

VERIFICATION REPORT OF SOLAR PV POWER PROJECT BY ROHA DYECHM PVT. LTD. (EKIESL.CDM.AUG-11-02)



Document Prepared By: URS Verification Private Limited (URS)

Project Title	Solar PV power project by Roha Dyechem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)
Version	01
Report ID	CCMS005845

Report Title	Verification Report of "Solar PV power project by Roha Dyechem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)"
Client	Roha Dyechem Pvt. Ltd
Pages	20
Date of Issue	25/07/2014
Prepared By	URS Verification Private Limited (URS)
Contact	Physical Address: F-31, Sector-6, Noida – 201301, India Tel: +91-11-41083363, +91-120 – 6404223, 6404224, Fax: +91- 120 - 4297916 Email: ceo@ursindia.com Website: www.ursindia.com
Approved By	Mr. Mukesh Singhal

Work Carried Out By	Mr. Manoj Shrivastava (Lead Assessor & Technical Area Expert TA 1.2)
	Mr. Sandip Saha (Assessor & Technical Area Expert TA 1.2)
	Mt. Rakesh Chouhan (Technical Reviewer & Technical Area Expert TA 1.2)

Summary:

- **A brief description of the verification and the project:**

URS Verification Private Limited (URS), have been commissioned by Roha Dyechem Pvt. Ltd, to verify the greenhouse gas emission reductions reported for the project “Solar PV power project by Roha Dyechem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)”, for the period from 30-December-2012 to 28-December-2013 (both days inclusive), with regard to the relevant requirements for VCS and CDM activities. The verification shall ensure that reported emission reductions are complete and accurate in accordance with applicable VCS and CDM requirements in order to be certified.

- **The purpose and scope of verification:**

The purpose of verification is to have an independent third party assessment of the monitoring period. In particular, the monitoring plan, and the project’s compliance with relevant VCS criteria are verified in order to confirm that the project implementation as documented, is sound and reasonable and meets the identified criteria.

- **The method and criteria used for verification:**

The verification consists of the following three phases:

- I) A desk review of the VCS PD, MR and ER spreadsheet and validation report
- II) On-site visit and follow-up interviews with project stakeholders
- III) The resolution of outstanding issues and the issuance of the final verification report and opinion.

- **Any findings, restrictions of uncertainties related to the verification:**

There are no restrictions of uncertainties related to this verification. There were 2 CAR and 1 CL were raised which were closed satisfactorily. The details of the findings (CARs & CLs) are provided in section 2.5 below.

- **Summary of the verification conclusion:**

The GHG emission reductions were calculated on the basis of the approved methodology ACM0002 version 13.0.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” and the monitoring plan included in the registered VCS-PD, version 02 of 26/06/2012.

In conclusion, it is URS’s opinion that the project “Solar PV power project by Roha Dyechem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)” as described in the Monitoring Report version 02 of 26/06/2012, meets all relevant requirements for VCS and CDM activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology ACM0002 version 13.0.0, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”. Hence URS is able to certify that the emission reductions from the project during the monitoring period 30-December-2012 to 28-December-2013 (both days inclusive) amount to 41,272 tCO₂e.

Table of Contents

1	Introduction.....	4
1.1	Objective	4
1.2	Scope and Criteria	4
1.3	Level of Assurance.....	5
1.4	Summary Description of the Project	5
2	Verification Process	5
2.1	Method and Criteria.....	5
2.2	Document Review	6
2.3	Interviews	9
2.4	Site Inspections	9
2.5	Resolution of Findings.....	9
2.6	Eligibility for Validation Activities	12
3	Validation Findings.....	12
3.1	Participation under Other GHG Programs	12
3.2	Methodology Deviations	13
3.3	Project Description Deviations	13
3.4	Grouped Project	13
4	Verification Findings.....	13
4.1	Project Implementation Status	13
4.2	Accuracy of GHG Emission Reduction and Removal Calculations	16
4.3	Quality of Evidence to Determine GHG Emission Reductions and Removals	18
4.4	Non-Permanence Risk Analysis.....	19
5	Verification conclusion	19

1 INTRODUCTION

1.1 Objective

The purpose of this verification, to have an independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the registered VCS PD;
- to confirm that the monitoring system is implemented and fully functional to generate Voluntary Emission Reductions (VCUs) without any double counting, and
- to establish that the data reported
- are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this VCS project is based on the monitoring report^{/01/}, VCS PD and supporting documents made available to the verifier and information collected through performing interviews during the on-site assessment. Furthermore publicly available information was considered as far as available and required. The URS has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions. However, stated requests for clarifications and/or corrective actions may have been provided input for improvement of the project design.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- VCS Standard version v3.4, 08/10/2013
- VCS Validation & Verification Manual v3.1, 08/10/2013
- VCS Program Guide v3.5, 08/10/2013
- VCS Program Definitions v3.5, 08/10/2013
- VCS registration and issuance process v3.5, 08/10/2013
- ACM0002 version 13.0.0, dated 11/05/2012
- Registered VCS PD ver 02 dated 20/05/2013
- Other relevant rules, including the host country legislation
- Monitoring plan as given in the registered VCS-PD

The information included in the monitoring report^{/01/} and the supporting documents were reviewed against the requirements and criteria mentioned above. The verification is carried out based on the information made available to URS and on the contract conditions.

1.3 Level of Assurance

The verification has been carried out by reviewing the monitoring report^{/01/}, site visit, VCS-PD, VCS-MR^{/01/}, ER sheet^{/02/} and evidences submitted to the verification team. Based on review of above mentioned documents, the assessment team is of the opinion that level of assurance is in reasonable level and that the GHG assertions are free of material errors, omissions and misrepresentations. The verification opinion is assured provided the credibility of all above document.

1.4 Summary Description of the Project

Roha Dyechem Pvt. Ltd. (RDPL) has installed a greenfield 25 MW solar photovoltaic (PV) power plant in the solar park at Patan district in Gujarat. The purpose of the project activity is to generate electrical energy utilising solar energy and export the generated electricity to the NEWNE grid. The PV system mainly consists of PV modules, module mounting structures, inverters, regulators, monitoring devices etc. The project activity uses 172,728 nos of 145 W Nexpower (NT/ AX series) solar thin film modules which are installed in array configuration. The project activity was commissioned on 04/03/2012.

The project activity has exported 43,308.37 MWh of electrical energy to the NEWNE grid of India. This has resulted reduction of 41,272 tCO₂ by the project activity.

The unique identification of the machines is as below:

Village	Taluka	District	State	Latitude	Longitude
Charanka	Santalpur	Patan	Gujarat	23° 53' 59" N	71° 12' 01" E

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification consists of the following steps:

- A desk review of the VCS PD, Validation report, Monitoring report, emission reduction sheet and supporting documents with the use of the relevant sections of a customised protocol according to the VCS Standard: VCS Version 3.4;
- A desk review of the Monitoring Report and additional supporting documents which were submitted by the client. The relevant sections of the above mentioned customised protocol according to the VCS Standard version 3.4 were used;
- Verification audit planning;
- On-Site assessment;
- Background investigation and follow-up interviews with personnel of the project developer; and
- Verification reporting (Draft Verification Report and Final Verification Report).

The criteria of this verification include the relevant rules and steps as set out in VCS criteria refers to VCS Standard: VCS Standard (8 October 2013, v3.4) and VCS Programme Guide, (8 October 2013, v3.5), VCS Validation Verification Manual, v3.1 Program Definitions, v3.5. Full data has been verified as per Verification audit planning and hence no sampling is required.

2.2 Document Review

The monitoring report^{/01/}, version 01 dated 28/05/2014 and version 02 dated 26/06/2012 and the emission reduction calculations provided in the form of a spreadsheet^{/02/} were assessed as part of the verification along with the related documents. In addition, the registered Project Description (VCS PD) in particular the baseline estimations and the monitoring plan, and the validation report for the project were reviewed.

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

Ref. No	List of documents
1.	- RDPL: Monitoring report for project activity "Solar PV power project by Roha Dychem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)" version 01 dated 28/05/2014 - RDPL: Monitoring report for project activity "Solar PV power project by Roha Dychem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)" version 02 dated 26/06/2012
2.	- RDPL: Spread sheets for emission reduction calculations corresponding to /01/ version 1 dated 28/05/2014 - RDPL: Spread sheets for emission reduction calculations corresponding to /01/ version 2 dated 26/06/2012
3.	VCS: Registered VCS-PD for project activity "Solar PV power project by Roha Dychem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)" version 02 dated 20/05/2013
4.	VCS: Verification report of project activity "Solar PV power project by Roha Dychem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)" version 2 dated 05/06/2013
5.	UNFCCC: CDM Validation report of project activity "Solar PV power project by Roha Dychem Pvt. Ltd. (EKIESL.CDM.Aug-11-02)" version 04 dated 23/12/2012
6.	- GETCO: Certification of energy injection by the project activity issued by Gujarat Energy Transmission Corporation Limited for the month of December-2012 dated 25/02/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of January-2013 dated 08/02/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of February-2013 dated 08/03/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of March-2013 dated 06/04/2013

Ref. No	List of documents
	- GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of April-2013 dated 08/05/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of May-2013 dated 06/06/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of June-2013 dated 06/07/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of July-2013 dated 08/08/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of August-2013 dated 07/09/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of September-2013 dated 27/10/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of October-2013 dated 08/11/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of November-2013 dated 07/12/2013 - GETCO: State Energy Account issued by Gujarat Energy Transmission Corporation Limited for the month of December-2013 dated - GETCO: Certification of energy injection by the project activity issued by Gujarat Energy Transmission Corporation Limited for the month of December-2013 dated 19/05/2014
7.	- RDPL: Invoice raised for the month of December-2012 dated 20/08/2012 - RDPL: Invoice raised for the month of January-2013 dated 09/02/2013 - RDPL: Invoice raised for the month of February-2013 dated 08/03/2013 - RDPL: Invoice raised for the month of March-2013 dated 08/04/2013 - RDPL: Invoice raised for the month of April-2013 dated 09/05/2013 - RDPL: Invoice raised for the month of May-2013 dated 07/06/2013 - RDPL: Invoice raised for the month of June-2013 dated 08/07/2013

Ref. No	List of documents
	- RDPL: Invoice raised for the month of July-2013 dated 08/08/2013 - RDPL: Invoice raised for the month of August-2013 dated 10/09/2013 - RDPL: Invoice raised for the month of September-2013 dated 23/10/2013 - RDPL: Invoice raised for the month of October-2013 dated 11/12/2013 - RDPL: Invoice raised for the month of November-2013 dated 10/12/2013 - RDPL: Invoice raised for the month of December-2013 dated 10/01/2014
8.	Gujarat Energy Development Agency: Commissioning certificate for the project activity 11/04/2012
9.	- Calsoft: Calibration certificate of meter no GJ1211A dated 28/12/2011 - Calsoft: Calibration certificate of meter no GJ1210A dated 31/12/2011
10.	UNFCCC: Consolidated baseline methodology for grid-connected electricity generation from renewable sources, ACM0002, Version 13 (http://cdm.unfccc.int/methodologies/DB/MPY3HVJIMTKE5P0UNTYE827D6Q7EHB).
11.	- RDPL: Undertaking provided by the PP dated 26/06/2014 regarding project has not rejected by any other GHG programme and sole right of VERs generated by the project activity. - RDPL: Undertaking provided by the PP dated 23/06/2014 regarding there will not be any double counting of emission reductions, project is not availing any other form of environmental credit, PP has not participated any kind of emission trading programme and PP has no binding limit.

2.3 Interviews

Verification team interviewed the project proponents i.e. Roha Dyechem Pvt. Ltd and First Climate (India) Private Limited (FCIPL) for the verification and details of the project implementation and its activity. Assessment team visited the Solar Park at Patan site on 18/06/2014.

2.4 Site Inspections

On 18/06/2014, Sandip Saha has visited Solar Park at Patan. During the on-site assessment of the project, assessment team assessed the implementation and operation of the proposed project, reviewed the information flows for generating, aggregating and reporting the monitoring parameters, interviewed key personnel of the plant to confirm the operational and data collection procedures, cross-checked between information provided in the monitoring report^{/01/} and data of the plant, checked the monitoring equipment including calibration^{/9/} performance, reviewed calculations and assumptions made in determining the GHG data and emission reductions, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

The key personnel interviewed during the site inspection and the main topics of the interviews are summarized in the table below:

Sr. No.	Date	Name and Role	Organization	Topic
/a/	18/06/2014	Mr. Viral Dudhrejiya, Technical head	RDPL	Implementation and operation of project, monitoring parameters, management structure, review and records
/b/	18/06/2014	Mr. Vipul Ramanuj, Manager	RDPL	Daily generation from the plant, break down records and maintenance
/c/	18/06/2014	Mr. Tushar Lad, Engineer	Wipro Eco Energy	O&M and Project implementation status
/d/	18/06/2014	Mr. Dipak Goswami, Engineer	Wipro Eco Energy	QA/QC procedures, review of internal audit, technical description, emergency preparedness plan
/e/	24/01/2014	Mr. Shivram Mukherjee, Consultant	FCIPL	Review of all relevant documents i.e., Monitoring reports, Baseline emission reduction sheet, Monitoring parameters, Management structure, review and records

2.5 Resolution of Findings

Summary of Findings	CAR	CL	FAR
	02	01	00

Date:	19/06/2014	Raised by:		Sandip Saha	
Type of Finding	CAR	S. No. of Finding	01	Reference	VCS-MR
Details of the Finding:			19/06/2014		
During assessment of VCS-MR, assessment team found the following issues:					
1) Total GHG emission reduction generated in this monitoring period is not mentioned in section 1.1 of the MR					
2) End date and duration of last crediting period mentioned in section 1.6 of the VCS-MR are not in line with para 3.8.3 of VCS standard.					
3) 'Comment' mentioned for $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ in section 3.1 of the VCS-MR are not correct.					
Project Participant Response			26/06/2014		
Following corrections have been made in the revised VCS MR(Version 02):					
1) Total GHG emission reductions have been mentioned in section 1.1 of revised MR (Version 02)					
2) Start date and end date of the 1 st crediting period has been mentioned only. Dates of the remaining crediting periods have been removed from the revised MR (Version 02)					
3) Comment' mentioned for $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ in section 3.1 of the VCS-MR has been corrected in revised MR (Version 02)					
Documents/ information provided by the Project Participant:					
VCS MR (Version 02)					
Reasoning for acceptance or non-acceptance:			30/06/2014		
1) Assessment team has checked the revised MR and found that PP has now incorporated the total emission reductions accrued for the project activity during the monitoring period are 41,272 tonnes of CO _{2e} . Same is found correct and acceptable to the validation team. Thus, this point of the CAR is closed.					
2) Assessment team has checked the revised MR and found that PP has now removed the start date, end date and duration of the 2 nd and 3 rd crediting period from the revised MR and details of only 1 st crediting period has been mentioned. Same is acceptable to the validation team. Thus, this point of the CAR is closed.					
3) Assessment team has checked the revised MR and found that PP has now corrected the 'Comment' mentioned for $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ in section 3.1 of the VCS-MR. In the 'Comment' section, PP has now mentioned the built margin and combined margin are fixed ex-ante respectively. Same is acceptable to the validation team. Thus, this point of the CAR is closed.					
Thus, this CAR is closed.					
Close out by Lead Assessor			30/06/2014		

Date:	19/06/2014	Raised by:		Sandip Saha	
Type of Finding	CL	S. No. of Finding	02	Reference	VCS-MR
Details of the Finding:			26/06/2014		
Verification team found that actual generation in this monitoring period is 11.56% higher than the estimated value. PP is requested to clarify the same.					
Project Participant Response			22/06/2014		
DOE is requested to note that the Generation figures for the months (Jan 2013 to June 2013) are on a higher side when compared with the remaining months of the monitoring period. This is due to higher solar radiation for the above mentioned months which has yielded in higher generation and thereby resulting a higher PLF. The PLF for the aforesaid monitoring period has found out to be 19.83% which has actually resulted an increase of 11.56% in emission reductions.					
Documents/ information provided by the Project Participant:					
VCS-MR (Version 02)					
Reasoning for acceptance or non-acceptance:			30/06/2014		
During assessment of the CDM-PDD, assessment team found that in the registered CDM-PDD, PP has considered 18% PLF for this project. Further, the assessment team checked the actual generation data through the “State Energy Account report”, daily generation report for the month of December-2012 and December-2013 and found that PP has considered generation of 364 days in this monitoring period and achieved 19.83% PLF for the project which is 10.17% higher from the estimated CDM-PDD. Further, assessment team checked the registered CDM-PDD and found that in the sensitivity analysis, PP has demonstrated that project would be additional in 10% increase in PLF and project would lose its additionality with 26.2% increase of PLF (i.e PLF of 22.72%). As the solar radiation is a natural phenomenon and same is beyond the control of PP, thus, assessment team accepted the increase in PLF as same is within the threshold limit. Thus, assessment team has accepted the 10.17% increased generation which resulted 11.56% higher emission reductions in this monitoring period.					
Thus, the CL is closed.					
Close out by Lead Assessor			30/06/2014		

Date:	19/06/2014	Raised by:		Sandip Saha	
Type of Finding	CAR	S. No. of Finding	03	Reference	VCS-MR
Details of the Finding:			19/06/2014		
During assessment of ER sheet, verification found that description of $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ in “Grid Emission Factor” worksheet are not matching with the registered PDD.					
Project Participant Response			26/06/2014		
$EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ in “Grid Emission Factor” worksheet have been corrected and the same has been shown in ER Sheet (Version 02)					
Documents/ information provided by the Project Participant:					

Emission Reduction Sheet (Version 02)	
Reasoning for acceptance or non-acceptance:	30/06/2014
Assessment team has checked the revised ER sheet and found that PP has now corrected the description of $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$ in “Grid Emission Factor” worksheet. PP has corrected to ‘Build margin for NEWNE electricity grid’ and ‘Combined margin CO2 emission factor for the project electricity system in year y’ respectively. Assessment team checked the same and found correct. Thus, the CAR is closed.	
Close out by Lead Assessor	30/06/2014

2.5.1 Forward Action Requests

During the verification process no FAR has been raised. Thus, this clause is not applicable to this project activity.

2.6 Eligibility for Validation Activities

URS Verification Private Limited holds accreditation of validation and verification in the sectoral scope of 1 and 13 (<http://cdm.unfccc.int/DOE/list/DOE.html?entityCode=E-0055>). URS has registered and issued several projects in said sectoral scopes. Thus, URS is authorized to conduct the verification and gap validation of this project activity.

3 VALIDATION FINDINGS

The project activity is a VCS validated project as per report ID VCS.13.VER.005 version 2 dated 05-June-2013 and no sampling was involved in the validation.

3.1 Participation under Other GHG Programs

The project activity is a VCS registered project as per report ID VCS.13.VER.005 version 2 dated 05-June-2013. Further, PP has also registered this project under Clean Development Mechanism scheme of UNFCCC (ref no. 7442). The project has been registered on 26-December-2012 and the crediting period date is from 29-December-2013 to 28- December-2020.

3.2 Methodology Deviations

The project uses the approved large scale methodology ACM0002, version 13.0.0^{/10/}: “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” dated 28/06/2012, <http://cdm.unfccc.int/methodologies/DB/MPY3HVJIMTKE5P0UNTYE827D6Q7EHB>. There is no deviation applied w.r.t. methodology applied to the project activity.

3.3 Project Description Deviations

Verification team has been carried out an onsite visit for this project on 19-June-2014 and also reviewed the supporting documents State Energy Account reports by GETCO^{/6/}, Invoices^{/7/}, Commissioning certificate^{/8/} and calibration certificate^{/9/}. Once reviewing all the said documents and conducting site visit it reveals that project is implemented as per registered VCS-PD^{/3/} and hence it confirms that no project description deviations are found in this project.

3.4 Grouped Project

In this project activity, Roha Dyechem Pvt. Ltd has installed the 25 MW solar power project. The project participants involved in this project activity are M/s. Roha Dyechem Pvt. Ltd and First Climate (India) Private Limited. This, it is not a grouped project activity and this clause is not applicable to this project activity.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The existence of any material discrepancies between project implementation and the project description:

The project involves generation of electricity by using solar energy as source. Thus the project avoids generation of CO₂ from fossil fuel that would have been used for power generation.

The verification team visited the project sites of the project and confirmed that the project proponent has installed 25.04 MW (DC) (i.e. 25 MW (AC)) Solar project in Solar park, Patan in Gujarat in India as mentioned in the registered VCS-PD^{/3/} and the same is in operation. The electricity generated through the solar project is supplied to the NEWNE grid. The project was commissioned on 04-March-2012 and this has been confirmed by verifying the commissioning certificate^{/8/} issued by the Gujarat Energy Development Agency (GEDA).

The crediting period for this project starts from 04-March-2012 as per the registered VCS PD. The project boundary covers the physical, geographical site of the renewable energy generation source. This includes the Solar modules, array junction boxes, module mounting structure, inverters, transformers, sub-stations and the respective grid. The proposed project evacuates all the power generated by the project in this project to the NEWNE grid. The same was confirmed by the verification team by assessing “State Energy Account report” and “Electricity injection

report". During the site visit, the following equipments as addressed in the validated VCS-PD^{/3/} were found operational.

Verification team has checked 172,728 solar modules of nominal power capacity of 145 W ($\pm 5\%$), 6400 mounting structures, 50 Nos. of 500 kW Satcon make inverters, 25 Nos. of 1.25 MVA transformer, 1 No of 160 kVA auxiliary transformer & 1 No of 27.5 MVA main transformer and EB meters for measuring and monitoring the electricity supplied to the grid.

One main and one check meters have been installed at the grid interconnection point in the substation. In case a main meter becomes defective, the readings of the check meter are used for the purpose of billing and calculation of emission reductions. These meters are in full control of GETCO^{/6/} and the PP has no control on the calibration and maintenance of the meters.

During the site verification, the team cross checked the generation data through the "State Energy Account report", daily generation report for the month of December-2012 and December-2013 and respective invoices^{/7/} of the project activity to note that the generation during this monitoring period (364 days) and found that in the registered CDM-PDD, PP has considered 18% PLF for this project. Further, PP has achieved 19.83% PLF in this monitoring period which is 10.17% increase from the estimated CDM-PDD. As the solar radiation is a natural phenomenon and same is beyond the control of PP. Further, assessment team checked the registered CDM-PDD and found that in the sensitivity analysis, PP has demonstrated that project would be additional in 10% increase in PLF and project would lose its additionality with 26.2% increase of PLF (i.e PLF of 22.72%). Thus, assessment team accepted the increase in PLF as same is within the threshold limit. Thus, assessment team has accepted the increased generation of the project activity in this monitoring period.

Further, assessment team has confirmed that the project boundaries and all the equipments related to the project activity are in line with what is described in the registered VCS PD, version 02 dated 20-May-2013.

The project activity is reducing CO₂ emissions to the extent of electricity displaced from the NEWNE grid. The achieved amount of emission reductions for this verification that covers from 30-December-2012 to 28-December-2013 (both days inclusive) is 41,272 tCO₂e as per the emission reduction sheet^{/02/}. Verification team has checked the calculations provided in the ER sheet^{/02/} and confirms that PP has quantified the values accurately. Based on the site observation and the documents assessed during the site visit, URS confirms that project is implemented fully and accurately as described in the registered VCS PD, version 02 dated 20-May-2013.

Monitoring plan and the completeness of monitoring:

Monitoring plan is implemented as per the applied monitoring methodology ACM0002^{/10/} version 13.0.0. As per the monitoring methodology, the following parameters are to be monitored:

Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (EG_{facility,y})

The net electricity exported by the project plant has been calculated by deducting the amount of imported electricity from the total amount of exported electricity. Electricity export and import by the project are monitored by one main meter at the grid interconnection point in the substation located in project premises only. Along with the main meter, one check meter has also installed at the same location. These meters are dedicatedly monitoring the electricity export from this project and electricity import by this project from the NEWNE grid for this project only.

The electricity delivered and imported by the project activity taken by Gujarat Energy Transmission Corporation Limited (GETCO)^{/6/} and upload the State Energy Account report in every month on the website of Gujarat State Load Dispatch Centre (SLDC) and PP is sourcing the same from the same website. This State Energy Account report is the main source for emission reduction calculation.

The net electricity supplied by the project to the NEWNE grid is determined as the difference between the quantity of electricity supplied by the project to the grid and the quantity of electricity imported by the project from the grid. PP raises invoice^{/7/} against the State Energy Account report for which payment is made by the state utility.

The critical parameter for the determination of emission reductions is the net electricity exported by the project to grid. The net electricity exported to the grid by the project plant is determined as the difference of electricity exported and electricity imported by the project activity. A set of meters (main and check) are installed at the high voltage side of the step up transformer installed at the project site at the common metering point which are cumulative type online digital meters. The meters are in custody of State Electricity Board.

Each of these meters (being bidirectional meters) measures both export and import of electricity in parallel. These meter readings are decisive for determining the net electricity fed to the grid and emission reduction calculations. Verification team has reviewed the State Energy Account reports and daily generation reports for the month of December-2012 and December-2013 issued by GETCO^{/6/} and convinced that the same are adequate and leads to correct measurement of the net electricity exported to the grid.

The main and check meters located at sites are calibrated by the SEB.

Also, the verification team cross-checked the electricity exported and imported figures mentioned in the State Energy Account reports and with the figures of monthly invoices^{/7/}. Further, verification team checked the daily generation reports for the month of December-2012 and December-2013. The same values are considered for the calculation of emission reduction. The verification team hereby confirms that there was no material misstatement in the calculation of emission reductions.

Any remaining issues from previous validation or verification:

There are no remaining issues from previous verification. The same has been verified and confirmed by the verification team for the entire verification period from 30-December-2012 to 28-December-2013 (both days inclusive) found to be correct and in line with the registered VCS-PD^{/3/}.

There are no deviations found in the methodology of this project.

The existence of any material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology

PP has applied approved consolidated methodology ACM0002 ver 13.0.0^{/10/} for this project activity. Further, the project was registered with VCS registry and PP has opted 10 years of crediting period with will be renewed twice. In line with the registered VCS-PD^{/3/}, “Quantity of net electricity generation supplied by the project plant/unit to the grid in year y” will be monitored to calculate the emission reduction. During site visit and discussion with the PP, verification team has confirmed that actual monitoring plan at the project site is exactly the same with the registered VCS-PD^{/3/} and applied methodology i.e. ACM0002 ver 13.0.0^{/10/}. Thus, verification team has confirmed that there is no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology.

Net GHG emission reductions or removals generated by this project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions as the host country i.e. India. This project is not participated in any emission trading programs except CDM or nor does it have any binding limits. PP has provided a declaration dated 23/06/2014 for the same which is acceptable to the assessment team.

PP has also registered this project under Clean Development Mechanism scheme of UNFCCC (ref no. 7442). The project has been registered on 26-December-2012 and the crediting period date is from 29-December-2013 to 28- December-2020. Further, PP has submitted a declaration that the project activity is not rejected by any other GHG scheme dated 26/06/2014. Verification team has checked the same and found correct.

Further, verification team has checked the project and found that there are no remaining issues from validation and previous verification. The same has been verified and confirmed by the verification team for the entire verification period from 30-December-2012 to 28-December-2013 (both days inclusive) in line with the registered VCS PD and found to be correct.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The State Energy Account and the daily generation report for the month of December-2012 and December-2013 issued by GETCO^{/6/} are the source for the values used to determine the net electricity supplied by the project activity to the grid. Same are in line with the requirement provided in the registered VCS-PD^{/3/}. The formulas, summation and consistency of the data and parameters are correctly applied in ER spreadsheet^{/02/}.

The calculations and applied formulae and method for calculation of baseline emission are in accordance with the registered monitoring plan and are in line with the requirements of the applied methodology. The formulae and the methods referred in the monitoring report^{/01/} and the spreadsheets^{/02/} for estimation of GHG reduction comply with the corresponding formulae and methods in the registered PD. The calculation of emission reductions is based on subtracting

project emissions and leakage from the baseline emissions. As the project activity generated electricity from solar energy and electricity import from grid are already deducted to estimate net electricity export to grid, the project emissions are considered as zero. Leakage is considered to be zero as per applied methodology.

For the calculation of baseline emissions the ex-ante and validated fixed value of baseline parameters, i.e. Combined Margin CO₂ emission factor for NEWNE grid is taken into account which is a validated and registered value. The value of the emission reductions depends on the net electricity exported by the project activity.

The baseline emissions reductions are based on the net electricity supplied by the project activity to NEWNE grid.

Therefore the baseline emission equals the Emission Reductions.

Baseline Emissions:

The formula used for the determination of baseline emissions which is line with the VCS-PD^{/3/}:

Baseline Emissions (tCO₂/yr) = Net electricity supplied to the southern regional grid (EG_{PJ, y}) (MWh) X Baseline Emission factor (EF_{grid, CM, y}) (tCO₂/MWh)

i.e. BE_y = EG_{PJ, y} X EF_{grid, CM, y}

Data fixed ex-ante:

Combined margin emission factor of the NEWNE grid is 0.953 tCO₂e/MWh. The ex-ante parameter has been derived from CO₂ Baseline Database for the Indian Power Sector, User Guide (Version 7), and Gov. of India. URS has verified the appropriateness of the value for the crediting period against the data source which is publicly available and found it to be correct and in line with the registered VCS-PD^{/3/}.

The net electricity exported to the grid for the period 30-December-2012 to 28-December-2013 (Both days included) is 43,308.375 MWh.

$$\begin{aligned} \text{Thus, BE}_y &= \text{BE}_y = \text{EG}_{PJ, y} \times \text{EF}_{\text{grid, CM, y}} \\ &= 43,308.375 \text{ MWh} * 0.953 \text{ tCO}_2\text{e/MWh} \\ &= 41,272 \text{ tCO}_{2e} \text{ (rounded down)} \end{aligned}$$

Project Emissions:

As the project activity generated electricity from solar energy and electricity import from grid are already deducted to estimate net electricity export to grid, the project emissions are considered as zero.

Leakage:

In accordance with ACM 0002 version 13.0.0, as no transfer of equipment has been carried out in the project, no leakage estimation is required.

An ER calculation^{/02/} was prepared by the PP and presented to the verification team. It is confirmed that the ER calculation^{/02/} is overall correct. The total emission reductions during the monitoring period are 41,272 tCO_{2e}.

No significant reporting risks have been identified for the data reported. The operational procedures for training, emergency preparedness, maintenance and calibration^{/9/} of monitoring equipments, monitoring measurements and reporting, record handling and maintenance, reviewing monitored data, internal audit, project performance reviews and corrective actions are available at the plant. All the monitored data are archived in electronic form. The data will be kept for the whole crediting period and additional 2 years thereby meeting the requirement of the VCS-PD^{/3/}.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

State Energy Account and the daily generation report for the month of December-2012 and December-2013 issued by GETCO^{/6/} have been used by the project proponent to calculate EG_{BL.y}. URS has cross checked and verified the values against the invoices^{/7/} raised by PP to SEB. The State Energy Account and the daily generation report for the month of December-2012 and December-2013 issued by GETCO^{/6/} are deemed to be the most appropriate source of data for net electricity supplied to the grid. Emission factor of the grid electricity of the NEWNE grid is 0.953 tCO₂e/ MWh. The ex-ante parameter has been derived from CO₂ Baseline Database for the Indian Power Sector, User Guide (Version 7), and Govt. of India.

Meter accuracy: the accuracy of measurement of electricity delivered is determined by the equipment accuracy and frequency of its calibration^{/9/}. The calibration frequency of meter is defined as once in every three year as per the registered VCS-PD^{/3/}. Details of the meter calibrations are mentioned below:

Sr. No.	Meter No.	Type	Accuracy Class	Calibration Date	Due Date
1	GJ1211A	Main Meter	0.2s	28-December-2011	27-December-2014
2	GJ1210A	Check Meter	0.2s	31-December -2011	30-December-2014

The calibration^{/9/} documents provided by the PP indicate that the energy meters were calibrated during this monitoring period. All the calibration report^{/9/} clearly indicates that the energy meters were performing satisfactorily and are within the permissible limit of error. It was found that the delivered electricity and the consequently emission reductions are found to be conservative.

These practices meet the requirements of the applied methodology and approved monitoring plan as in the registered VCS PD.

URS verified that the emission calculations are based on the authentic data issued by GETCO^{/6/}. The source and reliability of the baseline ER sheet^{/02/} used to calculate the monthly emission reduction was checked and found to be correct.

4.4 Non-Permanence Risk Analysis

This project activity has already been commissioned and exporting electricity to the NEWNE grid. After commissioning, project is in working condition except scheduled shut down period. Assessment team has not observed any other non-performance risk involved in this project activity.

5 VERIFICATION CONCLUSION

The scope of this verification covers the determination of voluntary greenhouse gas emission reductions generated by the above mentioned project. The verification is based on the registered VCS-PD^{/3/}, VCS validation report, CDM-PDD, VCS-monitoring report^{/01/}, supporting emission reduction calculation sheet^{/02/} and other supporting documents made available to the verifiers by the project proponent.

As a result of the verification, the verifier confirms that:

- All operations of the project are implemented and installed as planned and described in the project document. The installed equipment essential for generating emission reductions runs reliable.
- The monitoring plan is in accordance with the applied approved CDM methodology ACM0002 ver 13.0.0^{/10/}.
- The installed equipment essential for measuring parameters required for calculating emission reductions are calibrated.
- The monitoring system is in place and functional. The project has generated GHG emission reduction and the emission reduction from the project activity is real, credible and long term for the whole crediting period
- GHG emission reductions are calculated without any material misstatements in a conservative and appropriate manner.

Also, all the documents checked during on-site visit and verification process will be kept confidential and will not be disclosed at any time other than the project proponent consent or as required by VCSA.

Verification period: From 30-December-2012 to 28-December-2013 (both days inclusive)

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2012 (30-December 2012 & 31-December 2012)	224	0	0	224
2013 (01-Jan-2013 to 28-Dec-2013)	41,048	0	0	41,048
Total	41,272	0	0	41,272