[12] https://rbi.org.in/Scripts/PublicationsView.aspx?id=16696

Rising Bhadla 1 Private Ltd. And Rising Bhadla 2 Private Ltd. Which is the normal price in the region and is acceptable to the assessment team. The DPR were available during decision making and financial profitability of the project was decided based on this DPR. Validation team checked the DPR of the project activity and found that consideration of the project cost in revised PD version 02 is correct and it is in line with Appendix of EB92, Annex 5 as well as in compliance to VVS version 09.0. Hence, the project cost consideration is justified. Moreover, the **actual cost of the project activity is 56.24 Mn/MW** and considering the same the project still do not breach the benchmark as detailed out in sensitivity analysis. If the actual cost is considered IRR still reduce and hence the same is considered conservative.

In India, infrastructure projects are generally entitled to a debt equity ratio of 70:30. However, depending on the relationship of the client with the bank, its credit rating and collaterals offered, banks consider higher debt equity ratio also. The debt equity ratio for the project is 70:30. Assessment team checked the order for the state of Rajhsthan (http://rerc.rajasthan.gov.in/TariffOrders/Order216.pdf) regarding ratio of debt and equity which was available at the time of investment decision and found that the ratio of Debt to equity was considered correctly for the present validation condition. Moreover, assessment team checked the actual Loan sanction letter dated 09/11/2016 and found that 70% amount was given as loan and thus the estimation for IRR is correct.

The profitability of the project, which forms the basis for IRR calculation is based on installed capacity, PLF, electricity tariff, O&M cost, depreciation and taxation. The installed capacity is based on the capacity of solar panels, which is evidenced by the Offer letter subsequently.

c) Assessment of Plant Load Factor (PLF):

PP considered the Plant load factor from a third party engineering company, for expected electricity generation estimation. They are contracted by the PPs for this project. PP has submitted the copies of the PLFs estimation report to the assessment team.

Validation team assessed the PLF assessment report submitted by Archer business solutions dated 10/11/2015 and the actual electricity generation and found correct. Same 3rd party PLF report has been used in the financials and the emission reduction calculation. PLF estimation by 3rd party engineering company is in line with Para 3 (b) Annex 11, EB 48 and acceptable to the assessment team. The decay factor solar panel is considered for PLF and ER calculation. For IRR calculation de-ration factor is already included. The decay factor for IRR calculation is sourced from DPR which was available to the PP at the time of investment decision. Hence the value is considered correct. Also state electricity commission provide decay rate for solar project in the region as same. DOE checked the state electricity regulatory commission report (http://rerc.rajasthan.gov.in/cnpl/PDFs/Solar.pdf) available to PP at time of investment decision and found that de-cay factor is correct.

D) Assessment of Electricity Tariff:

The tariff is considered from DPR dated 10/11/2015 available to the PP at the time of decision making.

Validation team assessed the tariff and found that same value was available during decision making and in conformity with guidance Appendix of EB92, Annex 5. Furthermore, assessment team has also checked the actual tariff in the power purchase agreement signed for further substantiation as these values are available during the validation stage. The vales as considered for the financial additionality determination are same as the values mentioned in power purchase agreement.

e) Assessment of O& M cost:

PP considered the O&M cost from the DPR dated 10/11/2015. The DPR has been used in the financial calculation as same was available during decision making and hence applicable. According to Appendix of EB92, Annex 5, the cost should be based on the input parameters available at the time of decision making and the PP has submitted DPR supporting this consideration. Therefore, considering the above assessment, validation team concluded that the O&M cost considered from respective DPR in the computation of financial indicator is in conformity with guidance Appendix of EB92, Annex 5.

F) Assessment of Tax computation:

The project developer has adopted book depreciation rates as per Schedule XIV of the Companies Act, 1956 for computing book profit and Income Tax Act 1961 stipulated for income tax calculation, which are in conformity with the accepted accounting principles adopted by the company and income tax laws in the host country. The block of assets has been computed for depreciation purpose as per the accepted accounting principles. Tax liability has been calculated as per the income tax rules and the rulings given. In computing the income tax liability, the project developers have considered Tax holiday (u/s 80IA of the Income Tax Act, 1961). Accelerated depreciation on plant and machinery is also sourced from IT act. The tax rates assumed corresponds to the tax rate prevailing at the time of taking decision (conformity to Appendix of EB92, Annex 5). Hence, these assumptions are appropriate during decision making context

g)Cross checking parameters:

The cost of Solar Panels, electricity tariff, O&M cost, depreciation, salvage value and tax rate have been checked with DPR, tariff order, Income Tax Act, power purchase agreement.

DPR value is checked from tariff order, Income Tax Act, power purchase agreement, purchase order value.

1. The tariff rate is considered from DPR, however the actual power purchase agreement is available which mention the same rate and thus is acceptable to DOE
2. The income tax values like the Tax rate, MAT, Education cess, surcharge etc is coozen from third party documents which is Income Tax act, Govt of India
3. The project cost is considered from DPR, however actual project cost is available and the IRR is still below the benchmark
4. Plant load factor is also considered from DPR whom were contrcated by PP and is in acccordance of Annex 11, EB 48

The DPR value has been used in the financial calculation as same was available during decision making and hence applicable. According to Appendix of EB92, Annex 5, the O&M cost should be based on the input parameters available at the time of decision making and the PP have submitted DPR supporting this consideration. There is no difference in the value used for O&M in the IRR sheet and the DPR. The same is acceptable to the assessment team

The project developer has adopted book depreciation rates as per Schedule XIV of the Companies Act, 1956 for computing book profit and Income Tax Act 1961 stipulated for income tax calculation, which are in conformity with the accepted accounting principles adopted by the company and income tax laws in the host country.

The tariff is considered from DPR report available to the PP at the time of decision making

The documents supporting the financial calculations, in the opinion of Validation Team, are therefore authentic and conform to the guidance given by EB. CARs and CLs were raised as non-conformities and they were either set right or clarified. With the corrections having been incorporated, the input costs considered conform to guidance on investment analysis issued by EB. All the input parameters considered in computation, the basis, correctness and appropriateness thereof are checked and found correct. Please refer CAR below for detail analysis.

H) Assessment of correctness of computation:

The assessment involved checking the data input taken from DPR dated 10/11/2015, power purchase agreement, tariff order, adoption of correct accounting principle and arithmetical accuracy. Validation Team checked the documents and ensured that appropriate input has been taken in the project cost and projections. Based on the CARs and CLs, corrections were incorporated or issues were clarified. The arithmetical accuracy was also found to be correct.

The equity IRR has been computed for a period of 25 years (=Operational lifetime of the project (for solar), which is the life time of the project and is in conformity with the Appendix of EB 92 Annex 05. As required by Appendix of EB 92 Annex 05 the expected realization on the sale of assets at the end of the operating life has been taken as salvage value in the terminal year. In computing the IRR, the project developer has taken into account profit after tax, depreciation tax shield and salvage value (in the terminal year). The principle adopted conforms to the accepted accounting and taxation principles.

Validation team also confirms that rest of the input parameters are considered appropriately and are in line with guidance Appendix of EB 92 Annex 05.Therefore, from the above arguments/justifications it is evident that the project is not business as usual scenario and requires CDM benefits to sustain.

Sensitivity analysis:

The Guidance on Appendix of EB 92 Annex 05 requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation. The project developer has identified Plant Load Factor (PLF), Project cost, Electricity tariff and O&M cost as critical assumptions. These critical parameters constitute more than 20% of either total project costs or total project revenues. The sensitivity analysis reveals that even under more favourable conditions, the IRR without CDM revenue would not cross the benchmark return as given in the following table:

Variation %	**-10%**	**Normal**	**10%**	**Breaching Value**
PLF	4.44%	7.00%	9.76%	25.55%
O&M	7.28%	7.00%	6.72%	-282.50%
Project Cost	9.76%	7.00%	4.92%	-21.94%
Tariff Rate	4.44%	7.00%	9.76%	25.55%

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favourable conditions.

Probability to breach the benchmark:
Sensitivity Parameter 1 : PLF
PLF considered in financials for is as per Third Party DPR in line with **"Guidelines for the reporting and validation of Plant load factors" stated in EB48 Annex11 option 3(b)**. Hence, variation in PLF of more than 10% is unlikely to happen as the PLF has been reported as per the Third Party Report based on long term data.
Sensitivity Parameter 2 : O&M
The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and also subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. Hence, the reduction in the O&M cost is highly unlikely.
Sensitivity Parameter 3 : Project Cost
Project Cost for financial analysis is considered from DPR of the project activity, being available at the time of investment making decision to go ahead with the project activity. The actual project cost is lower than the DPR cost. Since the Purchase Order cost is firm, there is no possibility of project cost going below this level. However, Sensitivity is carried out for threshold level below which benchmark is not breached. The actual project cost is 3936.93 million INRs for 70 MW project activity each by Rising Bhadla 1 and Rising Bhadla 2 Pvt. Ltd which is lower than DPR cost, thus with actual project cost and actual fixed Tariff rate of 4.34 INR/KWh, the IRR does not cross the benchmark. The threshold limit for project cost reduction is 21.94% which is highly unlikely scenario.
Sensitivity Parameter 4 : Tariff Rate
The tariff is determined by PPA which is fixed for entire lifetime of the project activity. Hence, there is no probability to get variation for the same. However, Sensitivity is carried out for +/- 10% even then the benchmark is not breached.

Common Practice analysis:

The common practice analysis is proved by following points as per the requirement of Methodological tool "Common Practice", version 03.1 EB84, Annex 7[13]:

1. Applicable Geographical Area (Para 9): The Rajhsthan state has been considered as the applicable geographical area for this project. PP had considered the state of Rajhsthan geo-graphical area due to regulatory regime since applicable power tariff structure for renewable energy projects is unique for all the states across national boundary of India; which is based on Electricity Act 2003 (EA 2003), section 82 which clearly mentions "Every State Government shall, within six months from the appointed date, by notification, constitute for the purposes of this Act, a Commission for the State to be known as the (name of the State) Electricity Regulatory Commission" Appropriateness of the same has been checked and confirmed from EA 2003 (http://www.cercind.gov.in/08022007/Act-with-amendment.pdf/40/).

Furthermore, following significant points on the State specific policy & regulatory framework on the renewable energy projects with special emphasis to solar power projects have been validated:

- Electricity Act 2003 (EA 2003) has changed the legal and regulatory framework for the renewable energy sector in India. The EA 2003 mandates policy formulation to promote renewable sources of energy by the federal government, the State governments and the State Electricity Regulatory Commissions (=SERCs) within their jurisdictions.

- The Electricity Act 2003 introduced some enabling provisions conducive to accelerated development of grid connected renewable energy sources. Under Section 61(h), promotion of cogeneration and generation of electricity from renewable sources of energy has been made the explicit responsibility of SERCs, which are bound by law to take these considerations into account while drafting their terms and conditions for tariff regulations. Nearly all SERCs have issued their tariff regulations incorporating suitable clauses, which will enable them to provide a preferential treatment to renewable energy (RE) during the tariff determination process. The SERCs determine the tariff for all renewable energy projects across the States, and the state-owned power Distribution Companies (DISCOMs) ensure grid connectivity to the renewable energy project sites.

- EA 2003 has initiated the adoption of the National Tariff Policy, 2006 as one of the key policies, National Tariff Policy (2006) framed under the Section 3 of the EA 2003. As per the excerpt from National Tariff Policy, 2006; pursuant to provisions of section 86(1)(e) of the EA 2003, the Appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006.

- As mandated under section 86(1)(e) of the Electricity Act (2003), by June 2012, 26 SERCs had fixed quotas (in terms of % of electricity being handled by the power utility) to procure power from renewable energy sources. The mandate, which is called a Renewable Purchase Specification

[13] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf

(RPS), varies from 0.5% to 14% in various states over varying time-scales. Few states have come out with technology specific RPSs. Besides, the state regulators determine the tariff for all RE projects in the states and ensure connectivity to the grid through extension of power evacuation from the RE project sites.

- At present thirteen SERCs have declared preferential feed–in tariffs (FITs) for purchase of electricity generated from solar power projects established in respective states, which varies from state to state in India. All the SERCs have adopted a 'cost plus' methodology to fix the feed–in tariff, which varies across the states depending upon the state resources, project cost and more importantly the tariff regulations of SERCs. Solar power related tariff polices in different states also has difference in regulatory and policy incentives. Several states have implemented fiscal and financial incentives for renewable energy generation, including; energy buy back (i.e. a guarantee from an electricity company that they will buy the renewable power produced); preferential grid connection and transportation charges and electricity tax exemptions.

Therefore the investment climate for the renewable energy projects varies from State to State within India due to state specific local policy & regulatory framework as outlined by the State Electricity Regulatory Commissions of the respective state. This difference in investment condition leads to essential distinction among solar energy projects between different States of the host country India.

Thus, the specific geographical area i.e. state of Rajasthan for the common practice analysis of the proposed project activity is considered and thus the same is acceptable to the assessment team.

2. Measure (Para 10): The project activity reduces greenhouse gas emissions by generating electricity using renewable energy source-solar. Therefore, the project activity falls under the following measure:

(b) Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies.

3. Output (Para 11): The project activity produces electricity. Therefore, electricity is considered as output of the project activity.

4. Different Technologies (Para 12): The project activity uses solar energy for producing electricity and hence as per Para 12(a), the technologies which use energy source/ fuel other than solar will be considered as the different technologies for the project activity.

The step wise approach to provide common practice anayalsis as per the guideline is as follows:

1. Common Practice Analysis for Rising Bhadla 1 Private Ltd

Stepwise approach for common practice analysis has been carried out as per Methodological tool "Common Practice", version 03.1 EB84, Annex 7:

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

Range	Capacity	Unit

+50%	105	MW
Capacity of the proposed project activity	70	MW
-50%	35	MW

Since the project activity is 70MW, the output range of +/- 50% has been considered as 105 MW (Higher range for comparison) to 35 MW (Lower range for Comparison) which is assessed to be correct.

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

(a) The projects are located in the applicable geographical area;

(b) The projects apply the same measure as the proposed project activity;

(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;

(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;

(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;

(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

a) Assessment team noted that as the projects are located in Rajasthan state of India, therefore, projects in the geographical area of Rajasthan have been chosen for analysis. Each state have different policies regarding renewable energy, hence Rajasthan state is considered as geographical region for common practise analysis. The distinction from choosing the state to entire geographical boundary is already explained above in the report and thus the applied geographical area is acceptable to the assessment team.

b) Assessment team noted that the project activity is a green-field solar power project and uses measure (b) “Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies”. Therefore, projects applying same measure (b) are candidates for similar projects.

c) Assessment team confirms during the site visit that the energy source used by the project activity is solar. Hence, only solar energy projects have been considered for analysis.

d) Assessment team confirms during the site visit that the project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.

e) Since the project activity is 70MW, the output range of +/- 50% has been considered as 105 MW (Higher range for comparison) to 35 MW (Lower range for Comparison) which is assessed to be correct

f) The start date of the project activity is 03-Oct-2016. Therefore projects, which have started commercial operation before 03-Oct-2016, have been considered for analysis.

In total there were 6 power plants in the state of Rajhsthan that had started commercial operation before the start date of the project and that are within the applicable output range which has been confirmed from the published data. Thus N_{solar} is accepted as 6.

Thus, Nsolar= 6

Assessment team checked the below sources which are considered to determine the similar projects.

State wise commissioning status of grid connected Solar Power Projects (As on 30.11.2015)- MNRE, India and Publically available data for solar projects in Rajasthan till Oct 2016.
http://mnre.gov.in/file-manager/UserFiles/state-wise-commissioned-grid-connected-solar-power-projects.htm

List of Solar Projects in Rajasthan (RRECL- Website) as on 31.10.2015. No projects of having capacity of 35 MW to 105 MW was found on publically available data till Oct 2016
http://energy.rajasthan.gov.in/content/dam/raj/energy/rrecl/pdf/Activities/Solar/4.37%20Details%20of%20commissioned%20Solar%20Projects.pdf

Both the above sources are third party Govt data from the state of Rajhsthan and thus the value is considered appropriate.

Step (3): Within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number Nall.

As per the requirement of step 3, CDM project activities, which have got registered or are under validation have been excluded in this step. After excluding the registered and under validation projects the total number of projects is 3. The source of check for the same is cdm.unfccc.int

. Nall = 3

Step (4): Within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number Ndiff.

As per the tool on Common Practice, the project activities have been separated from the different technologies on the basis two criteria:

1. Size of Installation – Assessment team confirms that as the proposed project activity is a large scale project and applies large scale methodology i.e. AMC0002 therefore **small scale projects** i.e. with capacity below or equal to 15 MW are considered as different projects.

. 2. Investment climate on the date of the investment decision – The proposed project activity is developed and implemented under Jawaharlal Nehru National Solar Mission (JNNSM) state specific bundling scheme [Non Solar Park – DCR (Domestic Content Requirement) Category]. The policy

of Domestic Content Requirement (DCR) is the use of the local manufactured components of solar generation equipment which includes the cells and modules. Since the cost of locally manufactured components is comparatively higher, accordingly Tariff Rate is deemed to be higher for projects sourcing components locally. Accordingly, the DCR category bidders are allowed to bid at a comparatively higher tariff rate than the Open category projects. Therefore the Projects other than DCR Category projects are considered as different projects on account of different Investment Climate for such projects. For proposed project activity, there are no any different technology project considered out of similar identified projects.

Hence, projects where either of the conditions is satisfied those projects are counted for calculating Ndiff projects.

Thus, Ndiff = 0

Step (5): Calculate factor F=1-Ndiff/Nall representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

Calculate F=1-Ndiff/Nall

F = 1-(0/3) = 1

As per methodological tool “common practise” version 03.1, the proposed project activity is a “common practice” within a sector in the applicable geographical area if the factor F is greater than 0.2 and Nall-Ndiff is greater than 3.
Thus if both conditions are fulfilled, then project activity will be a common practise otherwise, the project activity is treated as not a common practise.

Outcome of Common Practise analysis:

As,

i. F = 1; is greater than 0.2

ii. Nall-Ndiff = 3; is not greater than 3

The project activity does not satisfy second condition. Hence, project activity is not a common practice.

2. Common Practice Analysis for Rising Bhadla 2 Private Ltd

Stepwise approach for common practice analysis has been carried out as per Methodological tool “Common Practice”, version 03.1 EB84, Annex 7:

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

Range	Capacity	Unit
+50%	105	MW

Capacity of the proposed project activity	70	MW
-50%	35	MW

Since the project activity is 70MW, the output range of +/- 50% has been considered as 105 MW (Higher range for comparison) to 35 MW (Lower range for Comparison) which is assessed to be correct.

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

(a) The projects are located in the applicable geographical area;

(b) The projects apply the same measure as the proposed project activity;

(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;

(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;

(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;

(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

a) Assessment team noted that as the projects are located in Rajasthan state of India, therefore, projects in the geographical area of Rajasthan have been chosen for analysis. Each state have different policies regarding renewable energy, hence Rajasthan state is considered as geographical region for common practise analysis. The distinction from choosing the state to entire geographical boundary is already explained above in the report and thus the applied geographical area is acceptable to the assessment team.

b) Assessment team noted that the project activity is a green-field solar power project and uses measure (b) “Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies”. Therefore, projects applying same measure (b) are candidates for similar projects.

c) Assessment team confirms during the site visit that the energy source used by the project activity is solar. Hence, only solar energy projects have been considered for analysis.

d) Assessment team confirms during the site visit that the project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.

e) Since the project activity is 70MW, the output range of +/- 50% has been considered as 105 MW (Higher range for comparison) to 35 MW (Lower range for Comparison) which is assessed to be correct

f) The start date of the project activity is 03-Oct-2016. Therefore projects, which have started commercial operation before 03-Oct-2016, have been considered for analysis.
In total there were 6 power plants in the state of Rajhsthan that had started commercial operation before the start date of the project and that are within the applicable output range which has been confirmed from the published data. Thus N_{solar} is accepted as 6.

Nsolar= 6

Assessment team confirm the above data from the below sources: State wise commissioning status of grid connected Solar Power Projects (As on 30.11.2015)- MNRE, India and Publically available data for solar projects in Rajasthan till Oct 2016.

http://mnre.gov.in/file-manager/UserFiles/state-wise-commissioned-grid-connected-solar-power-projects.htm
List of Solar Projects in Rajasthan (RRECL- Website) as on 31.10.2015. No projects of having capacity of 35 MW to 105 MW was found on publically available data till Oct 2016

http://energy.rajasthan.gov.in/content/dam/raj/energy/rrecl/pdf/Activities/Solar/4.37%20Details%20of%20commissioned%20Solar%20Projects.pdf

Both the above sources are third party Govt data from the state of Rajhsthan and thus the value is considered appropriate.

Step (3): Within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number Nall.

As per the requirement of step 3, CDM project activities, which have got registered or are under validation have been excluded in this step. After excluding the registered and under validation projects the total number of projects is 3. The source of check for the same is cdm.unfccc.int

.Nall = 3

Step (4): Within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number Ndiff.

As per the tool on Common Practice, the project activities have been separated from the different technologies on the basis two criteria:

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2. Investment climate on the date of the investment decision – The proposed project activity is developed and implemented under Jawaharlal Nehru National Solar Mission (JNNSM) state specific bundling scheme [Non Solar Park – DCR (Domestic Content Requirement) Category]. The policy of Domestic Content Requirement (DCR) is the use of the local manufactured components of solar generation equipment which includes the cells and modules. Since the cost of locally manufactured components is comparatively higher, accordingly Tariff Rate is deemed to be higher for projects sourcing components locally. Accordingly, the DCR category bidders are allowed to bid at a comparatively higher tariff rate than the Open category projects. Therefore the Projects other than DCR Category projects are considered as different projects on account of different Investment Climate for such projects. For proposed project activity, there are no any different technology project considered out of similar identified projects.

Hence, projects where either of the conditions is satisfied those projects are counted for calculating Ndiff projects.

Ndiff = 0

Step (5): Calculate factor F=1-Ndiff/Nall representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

Calculate F=1-Ndiff/Nall

F = 1-(0/3) = 1

As per methodological tool “common practise” version 03.1, the proposed project activity is a “common practice” within a sector in the applicable geographical area if the factor F is greater than 0.2 and Nall-Ndiff is greater than 3.
Thus if both conditions are fulfilled, then project activity will be a common practise otherwise, the project activity is treated as not a common practise.

Outcome of Common Practise analysis:

As,

i. F = 1; is greater than 0.2

ii. Nall-Ndiff = 3; is not greater than 3
The project activity does not satisfy second condition. Hence, project activity is not a common practice. Thus, the proposed project activity is not a “common practice” within a sector in the applicable geographical area.

The above discussions show that solar power development is not a common practice and the project activity is not financially attractive; hence the project activity is additional.

3.2.6 *Quantification of GHG Emission Reductions and Removals*

Assessment team checked the baseline, project and leakage calculation and confirm that the evaluation of baseline, project and leakage is as per the approved methodology and formula used to calculate the same is correct. The detail analysis is as below:

Baseline Emission:

As per the approved consolidated Methodology ACM0002 (Version 17.0, EB 89, Annex 1) para 44:

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid- connected power plants. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (t CO_2/yr)

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

$EF_{grid,CM,y}$ = Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO_2/MWh)

The grid emission factor is calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values. The value of combined margin is sourced from Baseline CO_2 Emission Database, Version 12.0, May 2017 published by Central Electricity Authority (CEA), Government of India. CEA calculates the data based on Tool to Calculate the Emission Factor for an Electricity System", Ver. 6.0. No further assessment is required for grid emission calculation as the ex-ante value is sourced directly from the Govt database.

Baseline emission factor (EF_y):

$EF_y = EF_{grid,CM,y} = 0.9653$ t CO_2/MWh. This value is fixed ex-ante for the crediting period.

$EG_{PJ,y}$ is calculated based on capacity (Checked from the manufacturer specification), PLF= sourced from 3rd party DPR thus fulfilling the requirement of Para 3 (b), Annex 11 EB 48 and 8760 (365*24) annual hours. Moreover as a conservative approach a degradation factor of 0.5% per year is considered from second year onwards. The estimation is thus considered appropriate. Moreover, $EG_{PJ,y}$ is a monitoring parameter and the actual value will be obtained during the verification of the project activity.

$BE_y = 251,412 \times 0.9653 = 242,688$ tCO_2 (for first year, afterwards degradation factor is applicable)

Project Emission:

As per the approved consolidated Methodology ACM0002 (Version 17.0, EB 89, Annex 1) para 36: "For most renewable energy power generation project activities, PEy = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$

Where:

PE_y = Project emissions in year y (t CO_2e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO_2/yr) = The project utilizes renewable fuel and thus there is no Consumption of fossil fuel envisaged for the project activity. Thus the parameter is considered zero for project emission calculation.

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO_2e/yr)= This parameter is not applicable as the proposed project is Solar power project and hence considered zero for project emission calculation.

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO_2e/yr)= This parameter is not applicable as the proposed project is Solar power project and hence considered zero for project emission calculation.

As the project activity is the installation of a new grid-connected Solar PV Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y,}$ $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

Leakage Emission:

Leakage emission is not applicable as per the requirement of ACM 0002 version 17. **Net Emission reduction:**

Reductions are calculated as follows:

ERy = BEy – PEy

Where:

ERy	=	Emission reductions in year y (t CO2e/yr)
BEy	=	Baseline emissions in year y (t CO2/yr)
PEy	=	Project emissions in year y (t CO2e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:
ERy = BEy – PEy

Year	Estimated baseline emissions or removals (tCO2e)	Estimated project emissions or removals (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated net GHG emission reductions or removals (tCO2e)
Year 1	242,688	0	0	242,688

Year 2	241,474	0	0	241,474
Year 3	241,468	0	0	241,468
Year 4	241,462	0	0	241,462
Year 5	241,456	0	0	241,456
Year 6	241,450	0	0	241,450
Year 7	241,443	0	0	241,443
Year 8	241,437	0	0	241,437
Year 9	241,431	0	0	241,431
Year 10	241,425	0	0	241,425
Total	2415,734	0	0	2415,734

3.2.7 Methodology Deviations

Assessment team confirms that No methodology deviation is applicable for the present project activity.

3.2.8 Monitoring Plan

Assessment team checked the monitoring practice onsite and also checked the guideline of respective State electricity regulatory commission. The detail analysis is as below:

Parameters determined ex-ante:

Baseline emission factor of INDIAN Grid is establish ex-ante based on Tool to calculate the grid emission factor, using a combined approach consisting 75 % operating margin and 25 % build margin. The emission coefficient from official data published in Central Electricity Authority (CEA) CO_2 Baseline database available to the project participant at the time of submission of PDD for validation and global stakeholder's consultation process. CEA is an official source of Ministry of Power, Government of India have worked out baseline as CO_2 baseline database. The assumption were verified by the validation team and found to be correct.

Parameters determined ex-post:

The parameters monitored ex-post involves net electricity supplied to the grid (calculated from electricity exported and imported) to the INDIAN grid by the project activity.

As per the PD version 02, Joint Energy Meter Reading Report (For the state of Rajhsthan DISCOM) will be the source of data during verification for each of the respective states. The DOE will use the same source for verification of emission reductions. As per the approved methodology ACM 0002 version 17 "Monitoring shall consist of metering the net electricity supplied by the project activity to the grid. Measurement results shall be cross-checked with records of the Invoices".

In accordance with the methodology requirement, net electricity supplied by the project activity is obtained from Joint Energy Meter Reading Report (For the state of Rajhsthan) issued by State electricity authority

of the respective states which provide input values (apportioned $EG_{export,y}$ and apportioned $EG_{import,y}$), used for calculation of $EG_{PJ,y}$. by the project activity and form the forms the basis for emission reduction calculation.

Electricity export to the grid and import from the grid is metered by main and check tri-vector energy meters. The main meter reading is taken jointly on a fixed day of every month for the preceding month at the delivery point and signed by the representatives of state utility and O&M personnel. All the plants (including the project activity solar plant and other investors solar plant) are connected to a Pooling substation 132/220 KV GSS II and further electricity is transferred to 220/400 KV RRVPNL substation. The common metering point at RRVPNL substation consists of both main & check meters (ABT Meters) having accuracy class of 0.2s. The export/import losses between these two substations are apportioned based on pooling substation readings.

The difference of final apportioned value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value will be considered for ER calculations.In the event of failure of main meter, the check meter will be used in monitoring the electricity data. The agency is experienced in the monitoring system and is managing O&M of numerous other solar farm projects. The validation team therefore is of the opinion that the project participant through the O&M agency is capable of implementing the monitoring plan in the context of the project activity.

Calibration of all the meters is done by state electricity board officials as per the industry standards. However, the calibration will be done once in a 5 year[14] for all the project instances. The energy meter recording the export and import from the grid at substation is under the control and supervision of state electricity board officials. Similarly O&M contractor is responsible for monitoring of the generation data at CMS.

It is reported that the data will be kept for 2 years following the end of the crediting period.

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.

3.3 Non-Permanence Risk Analysis

Not applicable for the present project activity.

4 SAFEGUARDS

4.1 No Net Harm

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.

As project is a renewable energy project hence there is no negative environmental and socio impact effect and the same can be summarized in the below table:

S.No.	Indicator	Assessment team opinion
1	Air quality	The project generates clean energy which replaces the fossil fuel

[14] http://powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf, page 12

		intensive electricity generation. Also report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013. This report clearly mentioned that solar farms operations do not result in direct air pollution. Adequate measures were taken to mitigate the envisaged impacts like spraying water on the road side to reduce dust level, etc. This was confirmed by the local stakeholders. 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	Water quality and quantity	The project has no effect on water quality and quantity because it neither generates any waste not consume any water. It was validated during on-site assessment that there was no requirement of water for operations of Solar Panels and the only usage of water was for drinking and sanitation purpose. The consumption of fresh water during construction was also pretty much limited as confirmed by the local stakeholders. Hence the parameter is indicated as neutral and the same is acceptable to the DOE
3	Soil condition	There are negligible impacts envisaged during operation of the project activity. 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. The top soil excavated during construction, was stockpiled and used for compaction. The roads were not paved and soling was done with

		excavated earth & rock material, so land disturbance could be minimized. It was also confirmed that, the vegetation done at site helps for soil erosion. The same is confirmed during the stakeholder meetings during onsite visit. Therefore, it can be concluded that the project has no effect on soil conditions during its operation because it has no waste coming out.
4	Biodiversity	During the validation site visit it was observed that the condition of ground vegetation will be gradually improved; No rare species has been found in the around area. The project site is not on the migration route of migratory bird. As Such solar panels do not have any obstruction in the path of migratory birds. With the implementation of Project, the greening water will be increased significantly; the biodiversity in the vicinity will be improved with the vegetation improvement. NO negative impact envisaged.
5	Employment Generation	The project activity employed local population as skilled workers as well as security guards which were envisaged during the validation site visit. The personnel employed by the project activity are also provided trainings and exposed to various awareness programs therefore a positive indicator has been accepted.
6	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 solar panels Positive impact envisaged. .

4.2 Environmental Impact

The project activity is expected to have positive impacts and no significant adverse environmental impacts are foreseen. Since, the project activity is an electricity generation from renewable source (i.e. solar energy) therefore no negative impact are envisaged. There is no mandatory legal requirement for carrying out an environmental impact assessment in the host country. The Ministry of Environment and Forests (MoEF), Government of India (GoI) notification[15] dated September 14, 2006 regarding the requirement of Environment Impact Assessment (EIA) studies states that any project developer in India needs to file an application to the Ministry of Environment and Forests (including a public hearing and an EIA) in case the proposed industry or project is listed in a predefined list. The list includes thirty nine project activities that require EIA studies. The solar power projects are not included in this list and thus an EIA study is not required.

4.3 Local Stakeholder Consultation

As per the VCS requirements, it is necessary to invite the relevant stakeholders, prior of the validation process. Moreover, the stakeholder meeting took place prior to the start date of the project activity which fulfill the requirement of Para 78 of project standard version 09.The DOE checked the relevance of the dates during the validation site visit. The detail of the invitation date and stakeholder meeting date is as below:

Date of invitation – 15/09/2016

Date of Meeting – 24/09/2016

Location of Meeting - Project site, Rajasthan

All the stakeholders have been invited through public notice to attend the stakeholders meeting. The local stakeholders' consultation meeting was attended by local persons including local villagers, local vendors and technology suppliers.

The stakeholders identified by the project participant were local villagers who are the major population of the particular area, local communities and gram panchayat (Village head), panel supplier, project proponent representatives, O&M Team and other people involved in the project. Validation team verified the list of participants who attended the stakeholder meeting and feedback questionnaire and confirms the stakeholders identified are relevant. Validation team verified the list of participants who attended the stakeholder meeting and feedback questionnaire and confirms the stakeholders identified are relevant. The validation team also verified the minutes of meeting to note that no negative comments were received and the same was cross checked with the information obtained during follow up interviews with the stakeholder's. Moreover, assessment team during the validation site visit also noted that a grievance register is also put onsite for the stakeholder to comment on any grievances during the operation lifetime

[15] http://envfor.nic.in/legis/eia/so1533.pdf

of the project activity, The grievances from the stakeholder if found suitable will be addressed immediately by the top management and thus the approach is found appropriate for the project activity.

The interaction with some of the stakeholders during the site visit are presented below:

Name of the stakeholder	Ghanshyam
Occupation	Vegetable seller
DOE QUESTION: Did this Solar power plant cause any pollution? Answer: No, the plant does not cause any pollution. DOE QUESTION: Did PP promised employment opportunity? Answer: Yes, PP told us that employment will be generated and the locals will be given priority. DOE also like to conclude that during the site visit it was observed that local people were employed for security and operation related work like water spraying, vegetation improvement and other unskilled work. DOE also found that skilled local persons were also employed by the organization for the operation and maintenance of the power plant.	

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

Thus Validation team is of the opinion that the stakeholder meeting was adequate and appropriate.

4.4 Public Comments

Assessment team checked the project was listed on VCS web site on 11/08/2017. The link for the same is as follows:

http://vcsprojectdatabase.org/#/pipeline_details/PL1709

The detail assessment of Global stake holder consultation is as follows:

Comment 1

Date: 14 September 2017

Sent by: Naveen Dhingra

Country: India

Comment:

Dear VCS Board,

I would like to mention the below comments for VCS Id 1709, project titled "**1**40 MW Solar Photovoltaic

Project in Rajasthan".

1. There are two project participants described, thus I am assuming it's a bundled project, which should have been specified in the PD, but I think it has purposefully not been written.

How it is that the contact details of the project proponent have not been described.

Is the DOE allowed to upload such half empty PD? What is the use of inviting the public comments when we cannot inform the project participant, the consultant I am not sure would inform the actual project participant of the comments received, thereby leading the entire exercise of inviting public comments a farce.

2. I have observed that such activity of not providing the actual contact details of the PP is becoming more and more widely used method. VCS has specifically mentioned that all the sections of the PD must be completed and I assume it should be in letter and spirit. Leaving the sections blank is a mockery of the guidelines. The DOE here is sleeping I assume or they simply are colluding with EKI.

The communications agreement mentions EKI as the consultant why has that not been mentioned in the other entities involved? I assume just to hide the public fact that EKI a blacklisted entity by government of India is involved.

3. Under the Additionality sections it is mentioned "Financial spread sheets for the key assumptions (web links & sources of input parameters) supporting the financial projections is still under development phase and would be submitted and updated at the time of final validation". Are the consultants really so dum b?

Financial sheets are still under development, then how did the client win the project that was under bidding process. Did they bid without making any financial? This is an act by the consultant which does not want the stakeholders an option to comment on the financials.

I urge the VCS board to make such PDs available for public comments again with the detailed being filled out so that we can comment on it.

4. Common practice analysis, where are the projects what is source, EKI in its own projects by ACME group

have projects in Rajasthan, why have they not considered in the analysis?

Also common practice has to be carried out separately for the two projects based on the start date as per

CDM guidelines, i.e. PO date. In VCS they have used the commissioning date as the cutoff date. Why

have they clarified this with the VCS? Is this allowed?

5. The LSC meeting details do not provide how only public notice is sufficient to invite all the stakeholders?

Again VCS to look into such projects that make the entire exercise a mockery. I hope the VCS takes some

action and make such projects go again for public comments. Such things should also be brought to the

notice of the PP. as right now i am sure he would not be even aware that such things are happening for

his projects. PP should always be in the loop.

Regards,

Naveen

Response by DOE as per the response made by the PP in section 5.4 of the VCS PD:

1. At the time of webhosting of PD, the minimum required information was mentioned in VCS PD as per listing requirement. Prior to listing the project activity, VCS Registry did the completeness check and VCS PD is listed once VCS PD met the requirement. Assessment team checked the VCS PD and appropriate findings were raised and closed successfully. Thus the GSC comment can be closed out. Please refer detail CAR/CL in Appendix 2 of this report.

2. The complete information of PP and other entity involved forms the part of revised PD version 02. Regarding the second half of the comment for EKI, the comment does not hold any ground as it is not directly linked with project activity. Thus the GSC comment can be closed out

3. The additionality assessment forms the part of Final validation report with appropriate CARs raised by DOE as deemed necessary and corrections were carried out by PP. The detail assumption parameters now forms the part of revised PD and typographical error is now modified. Thus the GSC comment can be closed out. Please refer section 3.2.5 of the FVR and section 2.5 of the VCS PD.

4. Common practice analysis is found appropriate by the DOE. The ACME group have 5 projects (under different SPV name) having each capacity of 20 MW, hence these projects are not come within 50% range of 70 MW and hence not considered as similar projects for common practise analysis. Please refer FVR and CAR for the same. GSC comment can be closed. Please refer section 3.2.5 of the FVR and section 2.5 of the VCS PD.

5. Local stakeholders were being invited individually as well as notice placed at public place. The minutes of meeting, Attendance sheets of stakeholders and Photographs to support the statement is checked and found correct by the assessment team. Please check the FVR for detail of stakeholder consultation. Moreover, FVR

and PD mention the detail process of ongoing communication with the stakeholder which is found suitable and appropriate.

5 VALIDATION CONCLUSION

Applus+ LGAI has performed a validation of the "140 MW Solar Photovoltaic Project in Rajasthan". The validation was performed on the basis of UNFCCC/VCS criteria and host country criteria, as well as criteria, e.g. ACM 002 version 17, given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided Applus+ LGAI with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC/VCS requirements for the CDM/VCS and all relevant host country criteria. The project will hence be recommended by Applus+ LGAI for registration with the VCS.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. The project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 241,573 tCO_2e per year, thereon displacing 250,258 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The validation has been performed following the requirements of the latest version of the CDM VVS version 09, VCS standard and guideline version 3.7 and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the VCS project cycle.

APPENDIX 1: DOCUMENTS REVIWED DURING VALIDATION

<table>
<tr><th>No.</th><th>Author</th><th>Title</th><th>References to the document</th><th>Provider</th></tr>
<tr><td>1</td><td>NA</td><td>Commissioning certificates of the Solar Panels implemented in the project site.</td><td>
<table>
<tr><th>Project Proponents Name</th><th>Capacity in MW (AC)</th><th>COD</th></tr>
<tr><td rowspan="2">Rising Bhadla 1 Private Ltd.</td><td>40 MW</td><td>18/07/2017</td></tr>
<tr><td>30 MW</td><td>29/09/2017</td></tr>
<tr><td rowspan="2">Rising Bhadla 2 Private Ltd.</td><td>40 MW</td><td>29/08/2017</td></tr>
<tr><td>30 MW</td><td>30/11/2017 (expected)</td></tr>
</table>
</td><td>Project participant</td></tr>
<tr><td>2</td><td>NA</td><td>Contract of the other entity with the DOE</td><td>Contract of the other entity with the DOE</td><td>Project participant</td></tr>
<tr><td>3</td><td>NA</td><td>Technical specifications of Solar Panels generators from manufacturers</td><td>Manufacturer technical specifications</td><td>Project participant</td></tr>
<tr><td>4</td><td>NA</td><td>Emission Calculation sheet- version 01</td><td>25/10/2017</td><td>Project participant</td></tr>
<tr><td>5</td><td>NA</td><td>The operational lifetime of the project activity from the manufacturer=(Technical specefications)</td><td>Manufacturer technical specifications</td><td>Project participant</td></tr>
<tr><td>6</td><td>NA</td><td>SERC order:

http://rerc.rajasthan.gov.in/

RBI: Reserve Bank of</td><td>Reference link is provided.</td><td>Independent Search</td></tr>
</table>

		India www.rbi.org.in Ministry of Environment and forest: www.envfor.nic.in UNFCCC www.cdm.unfccc.int CEA: Central electricity authority www.cea.nic.in Income tax act 1961 http://law.incometaxindia.gov.in/DIT/ VCS: Verified Carbon Standard www.v-c-s.org		
7	NA	Tools/ guidelines used in the project activity • Tool to determine the remaining lifetime of the project activity in line with Annex 15 EB 50 • Tool to calculate the emission factor for an electricity system version 06 • Glossary of CDM terms	UNFCCC CDM web site	UNFCCC

		version 07 • VCS verification report template version 03		
8	NA	VCS PD version 01 VCS PD version 02 VCS PD version 03	04/08/2017 25/10/2017 26/12/2017	Project participant
9	NA	Financial Analysis Analysis sheet version 01 Financial Analysis sheet version 02	25/10/2017 26/12/2017	Project participant
10	NA	DPR/PLF reports for Individual project owners	DPR /PLF report dated 10/11/2015	Project participant
11	NA	Board decision for individual project instances	Decision of Board of directors dated 16/11/2015	Project participant
12	NA	Power purchase agreement	Power purchase agreement between Rising Bhadla 1 and NTPC dated 12/05/2016 Power purchase agreement between Rising Bhadla 2 and NTPC dated12/05/2016	Project participant
13	NA	Module purchase agreement	Module purchase agreement between Rising Bhadla 2 and Ray power dated 26/11/2016 Module purchase agreement between Rising Bhadla 1 and Ray power dated 27/10/2016	Project participant
14	NA	Loan Sanction letter	Loan sanction letter dated 09/11/2016 for both Rising Bhadla1 and 2	Project participant

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

CAR ID	01	**Section no.**	1	**Date:** 26/09/2017
Description of CAR				
During the document review it was observed that following details are missing in VCS PD 1. A summary description of the technologies/measures (e.g., plant, equipment, process, or management or conservation measure) included in the project and the status of their implementation. 2. The relevant implementation dates (e.g., dates of construction, commissioning, and continued operation periods). 3. The total GHG emission reductions or removals generated in this monitoring period. 4. Description and supporting regarding Other forms of environmental credit sought or received and eligible to be sought or received 5. Description and supporting regarding Participation under other GHG programs 6. Description and supporting regarding Rejection by other GHG programs Corrective action is sought for the same.				
Project participant response				**Date:** 25/10/2017
1. Summary description of the technologies and measures is included in the PD version 02. *2. The relevant dates for the plant implementation and continued operation details is mentioned in PD Version 02.* *3. Being only a validation project, the expected emission reduction is mentioned in PD Version 02.* *4. The PP is not claiming any other form of environmental credits and the same has been explained in relevant sections* *5. The project is not participating in any other GHG programme and the Undertaking Letter for the same has been submitted to the Validation team for this.* *6. The project has not been rejected by any other GHG programs and the supporting for the same is submitted to the Validation Team.*				

Documentation provided by project participant	
1. *PD Version 02* 2. *Undertaking Letter by PP for not claiming any other form of environmental credits*	
DOE assessment	**Date:** 31/10/2017
Following are the observations of the DOE: 1. Summary description of the technologies and measures is included in the PD version 02. 2. The relevant dates for the plant implementation and continued operation details is mentioned in PD Version 02. 3. Being only a validation project, the expected emission reduction is mentioned in PD Version 02. 4. The PP is not claiming any other form of environmental credits and the same has been explained in relevant sections 5. The project is not participating in any other GHG programme and the Undertaking Letter for the same has been submitted to the Validation team for this. *6.* The project has not been rejected by any other GHG programs and the supporting for the same is submitted to the Validation Team. CAR is thus closed.	

CAR ID	02	**Section no.**	2.5	**Date:** 26/09/2017
Description of CAR				
During the desk review of the PDD and onsite visit document verifications, APPLUS team observed following inconsistency in the additionality determination : 1. Following documents are missing and thus the IRR calculation is reserved: a. PLF reports b. All the input value (e.g. Offer letters, Loan sanction if any, Insurance etc) 2. IRR calculation is reserved as no IRR sheets are provided 3. Common Practice analysis supporting documents Additionality section of the VCS PD version 01 is reserved till the documents are submitted.				

Project participant response	**Date:** 25/10/2017
1.a. DPR of the each project activity is submitted with PD Version 02 *b. Supporting documents against input assumptions is submitted with PD Version 02* *2. IRR Calculations are submitted with PD Version 02.* *3. Common Practice Sheets are submitted with PD Version 02*	
Documentation provided by project participant	
1. *PD Version 02* 2. *Loan Sanction Letter, Insurance copies, DPR of project activity* 3. *CPA Worksheets*	
DOE assessment	**Date:** 31/10/2017
Following are the observations of the DOE: 1.a. DPR of the each project activity is submitted with PD Version 02 b. Supporting documents against input assumptions is submitted with PD Version 02 2. IRR Calculations are submitted with PD Version 02. 3. Common Practice Sheets are submitted with PD Version 02 CAR is thus closed.	

CAR ID	03	**Section no.**	3	**Date:** 26/09/2017
Description of CAR				
Assessment team found during desk review is that emission reduction sheet is missing for the project activity. Hence estimated ER in section 3 of the PD is thus reserved				
Project participant response				**Date:** 25/10/2017
Emission Reduction sheet for the project activity is submitted with Version 02 of PD.				
Documentation provided by project participant				

ER Worksheets
DOE assessment **Date:** 31/10/2017
The corrected ER sheet is provided and assessment team confirms that the calculation is as per the approved methodology. CAR is thus closed.

CAR ID	04	**Section no.**	5.1	**Date:** 26/09/2017
Description of CAR				
The no Net harm details are missing in the VCS PD. Moreover, as VCS PD claims that there are no negative impacts on air, water, soil quality and ambience are envisaged due to the project activity however supporting and explanation of the same is missing.				
Project participant response				**Date:** 25/10/2017
*The project activity does not create any kind of environment or biodiversity in the region. Being a solar PV project. Also t*he report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013. This report clearly mentioned that solar PV project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same[16].				
Documentation provided by project participant				
VCS PD Version 02				
DOE assessment				**Date:** 31/10/2017
Being a renewable project activity solar PV project activity operations do not result in direct air pollution, noise pollution. The same is confirmed from the report published by MNRE. CAR is thus closed.				

[16] http://mnre.gov.in/file-manager/UserFiles/report-on-developmental-impacts-of-RE.pdf

CAR ID	05	**Section no.**	5.3	**Date:** 26/09/2017
Description of CAR				
During the desk review related to stakeholder consultation following observation is made by the APPLUS project team: 1.The stakeholder documentation is also not provided to the DOE 2. The site photograph of LSHC meeting is not provided to the DOE. Corrective action is this sought for the same.				
Project participant response				**Date:** 25/10/2017
Stakeholder document is submitted and PD is submitted and the supporting for the same is submitted with DVR Response				
Documentation provided by project participant				
LSHM Photographs *List of Attendees and minutes of meeting*				
DOE assessment				**Date:** 31/10/2017
The minutes of meeting, Attendance sheets and photographs are checked and found correct by the assessment team. Thus LSHC meeting is done in appropriate manner. CAR is thus closed.				

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	Interview(s)	Verification findings
1.	Team Leader/Lead Assessor	OR	DAS	SUKANTA	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)	IR	Shen	Simon	Applus+ LGAI
2.	Approver	IR	Sendin	Juan	Applus+ LGAI

Short CVs of the Team:

1. Mr. Sukanta DAS, has done M. SC in (Electronics and Photonics) and M. Tech in (Energy technology) from Tezpur Central University/ Indian Institute of technology Bombay in India. He is a certified lead auditor for ISO 14001 EMS LA and ISO 9001 QMS LA from International registry for Certified Auditors (IRCA) and Certified Lean Management practitioner from Quality Council of India (QCI). He has more than Nine (9) years of working experience at TUV NoRD/ Re-consult/CRA/APROJECT OWNERSLUS certifications under various categories of projects stating from Renewable to waste to supercritical projects. He was JI/ CDM Lead Assessor in TUV NoRD and was involved in more than 100 CDM validation and verifications activities in Gold Standard, VCS, CDM projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1, 13 technical areas 1.2/1.1/13.1. Currently he is associated with True Quality Certifications Private Limited and is empanelled with APROJECT OWNERSLUS certification to carry out GHG audit.

2. Meng (Simon) Shen (Master Degree in Thermal Energy Engineering, Bachelor Degree in Environmental Engineering) is a Lead Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based in Shanghai. He has several years of work experience in environmental protection field. Before he joined Applus+ LGAI, he had been worked for TÜV SÜD as a GHG Validator/Assessment team and ISO 9001/14001 Lead Auditor for 3.5 years

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
CMS	Central Monitoring system
CO_2	Carbon dioxide
CO_2e	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)
GERC	Gujarat Electricity regulatory commission
GWP	Global Warming potential
JMR	Joint Metering reading
RBI	Reserve Bank Of India
RERC	Rajhsthan Electricity regulatory commission