



# VALIDATION REPORT


**Final**

**“5 MW Solar PV Power Plant CDM Project by OPG  
Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India”  
in  
India**

**Report N° 2013-IQ-MD-07**


**Revision N° 1.4 Aa**

# VALIDATION REPORT

<b>Project Title:</b> 5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India		<b>Country:</b> India	<b>Estimated CERs (tCO<sub>2e</sub>):</b> 7,814 tCO <sub>2e</sub> annual average	
<b>Client:</b> OPG Energy Private Limited		<b>Client contact:</b> Mr. Sunil Singh		
<b>Report No.:</b> 2013-IQ-MD-07		<b>Revision:</b> 1.4 Aa	<b>Date of this report:</b> 23/03/2015	
<b>Approved by (Final Report - Authorized officer signing for the DOE):</b>   Laura Severino			<b>Date of approval:</b> 24/03/2015	
<b>Methodology</b>				
<b>Number:</b> AMS-I.D	<b>Version:</b> 17 of 03/06/2011	<b>Title:</b> Grid connected renewable electricity generation	<b>Scale</b> Small	<b>SS(s):</b> 01
<p>RINA Services S.p.A. (RINA), commissioned by OPG Energy Private Ltd. has performed the validation of the project activity "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India" in India, with regard to the relevant requirements for CDM activities.</p> <p>In conclusion, it is RINA's opinion that the project activity "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India", in "India", as described in the PDD version 01.2 of 10/02/2015, meets all relevant requirements for CDM activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology "AMS-I.D", "Grid connected renewable electricity generation", version 17 of 03/06/2011.</p> <p>Hence RINA requests the registration of the project as a CDM project activity.</p>				

<b>Work carried out by:</b> Rekha Menon Vijay Mathew Champok Buragohain
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<b>Work verified by (Final Report)</b>   Rita Valoroso
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<b>Keywords:</b> Climate Change, Kyoto Protocol, Clean Development Mechanism, Validation
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# VALIDATION REPORT

## Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CDM-PCP	Clean Development Mechanism Project Cycle Procedure
CDM-PS	Clean Development Mechanism Project Standard
CDM-VVS	Clean Development Mechanism Validation and Verification Standard
CER(s)	Certified Emission Reduction(s)
CH <sub>4</sub>	Methane
CL	Clarification Request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
DPR	Detailed Project Report
EB	Executive Board
EIA	Environmental Impact assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MOC	Modalities of Communication Statement
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-governmental Organization
NTPC	National Thermal Power Corporation
NVVN	NTPC Vidyut Vyapar Nigam Limited
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
SSC	Small Scale
UNFCCC	United Nations Framework Convention on Climate Change

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Appendix A: Validation Protocol

# VALIDATION REPORT

## 1 INTRODUCTION

OPG Energy Private Limited has commissioned RINA to carry out the validation of the “5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India” project in India.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

### 1.1 Objective

The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the CDM as set out in decision 3/CMP.1, its annex and relevant decisions of the COP/MOP, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

### 1.2 Scope

The validation scope is to review the PDD against the UNFCCC criteria for CDM.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, for SSC project add the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

Validation is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

## 2 METHODOLOGY

Validation was conducted using RINA procedures in line with the requirements specified in the CDM M&P, the latest version of the CDM Validation and Verification Standard, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The validation consisted of the following three phases:

- Document review;
- Follow-up actions;
- The resolution of outstanding issues and the issuance of the final validation report.

The following sections outline each step in more detail.

### 2.1 Document Review

The PDD, version 1.2 of 10/02/2015 and previous version 01.1 of 25/09/2013, version 01 of 30/07/2013 **/01/**, in particular the applicability of the methodology **/06/**, the baseline determination, the additionality of the project activity, the starting date of the project, the monitoring plan, the emission reduction calculations provided in the form of a spreadsheet (Emission reduction calculation-OPG Energy\_Ver02\_25092013.xls) version 02 of 25/09/2013 and (Emission reduction calculation-OPG Energy.xls) version 01 of 30/07/2013 **/02/**, were assessed as part of the validation.

The following table lists the documentation that was reviewed during the validation.

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/01/	OPG Energy Private Limited: F-CDM-SSC-PDD for project activity "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India" in India, version 01 of 30/07/2013, version 01.1 of 25/09/2013 and version 1.2 of 10/02/2015
/02/	OPG Energy Private Limited: CER calculation worksheet (Emission reduction calculation-OPG Energy.xls) version 01 of 30/07/2013 and (Emission reduction calculation-OPG Energy_Ver02_25092013.xls) version 02 of 25/09/2013
/03/	CDM Executive Board: Clean Development Mechanism Project Cycle Procedure, version 07.0 of 01/06/2014.
/04/	CDM Executive Board: Clean Development Mechanism Project Standard, version 07.0 of 01/06/2014
/05/	CDM Executive Board: Clean Development Mechanism Validation and Verification Standard, version 07.0 of 01/06/2014.
/06/	CDM Executive Board: Baseline and monitoring methodology "AMS-I.D.", "Grid connected renewable electricity generation", version 17 of 03/06/2011.
/07/	CDM-Executive Board: Project Design Document form for Small-Scale CDM project activities (CDM-PDD-SSC-FORM) version 05.0, dated 25/06/2014.
/08/	Website: <a href="http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php">http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php</a> Argument: Status of ratification of the Kyoto Protocol Language: English Retrieved on: 22/08/2013
/09/	Website: <a href="http://cdm.unfccc.int/DNA/index.html">http://cdm.unfccc.int/DNA/index.html</a> Argument: Website indicating the list of DNAs Language: English Retrieved on: 22/08/2013
/10/	CDM Executive Board: "Instructions for filling out the project design document form for small-scale CDM project activities" as attachment to Project Design Document form for Small-Scale CDM project activities (CDM-PDD-SSC-FORM) version 05.0, dated 25/06/2014
/11/	Jodhpur Discom: Commissioning report for 5 MW solar power Generation plant by M/s OPG Energy Pvt. Ltd. at village Baap, tehsil Phalodi, distric Jodhpur, on dated 14/10/2011
/12/	OPG Energy Private Limited: Power Purchase Agreement for procurement of 5 MW solar power on long term basis, Signed between NTPC Vidyut Vyapan Nigam Limited (NVVN) and OPG Energy Private Limited on 15/10/2010.
/13/	OPG Energy Private Limited: Amendment to Power Purchase Agreement for procurement of 5 MW solar power on long term basis, Signed between NTPC Vidyut Vyapan Nigam Limited (NVVN) and OPG Energy Private Limited dated 15/10/2010.
/14/	OPG Energy Private Limited: Agreement signed for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies Inc dated 28/12/2010.
/15/	Website: <a href="http://www.cdmindia.gov.in/approval_process.php">http://www.cdmindia.gov.in/approval_process.php</a> Argument: CDM project activity approval process Language: English Retrieved on: 26/08/2013
/16/	Central Electricity Authority (CEA): CO <sub>2</sub> Baseline Database for the Indian Power Sector User Guide, Version 8.0, January 2013.
/17/	CDM Executive Board: <a href="http://cdm.unfccc.int/Projects/Validation/index.html">http://cdm.unfccc.int/Projects/Validation/index.html</a> Argument: Reference link for the project cycle search from UNFCCC site. Language: English Retrieved on: 26/08/2013.
/18/	CDM Executive Board: Methodological "tool to calculate the emission factor for an electricity system", version 04.0 dated 04/10/2013, Annex 15 of EB 75

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/19/	UNFCCC: Guidelines on the demonstration of additionality of small-scale project activities, version 09 of 20/07/2012
/20/	CDM Executive Board: Glossary of CDM terms, version 7.0 of 23/11/2012.
/21/	NVVN: Approval to OPG Energy Private Ltd. for the project to be taken under Jawaharlal Nehru National Solar Mission dated 16/07/2010.
/22/	Memorandum of Understanding between NVVN and OPG Energy Private Ltd. dated 24/07/2010 for setting up the project.
/23/	RERC: website <a href="http://www.erc.rajasthan.gov.in/TariffOrders/Order127.pdf">http://www.erc.rajasthan.gov.in/TariffOrders/Order127.pdf</a> Argument: Reference link for Tariff order dated 30/05/2012; Language: English Retrieved on 09/09/2013.
/24/	OPG Energy Private Limited: Copy of prior CDM consideration notification e-mail to UNFCCC and host country DNA dated 13/04/2011
/25/	CDM Executive Board: <a href="http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html">http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html</a> Argument: Reference link for the prior consideration of CDM from UNFCCC site. Language: English Retrieved on: 09/09/2013.
/26/	Central Electricity Authority; Notification for regulating the installation and operation of meters dated 17/03/2006, website ' <a href="http://www.cea.nic.in/reports/regulation/meter_reg.pdf">http://www.cea.nic.in/reports/regulation/meter_reg.pdf</a> ' in English retrieved on 09/09/2013.
/27/	RINA S.p.A: Economic offer for the validation of 5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India dated 24/06/2013
/28/	RINA Services S.p.A; Onsite visit interview sheet dated 11/09/2013
/29/	Ministry of Environment & Forest (MoEF); Notification under Environment (Protection) Rules, 1986, dated 01/12/2009
/30/	RINA: Contract signed between RINA Services S.p.A and OPG Energy Private Limited for the validation of the project titled "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India" on 24/06/2013.
/31/	Modalities of Communication provided by OPG Energy Private Limited dated of 05/09/2013
/32/	Punjab National Bank: Certification of payment remitted to the technology supplier on 04/03/2011, dated 10/10/2013
/33/	"Guidelines on assessment of de-bundling for SSC project activities" version 03, Annex 13 of EB 54, dated 28/05/2010
/34/	Government of India, Ministry of Environment & Forests: Declaration notification/office memorandum on EIA notification for solar power project activity, No.J-11013/41/2006-IA.II (I), dated 13/05/2011.
/35/	Guidelines for the reporting and validation of plant load factors, Annex 11 of EB 48, version 01 of 17/07/2009
/36/	CDM Executive Board: Modalities of communication statement (F-CDM-MOC), version 02.1 dated 16/03/2012.
/37/	OPG Energy Private Limited: Undertaking to authorize Mr. Sunil Singh, Director to execute documents related to CDM dated 19/09/2013
/38/	Identity proof of the authorized primary signatory and alternate authorised (PAN card) for the project proponent issued by Income Tax Department, Government of India.
/39/	OPG Energy Pvt. Ltd: Detailed project report solar photovoltaic project, capacity: 5.00 mwp, promoter company OPG Energy Private Limited., at Baap, tehsil Phalodi, district jodhpur rajasthan, india prepared by S B Chandrasekaran, MA, CAIIB, ACS, CFA, BGL & K Pramodh, BA, FCA, AICWA, dated November, 2010.
/40/	OPG Energy Pvt. Ltd: Personal invitation letter sent to invite stakeholders for attending the meeting on 24/07/2013.
/41/	OPG Energy Pvt. Ltd: Minutes of stakeholders meeting at village Baap, district Jodhpur on 24/07/2013.
/42/	State Bank of India: Letter on financial closure for 5 MW solar PV project, Rajasthan OPG Energy Pvt. Ltd, dated 13/01/2011.



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/43/	OPG Energy Pvt. Ltd: Attendance sheet of personals attended the stakeholders meeting conducted by OPG Energy Pvt. Ltd on 24/07/2013
/44/	Central Electricity Regulatory Commission (CERC): CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) (First Amendment) Regulations, 2010 dated 27/04/2010 and Notification No.L-7/186(201)/2009-CERC, dated 16/09/2009.
/45/	OPG Energy Pvt. Ltd: Monthly Generation records (Joint Meter Reading) taken for the Month(s) from October, 2011 to March, 2013.
/46/	Abound Solar: Technical Specification of Abound solar AB1 series thin film Photovoltaic module, doc#10557 Rev B, dated 21/12/2011
/47/	Topray Solar: Technical Specification of Topray solar, TPS-113 (40W/45W/50W/55W/60W,240W) solar Photovoltaic module. submitted on 09/08/2013
/48/	Answer Drives: Technical Specification of PVMS8M581NN solar inverters, dated 10/12/2010
/49/	Central Electricity Authority: Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 dated 17/03/2006
/50/	Ministry of Power: The Electricity act, 2003
/51/	Ministry of Power: National Electricity Policy, 2005
/52/	Ministry of Power: Tariff Policy, 06/01/2006
/53/	OPG Energy Private Limited: Copy of second prior CDM consideration notification e-mail to UNFCCC and host country DNA dated 06/04/2013
/54/	UNFCCC secretariat: Acknowledgement email informing the project information has been published to the Prior Consideration of the CDM list at the website, received on 11/04/2013
/55/	Ministry of Environment and Forests; Govt. of India: Host country approval to "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India" dated 28/08/2014.

## 2.2 Follow-up actions

On 11/09/2013, Mr. Champok Buragohain (validator and technical expert) of RINA visited village Baap in Jodhpur district in Rajasthan state to resolve questions and issues identified during the document review and to perform interviews with relevant stakeholders in the host country.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	11/09/2013	Bhaskar Jyoti Nath (CDM Consultant)	Emergent Ventures India Pvt. Ltd.	Project Description, CDM consideration, Baseline identification, Project Boundary. project financing, Additionality, Baseline Calculation, etc.
/b/	11/09/2013	Sandeep Singh (Project Manager)	OPG Energy Private Ltd	Regulatory requirements, project status, Monitoring procedures & Calibration of meters, Operation and Maintenance, Data recording, Emergency procedures, etc.
/c/	11/09/2013	Chandra Pal (Local People)	Village: Baap	Mode of Invitation for stakeholders meeting, Stakeholders meeting consultation, advantages
/d/	11/09/2013	Raja Joshi (Local People)	Village: Baap	



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/e/	11/09/2013	Rajendra (Local People)	Village: Baap	and disadvantages of the project, employment generation, etc
/f/	11/09/2013	Ramesh Dhanvi (Local People)	Village: Baap	
/g/	11/09/2013	Jagdish Dhanvi (Local People)	Village: Baap	
/h/	11/09/2013	Rafik (Local People)	Village: Baap	
/i/	11/09/2013	Hanib (Local People)	Village: Baap	

### 2.3 Resolution of outstanding issues

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the project design.

To guarantee transparency a validation protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of validation and the results from validating the identified criteria. The validation protocol consists of four tables; the different columns in these tables are described in the figure below (see Figure 1). The completed validation protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The CDM requirements have not been met.
- There is a risk that the emission reductions cannot be monitored or calculate.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration. CARs, CLs and FARs identified are included in the validation protocol in Appendix A of this report.

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**Figure 1 Validation protocol tables**

Validation Protocol, Table 1 - Mandatory requirement		
Requirement	Reference	Conclusion
The requirements the project must meet.	Makes reference to the documents where the answer to the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) if a requirement is not met. A request for clarification (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol, Table 2 - Requirement checklist				
Checklist Question	Ref.	MoV	Comments	Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in five different sections.	Makes reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects, (N/A) means not applicable.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with checklist question so far.	For CAR, CL and FAR see the definitions above. OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements.

Validation Protocol, Table 3 - Resolution of Corrective Action Requests and Clarification			
Corrective action requests and/or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
The CAR and/or CLs raised in table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The validation team's assessment and final conclusion of the CARs and/or CLs.

Validation Protocol, Table 4 - Forward Action Requests (if no FAR the table 4 is deleted)		
Forward action request	Reference to Table 2	Response by project participants Validation Conclusion
The FAR raised in table 2 is repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by the project participants on how forward action request will be addressed prior to first verification.

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## 2.4 Internal quality control

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM validation and verification.

## 2.5 Validation team and the technical reviewer(s)

The validation team and the independent technical reviewer team have the collective competence necessary to perform the validation.

The validation team fulfills the following requirements:

- qualification for all technical area/s (TAs) related to the activity;
- technical experts who provides specific technical, methodological and sectoral knowledge and/or expertise and qualification for TAs can be involved;
- it includes one Team Leader that takes the responsibility to lead the team;
- it includes a Validator and in presence of investment analysis a Financial expert;
- at least one member who performs the on-site visit is qualified for all TAs related to the activity;
- at least one member who performs the on-site visit is qualified as Team Leader, even if he/she does not cover this role for the specific activity;
- the same person can cover more than one roles.

The independent technical reviewer team fulfills the following requirements:

- qualification for the CDM scheme and attendance to specific training related to the independent technical reviewer activity;
- qualification for all technical area/s (TAs) related to the activity in case of Final Report;

The validation team members and the technical reviewers consist of the following personnel (refer to the relevant attachments to see the pertinent qualification certificates):

Role	Last Name	First Name	Site Visit (Yes/No)	Country
Team Leader	Menon	Rekha	No	India
Validator and technical expert	Buragohain	Champok	Yes	India
Technical Expert	Mathew	Vijay	No	India
Technical Reviewer	Raghavan Nair	Reghu Kumar	No	India
Technical Reviewer	Valoroso	Rita	No	Italy

## 3 VALIDATION FINDINGS

The findings of the validation related to the project, as described in the PDD version 1.2 of 10/02/2015 and previous version 01.1 of 25/09/2013 and version 01 of 30/07/2013 **/01/**, are stated in the following sections.

The validation requirements, the means of validation and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

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## 3.1 Approval and Participation

The project participant is OPG Energy Private Limited and is a private entity; the project is a unilateral project and hence the host country is the only Party involved in the proposed project activity. India (Host country) fulfils the requirements to participate in the CDM, having ratified the Kyoto Protocol on 26/08/2002 /08/ and establishing as DNA the National CDM Authority (NCDMA) under Ministry of Environment and Forest, Govt. of India as per the UNFCCC website /09/. The project participant is correctly listed in table A.4 of the PDD and the information is consistent with the contact details provided in Appendix 1 of the PDD /01/. RINA confirms that only OPG Energy Private Limited, the PP is listed in the section A.4 of the PDD.

The DNA of India issued a Letter of Approval on 28/08/2014, authorizing OPG Energy Private Limited as project participant and confirming that the project assists in achieving sustainable development and the CDM project activity contributes to the sustainable development of the Host Country /55/. The Letter of Approval was received from the PP and refers to the precise project proposed project activity in the PDD submitted for registration /55/.

The authenticity of the letter of approval has been validated by verifying the original LoA. The letter has been issued by the respective DNA of the Host Party for the specific proposed project activity and RINA has not found reason to doubt their authenticity

By checking the above documents /55/ RINA considers the LoA in accordance with paragraphs 39-42 of the CDM-VVS /05/.

Project participants	OPG Energy Private Limited
Parties involved	India (Host Country)
<b>APPROVAL</b>	
LoA received	Yes /55/
Date of LoA	28/08/2014
LoA received from	Directly from PP
Validation of authenticity	Verifying the original document /55/
Validity of LoA	Yes
<b>PARTICIPATION</b>	
Party is party to Kyoto Protocol	Yes
Voluntary participation	Yes
Project contribution to SD	Yes

The proposed project does not involve any public funding from an Annex I Party, and the validation did not reveal any information that indicated that the project could be seen as a diversion of official development assistance (ODA) funding towards the host country/42/.

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## 3.2 Modalities of communication

The MoC dated 05/09/2013 **/31/** was provided by OPG Energy Private Limited with whom RINA has a contractual relationship confirmed by the request of services signed on 24/06/2013**/30/**. The corporate identity of PP, who is the sole focal points included in the MoC statement, as well the personal identities, the signatures and the related authorized signatures, and the employment status have been cross-checked through company undertaking **/37/** copy of PAN Card **/38/** and interview with the PP.

RINA confirms that the MoC statement provided by the PP(s) **/31/** is based on the currently valid form "Modalities of Communication Statement" (F-CDM-MOC) **/36/**, the information required by the form including its Annex 1 is correctly completed, and the PP(s) authorized signatories signing the MoC correspond to the PP(s) authorized signatories included in Annex 1.

In conclusion, RINA confirms that the MoC statement provided by the PP(s) is in accordance with the requirements in para 53-55 as well it is in accordance with the requirements in para 60 of the CDM-VVS **/05/**.

## 3.3 Project design document

The PDD for the project activity "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India", in "India", version 01 of 30/07/2013, version 01.1 of 25/09/2013 and version 1.2 of 10/02/2015 **/01/** submitted by the OPG Energy Private Limited name has been the basis for the validation process.

RINA confirms that the above PDD is based on the currently valid PDD template **/07/** and is completed in accordance with the applicable guidance document "Instructions for filling out the project design document form for small-scale CDM project activities"**/10/**.

The main changes between the PDD version 01 of 30/07/2013 published for GSC and the PDD version 01.2 of 10/02/2015 submitted for registration are the following:

Section of the PDD	Description and reason for changing the information in that section
Throughout the PDD	The webhosted PDD template was with version 04.1 which has been updated to its latest template version 05.0 <b>/01/</b> .
B.2.	PDD does not demonstrate whether the project activity qualifies as Type I, II, and/or III during every year of the crediting period in accordance with applicable provisions for project activity eligibility in the Project standard. The same is incorporated in the latest PDD <b>/01/</b> .
B.5.	The latest guidelines on demonstration of additionality of small scale project activities have been now used in the latest PDD.
B.6.3.	In the webhosted PDD the emission reduction has been estimated based on the PPA. Now the same has been calculated based on the DPR value, which is conservative. Further the emission reductions have now been calculated based on 0.5% degradation on modules from the first year of crediting period. The same has updated through out the PDD.
B.7.1.	Data and parameters to be monitored has been now revised and made according to the actual monitoring plan.
E.2	Comments made by stakeholders and identification of stakeholders who made comments was not included in the PDD <b>/01/</b> . The same is incorporated in the latest PDD <b>/01/</b> .

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## 3.4 Project Design

### Purpose and general description of the project activity

The purpose of the project activity is to generate the electricity using solar photo voltaic technology. The total installed capacity of the project is 5 MW, and the electricity generated is supplied to NEWNE grid. The validation team has confirmed the same by cross verifying the commissioning report /11/, nodal agency approvals /21/, /22/, PPAs /12/, /13/ and physical verification of project site/28/. The Annual generation for first year of commissioning is estimated as 8,322 MWh. The same has been confirmed from the DPR /39/. However, the generation decreases over the year due to degrading factor of 0.5%. The degradation factor is as per RERC tariff order /23/. The PLF is taken from the DPR prepared by the third party /39/, the load factor is cross checked and confirmed from the actual generation data (JMR) data submitted by the PP. The actual PLF achieved for the years 2011-12 and 2012-13 are less than the DPR value /45/. This complies with the guidelines for reporting and validation of Plant load factor /35/. Since, the solar energy is clean energy, the project activity does not involve any fossil fuel firing and hence no greenhouse gases are involved in the project activity. The power generation from the project activity replaces the equal amount of power which otherwise would have been supplied from the fossil fuel dominated grid. Thus project activity helps in an average annual emission reduction of 7,814 tCO<sub>2</sub>e/year for a period of 7 years.

### Project location

The project site is in Baap village, located in Phalodi Tehsil of Jodhpur district, Rajasthan state, India. The geographic co-ordinates for the project activity are Latitude: 27° 21' 20.61"N and Longitude: 72° 21' 04.71"E. The same was confirmed by the measurement of co-ordinates using GPS at the project site. The other details such as village name, taluka name and district name of the project location are checked with the commissioning certificate of the project activity and were found appropriate /11/.

### Scenario existing prior to the implementation of the project activity

The project activity is the green field activity, which involves installation of new solar PV modules at the project facility. As confirmed during the site visit and discussion with the PP, there was no renewable energy operating prior to the implementation of the project activity. The same has also confirmed from the EPC contract agreement signed between PP and the technology provider /14/. The project has been commissioned on 14/10/2011 and the validation team confirms the commissioning date by cross verifying the commissioning report issued by Jodhpur discom 5 MW solar power Generation plant by M/s OPG Energy Pvt. Ltd. at village Baap, tehsil Phalodi, distric Jodhpur/11/. The baseline scenario is the electricity delivered to the grid by the project activity, which would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid. The same complies with the applied methodology /06/.

### Technology(ies) employed

The technology supplier of the project activity is Vivaswan Technologies Inc. which is confirmed from the EPC agreement between the project proponent and the technology supplier for design, engineering, procurement, supply, installation, testing and commissioning of a fully integrated and operational 5MWp SPV system /14/. Solar modules with varying module wattage of 40 Wp, 62.5 Wp, 72.5 Wp and 240 Wp are connected together to produce the total project capacity of 5 MWp power. The solar modules are further connected to the inverters. Inverters shall convert the DC energy produced by array to AC voltage using its MPPT (Maximum Power Point Control) control to extract maximum energy from solar array and synchronize with the grid through LT/HT panels. Technical specifications of PV modules topray Solar (40 W), abound Solar (62.5 W) and abound Solar (72.5 W) are specified in the PDD have been confirmed with the technical specification provided by technology supplier /46/,/47/. The plant summary is as per the DPRs prepared /39/ and the technical specifications of the inverter(s) are as per the supplier Answer Drives /48/. The technical life time of the equipment is 25 years. The same has been confirmed from the DPR/39/ and technical specification provided by the technology supplier/46/,/47/. Further, it is noted that project activity does not involve in any transfer of technology from any Annex I countries as verified with the Agreement signed for setting up 5 MW grid connected solar photovoltaic project at Baap, with Vivaswan Technologies /14/.



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The DPR has considered 96.5% confidence limit of the simulated values a guaranteed power generation at 19% PLF for the project activity with installed capacity 5 MWp /39/; which agrees with the CERC PLF value of 19% for solar PV projects/44/. The validation team has cross-checked the same with the PPAs /12/, /13/ and found that the maximum saleable energy is 9,198 i.e. 21%. For the conservative estimation of emission reduction PP has considered DPR value of 19% PLF; which is prepared by third party consultants/39/. RINA could confirm that the PLF considered by PP is reasonable and in line with the requirement of CDM EB “guideline for the reporting and validation of plant load factors” /35/.

### Project implementation

The starting date of the project activity is 28/12/2010, when the project proponent has signed the EPC contract with Vivaswan Technologies Inc for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan /14/. Validation team has accepted the start date since this is the earliest date on which the PP has committed itself to the expenditures related to the implementation of the project activity as per the Glossary of CDM Terms /20/. During the site visit on 11/09/2013 it was observed by the validation team that the entire project has been commissioned and connected to NEWNE grid on 14/10/2011 /11/.

### Crediting period and estimated Emission Reductions

A renewable crediting period of 7 years has been chosen for the project, starting from 01/03/2015 or date of registration of the project activity with the CDM EB of UNFCCC whichever occurs later. The GHG emission reductions for the proposed project activity are estimated to be average 7,814 tCO<sub>2</sub>e per year and 54,699 tCO<sub>2</sub>e over the seven years of renewable crediting period.

### Contribution to sustainable development

The contribution towards sustainable development by project activity is explained under the title of social well-being, economic well-being, environment well-being, and technological well-being in section A.1. of the latest PDD /01/. The same has been cross-checked with the official web site /15/ of National CDM authority under Ministry of Environment and Forests (MoEF), India and it is found to be in line with sustainable indicators derived by the host country (India). It is confirmed from the site visit and interview with the Local stakeholders that Project activity provides employment opportunities to the local people. Further, the proposed project activity contributes towards sustainable development as confirmed through the HCA /55/.

RINA was able to verify all the documented evidence listed above during the validation process and can confirm that data and considerations are complete and accurate. Moreover RINA confirms that the description of the proposed CDM project activity, as contained in the PDD sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity.

## 3.5 Application of selected baseline and monitoring methodology

### Project activity eligibility

The project correctly applies the approved baseline and monitoring methodology “AMS-I.D”, “Grid Connected Renewable Electricity Generation”, version 17 of 03/06/2011 /06/. The proposed project activity meets the criteria defined in the baseline methodology as it ensures that:

- The project activity is the green field renewable project activity using the solar power resources for the generation of electricity. The generated electricity is supplied to the NEWNE grid, which is the regional grid. The same is confirmed by the site visit observation and PPAs /12/, /13/. As project activity falls under the condition 1(a) of the methodology /06/, option 1(b) is not applicable to the project activity.
- With respect to the condition 2 of the methodology, the project activity supplies electricity to a regional grid i.e. NEWNE grid as confirmed through the PPA /12/, /13/. Hence, option 1 of Table 2 of AMS-I.D version 17 is applicable for this project activity /06/.



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- Project activity involves the installation of new solar PV modules at the project site where there was no renewable energy generation unit operating prior to the proposed project activity (green field project activity). The same has been confirmed by site visit observation and discussion with the PP. Thus, condition 3(a) of the methodology /06/ is applicable to this project activity. As project activity comes under the condition 3(a), other options such as 3(b), 3(c) and 3(d) are not applicable to this project activity.
- The project activity is the green field solar power project; hence applicability condition 4 of the methodology AMS-I.D is not relevant to this project activity.
- The project activity is the green field solar power project activity with a total capacity of 5 MW, which is much below the eligibility limit for the small-scale CDM project activity and there is no non-renewable component or co-firing involved in the project activity, as confirmed by site visit, Commissioning report for solar power plant /11/ and PPAs /12/, /13/.
- As project activity is the green field solar power project activity, the applicability conditions 6, 7 and 8 of the approved methodology is not relevant to the project activity

The project activity applies the following methodological tools:

- Methodological tool "Tool to calculate the emission factor for an electricity system, version 04.0 of 04/10/2013 /18/ and meets the defined criteria as it ensures that:
  - Calculation of the emission factor has been done for the proposed project activity as per the steps stipulated in the tool.
  - Data used in the calculation of emission factor is publicly available from CEA data base version 8.0, January 2013, published by Ministry of power, India and it is noted that this is latest version available with the CEA data base /16/ at the time of submission of PDD to the DOE. The same is accepted by the validation team.

### Debundling:

The proposed project activity is not a de-bundled component of a large scale project activity since the PP does not have any registered small-scale CDM project activity or an application to register another CDM project activity in the same project category and technology, within 1 km of the project boundary of the proposed small scale project activity and within the previous 2 years. This has been confirmed during validation site visit and from the databank of UNFCCC /17/.

Through the assessment of project site and documents such as PPAs /12/, /13/, commissioning report /11/, and contract agreement /14/. RINA confirms that project activity meets all the applicability conditions of the AMS-I.D., "Grid Connected Renewable Electricity Generation", Version 17 of 03/06/2011/06/. RINA hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein and the selected version is valid at the time of submission of the proposed project activity for registration. It is also confirmed that the methodology is correctly applied by comparing it with the actual text of the applicable version of the methodology.

RINA hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein and the selected version is valid at the time of submission of the proposed project activity for registration. It is also confirmed that the methodology is correctly applied by comparing it with the actual text of the applicable version of the methodology.

### 3.6 Project boundary

According to the approved simplified baseline and monitoring methodology "AMS-I.D" of "Grid connected renewable electricity generation", version 17 of 03/06/2011/06/, the project boundary is "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 solar PV array, invertors, transformers, metering/substation system and NEWNE grid (regional grid).

The physical boundary of the project activity identified by the PP has been cross-verified by site visit observation, PPAs /12/, /13/, commissioning report for solar power plant /11/ and contract agreement /14/. Emissions sources included in the project boundary are shown in the table below:

## VALIDATION REPORT

	GHGs involved	Description
Baseline emissions	CO <sub>2</sub>	Electricity that would have been generated by the fossil fuel based power plants connected to NEWNE grid. The same was verified with the PPAs /12/, /13/ and found to be inline.
Project emissions	Nil	As the solar power project doesn't use fossil fuel for their operation, no project emissions are envisaged.
Leakage	Nil	As the energy generation equipment is not transferred from another activity.

During the operation phase, solar PV modules operate only on solar power and don't use any fossil fuels for its working. Since this is a solar power project and the project implementation involves only the assembly of various components of the solar modules over the cement concrete basement, it is not expected to have any emission sources that are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reduction and hence have not been identified.

By checking the information and by the physical verification of site, RINA can confirm that all the emission sources and gases have been included in the project boundary and the description in the PDD is accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.

### 3.7 Baseline scenario identification

According to the approved baseline methodology AMS-I.D /06/, the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid. Project activity involves generation of electricity using solar power and selling it to NEWNE grid as confirmed through the PPAs /12/, /13/ and commissioning report /11/. In the absence of this project activity, same amount of electricity would have been generated by the operation of existing/proposed grid connected fossil fuel based power plants. The same was cross checked and confirmed by referring the CO<sub>2</sub> Baseline Database for the Indian Power Sector, User Guide (Version 8.0, January 2013) issued by Central Electricity Authority /16/. The CEA data base used by the PP is accepted by the team as this is the latest version available at the time of submission of PDD to DOE as per the "tool to calculate the emission factor for an electricity system"/18/.

RINA was able to verify all the documented evidence listed above during the validation process and can confirm that:

- All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used /11/, /12/, /13/, /16/, /18/ are relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence /11/, /12/, /13/, /16/, /18/ and can be deemed reasonable;
- Relevant national and/or sectoral policies (E+ / E-) and circumstances /23/, /50/, /51/, /52/ are considered and listed in the PDD;
- The approved baseline methodology "AMS-I.D: Grid connected renewable electricity generation" has been correctly applied to identify the most reasonable baseline scenario

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and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

### 3.8 Additionality

As per the guidelines on the demonstration of additionality of small-scale project activities, version 09.0, dated 20/07/2012 /19/, this project activity (solar power project) falls under the positive list of grid connected renewable electricity generation technologies that are automatically defined as additional, without further documentation of barriers, since the installed capacity is only 5 MW.

The proposed project activity is a solar photovoltaic power project with a total installed capacity of 5 MW, which is in-line with the paragraph 2 of the guidelines on the demonstration of additionality of small-scale project activities /19/. Therefore, the project activity is automatically defined as additional. Further, RINA confirms that no further documentation of barriers is required to demonstrate the additionality of the proposed project activity as per latest version of the guidelines on the demonstration of additionality of small-scale project activities /19/.

### 3.9 Prior consideration of the clean development mechanism

#### Project starting date

The project start date is 28/12/2010, when the project proponent has signed the EPC contract with Vivaswan Technologies Inc for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan /14/. During the site visit on 11/09/2013 it was observed by the validation team that the entire project has been commissioned and connected to NEWNE grid /11/. The commissioning dates were also verified from the commissioning certificates issued by the respective nodal agency to the project activity /11/ and confirms that the start date selected is appropriate.

#### Prior consideration of CDM

The identified start date (28/12/2010) is prior to 03/08/2013 when the PDD was published for global stakeholder consultation. PDD was webhosted for global stake holder comments from 03/08/2013 to 01/09/2013. Hence as per the "Clean Development Mechanism Project Standard", version 05.0, dated 04/10/2013 /04/, for project activity with a start date on or after 02/08/2008, project participant must inform the Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. It was noted that PP had intimated the prior CDM consideration to UNFCCC and DNA of the host country through mail dated 13/04/2011 /24/. The date of notification is reflected in the UNFCCC site having received on 13/04/2011 /25/. Hence, prior CDM consideration notification were made within six months of the project activity start date and hence conforms to the requirement of CDM project standard /04/. Further, it is noted that PP intimated UNFCCC and host country DNA again on 06/04/2013 /53/ since the PDD was not webhosted for global stake holder comments within two years from the start date. The notification has been confirmed from the UNFCCC website /25/ and the acknowledgment mail received on 11/04/2013/54/.

In conclusion, in accordance with the requirements of the Clean Development Mechanism Project Standard /04/ and VVS/05/, RINA can confirm that the CDM was considered seriously in the decision to implement the project activity.

### 3.10 Identification of alternatives

The project activity is a grid connected electricity generation project by solar power, as per the approved simplified baseline methodology AMS-I.D, version 17, /06/ the most realistic baseline scenario is "the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources. Since the methodology has already defined the baseline scenario, no further analysis is required as according to the paragraph 122 of VVS version 07.0 /05/. The project proponent has justified the selection of the baseline scenario in line with the applied methodology and the same is deemed reasonable.

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### 3.11 Investment analysis

This section is not applicable as the PP has not chosen investment analysis for demonstration of additionality and the project activity is automatically defined as additional as per the latest version of guidelines on the demonstration of additionality of small-scale project activities /19/, please refer to section 3.8 above.

### 3.12 Barrier analysis

This section is not applicable as the PP has not chosen Barrier analysis for demonstration of additionality and the project activity is automatically defined as additional as per the latest version of guidelines on the demonstration of additionality of small-scale project activities /19/, please refer to section 3.8 above.

### 3.13 Common practice analysis

This section is not applicable as the project activity falls under small scale project activity.

### 3.14 Conclusion

According to the guidelines on the demonstration of additionality of small-scale project activities /19/, the proposed project is automatically defined as additional since is the project activity is a solar Photovoltaic power project with an installed capacity of 5 MW. The capacity is also confirmed through the agreement signed between PP and technology provider for setting up 5 MW solar power plant /14/, commissioning report /11/, PPAs /12/, /13/ and; the same has been confirmed during the physical verification of the site. Thus, RINA confirm that the project activity qualifies to be considered additional as per Guidelines on the demonstration of additionality of small-scale project activities /19/.

By assessing the evidences presented and cross-checking the information contained in, RINA considers the reasoning's for the proposed project additionality demonstration is credible and reasonable i.e. the proposed project has the ability to reduce anthropogenic emissions of greenhouse gases by sources below those that would have occurred in the absence of the registered CDM project activity.

### 3.15 Monitoring Plan

The approved baseline and monitoring methodology "AMS-I.D" /06/ has been applied.

The monitoring plan is in accordance with the monitoring methodology; the monitoring plan will give opportunity for real measurement of achieved emission reductions.

RINA has checked all the parameters presented in the monitoring plan against the requirements of the methodology; no deviations relevant to the project activity have been found in the plan.

RINA confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.

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## Parameters determined ex-ante

The ex-ante parameters that are mentioned in the methodology are included in the PDD and are provided in compliance with the methodology:

	Data/parameter	Unit	Value applied	Assessment
1	Simple operating margin for NEWNE grid ( $EF_{grid,OM,y}$ )	tCO <sub>2</sub> e/MWh	0.972	The simple OM emission factor have been calculated using the Simple OM method as the low-cost/must run resources constitute less than 50% (for year 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12) <b>/16/</b> . The ex-ante vintage data has been used for the OM calculation of the project. The PDD, version 01 <b>/01/</b> was web-hosted for global stakeholder comments from 03/08/2013 to 01/09/2013 and the latest available data vintage is taken for the EF calculations. $EF_{OM}$ for the most recent three years (2009-10, 2010-11 and 2011-12) and the weighted average is calculated to be 0.972 tCO <sub>2</sub> e/MWh <b>/02/</b> . The simple OM is fixed ex-ante in line with the ‘tool to calculate the emission factor for an electricity system’ Version 04.0 <b>/18/</b> . Hence, accepted by the validation team.
2	Build margin for NEWNE grid ( $EF_{grid,BM,y}$ )	tCO <sub>2</sub> e/MWh	0.916	As per the “tool to calculate the emission factor for an electricity system” Version 04.0 <b>/18/</b> , the build margin emissions factor is the generation-weighted average emission factor (tCO <sub>2</sub> /MWh) of all power units <i>m</i> during the most recent year <i>y</i> for which electricity generation data is available. Hence, default value from CO <sub>2</sub> Baseline Database for the Indian Power Sector User Guide, Version 8.0, January 2013 <b>/16/</b> for the year 2011-12 has been considered. This was the latest available data at the start of validation of the project activity. The calculation procedures are outlined in the PDD and also provide in spreadsheet <b>/02/</b> . Hence, accepted by the validation team.
3	Combined margin emission factor for NEWNE grid ( $EF_{grid,CM,y}$ )	tCO <sub>2</sub> e/MWh	0.958	Calculated considering 75% operating margin and 25% build margin as per the “tool to calculate the emission factor for an electricity system” <b>/18/</b> .

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## Parameters monitored ex-post

The ex-post parameters that are mentioned in the methodology are included in the PDD and are provided in compliance with the methodology, and they will be monitored during the crediting period:

	Parameter	Description/Assessment
1.	Quantity of electricity export to the grid during the year y, $EG_{BL,y, \text{ export}}$ (MWh)	<p>The electricity generated by the project activity is exported to the grid by a feeder line to the sub-station. The amount of electricity exported by the project activity shall be continuously monitored by a main and a check meter of accuracy class 0.2s installed on the feeder line. The meters used are two-way electronic meters.</p> <p>The Export readings shall be taken from the main meter by the authorized officer of Jodhpur Discom in the presence of PP or representative of PP at appointed day and hour (time). The export meter reading is taken on monthly basis. The meter reading will be taken jointly and signed by the representatives of the Jodhpur Discom and OPG Energy Private Limited.</p> <p>In case of failure of main meter; the check meter shall be used. Both these meters are owned and sealed by state utility. Energy meters are calibrated at least once in three years. Sales record (invoice raised, payment proof etc.) can be referred to cross check the value applied.</p>
2.	Quantity of electricity import to the grid during the year y, $EG_{BL,y, \text{ import}}$ (MWh)	<p>The electricity imported by the project activity from the grid by a feeder line to the sub-station. The amount of electricity imported by the project activity shall be continuously monitored by a main and a check meter of accuracy class 0.2s installed on the feeder line. The meters used are two-way electronic meters.</p> <p>The import readings shall be taken from the main meter, by the authorized officer of Jodhpur Discom in the presence of PP or representative of PP at appointed day and hour (time). The import meter reading is taken on monthly basis. The meter reading will be taken jointly and signed by the representatives of the Jodhpur Discom and OPG Energy Private Limited.</p> <p>In case of failure of main meter; the check meter shall be used. Both these meters are owned and sealed by state utility. Energy meters are calibrated at least once in three years. Sales record (invoice raised, payment proof etc.) can be referred to cross check the value applied.</p>
3.	Net quantity of electricity export to the grid during the year y, $EG_{BL,y}$ (MWh)	<p>Net electricity supplied to the grid would be calculated based on export &amp; import data (<math>EG_{BL,y} = EG_{BL,y, \text{ export}} - EG_{BL,y, \text{ import}}</math>). The amount of electricity imported/exported by the project activity shall be continuously monitored by a main and a check meter of accuracy class 0.2s installed on the feeder line. The meters used are two-way electronic meters.</p> <p>The export and import energy will be measured continuously using above mentioned Main &amp; Check meters at the switchyard. Export &amp; Import readings of Main meter shall be taken on monthly basis at appointed day and hour (time) by authorized officer of Jodhpur Discom in the presence of PP or representative of PP. The meter reading will be taken jointly and signed by the representatives of the Jodhpur Discom and OPG Energy Private Limited. Based on the readings, invoices for net electricity exported will be raised by OPG Energy Private Limited to Jodhpur Discom.</p>



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	In case of failure of main meter; the check meter shall be used. Both these meters are owned and sealed by state utility. Energy meters are calibrated at least once in three years. Sales record (invoice raised, payment proof etc.) can be referred to cross check the value applied.
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### Management system and quality assurance

Electricity meter of 0.2S class accuracy is used which in line with CEA regulation 2006 /49/. Main electricity meters at Sub-station will be calibrated at least once in three years by Jodhpur Discom. Calibration records are maintained by state utility. The O & M of the project activity will be done by the project proponent who has dedicated trained personnel to carry out the day to day operation and maintenance of the project activity so as to monitor the quantity of electricity supplied to the grid. In addition,

The operational and management structure implemented by PP is summarized below:

- The Chief Executive officer (CEO) holds complete control over monitoring aspects pertaining to the project.
- The monitoring report will be reviewed and will keep a check on the proper training of staff, etc.
- The CEO is the responsible for maintaining emission reduction calculation for verification.
- The general manager controls the operation and maintenance of the entire power plant. A periodic checking of recorded and stored data and the emission reduction calculation sheet and monitoring report will be prepared. The site manager and site supervisor records the day to day operation data and stores it in hard copy as well as soft copy.
- Export & Import readings from main & check meter will be collected under the supervision of the Site Manager. The net electricity supplied to grid would be calculated based on export & import readings. Export and Import data would be recorded and stored in logs as well as in electronic form. The records are checked periodically by the General Manager.
- Final data management and invoicing against net electricity generation will be done by OPG Energy Private Limited.
- The data will be archived for 2 years after the end of the crediting period by the PP

RINA confirms that the monitoring plan mentioned in the PDD is in accordance with the requirements mentioned in the monitoring methodology and the local regulatory requirements of the state utility, as well the monitoring arrangements described in the monitoring plan are feasible within the project design. RINA is of the opinion that the monitoring plan will give opportunity for real measurement of achieved emissions reductions for 2 years after the crediting period.

### 3.16 Estimation of GHG emissions

The emission reduction  $ER_y$  by the proposed project activity during the crediting period is the difference between baseline emissions ( $BE_y$ ), project emission ( $PE_y$ ) and emissions due to leakage ( $L_y$ ) as follows.

#### Baseline emissions

The baseline emissions are calculated as per the paragraph 11 of the approved methodology AMS-I.D, version 17 /06/ and is the best suited for this project activity. Baseline emission is determined as the product of electrical energy baseline  $EG_{BL,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor. Emission factor can be calculated either by combined margin approach consisting of the combination of operating margin and build margin according to the procedures prescribed in the 'Tool to calculate the emission factor for an electricity system' or using weighted average emission approach. PP has opted for the combined margin



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emission factor approach. The operating margin emission factor has been calculated based on Simple OM method as the lowcost/ must run resources constitute less than 50% of total grid generation. Ex ante data vintage has been opted by PP for calculating Simple OM. Subsequently the generation weighted average from the CEA data base /16/ for the years 2009-10, 2010-11 and 2011-12 has been considered. Validation team has accepted the same as it was the most recent data available at the time of submission of the PDD to the DOE for validation. Thus the weighted average simple OM emission factor is determined to be 0.972tCO<sub>2</sub>/MWh. Further, the BM emission factor has been calculated based on option 1 as indicated in the “Tool to calculate the emission factor for an electricity system”/18/. As per the tool, BM emission factor has to be calculated for the set of power plants that comprises the larger annual generation among i) 5 most recent power units, ii) the units that comprise at least 20% of the system generation excluding CDM. PP has opted the latter approach as it yields the larger sample in India. The same was evident in the “CO<sub>2</sub> baseline database for the Indian power sector”, user guide, version 08 published in January - 2013/16/. Validation team has checked the same and confirmed to be appropriate. Accordingly the BM emission factor is determined to be 0.916 tCO<sub>2</sub>e/MWh, this is based on most recent year, 2011-12, for which power generation data was available. Thus the combined margin emission factor has been calculated to be 0.958 tCO<sub>2</sub> / MWh. The source of this data is CEA CO<sub>2</sub> baseline Data base; version 8.0 /16/. The validation team accepted the same as this was the latest version of the database publically available to the project participant at the time of submission of PDD for validation. The DPR has considered 96.5% confidence limit of the simulated values a guaranteed power generation at 19% PLF for the project activity with installed capacity 5 MWp /39/; which agrees with the CERC PLF value of 19% for solar PV projects/44/. The validation team has cross-checked the same with the PPAs /12/, /13/ and found that the maximum saleable energy is 9,198 i.e. 21%. For the conservative estimation of emission reduction PP has considered DPR value of 19% PLF; which is prepared by third party consultants/39/. This complies with the guidelines for reporting and validation of plant load factors, EB 48, Annex11 /35/. Hence, the PLF value (19%) calculated by the third party is accepted by the team. The annual electricity has been calculated considering the degradation factor of 0.50% from second year onwards in the crediting period as per RERC tariff order/23/.

In conclusion, the baseline emissions are only the CO<sub>2</sub> emissions from the electricity displaced in the northern grid due to the project activity and total baseline emissions are estimated to be 7,814 tCO<sub>2</sub> annually.

### Project emissions

As per the methodology AMS-I.D, version 17, for the project activity that involves grid connected renewable energy generation from power plants other than geothermal plant and hydro power plant, project emission is considered as zero. Since this project activity involves grid connected renewable electricity generation through the solar PV modules, the project emissions are considered as zero.

### Leakage

Also, it was verified that all the solar PV modules are new and there is no transfer of equipment from or to other project activity. Hence, no leakage has been considered for this project activity.

### Emission Reductions

The emission reduction E<sub>Ry</sub> by the proposed project activity during the crediting period is the difference between baseline emissions (BE<sub>y</sub>), project emissions (PE<sub>y</sub>) and emissions due to leakage (L<sub>y</sub>) as follows,

The following is the formula used for the same,

$$E_{Ry} = BE_y - PE_y - LE_y$$

E<sub>Ry</sub> -Emission reductions during the year y.

BE<sub>y</sub> -Baseline emissions during the year y.

PE<sub>y</sub> -Project emissions during the year y.

LE<sub>y</sub> -Leakage emissions during the year y.

## VALIDATION REPORT

Based on the above consideration, the emissions reductions from the project activity will be the baseline emissions and have been determined to be 7,814 tCO<sub>2</sub>e per year throughout the renewable crediting period of seven years. Validation team has verified the emission reduction calculation sheet/02/ and found appropriate.

Hence the RINA concludes that the project emissions, baseline emissions, leakage and emission reductions stated in the PDD version 1.2 of 10/02/2015/01/ and emission reduction spread sheet, version 02 /02/ are calculated correctly, accurately and conservatively as per the approved methodology AMS-I.D, version 17 /06/. RINA also confirms that all estimates of the emission reductions can be replicated using the data and parameter values provided in the PDD and supporting files submitted for registration and concludes that the estimates provided in the PDD are reasonable and the project participant has correctly applied the methodology.

### 3.17 Environmental Impacts

The project activity does not fall under the purview of Environmental Impact Assessment (EIA) as per the notification from MoEF dated 14/09/2006/27/29/. The same has been verified and confirmed by the validation team. Hence it is not required for the PP to conduct an Environmental Impact Assessment for this project activity. The project activity is expected to have positive impacts to the environment and would lead to the new employment opportunities in the region. The same was verified by the validation team during the site visit and found appropriate. No negative impact is foreseen for this project activity as it is solar power project activity. Validation team has also verified all the clearances obtained for this project activity which includes PPA/12/13/ and commissioning report issued by the respective nodal agency/13/. Thus, the validation team confirms that all the clearances obtained are in accordance with the procedures required by the host party.

### 3.18 Local stakeholders consultation

Prior to the publication of the PDD on the UNFCCC website from 03/08/2013 to 01/09/2013, the Project owner has arranged a Stakeholder's consultation meeting to discuss possible stakeholders concerns on the proposed CDM project activity "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India", on 24/07/2013 at project site in Baap village, Rajasthan state. The PP has given personal invitation to all the stakeholders for attending the meeting /40/ on 24/07/2013 to invite the comments with respect to the project activity.

Totally 72 stakeholders have participated in the meeting on 24/07/2013 and were explained about the project activity. RINA has verified the lists of the participants who attended the meeting and confirms that relevant stakeholders were involved in the consultation process/40/,/41/,/43/. A summary of comments /41/,/43/ was provided and has been verified by RINA to confirm that no negative comment was received and the same was also cross-verified during the site visit /28/ by interviewing some of the stakeholders who were present in the stakeholder consultation meeting. Hence, RINA confirms that the local stakeholder's process was adequate and credible on what regards.

## 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD version 01 of 30/07/2013 /01/ was made publicly available on the CDM UNFCCC website and Parties, stakeholders and NGOs through the CDM website (<https://cdm.unfccc.int/Projects/Validation/DB/1NTM6ZB6OPL2R113EQ4U5CNPRPVNCE/view.html>) invited to provide comments during a 30 days period from 03/08/2013 to 01/09/2013. Below comments as presented in Table A, were received during this period.

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
1.	jhoncraig, <a href="mailto:jhoncraig0@gmail.com">jhoncraig0@gmail.com</a>	DOE to ensure that the PDD values are consistent and ensure that the CDM project is a genuine project.	The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0.	The validation has been conducted according to the clean development mechanism validation and verification standard (VVS), version 05.  RINA's opinion that the project activity " 5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India" in India, as described in the PDD, version 01.1 of 25/09/2013, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology "AMS-I.D", " Grid Connected Renewable Electricity Generation", version 17 of 03/06/2011.
		DoE to check the Detailed Project Report and Feasibility Report which is submitted to the agencies and Banks by Project owner and ensure that the values match with the DPR/FR submitted to DoE also.	The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP has considered only	As per the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0., the project activity is automatically additional. DOE has cross-checked the technical values taken from DPR and found appropriate.

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
			the technical values and has not shown any investment barrier as per the above mentioned guidelines.	
		Careful study must be done so that the DPR/FR is not in different versions made and submitted with different purposes to different agencies, which is totally unacceptable, illegal and unethical.	The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP has considered only the technical values and has not shown any investment barrier as per the above mentioned guidelines.	The validation team has verified the DPR and found appropriate. As project activity falls under the automatic additional category, no investment barriers has been demonstrate by the PP; which is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05.
		Project owner should show some undertaking letter from bank manager to DoE stating that both DPR's are same. These kinds of letters should not be accepted and entertained by DoE at face value, but must be checked independently. While collecting the DPR/FR from banks and other agencies, all DPR/FR pages should be counter signed by Banks and other agencies so that the real	The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP has considered only the technical values and has	The validation team has verified the DPR and found appropriate. As project activity falls under the automatic additional category, no investment barriers has been demonstrate by the PP; which is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05.

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
		DPR/FR given to other parties by the PP/Consultant is same as the one submitted to DOE.	not shown any investment barrier as per the above mentioned guidelines.	
		DPR/FR values must be probed fully. DOE must take a written undertaking from the PP/Consultant about the list of parties to whom this DPR/FR is submitted and for what purposes. Then DOE should cross check with all the parties and confirm that the same DPR/FR is submitted to all the parties correctly without any changes. DOE must not accept any reports and undertakings from PP/Consultant. DOE must make independent evaluation and use totally different parties without informing the PP or Consultant to cross check the facts.	The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP has considered only the technical values and has not shown any investment barrier as per the above mentioned guidelines.	The validation team has verified the DPR and found appropriate. As project activity falls under the automatic additional category, no investment barriers has been demonstrate by the PP; which is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05.
		DOE to write to the party who prepared the DPR/FR which is submitted to the banks and other agencies and the same is verified against the one submitted to the DOE by PP/Consultant.	The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP has considered only	The validation team has verified the DPR and found appropriate. As project activity falls under the automatic additional category, no investment barriers has been demonstrate by the PP; which is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05.

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
			the technical values and has not shown any investment barrier as per the above mentioned guidelines.	
		DOE must not entertain this project any more if found the DPR/FR is tampered with at any point in time. PP can not give different DPR's and FR's. They must submit only the one given to Banks and other agencies while obtaining loans and decision making time.	The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP has considered only the technical values and has not shown any investment barrier as per the above mentioned guidelines.	The validation team has verified the DPR and found appropriate. As project activity falls under the automatic additional category, no investment barriers has been demonstrate by the PP; which is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05.
		Has the PP considered the CDM revenues while envisaging the project? Without CDM the project was not viable, is it right? This project is having a debt component? Then how bankers or lenders gave the loan? Have the bankers or lenders considered the CDM revenues while agreeing to give loan to this projects? If not this project should be rejected right away by DOE by terminating the	The PP has seriously considered the CDM revenue in the investment decision making for the proposed project and had sent the prior CDM consideration within 6 months of taking any real action for the project activity.  The proposed CDM project is a grid connected small scale solar power project which is	The identified start date (28/12/2010) is prior to 03/08/2013 when the PDD was published for global stakeholder consultation. PDD was webhosted for global stake holder comments from 03/08/2013 to 01/09/2013. Hence as per the "Clean Development Mechanism Project Standard", version 05.0, dated 29/07/2013 /04/, for project activity with a start date on or after 02/08/2008, project

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
		contract forthwith. If yes, where is the proof? What is the date of the evidence document from bank? Is this document printed now a days or earlier. DOE to independently check the same. If the document is available from Bank it must be checked from all angles so that it is genuine and not forged and date changed by putting back dated. This is normally done, DOE to be aware of this please. Please check the communication the PP had during that time with banks, emails and postal receipts and the weights and dates mentioned on the receipts. Do not believe in courier bills and receipts since these can be cooked up easily. Insist on government owned postal service receipts only. If the project is fully equity project then on what basis the PP has invested full equity in to the project while considering the CDM revenue? DOE to check the same in detail and bring out the facts. Is there any past record of this PP to invest or not to invest at returns what he is talking about in this project? Proper evidences must be reviewed and digged out	listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP doesn't have to show any investment barrier as per the above mentioned guidelines.	participant must inform the Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. It was noted that PP had intimated the prior CDM consideration to UNFCCC and DNA of the host country through mail dated 13/04/2011 <b>/24/</b> . The date of notification is reflected in the UNFCCC site having received on 13/04/2011 <b>/25/</b> . Hence, prior CDM consideration notification were made within six months of the project activity start date and hence conforms to the requirement of CDM project standard <b>/04/</b> . Further, it is noted that PP intimated UNFCCC and host country DNA again on 06/04/2013 <b>/53/</b> since the PDD was not webhosted for global stake holder comments within two years from the start date. The notification has been confirmed from the UNFCCC website <b>/25/</b> and the acknowledgment mail received on 11/04/2013 <b>/54/</b> .  As project activity falls under the automatic additional category, no



## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
		by the DOE and take decision on the project based on established facts. Do not ask documents from PP, DOE to collect the same from different sources to do independent evaluation.		investment barriers has been demonstrate by the PP; as is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05.
		Is the project equipment purchased second hand equipment or sourced from cheap foreign sources? If yes, the issue must be probed by DOE since invoices will invariably be inflated and forged. Total project costs mentioned by PP will not be the same as originals. Hence no additionality. These facts must be probed in full by DOE by checking all documents and money transactions along with bank statements and certified accounts by a legally acceptable financial analyst.	The project uses newly purchased solar panels. This can be cross checked from the purchase orders	It has been confirmed from the Agreement signed for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies Inc dated 28/12/2010 /14/ that the project uses newly purchased solar panels. The same has cross checked during the site visit.
		From DOE side which auditor has done marketing and business development for acquiring this business of validating this project? With whom he or she was co-ordinating at PP or CER buyer? The same person who has done the marketing and business development to acquire the	Not applicable	The validation team is not involved in the marketing and business development to take the project activity. The same can be verified from the form titled - 'Request for Validation /Verification /Assessment of Greenhouse Gases project/programme of activity proposed to RINA'.

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
		business do validation or participate in any manner what so ever in the validation process? One cannot do like that. It is against the accreditation rules and norms followed since ages. DOE should send auditors from different offices or countries to do this validation audit. DOE must take care of impartiality and accreditation rules. Due to the targets set by the DOE managements auditors are doing marketing and meeting clients and giving promises that the project will be taken care. Is it acceptable and fair? This must be stopped. No auditor should do marketing. Only non-auditing staff should do marketing. DOE to ensure the same please.		
		If applicable only: Is these machines, equipment was a part of any bundle of CDM activity envisaged and developed earlier. DOE to check the same through independent sources also. Once some bundles are non-additional and getting negative validation from a DOE, PP is rolling out the same project as an individual project which is not a CDM project at all.	The solar panels and other equipments in the project are not a part of any bundle of CDM activity envisaged and developed earlier.	It has been confirmed from the Agreement signed for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies Inc dated 28/12/2010 /14/ that the project uses newly purchased solar panels and not a part of any bundle of CDM activity. The same has cross checked

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
		DOE to verify the same from independent sources and also take undertaking in the form of an affidavit from the PP's that any misrepresentation or false statement with respect this would attract strict legal action from UNFCCC and DOE. Furthermore the registered project must be de-registered in case of any future findings contradicting the submissions made by the project owner.		during the site visit.
		DOE to be more careful so that this is a genuine CDM project. What is the exact project cost? The project cost is covering what? Each value considered must be validated with proof. The machinery is second hand purchased or fresh and new from an OEM? In either case DOE to check all the quotations, proposals, purchase orders, invoices, way bills, transport bills, proof of payments like bank statements. DOE to check with banks by way of written confirmation the amount transacted, to whom the money is paid, when the money is paid, is the party paid is the correct party	<p>The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP doesn't have to show any barrier as per the above mentioned guidelines.</p> <p>The project uses newly purchased solar modules.</p>	As project activity falls under the automatic additional category, no investment barriers has been demonstrate by the PP; which is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05.

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
		as shown in the purchase orders. It may so happen that the values, party names, dates are fabricated and misrepresented in this project. DOE should terminate their contract for this project immediately. This is the only way out to protect the value of CDM process. If the PP is purchasing second hand or second quality equipment and inflating the purchase order values and invoices, this must be probed thoroughly and real values to taken for additionality calculation. Then I'm sure the additionality is not there at all in such a situation.		

## VALIDATION REPORT

Table A				
Sr. No.	Details of the commenter	Comment [unedited]	Response by the project participants	Explanation on how account is taken by the DOE
		<p>How is the base line defined in this project? Is Base line hypothetically defined with no proper evidences and proper justification? In such case, DOE cannot take the base line as suggested by the PDD. Please check that there are real emission reductions beyond the real and factual base line. It may so happen that this project qualifies for no CER's. DOE cannot assume values and things as giving by this PP. Whatever values are considered throughout the project in all documents including the real DPR (not the one prepared for CDM, the one given to the banks and others), they must be validated, verified and double checked. Do not ask PP for DPR. Ask the parties who have been given DPR by the PP. Get directly from the bank and others by each page of the DPR and Feasibility report signed. Such document can be considered as a real DPR or FR. UNFCCC CDM process cannot be degraded by fabricating and misinterpreting the project base line and additionality.</p>	<p>The baseline of the proposed project, which is NEWNE grid in this case, has been identified as per the applied methodology AMS ID version 17. The project meets all the criteria of the applied methodology and claims for real and measureable emission reductions. The proposed CDM project is a grid connected small scale solar power project which is listed as automatically additional as per "GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES" version 09.0.0. The PP doesn't have to show any barrier as per the above mentioned guidelines.</p>	<p>The project correctly applies the approved baseline and monitoring methodology "AMS-I.D", "Grid Connected Renewable Electricity Generation", version 17 of 03/06/2011 /06/. The validation team confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein and the selected version is valid at the time of submission of the proposed project activity for registration. It is also confirmed that the methodology is correctly applied by comparing it with the actual text of the applicable version of the methodology.</p> <p>As project activity falls under the automatic additional category, no investment barriers has been demonstrate by the PP; which is inline with the "Guidelines on the demonstration of additionality of small-scale project activities" version 09.0.0. and VVS, version 05</p>

# VALIDATION REPORT

## 5 VALIDATION OPINION

RINA Services Spa (RINA) has performed validation of the project activity “5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India” in India, with regard to the relevant requirements for CDM activities.

The review of the project design document and the subsequent follow-up interviews have provided RINA with sufficient evidence to determine the fulfillment of the stated criteria.

The host Party is India; and the Parties fulfil the participation criteria and have approved the project and authorized the project participant OPG Energy Private Limited. The project correctly applies the approved baseline and monitoring methodology “AMS-I.D”, “Grid Connected Renewable Electricity Generation”, version 17 of 03/06/2011.

By description of the project activity by generating renewable energy from solar photovoltaic plant the project results in reduction of CO<sub>2</sub> emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project 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 total emission reductions from the “5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India” are estimated to be on an average 7,814 tCO<sub>2e</sub> per year over the selected 7 years renewable crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is RINA's opinion that the project participants are able to implement the monitoring plan.

In conclusion, it is RINA's opinion that the project activity “5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India” in India, as described in the PDD, version 1.2 of 10/02/2015, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology “AMS-I.D”, “Grid Connected Renewable Electricity Generation”, version 17 of 03/06/2011

RINA thus requests registration of the project as a CDM project activity.

# **VALIDATION REPORT**

## **APPENDIX A**

### **VALIDATION PROTOCOL**



**TABLE 1 MANDATORY REQUIREMENTS**

Requirement	Reference	Conclusion
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reductions commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non Annex I Parties contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved	Kyoto Protocol Art.12.5a CDM Modalities and Procedures §40a	<del>CAR 01</del> , OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art.12.2 CDM Modalities and Procedure §40	<del>CAR 01</del> , OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7 CDM Modalities and Procedures Appendix B §2	<del>CL 02</del> OK
6. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities and Procedures §30/31a	OK. There is no Annex I party involved in this project activity.
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedure §31b	Not Applicable
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedure §31b	Not Applicable
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	CDM Modalities and Procedure §43	<del>CAR 02, CAR 04/ CAR 05, CAR 06, CL 01, CL 04, CL 03</del> OK
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art.12.5b	<del>CAR 05, CAR 06</del> OK
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a de-bundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK

Requirement	Reference	Conclusion
13. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	<del>CAR-02</del> OK
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK
15. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	<del>CL-05</del> OK
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30/45 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
17. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel.	CDM Modalities and Procedures §37e	OK
18. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §47	OK
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords, and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	<del>CAR-05, CAR-06</del> OK

**TABLE 2 REQUIREMENTS CHECKLIST**

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
<b>A Description of Project Activity</b>					
<b>A.1 Title of the project activity</b>					
A.1.1.	Does the used project title clearly enable the reader to identify the unique CDM activity? Is there an indication of a revision number and the date of the revision.	/01/	DR	Yes; as per the webhosted PDD, the title of the project activity in the PDD is "5 MW Solar PV Power Plant CDM Project by OPG Energy Private Ltd., - Baap, Jodhpur, Rajasthan, India" version 1.0, dated 15/06/2012.  The PDD clearly indicates the revision number, version 01 and the date of revision i.e. 30/07/2013.  However, the PP is requested to submit the Letter of Approval from host country DNA	CAR-04, OK
A.1.2	Does the project comply with the applicable requirements for completing the PDDs (latest version available)?	/01/,/10/	DR CC	No, the PDD does not comply to the latest "Guidelines for completing the project design document form for small scale CDM project activities" version 01.1 dated 01/04/2013.  Section A.1 of the PDD doesn't mention about baseline scenario and scenario existing prior to the implementation of the project activity.  The section B.2 of the PDD does not demonstrate whether the project activity qualifies as Type I, II, and/or III during every year of the crediting period in accordance with applicable provisions for project activity eligibility in the Project standard.  The reference documents used as a basis for justification to the choice of the selected methodology and compliance to its applicability conditions are not mentioned in the PDD.  Comments made by stakeholders and identification of stakeholders who made comments are not included in section E.2 of the PDD.	CAR-02 OK
A.1.3	Does the PDD comply with the template available	/01/,/07/	DR/	Yes, PP has used the latest template, that is 04.1, dated	OK

<sup>1</sup> MoV: DR document review, I interview, CC cross checking

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
(latest version)?		CC	11/04/2012 available with the UNFCCC site. The same has been cross verified by the team and found to be appropriate.	
<b>A.2 Description of the proposed project activity</b>				
A.2.1 Does the PDD contain an accurate description of the project activity and provide the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? How was the design of the project assessed?	/01/, /11/, /12/, /13/, /14/	DR CC	<p>As per the PDD, the purpose of the project activity is to generate electricity from solar photovoltaic and supply the same to NEWNE grid of India. OPG Energy Private Limited is the project participant who has developed a 5 MWp solar photovoltaic power plant at Baap village of Jodhpur district, in the State of Rajasthan. The project capacity is confirmed during the site visit and from the Agreement signed for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies Inc dated 28/12/2010. It was confirmed during the site visit that the project activity is commissioned. The same has been crosschecked with commissioning report for solar power plant received from Jodhpur Discom, dated 14/10/2011. This confirmed that the project activity is a green field project.</p> <p>PP is requested to provide the following</p> <ol style="list-style-type: none"> <li>1. Land approval/lease agreement executed for the project location.</li> <li>2. Feasibility study report for setting up of 5 MWp solar photovoltaic power plant at Baap village of Jodhpur district.</li> <li>3. The age and average lifetime of the equipment based on manufacturer's specifications and industry standards are not transparent in section A.3. of the PDD as per the specific guidelines for completing the PDD.</li> <li>4. Load factors and efficiencies are not mentioned in section A.3. of the PDD.</li> <li>5. Section A.3. of the PDD is not transparent on the technology transfer from any Annex-I party .</li> </ol>	CL-04 OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
A.2.2	Does the project activity involve alteration of existing installations? If yes, have the differences between pre-project and post-project activity been clearly described in the PDD?	/01/, /11/, /14/	DR CC I	The project activity is a Greenfield project. This has been confirmed from the Agreement signed for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies Inc dated 28/12/2010 and commissioning report for solar power plant received from Jodhpur Discom, dated 14/10/2011. This was further confirmed also during the site visit.	OK
A.2.3	Is all information provided consistent and in compliance with the actual situation or planning?	/01/	DR/ CC/I	All the information provided in the PDD is consistent and in compliance with the actual situation/planning. The same has been confirmed during the site visit.	OK
A.2.4	Does the project qualify as a small-scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/01/11/14/	DR CC	The project activity qualifies as a small-scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM dated 30/03/2006. The total capacity of the project activity is 5 MW, which is well below the stipulated limit of 15MW. Hence it falls under the type-I small scale project activity.	OK
A.2.5	Is the small-scale project activity a debundled component of a larger project activity in accordance with the Guidelines on assessment of debundling for SSC project activities?	/01/28/	DR CC	As per the “Guidelines on assessment of de-bundling for SSC project activities” version 03, Annex 13 of EB 54 dated 28/05/2010, the proposed project activity is not a de-bundled component of a large scale project activity since the PP does not have any registered small-scale CDM project activity in the same project category and technology, within 1 km of the project boundary of the proposed small scale project activity and within the previous 2 years. This has also been confirmed during validation site visit and from the databank of UNFCCC.	OK
A.3 Project participants					
A.3.1	Have the Parties and project participants participating in the project been listed in tabular form in Section A.3 and are they consistent with the information detailed in Annex 1 of the PDD?	/01/, /07/	DR CC	The party (host country) involved in the project activity is India, the name of the project participant is “OPG Energy Private Limited” as per the webhosted PDD. The same has been listed in tabular form in section A.4. of the PDD, this is consistent with the information detailed in the Appendix 1 of the PDD. PDD also mentions that the PP is a private entity. However PP is requested to submit the HCA.	CAR-01, OK

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
A.3.2 Do all participating Parties fulfil the participation requirements as follows: (a) Party has ratified the Kyoto Protocol (b) Party has a Designated National Authority (c) The assigned amount has been determined	/01/ /09/ /10/	DR/ CC	Since it is a unilateral project, the only party involved is India. India ratified the Kyoto Protocol on 26/08/2002 and is allowed to participate. India has a Designated National Authority (DNA) called National Clean Development Mechanism Authority (NCDMA) under Ministry of Environment and Forest, Govt. of India.  There is no assigned amount determined for India.	OK
A.3.3 Have the letters of approval have been issued?	/01/	DR	The letter of approval from host country DNA is not yet available. The PP is requested to provide the same.	CAR-01, OK
A.3.4 Do the letters of approval meet the following requirements? (a) LoA(s) is/are issued by the DNA (b) LoA confirms that the Party has ratified the Kyoto Protocol; (c) LoA confirms that participation is voluntary (d) The LoA confirms that the project contributes to the sustainable development of the Host Country? (e) The LoA is valid for the proposed project activity under validation (f) The LoA was received directly by the DNA or by the PP	/01/	DR	Please refer to section A.3.3 of this protocol.	CAR-01, OK
A.3.5 Indicate the means of validation employed to assess the authenticity	/01/	DR	The letter of approval from host country DNA is not yet available. The PP is requested to provide the same.	CAR-01, OK
A.3.6 Have all private/public project participants been authorized by a Party to the Kyoto Protocol?	/01/	DR	Please refer to section A.3.3 of this protocol.	CAR-01, OK
A.3.7 Are the entities included in the PDD those authorized as PPs?	/01/	DR	The letter of approval from host country DNA is not yet available. The PP is requested to provide the same.	CAR-01, OK
A.3.8 Do the PP(s) listed in the PDD have a contract with RINA for the project validation?	/01/, /30/	DR	Yes. The PP listed in the PDD has signed a contract with RINA for validating this project activity.	OK
<b>A.4 Modalities of communication</b>				

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
A.4.1	Does the MoC statement comply with the latest version of the Form F-CDM-MOC available?	/01/	DR	PP is requested to submit the latest version of the Modalities of Communication statement (F-CDM-MOC) and documentary evidence to check the authenticity of the signing authority.	<del>CAR-03</del> OK
A.4.2	Does the MoC statement is correctly completed including Annex 1?	/01/	DR	Please refer to section A.4.1 above.	<del>CAR-03</del> OK
A.4.3	Does the MoC statement identify all PPs and focal points?	/01/	DR	Please refer to section A.4.1 above.	<del>CAR-03</del> OK
A.4.4	How the personal identities, the specimen signatures and the employment status is cross-checked?	/01/	DR	Please refer to section A.4.1 above.	<del>CAR-03</del> OK
A.4.5	Is the official who submitted the MoC statement and the official who signed the written confirmation duly authorized to do so on behalf of the respective PPs?	/01/	DR	Please refer to section A.4.1 above.	<del>CAR-03</del> OK
<b>A.5 Technical description of the project</b>					
A.5.1	Does the information provided on the location of the project activity allow for a clear identification of the site(s)?  Are the latitude and longitude of the site indicated (decimal points)?	/01/	DR CC	The information on the location of the project activity is provided clearly in section A.2. of the PDD and the same was cross checked during site visit and found to be correct. The onsite measurement using GPS reveals the coordinates as  Latitude : 27 <sup>0</sup> 21' 20.61" N Longitude : 72 <sup>0</sup> 21' 04.71" E  The same is in line with the co-ordinates mentioned in the PDD.	OK
A.5.2	Is the category(ies) of the project activity correctly identified?	/01/	DR	Yes; the category of the project activity is correctly identified.	OK
A.5.3	Does the project design engineering reflect current good practices? Would the technology result in a significantly better performance than any commonly used technologies in the host Country? Is any transfer of technology from any Annex I Party involved?	/01/,/10/	DR	1. The technology involved in the project activity is the conversion of solar energy into electrical energy by installing the PV modules at site. The electricity is generated at PV modules as Direct Current (DC) and the same is converted to Alternating Current (AC) using inverter. However refer to CAR 02	<del>CAR-02</del> OK



Checklist Question		Reference	MoV <sup>1</sup>	Comments		Conclusion						
A.5.4	What is the expected operational lifetime of the project activity? Is it reasonable?	/01/	DR	Please refer section A.5.3		CAR-02 OK						
A.6 Public funding												
A.6.1	Does the information on public funding provided conform to the actual situation or planning as presente by the PPs?	/01/	DR CC	As per the webhosted PDD, there is no public funding from Annex I countries for the proposed project activity, however, PP is requested to clarify on the mode of financing for the proposed project activity and substantiate the same with supporting documents.		CL-02 OK						
A.6.2	If public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/01/	DR CC	Please refer to section A.6.1 above.		CL-02 OK						
B. Baseline and monitoring methodology												
B.1 Methodology applied												
B.1.1	Does the project activity apply an approved methodology and the correct version thereof?	/01/,/06/	DR CC	The project activity applies approved methodology AMS-I.D. “Grid Connected Renewable Electricity Generation”, version 17, dated 03/06/2011, which is the latest version available with the UNFCCC site.		OK						
B.1.2	Is there any specific guidance, including the methodological tools provided by EB and has these guidance been applied?	/01/, /06/, /29/	DR CC	The tool used for the project activity is “Tool to calculate the emission factor for an electricity system”, version 03, EB 70, Annex 22, dated 23/11/2012.		OK						
B.1.3	How was it validated that the project activity complies with the applicability criteria?	/01/, /06/, /11/, /12/, /13/, /14/		<table><tr><th>Applicability criteria</th><th>Project activity</th><th>Criteria is met?</th></tr><tr><td>1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and</td><td>The project activity is the solar based power generation; and the generated electricity is supplied to NEWNE grid</td><td>As confirmed through the site visit and PPA, project</td></tr></table>		Applicability criteria	Project activity	Criteria is met?	1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and	The project activity is the solar based power generation; and the generated electricity is supplied to NEWNE grid	As confirmed through the site visit and PPA, project	CAR-02, CL04 OK
Applicability criteria	Project activity	Criteria is met?										
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and	The project activity is the solar based power generation; and the generated electricity is supplied to NEWNE grid	As confirmed through the site visit and PPA, project										

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
			renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	(regional grid) as confirmed through the commissioning report, site visit and PPA.  activity is the Renewable energy and supplies power to regional grid.
			2. Illustration of respective situations under which each of the methodology (i.e. AMSI. D, AMS-I.F and AMS-I.A) applies is included in Table 2.	The project activity supplies electricity to regional grid as confirmed through the site visit and PPA.  The project activity supplies electricity to regional grid as confirmed through the site visit and PPA.
			This methodology is applicable to project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the	The project activity is green field solar based small scale activity as confirmed during site visit and commissioning report.  Yes, the criteria is met as per the applied methodology.

Checklist Question		Reference	MoV <sup>1</sup>	Comments			Conclusion
				project activity (Greenfield plant); (b) Involve a capacity addition; (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s).			
				<p>4. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> <li>• The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</li> <li>• The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m<sup>2</sup>;</li> <li>• The project activity results in new reservoirs and the</li> </ul>	The project activity is the green field solar based power generation project activity.	This criteria is not applicable to the proposed project activity	

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
			power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m2.	
			5. If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The project activity is the installation of new solar power project activity .the total capacity of the project activity is 5MW as confirmed from commission report, PPA and site visit observation .  This criteria is not relevant for the proposed project activity.
			6. Combined heat and power (cogeneration) systems are not eligible under this category.	The project activity does not involve any co-generation activity.  This criteria is not applicable for the project activity.
			7. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable	The project activity is the installation of new solar PV modules at site to generate electricity. Hence,  This criteria is not applicable for the project

Checklist Question		Reference	MoV <sup>1</sup>	Comments			Conclusion
				power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	it does not involve in any capacity additions.	activity.	
				8. In the case of retrofit or replacement, to qualify as a smallscale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	The project activity is the installation of new solar PV modules at site to generate electricity as confirmed through the site visit, commission report and EPC contract with technology supplier.	This criterion is not applicable for the project activity.	
B.1.4	Is the selected baseline one of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/01/, /06/, /12/, /13/	DR CC	<p>Yes. The project proponent has chosen baseline scenario as per the approved baseline methodology AMS-I.D. version 17.0.0. The baseline scenario is that the 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 into the grid.</p> <p>The project activity involves generation of electricity through the solar photovoltaic power plant, the generated power is supplied to NEWNE grid (regional grid). The same has been confirmed by the PPA and the physical inspection of</p>			OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
				site.	
<b>B.2 Project boundary</b>					
B.2.1	Is the project boundary are clearly defined and in accordance with the applied methodology?	/01/06/	DR	Yes. The project boundary is clearly defined in the PDD and the validation team found that this is in line with the methodology.	OK
B.2.2	What are the project's system boundaries (components and facilities used to mitigate GHGs)?	/01/06/	DR/C C/I	The project's system boundary, that is components and facilities used to mitigate the GHGs are mentioned in the webhosted PDD.	OK
B.2.3	Which sources are identified for the project? Does the identified project boundary cover all possible sources linked to the project activity?	/01/06/	DR CC	CO <sub>2</sub> emission from the net electricity displaced in the NEWNE (baseline emissions) has been considered and this reflects clearly in the project boundary. The project activity does not have any project or leakage emission.	OK
B.2.4	In case of grid connected electricity project: is the relevant grid correctly identified in accordance with the latest version of tool to calculate emission factor of electricity system and the underlying methodology?	/01/06/18/	DR CC	Yes; NEWNE grid is correctly identified as the relevant grid for the project activity in accordance with the latest version of the "tool to calculate the emission factor for an electricity system" version 3.0. The approach is also in line with the applied methodology.	OK
B.2.5	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute by more than 1% to the estimated emission reductions of the project?	/01/06/	DR CC	The validation did not reveal any other emission sources not foreseen by the methodologies that may question the applicability of the methodology, may contribute to more than 1% to the estimated emission reductions of the project as this is only a Solar photovoltaic power project.	OK
<b>B.3 Identification of the Baseline Scenario</b>					
B.3.1	Which baseline scenarios have been identified? Is the list of the baseline scenarios complete? Does the PDD follow the steps to determine the baseline scenario required by the methodology/tool?	/01/06/	DR	As per the paragraph 10 of the methodology AMS-I.D, version 17, "Grid connected renewable electricity generation"; the baseline scenario is "the 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 into the grid". According to the paragraph 115 of the CDM-VVS, version 05.0. states that when the baseline scenario is prescribed in the approved methodology, no further analysis is required. Since the baseline selected is in line with the methodology, the same is accepted.	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
B.3.2	How have the other baseline scenarios been eliminated in order to determine the baseline?	/01/06/	DR// CC	Since the approved methodology that is applied prescribes the baseline scenario, no further analysis is required, according to paragraph 115 of the CDM-VVS, version 05.0	OK
B.3.3	What is the baseline scenario? Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/01/06/	DR CC	Please refer to section B.3.1 and B.3.2	OK
B.3.4	Has the baseline scenario been determined using conservative assumptions? Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies (E+ / E-), macro-economic trends and political aspirations?	/01/06/	DR// CC	Since the approved methodology that is applied prescribes the baseline scenario, no further analysis is required, according to paragraph 115 of the CDM-VVS, version 02.0.	OK
<b>B.4 Additionality</b>					
B.4.1	What tool does the project use to assess additionality? Is this in line with the methodology?	/01/	DR	PDD states that the additionality has been demonstrated as per paragraph 2 of the provisions of Attachment A to Appendix B, version 08; however the Attachment A to Appendix B is changed to guidelines on the demonstration of additionality of small-scale project activities. PP is not using the latest guidelines to demonstrate additionality.	<del>CAR-04</del> OK
B.4.2	What is the project additionality mainly based on?	/01/	DR	Please refer to section B.4.2	<del>CAR-04</del> OK
<b>B.4.3 Prior consideration of CDM</b>					
B.4.3.1	What is the starting date of the proposed project activity? Is it in accordance with the CDM Glossary of Terms?	/01/, /14/, /20/	DR CC	As per section C.1.1 of the PDD, the start date of the project activity is 28/12/2010 which is the date of signing the agreement (EPC contract) for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies. The validation team has cross checked the copy of the agreement and found that the advance payment shall be payable upon the signing of the project contract. However, PP is requested to provided the proof of advance payment made to the technology supplier to justify the suitability of choosing start date as per Glossary of CDM terms" version 7.0 of 23/11/2012..	<del>CL-03</del> OK
B.4.3.2	Is the project activity a new project activity or existing project?	/01/,/14/	DR	The project is a new project activity since the start date is after 2 August 2008. This has been confirmed from the the	OK



Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
		CC	agreement (EPC contract) signed for setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies.	
B.4.3.3 For an existing project activity with a start date is prior the date of the PDD publication for GSC, what is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/01/,/04/	DR	<p>The project activity is a new project activity as discussed above. The start date of the project activity is mentioned as 28/12/2010 in the PDD; which is after 2 August 2008 (CDM EB guidelines on CDM consideration). PP intimated host country DNA and UNFCCC regarding the commencement of the CDM project activity as per the "Clean Development Mechanism Project Standard", version 05.0.</p> <p>This has been cross checked from the UNFCCC website. However PP is requested to submit the copy of initial e-mail sent to UNFCCC and host country DNA; and their acknowledgment.</p>	CL-04 OK
B.4.3.4 Does the timeline of the project confirm that continuous actions in parallel with the implementation were taken to secure CDM status? Please specify the gap between the documented evidences.	/01/,/04/	DR	Please refer to section B.4.3.3 above.	CL-04 OK
<b>B.4.4 Investment analysis</b>				
B.4.4.1 What is the analysis method used to determine whether the proposed project activity is not (a) the most economically or financially attractive; or (b) economically or financially feasible, without the revenue from the sale of certified emission reductions?	/01/06/19/	DR CC	<p>PP has not opted for demonstration of additionality through any barriers since: As per para 2 of the provisions of Attachment A to Appendix B, version 08, of the simplified modalities and procedures for small-scale CDM project activities, "the positive list of grid-connected renewable electricity generation technologies that are automatically defined as additional, without further documentation of barriers, consists of the following grid connected renewable electricity generation technologies of installed capacity up to 15 MW:</p> <p>(a) Solar technologies (photovoltaic and solar thermal electricity generation);</p> <p>(b) Off-shore wind technologies;</p> <p>(c) Marine technologies (wave, tidal)".</p>	CAR-04 OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
				<p>As the proposed project activity is a solar PV project of 5 MW capacity only, in-line with the paragraph 2 of the attachment A to Appendix B, the project activity is proved to be additional by default</p> <p>Thus, investment analysis is not required to demonstrate additionality of the project. However the Attachment A to Appendix B is changed to guidelines on the demonstration of additionality of small-scale project activities. PP is not referring to the latest guidelines to demonstrate additionality.</p>	
B.4.4.2	What the financial indicator is used?	/01/06/19/	DR CC	Please refer to section B.4.4.1	<del>CAR-04</del> OK
B.4.4.3	<p>If a benchmark is used, is it ensured that it is selected in accordance with the requirements of the EB guidelines and it represents standard returns in the market?</p> <p>Is the benchmark suitable for the type of financial indicator presented?</p> <p>Is it ensured the any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity?</p>	/01/06/19/	DR CC	Please refer to section B.4.4.1	<del>CAR-04</del> OK
B.4.4.4	<p>Is the investment analysis carried out in accordance with specific guidance from EB?</p> <p>Is the investment analysis complete and accurate?</p> <p>Is the investment analysis provided in a spreadsheet version? Are all the formulas used readable and all relevant cell be viewable and unprotected?</p>	/01/06/19/	DR CC	Please refer to section B.4.4.1	<del>CAR-04</del> OK
B.4.4.5	Cross-check the parameters used in the financial analysis against third party or publicly available sources (all parameters used as input values shall be cross-checked and assessed).	/01/06/19/	DR CC	Please refer to section B.4.4.1	<del>CAR-04</del> OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
B.4.4.6	Are the input values used in the investment analysis valid and applicable at the time of the investment decision taken by the PP?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
B.4.4.7	Where applicable, the PFL has been defined ex-ante according to the applicable EB guideline?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
B.4.4.8	Does the time period of the investment analysis reflect the expected operation of the underlying project activity (technical lifetime)?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
B.4.4.9	Does the fair value of the project activity assets is included at the end of the assessment period as a cashflow in the final year?  Is the fair value calculated in accordance with local accounting regulations where available or international best practice?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
B.4.4.10	Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the Host Country	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
B.4.4.11	Sensitivity analysis: have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
B.4.4.11	Sensitivity analysis: is the range of variations is reasonable in the project activity?  The main parameters can be changed for the different project category.	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
B.4.4.12	Have the key parameters been varied to reach the benchmark and the likelihood of this happening been justified to be small?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	CAR-04 OK
<b>B.4.5 Barrier analysis</b>					
B.4.5.1	Are the barriers identified complimentary to a potential investment analysis?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.5.2	How were the investment barriers assessed to be real?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
	How were the technological barriers assessed to be real?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.5.3	How were the other barriers assessed to be real?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.5.4	Barriers due to prevailing practice (First of its kind): does the project apply measures currently covered in the framework (fuel and feedstock switch, switch of technology with or without change of energy source, methane destruction, methane formation avoidance)?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.5.5	Barriers due to prevailing practice (First of its kind): do the technologies deliver the same output and differ by at least of energy source/fuel, feed stock, size of installation?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.5.6	Barriers due to prevailing practice (First of its kind): does the applicable geographical area is in compliance with the definition as per the EB guideline?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.5.7	Is the project activity prevented by the identified barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.5.8	How the CDM can alleviate the identified barriers?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
<b>B.4.6 Common practice analysis</b>					
B.4.6.1	Does the project apply measures currently covered in the framework (fuel and feedstock switch, switch of technology with or without change of energy source, methane destruction, methane formation avoidance)?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.6.2	Do the technologies deliver the same output and differ by at least of energy source/fuel, feed stock, size of installation, investment climate in the date of the investment decision, other features?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.6.3	Does the applicable geographical area is in compliance with the definition as per the EB	/01/06/19/	DR	This is not applicable for the project activity.	OK

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
guideline?		CC	Please refer to section B.4.4.1	
B.4.6.4 How many similar non-CDM-projects exist in the region within the scope?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
B.4.6.5 What is the data source(s) used for the common practice analysis?	/01/06/19/	DR CC	This is not applicable for the project activity. Please refer to section B.4.4.1	OK
<b>B.4.7 Conclusion</b>				
B.4.7.1 What is the conclusion with regard to the additionality of the project activity?	/01/06/19/	DR CC	<p>PP has not opted for demonstration of additionality through any barriers since: As per para 2 of the provisions of Attachment A to Appendix B, version 08, of the simplified modalities and procedures for small-scale CDM project activities, “the positive list of grid-connected renewable electricity generation technologies that are automatically defined as additional, without further documentation of barriers, consists of the following grid connected renewable electricity generation technologies of installed capacity up to 15 MW:</p> <p>(a) Solar technologies (photovoltaic and solar thermal electricity generation);</p> <p>(b) Off-shore wind technologies;</p> <p>(c) Marine technologies (wave, tidal)”.</p> <p>As the proposed project activity is a solar PV project of 5 MW capacity only, in-line with the paragraph 2 of the attachment A to Appendix B, the project activity is proved to be additional by default</p> <p>Thus, investment analysis is not required to demonstrate additionality of the project. However the Attachment A to Appendix B is changed to guidelines on the demonstration of additionality of small-scale project activities. PP is not referring to the latest guidelines to demonstrate additionality. Please refer to section B.4.4.1.</p>	<del>CAR-04,</del> <del>CL-03, CL-04</del> OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
<b>B.5 Algorithms and/or formulae used to determine emission reductions</b>					
<b>B.5.1 Baseline emissions</b>					
B.5.1.1	Are the steps and equations applied to calculate the baseline emissions in compliance with the requirements of selected baseline and monitoring methodology?	/01/,/06/ /16/,/18/ /29/	DR CC	<p>According to the methodology (AMS-I.D.version-17) emission reductions are calculated as follows:</p> $ER_y = BE_y - PE_y - LE_y$ <p>BE<sub>y</sub> - Baseline CO<sub>2</sub> emissions: It is the multiplication of net electricity (EG<sub>y</sub>) exported to the grid by the project activity with grid emission factor (EF<sub>grid,CM,y</sub>).</p> <p>Emission factor has been calculated as per the "Tool to calculate the emission factor for an electricity system". The values for Emission factor (EF) has been taken from Central electricity authority (CEA) data base, version 08, January 2013 from Ministry of power, India. The Combined emission factor is calculated to be 0.958 tCO<sub>2</sub>/MWh. The PP has declared in the PDD that this is going to be fixed for the entire crediting period.</p> <p>However, the following issues are identified,</p> <ol style="list-style-type: none"> <li>1. The identification of electricity system and connected system is not justified in the PDD.</li> <li>2. Plant Load Factor of the project activity is not transparent in the PDD.</li> <li>3. The reference mentioned for the tool to calculate the emission factor for an electricity system is not consistent in the PDD. Further the version used is not the latest at many places in the PDD.</li> <li>4. The net electricity generation is taken from the PPA. And as per the RERC tariff order degradation of 0.5% to be applied after two years of commissioning. Its more than two years the project is commissioned. Thus this needs to be applied from the 1<sup>st</sup> year of ER calculations in the PDD and the ER spread sheets.</li> </ol> <p>Further PDD is not transparent on the calculation of E<sub>GBL,y</sub>.</p>	CAR-05 OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
B.5.1.2	Have conservative assumptions been used when calculating the baseline emissions and are the uncertainty estimates properly addressed?  Are all the values used in the PDD considered reasonable in the context of the proposed project activity?	/01/,/06/ /16/ ,/18/ /29/	DR CC	Please refer section B.5.1.1	CAR-05 OK
B.5.1.3	Baseline Emissions estimated	/01/,/06/ /16/ ,/18/ /29/	DR CC	The baseline estimated is 8,680 tCO <sub>2</sub> . Please refer section B.5.1.1	CAR-05 OK
B.5.2 Project emissions					
B.5.2.1	Are the steps and equations applied to calculate the project emissions in compliance with the requirements of selected baseline and monitoring methodology?  Are all the values used in the PDD considered reasonable in the context of the proposed project activity?	/01/,/06/ /16/ ,/18/ /29/	DR CC	Yes. The solar photovoltaic project activity has zero emission sources, and hence there are no associated emissions in the project scenario.	OK
B.5.2.2	Have conservative assumptions been used when calculating the project emissions and are the uncertainty estimates properly addressed?	01/,/06/ /16/ ,/18/ /29/	DR/ CC	Please refer to section B.5.2.1	OK
B.5.2.3	Project emissions estimated	//01/,/06/ /16/ ,/18/ /29/	DR/ CC	Project emissions are estimated as zero. Considering the project is a wind power project, this is in line with the methodology.	OK
B.5.3 Leakage					
B.5.3.1	Are the steps and equations applied to calculate the leakage in compliance with the requirements of selected baseline and monitoring methodology?  Are all the values used in the PDD considered reasonable in the context of the proposed project activity?	/01/06/	DR/ CC	As per the applied methodology AMS-I.D., version 17.0.0, no leakage emissions are required to be considered. This is made transparent in the PDD.	OK
B.5.3.2	Have conservative assumptions been used when calculating the leakage and are the uncertainty estimates properly addressed?	/01/06/	DR/ CC	Please refer to section B.5.3.1	OK



Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
B.5.3.3 Leakage estimated	/01/06/	DR/ CC	Leakage emissions are estimated as zero. This is in line with the methodology.	OK
<b>B.5.4 Emission reductions</b>				
B.5.4.1 Has the methodology been correctly applied to calculate the emission reductions and can this be replicated by the data provided in the PDD and supporting files to be submitted for registration?	01/,/06/ /16/,/18/ /29/	DR CC	Please refer section B.5.1.1	<del>CAR-05</del> OK
B.5.4.2 Are all the assumptions and data used by the project participants listed in the PDD including their references and sources?	01/,/06/ /16/,/18/ /29/	DR CC	Please refer section B.5.1.1	<del>CAR-05</del> OK
B.5.4.3 Is all the documentation used by the project participants as the basis for assumptions and source of data quoted and interpreted in the PDD?	01/,/06/ /16/,/18/ /29/	DR CC	Please refer section B.5.1.1	<del>CAR-05</del> OK
B.5.4.4 Emission Reductions estimated	01/,/06/ /16/,/18/ /29/	DR CC	Please refer section B.5.1.1 Emission Reduction estimated is 8,680 tCO <sub>2</sub> .	<del>CAR-05</del> OK
<b>B.6 Monitoring plan</b>				
<b>B.6.1 Parameters ex-ante</b>				
B.6.1.1 Does the monitoring plan contain the list of all parameters required by the approved methodology and by the applicable methodological tool?	/01/06/	DR/ CC	Yes; the monitoring plan in the PDD contains all parameters required by the approved methodology and the applicable methodological tool. This is further discussed in below sections.	OK
B.6.1.2 How were the parameters available at validation verified?	/01/06/16/1 8/	DR/ CC	The following parameters were available at the time of validation:  EF <sub>grid,OM,y</sub> (Operating Margin emission factor): Operating margin emission factor is estimated as per the "tool to calculate the emission factor for an electricity system" and referring the publicly available data published by Central Electricity Authority in the "CO <sub>2</sub> Baseline Database for the Indian Power Sector User Guide, Version 8.0, January 2013. This was the latest data available at time of start of validation.  EF <sub>grid,BM,y</sub> (Build Margin emission factor): Build margin	<del>CAR-05</del> OK

Checklist Question	Reference	MoV <sup>1</sup>	Comments	Conclusion
			emission factor is estimated as per the “tool to calculate the emission factor for an electricity system” and referring the publicly available data published by Central Electricity Authority in the “CO <sub>2</sub> Baseline Database for the Indian Power Sector User Guide, Version 8.0, January 2013. This was the latest data available at time of start of validation. Accordingly, the Combine margin emission factor (EF <sub>grid, CM,y</sub> ) is calculated in line with the tool. However, the tool referred are not latest in the PDD,	
B.6.1.3	Which default data have been selected and applied?	/01/06/16/18/	DR/CC No default values have been applied.	OK
B.6.1.4	Are all the values used in the PDD considered reasonable in the context of the proposed project activity?	/01/06/16/18/	DR/CC Yes; the values used in the PDD and considered reasonable in the context of the project activity.	OK
<b>B.6.2 Parameters ex-post</b>				
B.6.2.1	Does the monitoring plan described in the PDD comply with the requirements of the methodology and the applicable methodological tool?	/01/06/18/	DR/C C The methodology requires monitoring of net electricity generation supplied by the project plant to the grid in a year. The grid emission factor is estimated ex-ante as per the procedures outlined in “tool to calculate the emission factor for an electricity system”. The institutional arrangement for data handling and storage, calibration frequency of energy meter and apportioning procedure to be followed for net electricity export is presented in the PDD.	OK
B.6.2.2	Does the monitoring plan contain all necessary parameters and are they clearly described?	/01/06/	DR/CC The following parameter is monitored as per the PDD: <b>EG<sub>BL,y</sub></b> is the net quantity of electricity supplied to the grid by the project activity. This shall be monitored continuously through a main electric meter installed at the substation. A check meter will also be installed for the same purpose and to be referred in case of failure of main meter. The energy meter monitors continuously the export and import of energy to the grid. However, the PDD does not include the monitoring procedures of export and import of electricity in the PDD.	GAR-06 OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
B.6.2.3	Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate? Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?	/01/ /06/11/	DR/ CC	Yes; the energy meters are of accuracy class of 0.2 S and is appropriate as per the commissioning certificate. Meters are calibrated at least once in three years which is in compliance with the clean development mechanism project standard.	OK
B.6.2.4	Does the Monitoring Plan stated in the PDD confirm that the calibration of meters will be done by an accredited person or institution?	/01/06/	DR/C C	Yes; the net electricity generation supplied to grid shall be measured continuously and recording will be done at least monthly. This is in line with the methodology.	OK
B.6.2.5	Is the monitoring and recording frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/01/06/	DR/C C	<p>The project plant is commissioned and monitoring provisions are being followed as per state utility requirements and UNFCCC requirements. Continuous monitoring of electricity import and export is done at the energy meter installed at the substation. Meters are of accuracy class 0.2 S. Check meter is also installed to refer in case of failure of main meter. On monthly basis joint meter reading is taken by the state utility representative in presence of project proponent and based on the net electricity export invoice is raised by PP. Meters are calibrated at least once in three years.</p> <p>The General manager is in-charge of the O&amp;M of the entire power plant. He is positioned at site and is reporting directly to Chief Executive Officer (CEO). The PDD discusses the organizational structure &amp; responsibility on project operation, monitoring, data recording, training and ER calculation. The same has been confirmed during the site visit and is in line with the PDD.</p>	OK
<b>B.6.3 Management/Quality Assurance/Quality Control</b>					
B.6.3.1	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/01/06/	DR/C C	Yes; daily generation is being monitored and records are stored electronically. However, joint meter reading is noted and recorded on monthly basis and monthly invoice is raised on that basis.	OK
B.6.3.2	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported ex post and verified?	/01/06/	DR/C C	Gross quantity of electricity exported to grid and imported from grid shall be continuously monitored in the main and check meter installed at the substation. Monthly joint meter reading shall be taken by state utility and representatives of project proponent from the main meter. From the copies of	OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
				invoices raised by PP to state utility, net electricity export can be cross checked.	
B.6.3.3	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/01/06/	DR/C C	Yes; all the data recorded under the monitoring plan will be kept till 2 year after the end of crediting period. This is in line with the methodology.	OK
C.1 Crediting period					
C.1.1	What is the expected crediting starting date of the proposed project activity? Does the crediting period start eight week after the request for registration?	/01/	DR	As per the section C.2.2 of the PDD, the expected starting date of crediting period is 01/10/2013 or date of registration of the project activity with UNFCCC whichever is later.	OK
C.1.2	What is the length of the crediting period? Is it clearly defined and reasonable?	/01/	DR	The PP has considered renewable crediting period and the length of first crediting period is considered as 7 years which is reasonable and appropriate.	OK
D.1 Environmental impacts					
D.1.1	Has an analysis of the environment impacts of the project activity been undertaken? Is it clearly and sufficiently described in the PDD?	/01/,/27/	DR/ CC	As per the notification of Ministry of Environment and Forest (MoEF), Govt. Of India, dated 01/12/2009, small scale solar power projects don't fall under the purview of Environmental Impact Assessment notification.	OK
D.1.2	Will the project create any adverse environmental effects? Are transboundary environmental impacts considered in the analysis?	/01/,/27/	DR, CC	The project activity is not likely to create any adverse environmental effects as mentioned in the PDD .	OK
D.1.3	Is the analysis of the environmental impacts required by the legislation of the host Country? If yes, has the EIA has been approved by local Government? Does the approval contain any conditions that need monitoring?	/01/,/27/	DR/ CC	As per the notification of Ministry of Environment and Forest (MoEF), Govt. Of India, dated 01/12/2009, small scale solar power projects don't fall under the purview of Environmental Impact Assessment notification.	OK
D.1.4	Is it the project in line with the current environmental legislation in the host Country?	/01/,/27/	DR/ CC	The project is in line with the current environment legislation in the host country (India). Please refer to section D.1.1	OK
D.1.5	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/01/,/15/, /27/	DR/ CC	Monitoring of sustainable indicators are not legislated by the host country of the project activity. DNA of the host country issued the HCA for the project activity, which does not warrant the monitoring of sustainable indicators /environmental impacts.	OK
D.1.6	Are the sustainable development indicators in line with stated national priorities in the host country?	/01/,/27/	DR/ CC	The letter of approval from host country DNA is not yet available. The PP is requested to provide the same.	CAR-01, OK

Checklist Question		Reference	MoV <sup>1</sup>	Comments	Conclusion
E.1 Local stakeholder consultation					
E.1.1	Are the local stakeholders be invited by the PP prior to the publication of the PDD to the UNFCCC website?	/01/	DR	As per the PDD, stakeholders' meeting was conducted on 25/07/2013, which is prior to the publication of PDD to UNFCCC website. However, PP is requested submit evidences related to stakeholders' consultation.	CL-05 OK
E.1.2	Area the stakeholders invited be considered as regards commenting the proposed project activity?	/01/	DR	Please refer to section E.1.1	CL-05 OK
E.1.3	Is the summary of the comments received from the stakeholders, provided in the PDD complete?	/01/	DR	Please refer to section E.1.1	CL-05 OK
E.1.4	Has due account been taken by the project participants of any stakeholder comments received?	/01/	DR	Please refer to section E.1.1	CL-05 OK
E.1.5	If a stakeholder consultation process is required by regulations/laws in the host Country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/01/	DR	Please refer to section E.1.1	CL-05 OK

**TABLE 3 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS**

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
CAR 01 The project proponent is requested to submit the copy of Letter of Approval (LoA) from host country DNA.	A.1.1., A.3.1., A.3.3., A.3.4, A.3.5, A.3.6, A.3.7	1 <sup>st</sup> response: Letter of Approval (LoA) from host country approval is still under process. It will be submitted to the validator as soon as it is received.  2 <sup>nd</sup> response: Letter of Approval (LoA) from host country approval is still under process. It will be submitted to the validator as soon as it is received.	The LoA from the host country is not submitted. <b>CAR 01 is open.</b> <b>2<sup>nd</sup> Review:</b> <b>The HCA (No.4/17/2014-CCC) dated 28/08/2014 has been submitted. The HCA copy has been cross checked with original letter and found to be accurate to conform the project activity.</b>  <b>Hence, CAR 1 is closed.</b>
CAR 02 PDD does not comply to the latest " Guidelines for	A.1.2., B.1.3, A.5.3, A.5.4	The PDD has now been updated with the	PP has revised the PDD and the revision made is found appropriate. Hence

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
<p>completing the project design document form for small scale CDM project activities" version 01.1 dated 01/04/2013.</p> <p>Section A.1 of the PDD doesn't mention about baseline scenario and scenario existing prior to the implementation of the project activity.</p> <p>Section A.3 of the PDD is not inline with the requirements of the latest " Guidelines for completing the project design document form for small scale CDM project activities"</p> <p>The section B.2 of the PDD does not demonstrate whether the project activity qualifies as Type I, II, and/or III during every year of the crediting period in accordance with applicable provisions for project activity eligibility in the Project standard.</p> <p>The reference documents used as a basis for justification to the choice of the selected methodology and compliance to its applicability conditions are not mentioned in the PDD.</p> <p>Comments made by stakeholders and identification of stakeholders who made comments are not included in section E.2 of the PDD.</p>		<p>latest " Guidelines for completing the project design document form for small scale CDM project activities" version 01.1 dated 01/04/2013.</p> <p>Section A.1 of the PDD has been updated with the baseline scenario and scenario existing prior to the implementation of the project activity.</p> <p>Section A.3 of the PDD has been updated inline with the requirements of the latest " Guidelines for completing the project design document form for small scale CDM project activities".</p> <p>Section B.2 of the PDD now demonstrates on how the project activity qualifies as Type I during the crediting period.</p> <p>Power purchase agreement with NVVN has been used as the reference document for justification to the choice of the selected methodology and compliance to its applicability conditions. This is now mentioned in section B.2 of the PDD.</p> <p>Comments made by stakeholders and identification of stakeholders who made comments are now included in section E.2 of the PDD.</p>	acceptable. CAR 02 is closed.
<p>CAR 03</p> <p>PP is requested to submit the latest version of the Modalities of Communication statement (F-CDM-</p>	<p>A.4.1, A.4.2, A.4.3, A.4.4, A.4.5.</p>	<p>The latest version of F-CDM-MOC for the project activity is submitted with the response. The copy of the PAN card is</p>	<p>PP has submitted the MOC form and its supportive documents. PP has used the latest version of the MOC form. The</p>

[illegible]



Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
<p>the PDD.</p> <p>4. The net electricity generation is taken from the PPA. And as per the RERC tariff order degradation of 0.5% to be applied after two years of commissioning. Its more than two years the project is commissioned. Thus this needs to be applied from the 1 st year of ER calculations in the PDD and the ER spread sheets.</p> <p>Further PDD is not transparent on the calculation of <math>E_{GBL,y}</math></p>		<p>Calculation of <math>E_{GBL,y}</math> has been now explained in section B.6.3 of the PDD</p>	
<p>CAR 06</p> <p><math>E_{GBL,y}</math> is the net quantity of electricity supplied to the grid by the project activity. This shall be monitored continuously through a main electric meter installed at the substation. A check meter will also be installed for the same purpose and to be referred in case of failure of main meter. The energy meter monitors continuously the export and import of energy to the grid. However, the PDD does not include the monitoring procedures of export and import of electricity in the PDD.</p>	B.6.2.2	<p>Monitoring parameters of electricity exported to grid, electricity imported from grid and net electricity exported to grid is now mentioned in section B.7.1 of the PDD.</p>	<p>PP has revised the PDD and the revision made is found appropriate. Hence acceptable. CAR 06 is closed.</p>
<p>CL 1</p> <p>PP is requested to submit the following documents;</p> <ol style="list-style-type: none"> <li>1. Land approval/lease agreement executed for the project location.</li> <li>2. Feasibility study report for setting up of 5 MWp solar photovoltaic power plant at Baap village of Jodhpur district</li> </ol>	A.2.1, B.1.3	<p>Land lease deed and feasibility study report for the project activity is now submitted with the response.</p>	<p>PP has submitted the land lease deed and FSR for the project activity. The documents found appropriate and hence accepted. CL 1 is closed.</p>
<p>CL 02</p> <p>As per the webhosted PDD, there is no public funding from Annex I countries for the proposed project activity, however, PP is requested to clarify on the mode of financing for the proposed project</p>	A.6.1, A.6.2	<p>The letter on the financial closure achieved for the project activity from Rural Electrification Corporation Limited (financing institution for the project activity) is submitted with the response.</p>	<p>PP has submitted the financial closure letter for the project activity from Rural Electrification Corporation Ltd. The document found appropriate; and it is evident from the document, that the</p>

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
activity and substantiate the same with supporting documents.			project activity does not involves the utilization of any public funding from Annex I country. CL 02 is closed.
<p>CL 03</p> <p>The agreement signed for the setting up 5 MW grid connected solar photovoltaic project at Baap, Rajasthan between OPG Energy Private Limited and Vivaswan Technologies mentions about an advance payment shall be payable upon the signing of the project contract. However, PP is requested to provided the proof of advance payment made to the technology supplier to justify the suitability of choosing start date as per Glossary of CDM terms" version 7.0 of 23/11/2012..</p>	B.4.3.1, B.4.7.1	<p>1<sup>st</sup> response:</p> <p>The first payment to Vivaswan Technologies was done on 21/04/2011 for setting up the 5 MW grid connected solar photovoltaic project at Baap, Rajasthan. The supporting document on the payment will be provided soon.</p> <p>2<sup>nd</sup> response:</p> <p>The undertaking letter from the lender bank (Punjab National Bank) regarding the payment details for the proposed project is provided with the response as supporting document.</p>	<p>Submission of Document is pending. Hence CL 03 is Open.</p> <p>DOE Response 2:</p> <p>PP has submitted the evidence of payment to the technology supplier; and the document is found appropriate. Hence CAR is closed.</p>
<p>CL 04</p> <p>PP is requested to submit the copy of initial e-mail sent to UNFCCC and host country DNA; and their acknowledgment.</p>	B.4.3.3, B.4.7.1	Copy of the initial email sent to UNFCCC and host country is submitted with the response. The project has been listed in the UNFCCC website on 13 <sup>th</sup> April 2011( <a href="http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html">http://cdm.unfccc.int/Projects/PriorCDM/notifications/index.html</a> )	PP has submitted the initial email sent to UNFCCC and host country. The validation team has reviewed the document and found appropriate. The validation team has cross checked with prior consideration date with UNFCCC website, and found inline with the emails. Hence CL 04 is closed.
<p>CL 05</p> <p>PP is requested submit evidences related to stakeholders' consultation.</p>	E.1.1, E.1.2, E.1.3, E.1.4, E.1.5	The invitation letters, attendance sheet, minutes of meeting of the stakeholder meeting consultation is submitted with the response.	PP has submitted the invitation letters, attendance sheet, minutes of meeting with respect to the stakeholders meeting. The document found acceptable. Hence CL 05 is closed.

**TABLE 4 FORWARD ACTION REQUEST**

Forward action request	Reference to Table 2	Response by project participants Validation Conclusion
FAR 1		



RINA

## CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:  
*We declare that Mr/Mrs/Ms:*

**Rekha Menon**

è qualificato come<sup>1</sup>:  
*is qualified as:*

**CDM-TEC, -VAL, -VER, -TL**

per le seguenti aree tecniche:  
*for the following technical areas:*

**1.2, 2.1, 13.1, 13.2, 14.1**

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
2.1	Energy Demand	2
13.1	Solid Waste and wastewater	13
13.2	Manure	13
14.1	Afforestation and reforestation	14

in accordo alle istruzioni della Divisione Certificazione.  
*in accordance with the instructions of the Certification Division.*

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	06-03-2008	-
10	22-12-2014	Update qualification according to AS ver.6.0

Il Resp. QPT  
*Head of QPT*

<sup>1</sup> Legend:

VAL: Validator  
VER: Verifier  
TEC: Technical Expert  
TL: Team Leader  
FIN-EXP: Financial Expert  
DET: Determiner

CDM: Clean Development Mechanism  
VCS : Verified Carbon Standard:  
GS: Gold Standard  
SCS: SocialCarbon Standard  
JI: Joint Implementation

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

*RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports*



RINA

## CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:  
*We declare that Mr/Mrs/Ms:*

**Champok Buragohain**

è qualificato come<sup>1</sup>:  
*is qualified as:*

**CDM -TEC, -VAL, -VER, -TL**

per le seguenti aree tecniche:  
*for the following technical areas:*

**1.2, 2.1, 13.1, 13.2**

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
2.1	Electricity distribution	2
13.1	Solid waste and wastewater	13
13.2	Manure	13

in accordo alle istruzioni della Divisione Certificazione.  
*in accordance with the instructions of the Certification Division.*

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19-01-2011	-
10	22-12-2014	Updated according to AS ver 6.0

Il Resp. QPT  
*Head of QPT*

<sup>1</sup> Legend:

VAL: Validator  
VER: Verifier  
TEC: Technical Expert  
TL: Team Leader  
FIN-EXP: Financial Expert  
DET: Determiner

CDM: Clean Development Mechanism  
VCS : Verified Carbon Standard:  
GS: Gold Standard  
SCS: SocialCarbon Standard  
JI: Joint Implementation

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

*RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports*



RINA

**CERTIFICATO DI QUALIFICA  
QUALIFICATION CERTIFICATE**

Si attesta che il sig./sig.ra:  
*We declare that Mr/Mrs/Ms:*

**Mathew Vijay**

è qualificato come<sup>1</sup>:  
*is qualified as:*

**CDM -TEC, -VAL**

per le seguenti aree tecniche:  
*for the following technical areas:*

**1.2**

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1

in accordo alle istruzioni della Divisione Certificazione.  
*in accordance with the instructions of the Certification Division.*

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	02/08/2012	-
2	22-12-2014	Update qualification according to AS ver.6.0

Il Resp. QPT  
*Head of QPT*

<sup>1</sup> Legend:

VAL: Validator  
VER: Verifier  
TEC: Technical Expert  
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RINA

## CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:  
We declare that Mr/Mrs/Ms:

Reghu Raghavan Nair Kumar

è qualificato come<sup>1</sup>:  
is qualified as:

CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, CDM-FIN-EXP  
VCS-TEC, VCS-VAL, VCS-VER, VCS-TL, VCS-FIN-EXP  
GS-TEC, GS-VAL, GS-VER, GS-TL, GS-FIN-EXP  
SCS-TEC, SCS-VAL, SCS-VER, SCS-TL, SCS-FIN-EXP  
JI-TEC, JI-FIN-EXP

per le seguenti aree tecniche:  
for the following technical areas:

1.1, 1.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 5.1, 6.1, 11.1, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation from fossil fuel and biomass including thermal electricity from solar	1
1.2	Energy generation from renewable energy sources	1
4.3	Iron and steel	4
4.4	Refinery	4
4.5	Rubber and Plastics	4
4.6	Electrical/electro technical products	4
4.7	Coke/coal/char-coal production	4
4.8	Pulp and paper production	4
5.1	Chemical process industries	5
6.1	Construction	6
11.1	Chemical process industries	11
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Divisione Certificazione.  
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	31-08-2009	-
7	03-06-2013	Annual revision

Il Resp. QPT  
Head of QPT

<sup>1</sup> Legend:

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VER: Verifier  
TEC: Technical Expert  
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RINA

## CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:  
*We declare that Mr/Mrs/Ms:*

Rita Valoroso

è qualificato come1:  
*is qualified as:*

CDM -TEC, -VAL, -VER, -TL  
TECHNICAL REVIEWER

per le seguenti aree tecniche:  
*for the following technical areas:*

1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
13.1	Solid Waste and waste water	13

in accordo alle istruzioni della Divisione Certificazione.  
*in accordance with the instructions of the Certification Division.*

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	18-01-10	-
9	22-12-2014	Update qualification according to AS ver.6.0

Il Resp. QPT  
Head of QPT

<sup>1</sup> Legend:

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