



SHINE – DISTRIBUTION OF LED LIGHTBULBS IN INDIA -3

Document Prepared By



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Project Title	SHINE- Distribution of LED Lightbulbs in India -3
Version	1.1
Report ID	VKU.VER.135.23_VCS_2657

Report Title	SHINE- Distribution of LED Lightbulbs in India -3
Client	Brightspark Energy Private Limited
Pages	121
Date of Issue	21-February--2024
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Summary:

VKU Certification Pvt. Ltd. (here after referred as VKU) was commissioned by Brightspark Energy Private Limited (here after referred as PP), has verified the greenhouse gas emission reductions reported for the grouped project “**SHINE- Distribution of LED Lightbulbs in India -3** (VCS ID 2657) in India, covering 3rd monitoring period from **01-January-2023 to 30-June-2023** (Inclusive of both dates) with regard to the relevant requirements for VCS Standard version 4.4 and 4.5¹ /09/.

The project involves the distribution of LEDs maximum six (7 W, 9 W and 12 W) to an individual grid connected household under a single project activity instance. A total of 3,099,557 LEDs has been distributed to 526,491 grid connected households located in the state of Uttar Pradesh (west), till 21-March-2021 and no further distribution of project LEDs has been carried out or planned after 21-

¹ Only norms of VCS Standard; Version 4.5, which are immediately effective from 29-August-2023 are referred along with the VCS Standard; Version 4.4 for verification of this project activity.

March-2021 under this grouped project activity, hence no distribution happened in the current monitoring period.

Purpose: The purpose of the verification is to have an independent review of ex-post determination of the monitored reductions in GHG emission reductions and verify that the monitoring methodology was implemented according to the monitoring plan and monitoring data used to confirm the reductions in anthropogenic emissions by sources is sufficient, definitive and presented in a concise and transparent manner from **01-January-2023 to 30-June-2023** (Inclusive of both dates) under first crediting period from 06-March-2020 to 05-March-2030 (Inclusive of both dates)

The verification scope of the project is:

- To verify that the project is implemented as described in the registered VCS PD²/04/ and and CDM-CPA-DD³/03/.
- To assess the project's compliance with other relevant rules including the host country legislation
- To confirm that the monitoring system is implemented and fully functional to generate voluntary carbon units without any double counting.
- 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.
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- To verify that reported GHG emission data is sufficiently supported by evidence.

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Program Guide version 4.4/08/, VCS Standard Version 4.4 and 4.5/09/, VCS Validation and Verification Manual version 3.2/31/, CDM Validation and Verification Standard 3.0/33/, and applying standard auditing techniques.

The verification consisted of desk review, remote assessment and the resolution of outstanding issues and the issuance of the final verification report and certification.

VKU followed the rule-based approach to perform this verification. During the course of verification, related to operation, monitoring and GHG emission reduction calculation of the VCS project activity in

² <https://registry.verra.org/app/projectDetail/VCS/2657>

³ https://cdm.unfccc.int/ProgrammeOfActivities/cpa_db/L4XT6C0ND7KEVO2ZFW9AJIBQR5HSGM/view

relation to all relevant VCS requirements for the project activity and the applied baseline and monitoring methodology and a total of **03** findings were raised, which includes: **03** Corrective Action Request (CARs); **01** Clarification Requests (CLs) and **00** Forward Action Requested (FAR). All the findings were raised and successfully resolved by the PP. The same has been discussed in **Appendix-B** of this verification report.

The verification team ensured that the reported emission reductions are complete and accurate in accordance with applicable VCS requirements in order to be certified therefore the verification team has accepted the values within the precision levels applied as part of sampling techniques.

The GHG emission reductions were calculated on the basis of the approved methodology (AMS-II.C) "Demand-side energy efficiency activities for specific technologies", Version 15.0./11/ and the monitoring plan included in the registered VCS PD Version 2.1 dated 16-July-2022/04/ and CDM-CPA-DD/03/.

The project has also referred to following documents.

- Methodology: AMS-I. D: Grid connected renewable electricity generation; Version 18.0 /12 /
- Methodological tool 19: Demonstration of additionality of microscale project activities Version 09.0 / 13/
- Methodological tool 21: Demonstration of additionality of small-scale project activities Version 12.0 /14/
- Guideline for sampling and surveys for CDM project activities and programme of activities, Version 4.0 /15/

Summary of the verification conclusion;

In conclusion, it is VKU's opinion that the grouped project activity "**SHINE- Distribution of LED Lightbulbs in India -3**" (VCS ID 2657), meets all relevant requirements for VCS standard and guidelines and correctly applies the baseline and monitoring methodology (AMS-II.C) " Demand-side energy efficiency activities for specific technologies, Version 15.0./11/. The monitoring system is in place and the emission reductions are calculated without material misstatement. Hence, VKU is able to certify that the emission reductions from the project during the third monitoring period from **01-January-2023 to 30-June-2023** (Inclusive of both dates) under first crediting period from 06-March-2020 to 05-March-2030 (Inclusive of both dates) amounts to **243,756 tCO₂e**.

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1 INTRODUCTION

1.1 Objective

Brightspark Energy Private Limited (hereafter referred as PP) commissioned M/s VKU Certification (hereafter referred as VKU) to carry out the third verification of the project “**SHINE-Distribution of LED Lightbulbs in India -3**” (VCS 2657) from **01-January-2023 to 30-June-2023** (Inclusive of both dates) for a period of **06 months (181 days)**.

The objectives of this verification exercise are, by review of objective evidence, to establish:

- An independent evaluation of grouped project activity by an accredited validation and verification body against the requirements of the VCS Program Guide Version 4.4/08/, VCS standard version 4.4 and 4.5/09/ and UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting, on the basis of the registered VCS PD/04/ and CDM-CPA-DD/03/.
- The grouped project activity has been implemented and operating as per the registered VCS PD/04/ and CDM-CPA-DD/03/ and that all physical features (technology, project equipment, and monitoring) of the project are in place;
- Monitoring report/01/ and other supporting documents are complete;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.
- To confirm that the monitoring system is implemented and fully functional to generate Verified Carbon Units (VCUs) without any double counting/07/
- 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.

The verification process is conducted with the goal of smooth execution and complete operational effectiveness of the monitoring system, assuring the precise generation of Verified Carbon Units (VCUs) without any double counting/30/. Furthermore, a thorough examination of the monitoring records and emissions reduction calculations was performed to ensure the data's comprehensiveness, coherence, transparency, and absence of significant errors or omissions, all in pursuit of establishing the trustworthiness and credibility of the data.

1.2 Scope and Criteria

The scope of this verification is the independent, objective review and ex-post determination of the monitored reductions in GHG emissions from the **“SHINE- Distribution of LED Lightbulbs in India -3”** (VCS ID 2657) in India. The verification of this project was based on the validated & registered VCS PD/04/ and and CDM-CPA-DD/03/and monitoring report/01/ along with supporting documents submitted by the project proponent to the VKU Assessment team. The documents thus submitted to the VKU Assessment team were reviewed against the following guidance & protocols:

- ✓ VCS Programme Guide Version 4.4 /08/
- ✓ VCS Standard Version 4.4 and 4.5 /09/
- ✓ VCS Program Definitions Version 4.4 /34/
- ✓ VCS validation and verification manual version 3.2/31/
- ✓ CDM: AMS-II.C- Demand-side energy efficiency activities for specific technologies, Version 15.0. /11/
- ✓ CDM: AMS-I.D: Grid connected renewable electricity generation; Version 18.0/12/
- ✓ CDM Standard: Validation and Verification Standard for Project Activities version 3.0/33/
- ✓ Methodological tool 19: Demonstration of additionality of microscale project activities Version 09.0/13/
- ✓ Methodological tool 21: Demonstration of additionality of small-scale project activities Version 12.0/14/
- ✓ CDM: Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities, Ver. 4.0/15/
- ✓ CDM: Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 09.0 /16/
- ✓ General Guidelines for SSC CDM Methodologies version 22.1/51/

The steps involved are as follows:

- To verify that the project is implemented as described in the registered VCS PD/04/ and CDM-CPA-DD/03/.
- To assess the project's compliance with other relevant rules including the host country legislation (India).
- To confirm that the monitoring system is implemented and fully functional to generate voluntary carbon units (VCUs) without any double counting /07/.
- 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/02/.
- To verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;

- To evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement;
- To verify that reported GHG emission data is sufficiently supported by evidence.

The verification method and criteria encompassed several phases, including

- Desk review of the MR/01/, ER/02/ and CDM-CPA-DD/03/ and VCS PD/04/, and other supporting documents listed in Table No.-05 below;
- Preparation of sampling plan by VKU assessment team by following the CDM sampling guideline/15/ and CDM sampling standard/16/. The assessment team has performed acceptance sampling by following the guideline and standard stated above as per the sampling survey sheet submitted by PP/21/.
- Remote interviews with field staff and the local stakeholders of selected LED samples /37/;
- Resolution of outstanding issues by PP
- Completeness check and issuance of final verification report and applicable VCS Verification Deed of Representation.

Verification is not meant to provide any consultancy to the project proponents. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

1.3 Level of Assurance

All the revisions in the verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent VKU's procedure, with a **Reasonable level of assurance**, as per section **04 clause 4.1.2 and clause 4.1.10 (1) of the VCS Standard version 4.5/09/**.

Verification is not meant to provide any consultancy to the project proponents. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the monitoring.

The verification report is based on the Monitoring report /01/, registered VCS PD /04/, CDM-CPA-DD/03/ and supporting documents /19//20//21//23//25//24//25//26//27//28//29//39//40//41//42//43/ made available to the assessment team and further information is also collected through performing interviews /37/ and remote audit/30/.

The technical review was performed by a technical reviewer qualified in accordance with VKU's qualification procedure.

The following individuals were part of the Verification Team as presented in **Table 1** below: -

Role/Qualification	Last Name	First Name
VCS Team Leader, VCS Verifier & Technical Expert (TA 3.1)	Kumar	Barun
Validator/Verifier-Trainee	Verma	Aastha
Project Trainee	Kumar	Anand
Local Expert ⁴	Kumar	Barun

The following individuals were part of the Technical Reviewer Team as presented in **Table 2** below: -

Role/Qualification	Last Name	First Name
Technical Reviewer & Technical Expert (TA 3.1)	Kumar Ahirwar	Vivek

The threshold for quantitative materiality with respect to the aggregate of errors, omissions, and misrepresentations, relative to the total reported GHG emission reductions and/or removals was limited to **1 %**, as required by section 4.1.10 of the VCS Standard version 4.5/09 /. The materiality of the project activity based on actual emission reductions achieved is **1% of 243,756 tCO₂e** which is equal to **2,437.56 tCO₂e**.

⁴ Team Leader play role and responsibility of the local expert in the given program of activity.

1.4 Summary Description of the Project

This is the third verification for the grouped project “**SHINE- Distribution of LED Lightbulbs in India-3**”, which employs the methodology; AMS-IL.C, Version 15.0/11/. The grouped project involves distribution of Light Emitting Diodes (LEDs) for domestic lighting in Northern States of Uttar Pradesh, Haryana, Himachal Pradesh and Eastern states of Bihar, Jharkhand and Odisha as per the VCS PD/04/ and CDM-CPA-DD/03/, but the distribution has been done only in the western part state of Uttar Pradesh as per the MR/1/ and the Installation database/23/ and ER sheet submitted/02/. Thus, under this grouped project, 60W ICL have been replaced with 7W/9W LED and 100W ICL with 12W LED as the lumen output is within the specified limit. 14 W LEDs have not been distributed under this grouped project activity.

Table-3 below states the baseline ICL wattage and the LED lumen output requirements as per the applied methodology/11/ and the installed LEDs Lumen output as per installed technology specifications/18/.

S.No.	Baseline technology Incandescent lamp (Watt)	Minimum light output (Lumen)	Lumen outputs of Installed LEDs
1.	60	715	7W= 740 lm 9W=820 lm
2.	100	1350	12W=1340 lm

Each project activity instance refers to the number of project devices, i.e., number of LEDs distributed to each grid connected household. Maximum number of six LEDs (7 W/9 W and 12 W) were distributed to an individual grid connected household. Total **3,099,557 LEDs** have been distributed in **526,491 grid** connected households in the state of Uttar Pradesh (west) till 21-March-2021. The last LED was distributed on **21-March-2021** as verified by assessment team in installation database and ER sheet/2/ submitted by PP. No further distribution of LEDs has been carried out or planned by PP after 21-March-2021 under this grouped project activity.

The start date for the grouped project is **06-March-2020** which is the date when the first energy efficient LED has been distributed as per MR/01/ section 3.1 and the Installation database/23/ and ER sheet/02/ submitted by PP.

The project proponents for the project activity; Brightspark Energy Private Limited (Indian Subsidiary and Project Management Entity of C-Quest Capital LLC) and Korea Impact Carbon Corporation, own the rights to Verified Carbon Units generated from this grouped project activity.

All the information stated above is verified through desk review and Remote assessment and it is found to be in line with the details provided in the registered VCS PD/04/ and CDM-CPA-DD/03/. The total estimated GHG emission reductions of grouped Project activity for the current monitoring period from 01-January-2023 to 30-June-2023 (Inclusive of both dates) under first crediting period from 06-March-2020 to 05-March-2030 (Inclusive of both dates) are 243,756 tCO₂e which is similar to the achieved emission reductions for the current monitoring period as the project estimated emission reductions are estimated after the installation of LEDs happened and since then there is no loss in any LEDs thus the achieved emission reduction remains same as the estimated emission reductions. The project activity has been implemented as described in the registered VCS PD/04/ and CDM-CPA-DD/03/ and the emission reductions are calculated conservatively as per the applied methodology/11/.

2 VERIFICATION PROCESS

The project is already registered under VCS with reference number **2657/22/**. The validation/05/ was done by Carbon Check (India) Private Ltd. First and second verification was done by Carbon Check (India) Private Ltd and VKU Certification Pvt. Ltd. respectively. The fixed crediting period is from 06-March-2020 to 05-March-2030 (Inclusive of both dates). The current verification assessment is again conducted by VKU certification Pvt. Ltd. for the third monitoring period from 01-January-2023 to 30-June-2023 (Inclusive of both dates).

2.1 Method and Criteria

Verification was conducted using VKU's procedures in line with the requirements specified in the VCS Requirements, i.e. VCS Program Guide version 4.4/08/, VCS standard document version 4.4 and 4.5/09/. The GHG emission reductions are on the basis of the approved Baseline and monitoring methodology, AMS-II.C- Demand-side energy efficiency activities for specific technologies, Version 15.0 /11/

Scope: 03 Energy Demand

Project type: Type II – Energy Efficiency improvement project

The verification consisted of the following phases:

- I. **Planning:** The assessment team initiates the GHG-program remote audit by first conducting a desk review.
- II. **Strategic Analysis:** The assessment team conducted a strategic analysis to gain insights into the organization's, project's, or product's activities. This analysis was aimed at determining the scope and scale of the verification activities and will be utilized in the risk assessment process.

- III. **Risk Assessment;** The assessment team carried out a risk assessment of the GHG statement to identify the likelihood of a substantial error or noncompliance with the established criteria.
- IV. **Evidence Gathering Activities;** Using a risk-based approach assessment team prepared the evidence gathering activities to collect sufficient and appropriate evidence upon which to base the conclusion & determine whether the GHG statement conforms to the criteria, taking into account the principles of the standards that apply to the GHG statement.
- V. The requirement for a remote audit is recognized, and subsequently, the planning for the remote audit is undertaken
- VI. **Audit and Sampling Plan:** An audit plan is prepared, including all sub-elements required for an integrated verification process aligned with the contract, scope, objectives, level of assurance and materiality.
- VII. **Evidence Gathering Plan;** The evidence-gathering plan is formulated in accordance with the risk assessment conducted by VKU's Assessment Team. This plan is structured to reduce the verification risk to a level considered acceptable. As a result, the evidence-gathering plan outlines the specific nature and scope of the evidence collection activities.
- VIII. **Client Confirmation and Approval:** The remote audit plan is sent to the client for review and confirmation/approval via email.
- IX. **Document Review:** Relevant documents, such as the verification report, monitoring plan, methodology, VCS PD and QA/QC procedures are thoroughly reviewed.
- X. **Remote Assessment:** This includes interviews and evaluation of the actual project scenario at site.
- XI. **Resolution of Discrepancies:** Any non-conformities identified during the assessment are addressed and resolved and documented in **Appendix-B** of this report.
- XII. **Independent Review:** An independent assessment was provided by the technical reviewer.
- XIII. **Final Verification:** After completeness checks, the verification report and certification are issued

The following sections outline each step involved in verification in more detail.

2.2 Document Review

During the document review, VKU has applied standard auditing techniques to assess the quality of information provided. The verification was performed primarily based on the review of the monitoring report (MR) version 1.0 dated 24-August-2023, Version 1.1 dated 14-November-2023 and final MR version 1.2 dated 21-February-2024/01/, were assessed as part of the verification.

The emission reduction (ER) calculations spreadsheet version 1.0 dated 24-August-2023 and Final version dated 2.0 dated 14-November-2023 received from PP /02/ were assessed along with the monitoring reports as part of the verification. In addition, the registered Project Documents VCS PD /04/ and CDM-CPA-DD/03/ in particular for the baseline estimations and the monitoring plan for the project was reviewed. The following table-03 lists the documentation that were reviewed during the verification.

Table No: 04 Lists of the documentation that were reviewed during the current verification:

/01/	Brightspark Energy Private Limited: VCS monitoring report for “SHINE- Distribution of LED Lightbulbs in India -3”, • Version 1.0 dated 24-August-2023, • Version 1.1, dated 14-November-2023 • Version 1.2, dated 21-February-2024
/02/	Brightspark Energy Private Limited: Emission Reduction Calculation spreadsheet “SHINE- Distribution of LED Lightbulbs in India -3”, • Version 1.0 dated 24-August-2023, • Version 2.0 dated 14-November-2023
/03/	<u>CDM-CPA -DD/03/ 10484-P1-0003-CP1 under registered CDM Programme of Activities (PoA) 10484 titled:” SHINE – Distribution of LED Lightbulbs in India”</u>
/04/	Brightspark Energy Private Limited. <u>Registered VCS PD for the project SHINE – Distribution of LED Lightbulbs in India-3’ version 02.1 dated 16-July-2022</u>
/05/	Carbon Check (India) Private Ltd: <u>Validation Report “SHINE – Distribution of LED Lightbulbs in India-3” version 03 dated 28-October-2022</u>
/06/	Carbon Check (India) Private Ltd: <u>Previous Verification Report SHINE – Distribution of LED Lightbulbs in India-3 version 2.1 dated 01-December-2022</u>
/07/	Brightspark Energy Private Limited: Declaration to avoid double counting, non-inclusion of projects in other standards
/08/	VCS Program Guide, version 4.4 dated 29-August-2023

/09/	VCS Standard, version 4.4 dated 17-January -2023 VCS Standard, version 4.5, 11-December-2023
/10/	VCS: Monitoring report Template VCS Version 4.2
/11/	VCS: AMS-II.C- <u>Demand-side energy efficiency activities for specific technologies, Version 15.0.</u>
/12/	CDM Executive Board: Baseline and Monitoring Methodology Baseline and monitoring: <u>AMS-I. D: Grid connected renewable electricity generation; Version 18.0</u>
/13/	<u>Methodological tool 19: Demonstration of additionality of microscale project activities Version 09.0</u>
/14/	<u>Methodological tool 21: Demonstration of additionality of small-scale project activities Version 12.0</u>
/15/	<u>UNFCCC: Guidelines for Sampling and Surveys for CDM Project activities and Programme of Activities, Ver. 4.0</u>
/16/	<u>UNFCCC: Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 09.0</u>
/17/	Brightspark Energy Private Limited: Sample copies of end user agreement between PP and end user of all the samples assessed during remote audit from 07-October-2023 to 08-October-2023
/18/	Test Reports for Lamp life certificates of LEDs distributed showing technical specification of LEDs: • For 7W the report is given by Planet Electrolabs • For 9W the report is given by Classic Instrumentation Pvt. Ltd. • For 12W the report is given by Classic Instrumentation Pvt. Ltd.
/19/	Brightspark Energy Private Limited: End user agreement showing the start date of project activity as 06-March-2020.
/20/	Auctus E Recycling Solutions Pvt. Ltd: - Destruction Certificates of 60W and 100W ICLs
/21/	Brightspark Energy Private Limited: User survey • Sample User Survey Form • Sampling _Survey sheet_ VCS 2657
/22/	VERRA: https://registry.terra.org/app/projectDetail/VCS/2657
/23/	Brightspark Energy Private Limited: Project installation database
/24/	Brightspark Energy Private Limited: Monitoring survey Sheet

/25/	Brightspark Energy Private Limited: Training records - Monitoring Survey Training dated 19-August-2021 - Monitoring Survey Training dated 06-July-2022
/26/	Monitoring survey agreement between Brightspark Energy Private Limited and CPASS
/27/	Grievance/ Replacement/ Logbook Record on sample basis for current monitoring period from 01-January-2023 to 30-June-2023 (Inclusive of both dates)
/28/	CPASS Services LLP as a Monitoring Agency: Monitoring Survey Report Dated 10-July-2022 to 11-July-2022
/29/	Brightspark Energy Private Limited: Screenshot of Public statement and copy of email to avoid double claiming of Scope 3 emissions.
/30/	Screenshots of remote audit and attendance sheet from 07-October-2023 to 08-October-2023
/31/	<u>Validation and verification manual version 3.2 dated 19-October-2016</u>
/32/	Gold Standard Foundation: https://registry.goldstandard.org/projects?q=&page=1
/33/	<u>CDM Validation & Verification Standard version 3.0 dated 09-September-2021</u>
/34/	<u>VCS Program Definitions; Version 4.4 dated 29-August-2023</u>
/35/	<u>GPS map camera (GPS App)</u>
/36/	<u>GPS Google earth software used for Location</u>
/37/	Interviews conducted remotely from 07-October-2023 to 08-October-2023 detailed in section 2.3 of this report.as recorded by assessment team of VKU Certification Pvt. Ltd. during remote audit in a form called as VKU.F46W. Attendance Sheet for Audit
/38/	Sampling and calculation sheet of Monitoring Period 03 from 01-January-2023 to 30-June-2023 (Inclusive of both dates)
/39/	ICL collection and disposal agreement between Brightspark Energy Private Limited and Auctus E Recycling Solutions Pvt. Ltd dated 13-August-2018
/40/	Brightspark Energy Private Limited: Net Present Value Spreadsheet
/41/	Brightspark Energy Private Limited: Spot Check Mechanism records
/42/	Brightspark Energy Private Limited: Employment records of people employed
/43/	Brightspark Energy Private Limited: Database Management system (DMS) screenshots

/44/	Brightspark Energy Private Limited: Declaration by the end user Vijendra Singh for replacement of LED dated 08-April-2023
/45/	VKU.62. W: Appendix-2 of Field Assessment Checklist for Sample Selected by VVB for Energy Demand & Distribution Projects
/46/	VKU.24W. Audit and Sampling Plan for Verification Activity; dated 3-October-2023
/47/	VKU.F56W.Risk Assessment_VKU.VER.135.23_VCS_2657
/48/	<u>ISO 14064-3:2019: Greenhouse gases – Part 3: Specification with guidance for the verification and validation of greenhouse gas statements</u>
/49/	<u>ISO 14065:2020: General principles and requirements for bodies validating and verifying environmental information</u>
/50/	<u>ISO/IEC 17029:2019: Conformity assessment – General principles and requirements for validation and verification bodies</u>
/51/	<u>General Guidelines for SSC CDM Methodologies version 22.1</u>

2.3 Interviews

The table below describes the remote interview process/37/ and further identifies personnel, including their roles, who were interviewed and/or where personnel responsible for monitoring of the project activity, data collection and management, and QA/QC procedure were interviewed.

The details of the people interviewed during monitoring period are mentioned in the table below as per the VKU.46.W. Attendance sheet signed by PP and other representatives/30/.

Location: **Uttar Pradesh (West)**

Table no: 05: Details of Personnel Interview

S. No.	Name	Designation	Topic
1	Neha Oli (Female)	CQC - Associate	
2	Atul Yadu (Male)	Project Manager (CQC)	

3	Sachin Kumar (Male)	Area Manager (CQC)	• Project Design • Project Implementation status • Project start date and Project Location • Baseline Scenario • Baseline Identification and Additionality • Qualification and Training requirement of the personnels • Monitoring and reporting documentation • Quality Assurance Management and operating system
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Table no: 06: The end users interviewed during remote audit are mentioned in the table below.

S. No.	Date	Name and DISCOM Service Number of the enduser	Topic
1.	07-October-2023 to 08-October-2023	Name – Akhtari Begum Gender - Female Discom Service Number – 6039321618	• Average annual operating hours of project LEDs (O_i project) • Number of group i project LEDs that are operational during time interval 't' (n_i operational)
2.	07-October-2023 to 08-October-2023	Name – Hari Om Gender - Male Discom Service Number – 771707255921	• Average annual operating hours of project LEDs (O_i project) • Number of group i project LEDs that are operational during time interval 't' (n_i operational)
3.	07-October-2023 to 08-October-2023	Name – Om Singh Gender - Male Discom Service Number – BR 74102115500	• Average annual operating hours of project LEDs (O_i project) • Number of group i project LEDs that are operational during time interval 't' (n_i operational)
4.	07-October-2023 to 08-October-2023	Name – Man Singh Gender - Male Discom Service Number – MU81312004158	• Average annual operating hours of project LEDs (O_i project) • Number of group i project LEDs that are operational during time interval 't' (n_i operational)

5.	07-October-2023 to 08-October-2023	Name – Gulsita Gender - Female Discom Service Number – 7055491405	• Average annual operating hours of project LEDs ($O_{i \text{ project}}$) • Number of group i project LEDs that are operational during time interval 't' ($n_{i \text{ operational}}$)
6.	07-October-2023 to 08-October-2023	Name – Mukesh Babu Gender - Male Discom Service Number – 8853462000	• Average annual operating hours of project LEDs ($O_{i \text{ project}}$) • Number of group i project LEDs that are operational during time interval 't' ($n_{i \text{ operational}}$)
7.	07-October-2023 to 08-October-2023	Name – Kanti Devi Gender - Female Discom Service Number – 3465462000	• Average annual operating hours of project LEDs ($O_{i \text{ project}}$) • Number of group i project LEDs that are operational during time interval 't' ($n_{i \text{ operational}}$)

The topics covered during interview ranges from general features and implementation of project to technical details of the project like monitoring and measuring system, data collection, recording, emergency procedures internal audit, Procedures for handling non-conformances with the validated monitoring plan, personal training and archiving procedures. The assessment was based on the feedback received during remote interview coupled with the documentation in **VKU.F62W. Field Assessment Checklist for Sample Selected by VVB for Energy Demand & Distribution Projects/45/**

During the remote audit/37/, the assessment team conducted interviews with local stakeholders involved in the projects to validate the implementation and grievance resolution process, which had been claimed and detailed in the MR/01/ (refer to section 2.2 of MR) by the PP. The assessment team not only confirmed the project's sustainable development claims but also evaluated its socio-economic impact on the local community. Further information on this aspect is available in section 4.1 of this report.

Moreover, the assessment team inspected records and noted that the PP had provided opportunities for local residents to voice their opinions and grievances. They had made efforts to resolve these issues through consultations with stakeholders. To verify these statements, the assessment team engaged in focused group discussions and conducted personal interviews with stakeholders. As a result, it was deemed acceptable by VKU that the PP has a well-defined

procedure for involving local stakeholders in project implementation and appropriately resolving their grievances, as summarized in the table no. 05 and table no. 06.

The above stated information regarding the Interview with site personnel/37/ was recorded by VKU's Assessment Team in a form called as **VKU.F46W. Attendance Sheet for audit/30/** & there were no negative comments received during the stakeholder consultation interview conducted on site and more detail is enlisted in the section 4.2.2 below of this report.

2.4 Site Visits

Remote Audit

VKU audit team have conducted remote inspection from 07-October-2023 to 08-October-2023 following sampling approach as explained below-

PP's sampling approach:

PP has proposed simple random sampling plan using 95/10 as confidence/precision. This is in line with the Section 4 para 13 of the applied methodology/11/ and the registered monitoring plan/04/ & /03/. The sample size for each parameter is determined following guidelines- Appendix 1 Section 2.1.1 for Sampling and Surveys for CDM Project activities and Programme of Activities Ver. 4.0 (EB86, Annex 4) /15/ and registered monitoring plan/04/& /03/. The monitoring parameter(s) monitored through the sampling plan were:

1. Number of operational project lamps during the monitoring period ($n_{i \text{ operational}}$)
2. Operating hours of replaced ICL lamps or installed LEDs using run time meters ($O_{i \text{ project}}$)

Development of the Verification/Sampling Plan:

The audit team has formally documented its verification/ sampling plan as well as determined the evidence-gathering plan. The verification plan is developed based on key elements of the verification process as per the criteria of engagement. The plan identifies and addresses the following:

- a. Level of Assurance
- b. Materiality
- c. Standards of evaluation & reporting for the verification including the assessment criteria
- d. Scope and objectives
- e. Assessment team and the roles of team members
- f. Schedule of verification activities

Verification Approaches:

- a. ASP: Acceptance Sampling
- b. SPL: Sampling Approach (all data available)

- c. CDC: Complete data check of data including all data aggregation steps
- d. COM: Full data check at higher data aggregation levels and sampling at original data levels

Sampling/Verification Plan-

In order to ensure a complete, transparent and timely execution of the assessment task, the team leader has planned the complete sequence of events necessary to arrive at a substantiated final opinion. Various tools have been established in order to ensure an effective assessment planning.

Table no.-7; Step 1- Identification of Materiality threshold

Check the relevant box against applicable threshold level	Threshold as per Section 4.1.10 of VCS Standard v4.5/09/	Related to
☒	1%	Quantitative materiality demands that the threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations, individually or in the aggregate, for any reported relative to the total reported GHG emission reductions and/or removals assets shall be limited to two percent. The same was verified from PPs sampling survey /38/ and VVBs acceptance sampling, it was found that the achieved proportion of non-working LEDs is less than the expected, as all the LEDs were found operational hence uncertainty is reduced. Hence, accepted.

Table no.-8; Step 2- Identification of risks, their level and assessment

S.No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the potential risk		Assessment of the records/information/interview with personnel to check controls/ mitigation measures
		Risk level	Justification	
1.	Monitoring parameter	High	Monitoring not done as per the registered PD	The risk will be mitigated by reviewing the claims in the VCS PD, Monitoring Plan and its assessment based on VCS requirements. The plausibility of the related monitoring parameter can be further cross-checked with the project specific evidence, related to the host country/region and interviews with the related stakeholders (end users/beneficiaries).
2.	Project design: Information on project design without adequate controls related to data, evidences (project/sector related)	High	Project design incorrectly described thus leading to incorrect delineation of the baseline scenario, causal change, threats to the project	The risk will be mitigated by reviewing the claims in the VCS PD/04/ and CDM-CPA-DD/03/ and its assessment based on VCS requirements. The background documents including monitoring survey report/28/shall be cross-checked with the project specific evidence, and interviews/37/ with the related stakeholders.
3.	Accuracy of the monitoring survey	Medium	Inadequately delineated monitoring plan may lead non-compliance of the VCS principle	The risk due to accuracy of the monitoring plan will be ensured by reviewing the VCS PD/04/ and CDM-CPA-DD/03/, VCS requirements, sampling tool applied and ensuring feasibility/appropriateness of the monitoring plan by means of remote interviews with the

				PP/37/, their associates and the end users.
4.	Competence of personnel involved in conducting monitoring like surveys	Medium	Interview of the personnel involved and check the training records conducting such monitoring.	The risk will be mitigated by reviewing the training records/25/ of the personnel involved in the conducting such surveys and by following the monitoring responsibilities. The training records will be reviewed which will also be confirmed during the interviews/37/.

VKU assessment team has conducted the risk assessment of each parameter separately in a risk assessment form /47/. This form enlists the risks which can cause the potential errors, material misstatements or omission, are assessed as following for each parameter in Table-9 below:

Table 09; The risk assessment of each monitoring parameter

Parameter	Type of Risk	Justification and Types of Errors Expected	Significance (H, M, L)	Risk Assessment output	General Data for Verification Plan and Evidence-Gathering Plan			
					Type of Data	Type of Sample	Sample Size	Evidence to be check
nj baseline (60W) & (100W) (Number of pieces of 60 W and 100 W baseline Incandescent Lamps	Inherent Risk	1. Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording	L- Low Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet 4. End-user Agreement	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet 4. End-user Agreement

replace d)		of actual readings into original records.		survey sheet provided by PP and all details of beneficiarie s is found to be correct. 2. Project Boundaries -CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemente d in western UP only. 3. Data Manageme nt - Beneficiarie s data is directly collected by the field staff with the help of mobile/tab let app module which feed data directly to	5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specificatio n and test report of LEDs 9. Life Certificate			5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specificatio n and test report of LEDs 9. Life Certificate
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				Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control – 1. IT Team ensures data quality checks: consistency, duplicity 2. Spot Checking by field staff				
	Inherent Risk	2. Human error in the quantification of emissions: This error may be due to transfer of monitored data into	H-Highly Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet

		Emission Reduction calculation spreadsheet and CDM-CPA - DD/03/d atabase for calculation of actual emission reduction achieved during monitoring period.		with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct. 2. Project Boundaries – CDM-CPA -DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management – Beneficiaries data is directly collected by the field staff with the help of mobile/tablet app	4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate			4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate
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				module which feed data directly to Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control – 1. IT Team ensures data quality checks: consistency, duplicity 2. Spot Checking by field staff				
Nil baseline scrapped (60 W & 100 W) (Number of pieces of 60 W and 100 W	Inherent Risk	1. Manual adjustment of otherwise automatically recorded	L- Low Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database

baseline Incandescent Lamps destroyed)		activity levels: This error may be due to manually recording of actual readings into original records.		SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct. 2. Project Boundaries – CDM CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management – The collected ICL (60W, 100W) at the time of exchange	3. Sampling Survey sheet 4. Destruction Certificates			3. Sampling Survey sheet 4. Destruction Certificates
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				were stored at central facility in separate boxes according to their wattage and scrapped by an independent entity which ensured recording and independent verification of ICLs. 4. Management Controls – Collected ICLs (60W, 100W) were stored in separate boxes at central facility according to their wattage.				
	.	2. Human error in the quantification of	H-Highly Significant	The verification of this project is planned	1. ER Calculation spreadsheet	Acceptance sampling	11 (11 LEDs of each type:	1. ER Calculation spreadsheet

	Inherent Risk	emissions: This error may be due to transfer of monitored data into Emission Reduction calculation spreadsheet and CDM-CPA - DD/03/database for calculation of actual emission reduction achieved during monitoring period.	thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct. 2. Project Boundaries – CDM CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management – The collected	2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet 4. Destruction Certificates		7W, 9W and 12W)	2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet 4. Destruction Certificates
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				ICL (60W, 100W) at the time of exchange were stored at central facility in separate boxes according to their wattage and scrapped by an independent entity which ensured recording and independent verification of ICLs. 4. Management Controls – Collected ICLs (60W, 100W) were stored in separate boxes at central facility according to their wattage.				
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ni project (7 W, 9W, 12 W) (Number of pieces of 7W, 9W, 12 W project lamps distributed)	Inherent Risk	1. Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings into original records.	L- Low Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct. 2. Project Boundaries – CDM CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA -DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate
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				western UP only. 3. Data Management – Beneficiaries data is directly collected by the field staff with the help of mobile/tablet app module which feed data directly to Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control – 1. IT Team ensures data quality checks: consistency, duplicity				
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				2. Spot Checking by field staff				
	Inherent Risk	2. Human error in the quantification of emissions: This error may be due to transfer of monitored data into Emission Reduction calculation spreadsheet and CDM-CPA-DD/03/ database for calculation of actual emission reduction achieved during monitoring period.	H-Highly Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct. 2. Project Boundaries – CDM-CPA-DD/03/ 3 DD and VCS PD was assessed for project	1. ER Calculation spreadsheet 2. CDM-CPA-DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA-DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate

				boundary and the project was found to be implemented in western UP only. 3. Data Management – Beneficiaries data is directly collected by the field staff with the help of mobile/tablet app module which feed data directly to Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control –				
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				1. IT Team ensures data quality checks: consistency , duplicity 2. Spot Checking by field staff				
ni, operational (7 W, 9W, 12 W) (Total number of 7W, 9W, 12 W project lamps that are operational during monitoring period)	Inherent Risk	1. Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings into original records.	L- Low Significance	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test

				beneficiaries is found to be correct. 2. Project Boundaries - CDM CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management - Beneficiaries data is directly collected by the field staff	n and test report of LEDs 9. Life Certificate			report of LEDs 9. Life Certificate
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				with the help of mobile/tablet app module which feed data directly to Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control – 1. IT Team ensures data quality checks:				
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				consistency, duplicity				
				2. Spot Checking by field staff				
	Inherent Risk	2. Human error in the quantification of emissions: This error may be due to transfer of monitored data into Emission Reduction calculation spreadsheet and CDM-CPA - DD/03/database for calculation of actual emission reduction achieved	H- Highly Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate	Acceptance sampling	11 (11 LEs of each type: 7W, 9W and 12 W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Destruction Certificates 7. Sample survey forms 8. Technical specification and test report of LEDs 9. Life Certificate

		during monitoring period.		be correct. 2. Project Boundaries – CDM CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management – Beneficiaries data is directly collected by the field staff with the help of mobile/	9. Life Certificate			
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				tablet app module which feed data directly to Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control – 1. IT Team ensures data quality checks: consistency, duplicity				
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				2. Spot Checking by field staff				
pi (baseline 60 W, 100 W) (Rated power of 60 W and 100 W baseline lamps replaced)	Inherent Risk	1. Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings into original records.	L- Low Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. Sample sale records 5. Destruction Certificates 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate	Acceptance sampling	11 (11 LEs of each type: 7W, 9W and 12 W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. Sample sale records 5. Destruction Certificates 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate

				be correct. 2. Project Boundaries - CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management - Beneficiaries data is directly collected by the field staff with the help of mobile/tablet				
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				app module which feed data directly to Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control – 1. IT Team ensures data quality checks: consistency, duplicity				
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				2. Spot Checking by field staff				
	Inherent Risk	2. Human error in the quantification of emissions: This error may be due to transfer of monitored data into Emission Reduction calculation spreadsheet and CDM-CPA-DD/03/ database for calculation of actual emission reduction achieved during monitoring period.	H- Highly Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct.	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. Sample sale records 5. Destruction Certificates 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate	Acceptance sampling	11 (11 LEs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. Sample sale records 5. Destruction Certificates 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate

				2. Project Boundaries – CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management – Beneficiaries data is directly collected by the field staff with the help of mobile/tablet app module				
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				which feed data directly to Central Database Management System. 4. Management Controls – As Per PD and MR section 4.3 PP has established two procedures for quality control – 1. IT Team ensures data quality checks: consistency, duplicity 2. Spot Checking by				
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				field staff				
Pi (project 7W, 9W, 12W) (Rated power of 7W, 9W, 12W project LEDs (Watts))	Inherent Risk	1. Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings into original records.	L- Low Significance	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct. 2. Project Boundar	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate	Acceptance sampling	11 (11 LEs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate

				ies - CDM- CPA - DD/03/ and VCS PD was assesse d for project boundar y and the project was found to be implem ented in western UP only. 3. Data Manage ment - Benefici aries data is directly collecte d by the field staff with the help of mobile/ tablet app module which feed data directly				
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				to Central Databas e Manage ment System. 4. Manage ment Controls – As Per PD and MR section 4.3 PP has establis hed two procedu res for quality control – 1. IT Team ensures data quality checks: consiste ncy, duplicity 2. Spot Checkin g by field staff				
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		2. Human error in the quantification of emissions: This error may be due to transfer of monitored data into Emission Reduction calculation spreadsheet and CDM-CPA-DD/03/ database for calculation of actual emission reduction achieved during monitoring period.	H- Highly Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of sampling survey sheet provided by PP and all details of beneficiaries is found to be correct. 2. Project Boundaries – CDM-CPA -	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate	Acceptance sampling	11 (11 LEs of each type: 7W, 9W and 12 W)	1. ER Calculation spreadsheet 2. CDM-CPA - DD/03/ replacement database 3. Sampling Survey sheet 4. End-user Agreement 5. Sample sale records 6. Sample survey forms 7. Technical specification and test report of LEDs 8. Life Certificate
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				DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management – Beneficiaries data is directly collected by the field staff with the help of mobile/ tablet app module which feed data directly to Central Databas				
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				e Manage ment System. 4. Manage ment Controls – As Per PD and MR section 4.3 PP has establis hed two procedu res for quality control – 1. IT Team ensures data quality checks: consiste ncy, duplicity 2. Spot Checkin g by field staff					
Ly (Averag e annual	.	1. Manual adjustme nt of	L- Low Significan t	The verification of this project is	1. ER Calculatio n	Accepta nce sampling	11 (11 LEDs of	1. ER Calculatio n	

technical grid losses)	Inherent Risk	otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings into original records.	planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked and default value of Ly is found to be correct as per methodology 2. Project Boundaries - CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management – As default value of Ly is used hence no data management is required	spreadsheet 2. Sampling Survey sheet 3. Small Scale Methodology AMS-II.C, Version 15.0		each type: 7W, 9W and 12W)	spreadsheet 2. Sampling Survey sheet 3. Small Scale Methodology AMS-II.C, Version 15.0
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				for this parameter. 4. Management Controls – As default value of Ly is used hence no management control is required for this parameter.				
		2. Human error in the quantification of emissions: This error may be due to transfer of monitored data into Emission Reduction calculation spreadsheet and CDM-CPA - DD/03/database for	H- Highly Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs – ER Calculation spreadsheet is checked and default value of Ly is found to be correct as per methodology. 2. Project Boundaries – CDM-CPA - DD/03/ and VCS PD was	1. ER Calculation spreadsheet 2. Sampling Survey sheet 3. Small Scale Methodology AMS-II.C, Version 15.0	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. Sampling Survey sheet 3. Small Scale Methodology AMS-II.C, Version 15.0

		calculatio n of actual emission reduction achieved during monitorin g period.		assessed for project boundary and the project was found to be implemente d in western UP only. 3. Data Managemen t – As default value of Ly is used hence no data managemen t is required for this parameter. 4. Managemen t Controls – As default value of Ly is used hence no managemen t control is required for this parameter.				
oi project (7W)/(9W)/ (12W) /baseli ne (60W)/(10 ow)	· Inher ent Risk	1. Manual adjustme nt of otherwis e automati cally	L- Low Significan t	The verification of this project is planned thoroughly to cover -	1. ER Calculatio n spreadsh eet 2. Sampling	Accepta nce sampling	11 (11 LEDs of each type: 7W, 9W	1. ER Calculatio n spreadsh eet 2. Sampling

(Average annual operating hours of type 'i' project/baseline lamp)		recorded activity levels: This error may be due to manually recording of actual readings into original records.		1. GHG Emissions SSRs – ER Calculation spreadsheet is checked with the help of value mentioned in CDM-CPA-DD/03/ DD and 1st Verification report available on project webpage⁵ and found to be true. 2. Project Boundaries –CDM-CPA - DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemented in western UP only. 3. Data Management	Survey sheet 3. Technical specification and test report of LEDs 4. Life Certificate		and 12W)	Survey sheet 3. Technical specification and test report of LEDs 4. Life Certificate
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⁵ <https://registry.terra.org/app/projectDetail/VCS/2657>

				t - This parameter value was measured at the time of 1st ex-post monitoring. Hence data management is not required. 4. Management Controls - This parameter value was measured at the time of 1st ex-post monitoring. Hence data management is not required.				
		2. Human error in the quantification of emissions: This error may be due to transfer of monitored data into Emission Reduction	H- Highly Significant	The verification of this project is planned thoroughly to cover - 1. GHG Emissions SSRs - ER Calculation spreadsheet is checked with the help of value mentioned	1. ER Calculation spreadsheet 2. Sampling Survey sheet 3. Technical specification and test	Acceptance sampling	11 (11 LEDs of each type: 7W, 9W and 12W)	1. ER Calculation spreadsheet 2. Sampling Survey sheet 3. Technical specification and test report of LEDs

		n calculatio n spreadsh eet and CDM-CPA -DD/03/ database for calculatio n of actual emission reduction achieved during monitorin g period.		in CDM-CPA -DD/03/ and 1 st Verification report available on project webpage ⁶ and found to be true. 2. Project Boundaries –CDM-CPA- DD/03/ and VCS PD was assessed for project boundary and the project was found to be implemente d in western UP only. 3. Data Managemen t – This parameter value was measured at the time of 1 st ex-post monitoring. Hence data managemen	report of LEDs 4. Life Certificat e			4. Life Certificate
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⁶ <https://registry.terra.org/app/projectDetail/VCS/2657>

				t is not required. 4.Management ent Controls -This parameter value was measured at the time of 1st ex-post monitoring. Hence data managemen t is not required.				
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Sampling Plan

Where, due to the number of project activity instances, it is unreasonable to undertake an individual assessment of each instance, the validation/verification body shall document and explain the sampling methods employed for the verification of instances. Such sampling methods shall be statistically sound. The number of instances included in the project, eligible for monitoring and generation of VCUs shall be proportional to the percentage of sampled instances found to be in compliance by the validation/verification body.

☐	No sampling approach has been used by the VVB to verify the project's compliance with SD Vista requirements.
☒	Acceptance sampling approach has been applied by the VVB to verify the project's compliance with VCS requirements for the aspects derived in step 2 above. The statistical approach of sample size (i.e., 11) calculation is provided below.

VVB has applied an acceptable sampling approach for the remote interviews as part of assessment in accordance with the paragraph 26 of the Standard: Sampling and surveys for CDM project activities and programmes of activities, Version 09.0/16/. In accordance with the sampling standard, acceptance sampling has been chosen by the verification team. Verification team has opted for **AQL of 0.5 %** and **UQL of 20%**; **producer risk of 10%** and **consumer risk of 10%** as per VVBs professional judgement according to **para 30** and **para 31** of Sampling and surveys for CDM project activities and programme of activities version 09.0/16/ in determining the **VVB's selected sample size of 11 (11 LEDs of each type; 7W, 9W, and 12W, Total = 33 LEDs)** with acceptance number (c) as 0.

Producer Risk		5%		5%		5%		5%	
Consumer Risk		5%		10%		15%		20%	
AQL	UQL	Sample Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)
0.5%	10%	46	1	38	1	33	1	29	1
0.5%	15%	30	1	25	1	22	1	10	0
0.5%	20%	22	1	18	1	9	0	8	0
1.0%	10%	61	2	52	2	33	1	29	1
1.0%	15%	30	1	25	1	22	1	19	1
1.0%	20%	22	1	18	1	16	1	14	1
Producer Risk		10%		10%		10%		10%	
Consumer Risk		5%		10%		15%		20%	
AQL	UQL	Sample Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)	Sample Size (n)	Acceptance Number (c)
0.5%	10%	46	1	38	1	19	0	16	0
0.5%	15%	19	0	15	0	12	0	10	0
0.5%	20%	14	0	11	0	9	0	8	0

1.0%	10%	46	1	38	1	33	1	29	1
1.0%	15%	30	1	25	1	22	1	10	0
1.0%	20%	22	1	18	1	9	0	8	0

Verification team based on its professional judgement and observation during acceptance sampling, derived its assessment including conclusions as discussed later in the following section of this report. The verification team selected 11 LEDs samples of each type from the PP's sample list for each LED type separately by using random number generator thus random samples from PP's sample list/38/ were selected. The LED details (Date of installation, type of LED, DISCOM Service number, name of user and address) were checked and found to be consistent with that reported in the installation database. No inconsistency was observed for any of the 11 samples (**11 LEDs of each type; 7W, 9W, and 12W, Total = 33 LEDs**) with respect to remote inspection & document review. This assessment of the selected samples was done to ascertain the implementation status of the grouped project activity with. the LED types, serial number, location, operation etc. of LED

2.5 Resolution of Findings

The objective of this phase of the verification is to resolve any outstanding issues which need to be clarified for VKU's positive conclusion on the project description. To guarantee transparency a verification protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of verification and the results from verifying the identified criteria. The verification protocol consists of three tables; the different columns in these tables are described below.

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

- Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate of emission reductions;
- Issues identified in a FAR during validation to be verified during verification have not been resolved by the project proponents.

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

A forward action request (**FAR**) is also raised in cases where any required deviation/information is not fulfilled in current verification and thus needs to be taken up in consequent verification for better transparency thus holding the applicability of the methodology eligible to the project activity and there is no impact of the same on additionality, baseline scenario & emission reduction calculation of project.

In summary, **01 CL**, **03 CARs** and **00 FAR** were raised during this verification which were closed successfully and details are given under **Appendix B** of this report.

2.5.1 Forward Action Requests

Based on the review of the verification report for the 2nd monitoring period /06/, one FAR found raised which needs to be closed during this verification. This FAR is addresses by the PP and closed successfully. There is no FAR raised during current monitoring period which needs to be addressed in next verification.

2.6 Eligibility for Validation Activities

VKU has not undertaken any validation activities as part of the verification and does not hold accreditation for validation of any relevant sectoral scope, hence this section is not applicable. It is to further conclude that during current verification there is no validation assessment undertaken either by VKU itself or parallelly by other certification bodies, as there was no distribution of LEDs happened in current monitoring period, thus no PAI validation activity was required to be performed by VVB as per clause 4.1.29 of VCS Standard version 4.5/09/. This was confirmed with focussed group discussions and interview with the PP /37/ during remote audit/30/. Assessment team assessed the VERRA's website during desk review <https://verra.org/validation-verification/vku-certification-pvt-ltd/#vcs> wherein the scope of services of VKU certification Pvt. Ltd. is mentioned as verification and not validation. Thus, ensuring that the accreditation details mentioned in FVR is consistent and correct

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The project has not applied under any other GHG program except VCS for the current monitoring period, 01-January-2023 to 30-June-2023 (inclusive of both dates). The project is registered under VCS with project ID: 2657 and under CDM with registration ID CDM-CPA-DD/03/10484-P1-0003-CP1. This was confirmed by checking VERRA registry website and CDM registry website and similar exercise was performed for GS/GCC/UCR registries with similar project title/capacity and Project Proponents but the assessment team was not able to trace any such project registered under any of the above stated registries or under any other similar mechanisms except CDM. This was supported from the declaration/07/ submitted by PP in which they claimed that same GHG emission reductions of the project from VCS for the current monitoring period will not be claimed under other registries except VCS. Similar exercise of independently searching for such project registration or claim for current monitoring period was performed for other GHG related benefits such as REC and I-REC benefits and based on both independent assessments, the assessment team accepted the claim that there is no double counting from this project activity for current monitoring period. Thus, ensuring emission reduction generated from the project activity will not be double counted hence accepted by the assessment team. The details of the registries checked are as follows:

- 1) <https://www.recregistryindia.nic.in/>
- 2) <http://cdm.unfccc.int/>
- 3) <http://www.goldstandard.org/>
- 4) I-REC Standard - The International REC Standard Foundation (irecstandard.org)
- 5) <https://cri.nccf.in/>
- 6) International Carbon Registry - International Carbon Registry
- 7) GCC PROJECTS PORTAL (globalcarboncouncil.com)

Rejection by other GHG programs

The Project is not rejected by other GHG programs. A declaration/07/ for the same is checked and found correct by the assessment team. Also, assessment team independently verified with the following registries and checked projects from the PP matching the same project design and found that no such project either exists or were rejected by the registries. The details of the registries checked are as follows:

- 1) <https://www.recregistryindia.nic.in/>

- 2) <http://cdm.unfccc.int/>
- 3) <http://www.goldstandard.org/>
- 4) I-REC Standard - The International REC Standard Foundation (irecstandard.org)
- 5) <https://cri.nccf.in/>
- 6) International Carbon Registry - International Carbon Registry
- 7) GCC PROJECTS PORTAL (globalcarboncouncil.com)

3.2 Methodology Deviations

There is no methodology deviation identified during the current monitoring period. Also, there were no methodology deviations identified during the validation /05/ and previous verification/06/

3.3 Project Description Deviations

Deviation 1

Korea Impact Carbon Corporation (herein after referred as KICC) is added as the Project Proponent under this grouped project activity since It has provided all implementation costs along with project 's operation and maintenance costs. It can be referred from the communication agreement deed dated 20-October-2023 which is available on the VERRA project webpage: <https://registry.verra.org/app/projectDetail/VCS/2657>. Further this deviation has not impacted the applicability of the methodology, additionality, or the appropriateness of the baseline scenario under the current monitoring period. Further no project description deviations were applied during previous verification and validation under this grouped project.

3.4 Grouped Project

The grouped project is the distribution of energy efficient LEDs to grid connected households located in the west Uttar Pradesh. A total of 3,099,557 LEDs were disseminated till 21-March-2021. Total 3,099,557 LEDs have been distributed in 526,491 grid connected households in the state of Uttar Pradesh (west) till the end of first monitoring period under VCS. No other LED has been distributed to any household in the current monitoring period as last LED was distributed on 21-March-2021 thus there is no need to assess any PAI in the grouped project activity as per clause 4.1.29 of the VCS standard requirement hence the assessment of grouped project activity instances is not included in current verification.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The grouped project, “**SHINE- Distribution of LED Lightbulbs in India -3**” is a LED distribution project with project ID **VCS 2657** applying the methodology AMS-II.C- Demand-side energy efficiency activities for specific technologies, Version 15.0 /11/. This is the third periodic verification for the grouped project activity. The grouped project involves distribution of Light Emitting Diodes (LEDs) for domestic lighting in Northern States of Uttar Pradesh, Haryana, Himachal Pradesh and Eastern states of Bihar, Jharkhand, and Odisha. Thus, under this grouped project, **60W ICL** have been replaced with **7W/9W LED** and **100W ICL** with **12W LED** as the lumen output is within the specified limit as per methodology/11/ mentioned in section 1.4 of this report above. Each household has received maximum six LEDs under this grouped project. Total **3,099,557 LEDs** have been distributed in **526,491** grid connected households in the state of **Uttar Pradesh (west)** till 21-March-2021. The last LED was distributed on **21-March-2021** as verified by assessment team in Project installation database/23/ and ER sheet/02/ submitted by PP.

No further distribution of LEDs has been carried out or planned by PP after 21-March-2021 under this grouped project activity. The start date for the grouped project is **06-March-2020** which is the date when the first energy efficient LED has been distributed as per MR/01/ section 3.1 and the installation database/23/ and ER sheet/02/ submitted by PP.

Table no. 10; The relevant implementation dates for the Grouped project activity under VCS

Date of first LED installed	06-March-2020
Date of last LED installed	21-March-2021
First Monitoring Period under VCS for which VCU issuance has been received under VCS	01-January-2021 to 31-May-2022 (Inclusive of both dates)
Second Monitoring Period under VCS for which VCU issuance has been received under VCS	01-June-2022 to 31-December-2022 (Inclusive of both dates)
Third Monitoring Period under VCS	01-January-2023 to 30-June-2023 (Inclusive of both dates)

The verification team confirms that there is no change in the project activity from the registered VCS PD/04/ and CDM-CPA-DD/03/of the physical features which may impact the emission reductions of the project activity. This has been confirmed based on the review of project installation database /23/, monitoring survey forms /21/ and end user agreements /19/, conducting interviews with representatives of PP as well as by carrying out remote interviews with end users/37/. Thus, the verification team concludes that all the structures of the CDM POA as defined in CDM-CPA-DD/03/ and registered VCS PD /04/ are in place as defined in these documents.

The verification team confirms that during the current monitoring period from 01-January-2023 to 30-June-2023 (Inclusive of both dates) the grouped project has distributed **3,099,557 LEDs**. This was confirmed based on the review of project installation database /23/, monitoring survey forms /21/ and end user agreements /19 and further based on interviews with representatives of PP through interviews during remote audit/37/.

During the remote interviews verification, QA/QC procedures were identified which demonstrate that:

- Operational and management system of the grouped project is in place; data were centralized;
- Monitoring data were crosschecked with the sales records stored and confirmation that all staff were trained before taking up positions.
- The verification team thus confirmed that the monitoring of the project activity has been implemented in accordance with the monitoring plan in the registered VCS PD/04/ and CDM-CPA-DD/03/.
- The registered VCS PD/04/ and CDM-CPA-DD/03/ clearly describes the monitoring plan and responsibility of monitoring and maintenance which is done by PP.

VKU verification team verified 11 samples (**11 LEDs of each type;7W, 9W, and 12W, Total = 33 LEDs**) which is required number of samples as explained in section 2.4 above to ascertain accuracy of information. VKU confirms that the project **LEDs** are operating in all samples interviewed/37/, and each LEDs has unique identification number (ID)-DISCOM Service number which has been provided in the end user agreement/19/ and it is consistent as per project installation database/23/. Along with the serial numbers, LED types, end user name, address, installation date, location etc. had also been noted which were found to be consistent on ground during the remote audit /30/ with the sampling survey sheet /38/ and project installation database/23/ submitted.

Table No. 11: Wattage wise LEDs' actual distribution figures under VCS 2657

7W	9W	12 W	Total LED Distributed

527,987	519,807	2,051,763	3,099,557
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During the current monitoring period, no incident or event occurred, that could affect GHG emissions reduction and implementation of the approved monitoring plan.

Specifications of LED Lamps –

The technical Specification of all three types of LEDs distributed is mentioned in the tables below from **Table no.12 to Table no. 14** and it was verified by the assessment team through the technical specification record from the life test reports of LEDs /18/ submitted by PP and during remote audit, assessment team confirmed it physically with the help of visual inspection of each LED bulb at site/30/.



Image of LED Bulb with Shine LOGO

Table no. 12; Showing Technical specification of 7W LED Bulb

Technical Specification of 7W LED bulb as per the technical specification report submitted by PP/18/	
Rated Wattage	7 W
Working Voltage	220-240 V, 50 Hz
Colour Temperature	5700 K - 6500 K
Initial Lumen	740 lm
Service level as compared to baseline lamp of 60W (715 lm as per methodology)	103% of lumen output
CRI	>80
Power Factor	0.90
Average Life	25,000 hrs
BIS compliant as per IS 16102 (Part 2): 2012	Yes

Table no. 13; Showing Technical specification of 9W LED Bulb

Technical Specification of 9W LED bulb as per the technical specification report submitted by PP/18/	
Rated Wattage	9 W
Working Voltage	100 V-300 V, 50 Hz
Colour Temperature	6500 K
Initial Lumen	820 lm
Service level as compared to baseline lamp of 60W (715lm as per methodology)	115% of lumen output
CRI	>80
Power Factor	0.90
Average Life	25,000 hrs
BIS compliant as per IS 16102 (Part 2): 2012	Yes

Table no. 14; Showing Technical specification of 12W LED Bulb

Technical Specification of 12W LED bulb as per the technical specification report submitted by PP/18/	
Rated Wattage	12 W
Working Voltage	230 V, 50 Hz
Colour Temperature	6000 K – 7000 K
Initial Lumen	1340 lm
Service level as compared to baseline lamp of 100W (1350lm as per methodology)	99% of lumen output
Power Factor	0.90
Average Life	25,000 hrs
BIS compliant as per IS 16102 (Part 2): 2012	Yes

It is noted that no changes have been observed or identified during the remote audit which may impact the additionality, no addition of component nor extension of technology, no addition nor removal of project sites, no change of values of the actual operational parameter relevant to determination of emission reductions which are within the control of the PP; no change has been observed or identified that may impact the scale of the grouped project activity or applicability of baseline and monitoring methodology AMS-II.C, Version 15.0 /11 /

All the ex-ante parameters which are used in the calculation of emission reductions are consistent with the CDM-CPA-DD/03/. It is confirmed that ex-ante parameters mentioned in section 4.1 of the MR /01/ are in line with the parameters mentioned in VCS PD/04/ and CDM-CPA-DD/03/. All the ex-post parameters have been monitored as per the monitoring plan and presented in section 4.2 of the MR /01/.

Assessment team concludes the following:

- There are no material discrepancies between project implementation and the project description found in current monitoring period.
- The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analyzing the monitored data and parameters) is appropriate.
- There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/11/.
- The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation/07/.
- The GHG emission reductions or removals generated by the project have not been included in any emissions trading program or any other mechanism that includes GHG allowance trading/07/.
- The assessment team confirms that PP have mentioned in section 1.10 of MR; according to the guideline in section 3.23.9 of the VCS Standard, version 4.5/09/, the “producer(s) or retailer(s) of the impacted good or service are known but not involved in the project or do not have a website”. PP has informed the distribution agent that the Verified Carbon Units (VCUs) may be issued for the greenhouse gas emission reductions and removals under this grouped project. For these VCUs, the PP will be claiming carbon credits under VERRA. Evidence of the email and public statement has been submitted by PP for current verification of the project. The Email screenshot is provided in Appendix D of this report which confirms that PP have communicated to supplier to avoid the double counting of emission reductions.
- The project is registered under CDM and validated on 11-January-2020 by Carbon Check (India) Private Limited⁷ and received CDM Credits from 12-January-2020 to 31-December-2020 under three different monitoring periods covering the time period of (0.97 years, 11 Months 20 Days). Then project got registered under VERRA on 29-November-2022 and validated by Carbon Check (India) Private Limited since then project is getting credits from VCS and no double counting has been observed as seen from audit history assessment by assessment team and Table-2 provided in MR/01/. Currently the project is undergoing third verification from 01-January-2023 to 30-June-2023 (Inclusive of both dates).
- The grouped project activity complies with nine indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India as discussed under section 1.11 of MR /01/. Assessment team has verified the same during remote audit/28/ and found all the indicators to be effective and applicable for the grouped project activity. SDG Indicators taken by PP are-

⁷ CDM-POA-VAL-FORM (unfccc.int)

- ✓ **4.3 i.e. (Number of individuals receiving any formal and informal vocational training)**
During this third verification no contribution is observed for the current monitoring period. While in the project lifetime the project has contributed to increasing relevant skills of at least 38 individuals since the project start date by providing training which is verified by assessment team through the training records/25/ submitted by PP. The training included topics such as appropriate methods of compiling project related documentation, with specific skill building in operations and surveying activities related to methodological requirements of implementation and monitoring of efficient lighting projects.
- ✓ **7.1.2 i.e. (Proportion of population with primary reliance on clean fuels and technology)** Completed one-to-one replacement of ICLs with 3,099,557 energy efficient LEDs in 526,491 grid connected households located in Uttar Pradesh (west) in the first monitoring period of the project. All project LEDs are also operational during the current third monitoring period, further confirmed through monitoring survey/28/ and this contributed to providing access to affordable, reliable, and sustainable modern energy in 526,491 grid connected households located in Uttar Pradesh (west) over the project lifecycle.
- ✓ **8.3.1 i.e. (Proportion of informal employment in non-agriculture employment, by sex)**
During this third verification no contribution is observed for the current monitoring period. While in the project lifetime the project has contributed to direct and indirect employment of a total of 20 male individuals (temporary in nature) since the project start date for various activities related to project implementation, maintenance and monitoring. Employment comprises all persons of working age who during a short reference period (minimum one week), or full time will be engaged in any activity to produce goods or provide services for pay or profit this has been verified with the hp of employment records submitted by PP.
- ✓ **12.5. i.e. (Volume of ICL generated);** During current monitoring period approximately waste generation of 0.91 failed ICLs is estimated to be reduced by use of 1 LED per grid connected household over the third monitoring period which contributed to reducing waste generation of approximately 2,828,597 ICL by distributed LEDs in the current monitoring period. For the overall contribution of the project activity, it has cumulatively contributed to reducing waste generation of 15,226,825 failed ICLs till the end of third monitoring period under VCS. This has confirmed by assessment team through the calculation provided by PP in Appendix-C of MR and DELP toolkit reference provided by PP.

- ✓ **13.0 i.e. (Tonnes of greenhouse gas emissions avoided or removed)** Due to installation of this project activity, PP has prevented the release of 243,756 tCO₂e emissions in the current monitoring period into the atmosphere. Over project lifetime, the project activity has contributed to GHG emission reduction of 694,396 tCO₂e in the first monitoring period, 288,199 tCO₂e in the second monitoring period and 243,756 tCO₂e in the current monitoring period under VCS. Assessment team has verified the emissions reductions for the project through ER spreadsheet/02/ and MR/1/.

In view of the information as verified above the assessment team is able to conclude that the grouped project has been implemented as described in the registered VCS PD/04/ and CDM-CPA-DD/03/, All the above stated information was verified by VVB during remote audit /37/ and site personnel interviews /30/ and found to be acceptable.

4.2 Safeguards

4.2.1 No Net Harm

Under this grouped project, grid connected households were provided with highly subsidized LEDs as a replacement of the ICLs or fluorescent lamps, thereby leading to reduction in GHG emissions through avoided use of fossil fuels ensuing from reduced consumption of electricity. In addition to reduced GHG emissions, the program will also result in reduced waste generation as LEDs last 25-50 times longer than the ICLs and do not contain toxic mercury as is the case with compact fluorescent lamp.

Further, PP has ensured proper collection and scientific disposal of baseline ICLs that are eligible to be replaced under the grouped project leading to effective management of hazardous wastes. The replaced ICLs from the LED recipient households were stored in boxes according to their wattage and clearly labelled. These boxes were then transferred to centrally designated storage facilities. PP has an agreement with the waste disposal agency for the safe destruction of the collected ICLs. This agency has collected the stored ICLs from the storage facility and destroyed them as per the legal norms of the Government of India. Proper handling and disposal procedures were implemented to ensure that the ICL destruction process has no negative impact on the environment. Further, ICL destruction certificates, certificate of taking over/handing over of ICL, inventory list of handling of ICLs were issued by the disposal agency which have been submitted to the VVB to ensure that the disposal was carried out in a safe and appropriate manner.

Therefore, the LEDs distributed under this project presents positive environmental impacts wherever they are applied, and no negative environmental impacts have been identified during this monitoring period.

4.2.2 Local Stakeholder Consultation

The Project is already registered with VCS and registered VCS PD/04/; sections 2.2 describe the Local Stakeholder Consultation Process as in-line with VCS requirement. The Local Stakeholder Meetings were organized for local stakeholder consultation and informed local stakeholder regarding the meeting. The followings are the local stakeholders for the project activity:

- Local community
- Local village administration
- Technology suppliers
- Local vendors

All the stakeholders have been invited through public notice to attend the stakeholders meeting. The details of the Stakeholder Meetings are as follows:

Local stakeholder consultation is not applicable for the project proponent during verification. PP organized stakeholder consultation during validation/05/ of the project activity which was validated by Carbon Check India Pvt. Ltd./05/ The local stakeholder consultation was done at PoA level, prior to the registration of the PoA. Key institutional stakeholders like Standard making bodies, Manufacturers of LEDs and Electricity regulatory bodies act at the National level, so do leading NGOs active in this field. Moreover, the CDM PoA covers pan India. In view of the above, the stakeholder opinion has been sought at PoA level. This has been done through stakeholder meeting that was organized on 7-March-2018 in Hyderabad, India.

A list of invitees was made prior to the stakeholder's consultation meeting. They were then contacted through calls, e-mails, public advertisements and follow-ups via word of mouth to ensure maximum participation. The stakeholder meeting was well attended, and the participants were actively involved. Through this meeting, it was evident to the PP representatives that not only did the stakeholders embrace the concept, but they also wanted to be educated about the product and kept in the loop regarding information about the success of project. Overall, the PP representatives believe the engagement was robust and beneficial to all parties involved. The program got positive feedback and participants appreciated the PP's efforts for this community-based project which in addition to reducing the GHGs would also lead to improvement in living condition owing to better lighting facilities.

The outcomes from the local stakeholder consultation are available in Section F of the CDM PoA-DD⁸.

A systematic feedback and grievance redressal mechanism is in place under the purview of the project to address all the issues and challenges experienced by the beneficiaries.

The mechanism for on-going communication with local stakeholders:

PP conducts regular surveillance to observe that project LEDs are functioning properly and to get feedback from stakeholders on LED usage and its benefits. Also, LED users can contact Project Proponent for any concerns /comments on the project or project LEDs through consumer care number. The distributed LEDs carry a warranty of three years. If within this period, the bulb becomes non-functional then the project implementer will replace it free of cost at LED Replacement Centers

The process for exchanging LED(s) under warranty has been summarized in following steps. Firstly, the end user must contact the Distribution Agency or their designated representative using the provided consumer care number. They will then be guided to bring the faulty LED(s) and a copy of the electricity bill for service number verification to the replacement center service counter. Upon receipt of the faulty LED(s), the agent will check them for failure and verify the service number in the bill against the installation database to ensure that the user was covered and that the claim is within the warranty period. If all conditions are met and the claim is genuine, the agent will replace the faulty LED(s) with a new equivalent LED and record the exchange in grievance register. This ensures that the user receives a satisfactory resolution to their issue with minimal hassle.

In the current monitoring period, 4 grievances were received from end users (concerning request for replacement of damaged and defective LEDs, replacement of non-project LEDs and requests for additional LEDs despite already having received replacements for their ICLs and with no reported defects in the provided LED). All complaints were reported to the Distribution Agency which further provided new LED to the end-users, in line with the grievance redressal process elaborated above. Assessment team verified the grievance records/27/ and confirms that the all raised concerns related to fusing of LEDs have been addressed properly by PP. Upon resolution of the grievances, feedback of end user against each complaint was recorded. Further, no project design change has been done by the Project Proponent under the current monitoring period.

The verification team confirms on the procedure and method for engagement, method for documenting the outcomes of local stakeholders' consultation and account of all inputs received. The verification team confirms that the project proponent has taken due account of all input/ feedback received during the monitoring process (positive or negative) have been compiled in the survey results spreadsheet/38/, this has been checked by the verification team during the remote interviews/37/ and grievance records/27/. Hence the verification team found the local stakeholders ongoing communication as appropriate.

⁸ https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/MN26BFZOCHPIR47GQ1L3YES9XVKTUD/view (PoA)

4.3 AFOLU-Specific Safeguards

This project is a non-AFOLU project, hence this section is not required.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The equations and choices provided in the methodology and all other methodological tools are correctly quoted in the MR /01/. The emission reductions of the grouped project activity are calculated using the formulae mentioned in the applied methodologies; AMS-II.C, Version 15.0/11/. The verification team has reviewed the emission reduction spread sheets (ER sheets)/02/ and checked all the formulae and found that they are correct and are in accordance with the monitoring plan of the VCS PD/04/ and CDM-CPA -DD/03/ and the applied monitoring methodology.

Baseline Emissions

According to paragraphs 20 and 21 of the applied methodology, Option 1 i.e., ‘Constant Load Equipment’s’ is applicable for the present project. Baseline emission is calculated using the following equations:

$$BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$$

As the project entails replacement of LED in place of ICLs hence no refrigerant is involved. The above equation is then modified as:

$$BE_y = E_{BL,y} \times EF_{CO2,ELEC,y}$$

BE_y = Baseline emissions in year y (tCO₂e)

$E_{BL,y}$ = Energy consumption for the baseline (ICLs) in year y (kWh)

$EF_{CO2,ELEC,y}$ = Electricity emissions factor. If electricity displaced is grid, the emission factor in year y shall be calculated in accordance with the provisions in AMS-I.D (tCO₂/MWh). If electricity displaced is captive electricity, the emission factor in year y shall be calculated in accordance with the “Tool to calculate baseline, project and/or leakage emission from electricity consumption”

Energy consumption for baseline in year y is calculated as:

$$E_{BL,y} = 0.95 * \sum_i (n_i \times \rho_i \times o_i / (1 - l_y))$$

Where,

n_i = Number of pieces of equipment of the group of ‘i’ baseline equipment (ICLs) replaced.

- ρ_i = Electrical power demand (kW) of the group of 'i' baseline equipment (e.g. 60W or 100W incandescent lamps).
In the case of more than one type of ICLs are replaced, electrical power demand is the weighted average of the rated power (kW) of group i baseline equipment (ICLs).
- o_i = Average annual operating hours of the group of 'i' baseline equipment (ICLs).
The operating hours of the baseline equipment in year y can be determined using surveys by continuous measurement of usage hours of baseline equipment for a minimum of 90 days. For a large population of baseline equipment: (a) Use a representative sample (sampling determined by a minimum 90% confidence interval and 10% maximum error margin); (b) Apply correction for seasonal variation, if any; and (c) Ensure that sampling is statistically robust and relevant, i.e. the selection of the equipment to be analysed for operating hours has a random distribution and is representative of target population (size, location).
- l_y = Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g. theft). The average annual technical grid losses will be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. The reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non-technical grid losses) will be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable
- 0.95 = Net to gross adjustment factor

For 100 W ICLs replacing 12 W

$$E_{BL,y} = 0.95 \times (1.00 \times 0.1 \times 2,153.5) / (1 - 0.10)$$

$$= 227.31 \text{ kWh}$$

$$BE_y = 227.31 \times 0.92/1000$$

$$= 0.209 \text{ tCO}_2\text{e/ICL/year}$$

For 60 W ICL replacing 7 W

$$E_{BL,y} = 0.95 \times (1.00 \times 0.06 \times 2,153.5) / (1 - 0.10)$$

$$= 136.39 \text{ kWh}$$

$$BE_y = 136.39 \times 0.92/1000$$

$$= 0.125 \text{ tCO}_2\text{e/ICL/year}$$

For 60 W ICL replacing 9 W

$$E_{BL,y} = 0.95 \times (1.00 \times 0.06 \times 2,153.5) / (1 - 0.10)$$

$$= 136.39 \text{ kWh}$$

$$BE_y = 136.39 \times 0.92/1000$$

$$= 0.125 \text{ tCO}_2\text{e/ICL/year}$$

Project Emissions

Project emissions on account of electricity used by the project equipment shall be calculated according to following equations:

$$PE_y = E_{PE,y} \times EF_{CO_2,ELEC,y} + PE_{ref,y}$$

Where,

$$PE_y = \text{Project emissions in year } y \text{ (tCO}_2\text{e)}$$

$$EP_{PJ,y} = \text{Energy consumption in project activity in year } y. \text{ This shall be determined ex post based on monitored values}$$

$$EF_{CO_2,y} = \text{Emission factor for electricity or thermal baseline energy. The emissions associated with grid electricity consumption should be calculated in accordance with the procedures of AMS-I.D. For fossil fuel displaced reliable local or national data for the emission factor shall be used; IPCC default values should be used only when country or project-specific data are not available or difficult to obtain}$$

$$PE_{ref,y} = \text{Project emissions from physical leakage of refrigerant from the project equipment in year } y \text{ (tCO}_2\text{e/y)}$$

As the project entails replacement of LED in place of ICLs hence no refrigerant is involved. The above equation is then modified as:

$$E_{PE,y} = 0.95 * \sum_i (n_i \times \rho_i \times o_i / (1 - l_y))$$

Where,

n_i = Number of group 'i' project devices operating during time interval t in year y.

ρ_i = Electrical power demand (kW) of the group 'i' project devices measured during the time interval t in year y.

o_i = Operating hours of group of 'i' project devices in the time interval t in year y

0.95 = Net to gross adjustment factor

For calculating the project emissions for the current monitoring period, project emission per LED has been calculated for each type (i.e., each for 7W, 9W, 12W) of project lamp and then apportioned according to the working days for each household as per the database in the ER calculation spreadsheet/02/.

For 12 W LEDs

$$= 0.95 \times (1.00 \times 0.012 \times 2,153.5) / (1 - 0.10)$$

$$= 27.28 \text{ kWh}$$

$$= 27.28 \times 0.92 / 1000$$

$$= 0.025 \text{ tCO}_2\text{e/LED/year}$$

For 9 W LEDs

$$= 0.95 \times (1.00 \times 0.009 \times 2,153.5) / (1 - 0.10)$$

$$= 20.46 \text{ kWh}$$

$$= 20.46 \times 0.92 / 1000$$

$$= 0.019 \text{ tCO}_2\text{e/LED/year}$$

For 7 W LEDs

$$= 0.95 \times (1.00 \times 0.007 \times 2,153.5) / (1 - 0.10)$$

$$= 15.91 \text{ kWh}$$

$$= 15.91 \times 0.92 / 1000$$

$$= 0.015 \text{ tCO}_2\text{e/LED/year}$$

Leakage Emissions

According to the applied methodology, leakage emissions have to be considered if the energy efficiency technology involves equipment's transferred from another activity. In the proposed project, LEDs that will be distributed to the consumers are not transferred from another activity; hence leakage emissions are not applicable.

Emission reductions have been calculated in accordance with the applied methodology AMS. II. C version 15 /11/, and VCS PD /04/. The PP has used monitored data and ex-ante fixed data including default values as mandated/permitted by the applied methodology. The values used for calculation of GHG emission reductions have been thoroughly checked by the verification team and was found appropriate and correct

Table 15: - Parameters Determined ex-ante.

Parameter	Unit	Value	Assessment
EF _{CO2,ELEC,y}	tCO2/MWh	0.92	The Project Proponent has applied the latest grid emission factor database available on the CEA website and fixed the value ex-ante
Li _{12w}	Hours	25,000	The value has been determined from independent life-tests of the LEDs as per national or any other admissible test. The value has been fixed ex-ante.
Li _{7w}	Hours	25,000	The value has been determined from independent life-test reports of the LEDs as per national standard IS 16012 (Part 2): 2017. The value has been fixed ex-ante
Li _{9w}	Hours	25,000	The value has been determined from independent life-test reports of the LEDs as per national standard IS 16012 (Part 2): 2017. The value has been fixed ex-ante.

Data mentioned in the above table is checked through below steps:

- Applied methodology
- Distribution records
- Third party reports
- National/ international Guidelines

Moreover, under section 4.3 of the MR/01/, it clearly states that the monitoring survey was conducted through questionnaires along with physical observations by a competent third party hired by PP. The same has been observed during the remote interviews and deemed low risk of manual transposition errors between data records. The spread sheet submitted by the PP clearly and transparently mentions values of the data parameters used for calculation of emission reductions. The input values have been verified from the reliable and authentic sources including monitoring records (distribution records), MR /01/, and applied methodology /11/. The emission reductions calculated were compared with the emission reduction spread sheet /02/ and found to be correct. No significant reporting risks have been identified for the data reported.

The details of monitoring parameters used for calculation of emission reductions are provided below:

Table 16: - Parameters monitored ex-post

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Number of pieces of 60 W and 100 W baseline Incandescent Lamps replaced. (ni baseline (60W) & (100W))
Measuring Reporting frequency/Time Interval:	Once at the time of project installation
Reported value:	60 W- 1,047,794 100 W- 2,051,763
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Not Applicable
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable. QA/QC procedures stated in MR comply with registered VCS PD /04/
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable
Is (are) calibration(s) valid for the whole reporting period?	Not Applicable

If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR /01/ has been compared with monitoring survey records /28/ and the ER sheet /02/. The total number of replaced LEDs has been cross checked with the database and registration certificate /23//27/ as provided by the PP. VVB confirms here that Remote assessment of Monitoring parameter ni _{baseline} (60W) & (100W) was conducted based on following two methods: • Confirmation with the household/end user whether or not the PP has performed monitoring/measurement campaign, survey on LEDs operation (for the parameter ni _{baseline} (60W) & (100W)). • Assessment of Competence of personnel involved in conducting
How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Number of pieces of 60 W and 100 W baseline Incandescent Lamps destroyed. (ni baseline scrapped (60 W & 100 W))
Measuring Reporting frequency/Time Interval:	Once at the time of project installation
Reported value:	60 W- 1,047,794 100 W- 2,051,763
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Not Applicable
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable. QA/QC procedures stated in MR comply with registered VCS PD /04/
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable
Is (are) calibration(s) valid for the whole reporting period?	Not Applicable

If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with the ER sheet /02/ and ER sheet further cross verified through the survey report and interviewing the project representative.
How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /26/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Number of pieces of 7W, 9W, 12 W project lamps distributed (n_i project (7 w, 9w, 12 w))
Measuring Reporting frequency/Time Interval:	Once
Reported value:	7 W- 527,987 9 W- 519,807 12 W- 2,051,763
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Not Applicable
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable. QA/QC procedures stated in MR comply with registered VCS PD /04/
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable
Is (are) calibration(s) valid for the whole reporting period?	Not Applicable

If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with the database /23/ and destruction certificate/20/.
How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Total number of 7W, 9W, 12 W project lamps that are operational during monitoring period, Number Π_{i, operational} (7 W, 9W, 12 W)
Measuring Reporting frequency/Time Interval:	Annually
Reported value:	7 W- 527,987 (100%) 9 W- 519,807 (100%) 12 W- 2,051,763 (100%)
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Not Applicable
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable.
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable

Is (are) calibration(s) valid for the whole reporting period?	Not Applicable
If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR/01/ has been compared with the ER sheet /02/. and ER sheet further cross verified through the survey report and interviewing the project representative.
How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /28/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Rated power of 60 W and 100 W baseline lamps replaced, Watts (P_i (baseline 60 W, 100 W))
Measuring Reporting frequency/Time Interval:	Once at the time of project installation
Reported value:	60 W and 100 W
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Not Applicable
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable.
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable
Is (are) calibration(s) valid for the whole reporting period?	Not Applicable

If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR/01/ has been compared with the ER sheet /02/. and ER sheet further cross verified through the survey report and interviewing the project representative.
How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /28/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Rated power of 7W, 9W, 12W project LEDs (Watts) P_i (project 7W, 9W, 12W)
Measuring Reporting frequency/Time Interval:	Once at the time of project installation
Reported value:	7W, 9W, 12W
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Not Applicable
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable.
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable
Is (are) calibration(s) valid for the whole reporting period?	Not Applicable

If applicable, has the reported data been cross-checked with other available data?	Yes, the reported data in MR has been compared with the ER sheet /02/ and registered PDD. And ER sheet further cross verified through the survey report and interviewing the project representative.
How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /28/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Average annual technical grid losses Percent, (Ly)
Measuring Reporting frequency/Time Interval:	Yes, Fixed for crediting period
Reported value:	10%
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Not Applicable
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Not Applicable
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable.
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable
Is (are) calibration(s) valid for the whole reporting period?	Not Applicable

If applicable, has the reported data been cross-checked with other available data?	Yes, the value is a default value from methodology AMS- II.C. – version 15/11/
How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /28/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Monitoring Parameter Requirement	Assessment/ Observation by the VVB
Data / Parameter:	Average annual operating hours of type 'i' project/baseline lamp (Hours)oi project (7W)/(9W)/(12W) /baseline (60W)/(100W)
Measuring Reporting frequency/Time Interval:	Once, prior to or concurrent with the first ex-post monitoring
Reported value:	2153.5
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes
Details of monitoring equipment:	Run Time Meters
Is accuracy of the monitoring equipment as stated in the VCS PD? If the VCS PD VVBs not specify the accuracy of the monitoring equipment, VVBs the monitoring equipment represent good monitoring practise?	Yes. QA/QC procedures stated in MR comply with VCS PD /04/
Calibration frequency /interval: Is it monitoring methodology /CDM guidance / local or national standards / manufacturers specification	Not Applicable
Is the calibration interval in line with the monitoring plan of the VCS PD? If the VCS PD VVBs not specify the frequency of calibration, VVBs the selected frequency represent good monitoring practise?	Not Applicable.
Company performing the calibration (internal or external calibration):	Not Applicable
Did calibration confirm proper functioning of monitoring equipment? (Yes / No):	Not Applicable
Is (are) calibration(s) valid for the whole reporting period?	Not Applicable
If applicable, has the reported data been cross-checked with other available data?	Not Applicable

How were the values in the monitoring report verified?	Not Applicable
VVBs the data management (from data generation to emission reduction calculation) ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes, the data management ensures correct transfer of data from monitoring survey /28/ and reporting of emission reductions and all necessary QA/QC processes are in place.
In case only partial data are available because activity levels or non-activity parameters have not been monitored in accordance with the registered monitoring plan, has the most conservative assumption theoretically possible been applied or has a request for deviation been approved?	Not Applicable

Sampling approach: -

As assessed in this section, emission reductions for the project “SHINE-Distribution of LED Lightbulbs in India-3” is being claimed for this monitoring period and the total population of the LED for this monitoring period **01-January-2023 to 30-June-2023** (Inclusive of both dates) is **3,099,557 LEDs**.

The sampling plan implemented by the PP is in accordance with the applied approved monitoring methodology /11/ and the VCS PD /04/. The PP has appropriately performed Simple random Sampling procedure, reliability levels were set at 95% confidence and 10% precision in line with the applied methodology AMS-II.C, Version 15.0/11/. As the VCS PD /04/and CDM-CPA -DD/03/ mentions the option for Simple random Sampling procedure, it is acceptable to the verification team.

The sampling surveys have been carried out by the well-trained personnel /25/. Monitoring parameters $O_{i\text{project}}$ and $n_{i\text{operational}}$ are monitored through monitoring sample surveys. Monitoring of the parameters ensures compliance with the applied methodology AMS- II.C. – version 15 /11/. Further, since no LEDs have been distributed in the current monitoring period, the first VCS Monitoring survey conducted in July 2022 for parameter $n_{i\text{operational}}$ are applicable till month of July 2023. Further in reference to the paragraph 27 of “General Guidelines for CDM SSC methodologies”, which says that “PA/CPAs may apply the result of the surveys for monitoring period up to 12 months after the date of the survey, if:

(a) The average lifetime of the units is known and is four years or more. It shall also be confirmed by e.g., previous experience with similar technologies or manufacturer or the elements of the project design, in order to assure that the local conditions are unlikely to result in premature failure of the technology.

(b) At least 50 per cent of the distributed units were functional in the previous survey undertaken by PAs/CPAs (this condition is applicable only after the first monitoring survey is concluded)."

This grouped project involves distribution of LED bulbs (project device) with life expectancy of 25000 hours (more than 4 years) and they came with a free replacement warranty of 3 years from the date of distribution. Since the project fulfils both the conditions, monitoring survey conducted in July 2022, is valid to be applied till 30th June 2023 (12 months after the survey).

Verification team has checked the survey records /21/ and sample size calculation/38/. Parameter $o_{i\text{project}}$ monitors the average annual operating hours of project LEDs and the parameters $n_{i\text{operational}}$ are used to calculate number of group i project LEDs that are operational during time interval 't'.

PP has applied sampling for the current monitoring period. A confidence/precision level of 95/10 has been used by the PP for all the monitoring parameters determined through applying simple random sampling. Survey has been carried out. This is in accordance with the sampling plan provided in the registered VCS PD /04/. The sample size calculations for each of the monitoring parameters monitored through the sampling have been provided in the table below. The sample size was calculated using the formula provided by Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities (Version 04.0)/15/

PP has provided the detailed sample size calculation under section 4.3 of the MR /01/

The above table mentions the sample size calculated applying the formula;

$$n \geq \frac{1.96^2 N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.96^2 p(1-p)}$$

Here,

n= Sample Size

N= Number of Households

p= Expected proportion – conservative assumption of 90% has been applied for sample size calculation

1.96= Represents the 95% confidence required

0.1= Represents the 10% precision required

For mean value parameters (operational hours of LED), monitoring survey/28/ was carried out as part of first verification under CDM.

The resultant applied sample size by the PP is summarized below.

Grouped Project SHINE CDM-CPA-DD/03/	Responded Samples		
	7W LED	9W LED	12 W LED
Sample Size	43	43	43
Number of LED Surveyed	60	58	129
Number of LED found operational- n_i	60	58	129
LED loss rate for this MP	0%	0%	0%
Precision achieved	0%	0%	0%

VVB used acceptance sampling during verification for checking the operational status in the households. The sampling done by VVB reflects the population of the project activity. Applying paragraph 39 (c) of the sampling standard, version 09 /16/, a sample size of **11 LEDs of each type;(7W, 9W, and 12W, Total = 33 LEDs)** was chosen (with no discrepant records). A sample size of **11 LEDs of each type;(7W, 9W, and 12W, Total = 33 LEDs)** was determined, based on an **AQL of 0.5%** and **UQL of 20%, producer risk 10% and consumer risk 10%**. Acceptance number (c) thus determined for the sample is 0. It was observed that out of the 11 samples of each LED type, all the LEDs (**11 LEDs of each type;(7W, 9W, and 12W, Total = 33 LEDs)**) were found to be operational and matched with the PP's records and hence no discrepant records were observed with the MR /01/ and ER sheet /02/ and thus $c=0$. Thus, PP's set of records has been accepted in line with para 33 of the sampling standard, version 09 /16/. Verification team has cross verified these sample documents.

The monitoring parameters to be monitored through the sampling plan are:

1. Number of operational project lamps during the monitoring period ($ni_{\text{operational}}$)
2. Operating hours of replaced ICL lamps or installed LEDs using run time meters (Oi_{project})

Simple random sampling was applied by the PP for selection of the monitoring samples with 95/10 confidence/precision for determining the sampling for all the parameters which is deemed acceptable as per the VCS PD /04/

Remote assessment of Monitoring parameters (namely $ni_{\text{operational}}$ and Oi_{project}) was conducted based on following two methods:

- Confirmation with the household/end user whether or not the PP has performed monitoring/measurement campaign (or parameter $ni_{\text{operational}}$) and survey on LED bulbs operation (for the parameter Oi_{project}).
- Assessment of Competence of personnel involved in conducting standardized tests viz., $ni_{\text{operational}}$ and Oi_{project} and surveys: Verification team has reviewed the abilities, qualifications and recognition of involved personnel and institutions of the measuring team involved in the $ni_{\text{operational}}$ and Oi_{project} . The verification team based on remote interviews confirms that the team was qualified to carry out the $ni_{\text{operational}}$ and Oi_{project} in line with the methodology.

PP has explained the process of conducting measurement campaign. surveys were done via data loggers. The operating hours (Oi_{project}) was measured continuously for a period of 90 days with the help of run time meters installed on a sample of lighting points. On-site surveys were conducted by third party monitoring team to estimated the number of operational LEDs. This was done by visiting the premises, visual inspection, and interview with the LED user to assess whether the LEDs have project logo and were operational.

During the remote interviews with PP's representative, VVB was able to understand the process in line with the methodology AMS II-C version 15/11/ and the PP monitoring procedure in line with the registered VCS PD /04/ and CDM-CPA-DD/03/.

VKU's sample for acceptance sampling was the same for both the parameters. VVB could verify the original survey forms /21/ and data/information flow to sampling sheet and ER spread sheet. No discrepancy was found in the data/information flow. As per the section 2.3 above the end users were not interviewed in a single day. Moreover, PP has conducted the monitoring survey/28/ from 10-July-2022 to 11-July-2022. Hence, the survey process deemed acceptable to the verification team. Furthermore, the database and sample sales record /23/ was also checked/cross verified to confirm the number of LEDs for the parameter **ni operational**.

As per paragraph 25 of the Sampling Standard, version 09 /16/, the verification team has to verify whether the project participants entity have implemented the sampling and surveys according to the sampling plan in the registered monitoring plan. The verification includes determining:

- a) Whether the required confidence/precision has been met;
- b) Whether the selected sample was representative of the population.

As per the applied methodology, and registered VCS PD /04/ and CDM-CPA-DD/03/. The necessary confidence / precision of 95/10 each of the parameters are met. This has been cross verified by the verification team from the supporting documents submitted. Verification team confirms that all parameters are used correctly in the calculations, all results are verifiable and transparent, all assumptions are described and based on verifiable evidence and calculations are done in accordance with the pre-defined formulae from registered VCS PD /04/ and CDM-CPA -DD/03/. The total number of emission reductions for the monitoring period from 01-January-2023 to 30-June-2023 (Inclusive both dates) is **243,756tCO₂e**.

The verification team has checked and confirmed the calculations in the spreadsheet and found to be accurate. The monitoring report is supported by emission reduction spreadsheet. The consistency and formula were verified and found to be accurate.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

When verifying the reported emission reduction, VKU ensured that there was a clear audit trail that contained the evidence and records that validate the stated figures. All source documents that form the basis for assumptions and other information underlying the GHG data are shown above.

When assessing the audit trails, VKU also examined:

1. Whether sufficient evidence was available, both in terms of frequency and in covering the full monitoring period
2. The source and nature of the evidence

3. if comparable information was available from sources other than that used in the monitoring report/01/, VKU cross-checked the monitoring report against the other sources to confirm that the stated figures were correct. The sources and the data referenced are shown in Section 2.2 above.

All records needed for monitoring are archived in line with the requirements of the registered monitoring plan. No significant, lack of evidence and missing data were detected during verification. Hence, the verification team confirms that the monitoring system ensures required quality of the monitoring system to ensure the quality of the monitored data. All internal data are subjected to QA/QC measures.

The operational status of project LEDs is monitored through sample survey following UNFCCC sampling and survey guideline follows 95/10 confidence precision. 95/10 is a methodological choice. The survey forms/21/ and photographs were checked to ascertain the monitoring results reported in survey/28/. For enhancing the survey reliability and QA/QC, training has been provided to the data collector during survey /28/ which was further verified from the training details provided by the PP/25/. It is also noted the achieved precision is less than 10% and hence meets the desired confidence precision. The monitored results are found consistent with remote assessment.

Also, PP has set up grievance/repair mechanisms/27/ and rectifies any issues for the operation of the project device. So, VKU is of the opinion that this method of calculation of emission reductions is accurate and results in conservative estimation of emission reduction and is line with the applicable VCS requirements set out in section 3.15 of VCS Standard version 4.4 and 4.5/09/ and that the verification of the GHG statement was conducted in accordance with ISO 14064-3; 2019/48/ and applied methodology/11/.

4.6 Non-Permanence Risk Analysis

The given programme of activity is efficient cookstove distribution grouped project which comes and registered under the sectoral scope 3 and sub sectoral scope 3.1. at time of validation. Hence, this is not anAFLOU project, So, this section is not applicable.

5 VERIFICATION OPINION

VKU Certification Pvt. Ltd. has performed third periodic verification of the emission reductions reported for the grouped project activity “**SHINE- Distribution of LED Lightbulbs in India -3**”, VCS Registry Project ID 2657, for the monitoring period from 01-January-2023 to 30-June-2023 (Inclusive of both dates) under first crediting period from 06-March-2020 to 05-March-2030 (Inclusive of both dates), with regard to the relevant requirements for VCS activities with a **reasonable level of assurance**.

The project proponents of the “**SHINE- Distribution of LED Lightbulbs in India -3**” are responsible for:

- The preparation of greenhouses gas emissions data and the reported greenhouse gas emission reductions from the grouped project on the basis set out in the monitoring plan contained in the registered VCS PD /04/ and CDM-CPA-DD/03/.
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of greenhouse gas emission reductions of the grouped project.

It is the responsibility of VKU to express an independent verification opinion about the project’s conformity with the requirements of VCS Standard version 4.4 and 4.5/09/ and GHG program applied, on the reported greenhouse gas emission reductions from the grouped project.

Based on documented evidence and confirmed by remote assessment, VKU can confirm that:

- The grouped project has been implemented and operated as per the registered VCS PD/04/ and CDM-CPA-DD/03/;
- The monitoring report and other supporting documents provided are complete and verifiable and in accordance with the applicable VCS Standard version 4.4 and 4.5 requirements/09/;
- The monitoring is in place as per the applied baseline and monitoring methodology/11/;
- The monitoring plan in the registered VCS PD/04/ and CDM-CPA-DD/03/ is as per the applied baseline and monitoring methodology /11/.

VKU’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. VKU Certification planned and performed the verification by obtaining evidence and other information and explanations that VKU Certification considered necessary to give Reasonable level of assurance that reported GHG emission reductions are fairly stated.

As per VCS Standard Version **4.5- clause 4.1.23, 4.1.24 and 4.1.25**, VKU opine that GHG emission reduction stated in the **monitoring report version 1.1 dated 14-Novemembr-2023** for the “**SHINE- Distribution of LED Lightbulbs in India -3**” in India for the period **01-January-2023 to 30-June-2023** (inclusive of both dates) are fairly and correctly stated.

Table No 17: Opinion/Conclusion by Validation-Verification Body

Opinion	Final Documents	Monitoring Period	Emission Reductions achieved	Remarks
Positive opinion ☒ Negative Opinion ☐ Adverse Opinion ☐ Unmodified Opinion ☒ Modified Opinion ☐	Monitoring Report Version 1.2 dated 21-February-2024 Emission Reduction Sheet Version 2.0 dated 14-November-2023	01-January-2023 to 30-June-2023 (Inclusive of both dates)	243,756 tCO ₂ e	The GHG emission reductions are calculated on the basis of approved methodology /11/ and the monitoring plan included in the registered VCS PD /04/ and CDM-CPA-DD/03/
Hence VKU is able to certify that the emission reduction from the project during the current monitoring period from 01-January-2023 to 30-June-2023 (Inclusive of both dates) amounts to 243,756 tCO₂e assessed in line with the applicable VCS requirements set out in section 3.15 of VCS Standard version 4.5/09/ The VVB hereby issues a positive and unmodified opinion in accordance with ISO 14064-3:2019/48/ and ISO 14065:2020/49/ Section 09; Clause 9.7.1.6 & 9.7.2. This opinion also meets the requirement stipulated under ISO/IEC 17029:2019/50/, Section 9.7 with a reasonable level of assurance for the reported GHG emission reduction data which is free from any material misstatement and is sufficiently supported by evidences provided to VVB by PP tabulated in Table No.- 04 of this report.				

Table 18: Verification period: From 01-January-2023 to 30-June-2023 (Inclusive of both dates)

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)
Year 2023	277,974	34,218	0	243,756

(01-January-2023 to 30-June-2023)				
Total	277,974	34,218	0	243,756 tCO₂e.

Comparison of Ex-Ante emission reductions/removals and Achieved emission reductions/removals under this grouped project are summarized below

Monitoring Period dates: 01-January-2023 to 30-June-2023 (Inclusive of both dates)

Number of Days: 181 Days

Table 19: Comparison of ex-ante and achieved ERR values under MP 3

Year	<u>Ex-ante emissions reductions/removals</u>	<u>Achieved emissions reductions/removals</u>	<u>Percent difference</u>	<u>Justification for the difference</u>
Year 2023 (01-January-2023 to 30-June-2023)	243,756 tCO ₂ e	243,756 tCO ₂ e	0.0%	Achieved Emission reductions are equal to ex-ante emission reductions. Therefore no justification is required to be given by PP.

APPENDIX A: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emissions
BEF	Baseline Emission Factor
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CQC	C-Quest Capital
DNA	Designated National Authority
EF	Emission Factor
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
HH	Household
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of Verification
MR	Monitoring Report
NA	Not Applicable
PAI	Project Activity Instances
PD	Project Description
PP(s)	Project Proponent(s)
QA/QC	Quality Assurance /Quality Check
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VCU	Verified Carbon Unit
VCS	Verified Carbon Standard
VKU	VKU Certification Ltd.
VVS	Validation and Verification Standard
VVB	Validation and verification body

APPENDIX B: AUDIT FINDINGS

Project Title: SHINE- Distribution of LED Lightbulbs in India -3

Project ID: VCS 2657

Date: 25-November-2023

Version: 1.1

CAR: Corrective Action Request; (03)

CL: Clarification Request; (01)

FAR: Forward Action Request; (00)

Type	Date	10-October-2023
CAR#01	Reference	Section of Ver protocol: Section 1 and 2
Description of the Non-Conformance		
1. Section 1.7 1.1. As per latest VCS Standard; Version 4.5, the details of project location are found insufficient. 2. Section 2.2 2.1. During desk review, Assessment team found only one grievance in the grievance register submitted by the PP. Please provide the record of other grievances if any and update accordingly. 2.2. Please provide the evidence for the feedback upon resolution of grievances.		
1st Response from PP	Date	30-October-2023
1. Section 1.7 1.1.LED distribution figures at district level have been added in Section 1.7 of the MR. Further, PP would like to clarify that as per document titled "<u>August 2023 Overview of VCS Program Updates and effective dates</u>" (Please refer to point 14 on page 4) updated project location requirements as mentioned in section 3.11.1 of <u>VCS standard v4.5</u> are "effective immediately for projects that initiate any validation process after 29-August-2023". PP would further like to state that the validation process for this project was initiated and completed before 29-August-2023 (28-October-2022 as the date of Final Validation Report as per Table 2 of the revised MR, and project was registered on VERRA on 29-November-2022).		

Therefore, section 1.7 of the revised MR has been updated in accordance with the monitoring report template v4.2.

2. Section 2.2

2.1. In the current monitoring period, 4 grievances were received from end users (concerning request for replacement of damaged and defective LEDs, replacement of non-project LEDs and requests for additional LEDs despite already having received replacements for their ICLs and with no reported defects in the provided LED). All complaints were reported to the Distribution Agency or their designated representative. Beneficiaries were informed that the number of LEDs (7W/9W and/or 12W) provided to them depended on the number of baseline incandescent bulbs (60W/100W) that could be replaced. Each household received a maximum of six LEDs, and the distribution has been completed. Further, new LEDs will only be provided in case of replacements due to defects in line with the grievance redressal process elaborated above. Upon resolution of the grievances, feedback from the end user against each complaint was recorded. Grievance redressal records have been provided to the verifying VVB.

2.2. Feedback of the end users as recorded in the grievance registers is being submitted to the VVB.

1st Assessment by Audit Team	Status	Closed	Date	25-November-2023
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1. Section 1.7

1.1. Assessment team confirms that the clarification provided and the changes made by PP in the MR Version 1.1 dated 14-November-2023 is correct. Hence, accepted.

2. Section 2.2

2.1. Assessment team confirms that the changes made by PP in the MR Version 1.1 dated 14-November-2023 is correct. Hence, accepted.

2.2. Assessment team confirms that PP has provided the grievance register to the VVB. Hence, accepted.

Hence, CAR#01 is CLOSED.

Type	Date	10-October-2023
CAR#02	Reference	Section of Ver protocol: Previous Verification Report

Description of the Non-Conformance

1. FAR from the 2nd Verification report raised as CAR:

1.1. VVBs are requested to check the replacement record in the next verification for the end user- (Bijender- DISCOM Service No.- ME71116157692). Please refer CAR#03

Reference:

Type	Date	10-April-2023
CAR#03	Reference	Section of Ver protocol: Section 1
Description of the Non-Conformance		
During Site Visit it was identified by assessment team that in one household sample selected for 7W LED and it was found that the LED was replaced by 9W LED, kindly justify the same along with the evidence.		

1st Response from PP

Date

30-October-2023

Grievance redressal record for defective 7 W has been submitted to the VVB. Further, PP would like to reiterate that as per the grievance register record as well as information provided by the end user during remote verification, the end user had requested for replacing defective 7 W LED. However, based on stock availability, he was provided with equivalent LED of 9W. Further, PP would like to update that the end user was provided with new 7W LED as soon as available at LED replacement centre. (LED replacement request by end user was received on 30-January-2023 and resolved by April 2023).

In the calculative approach for net emission reductions, there is no change in the baseline emissions (since 60 W ICL has been replaced with 7W/9W ICL). However, while calculating project emissions, number of days have been taken into consideration according to the above-mentioned situation in this household (Please refer to row 260343 in the “detailed ER” sheet in ER spreadsheet) wherein the current monitoring period has been split into 112 days of 9W usage and 69 days of 7W usage for calculating project emissions).

1st Assessment by Audit Team

Status

Closed

Date

25-November-2023

FAR from the 2nd Verification report raised as CAR:

Assessment team confirms that the PP has provided the declaration from Vijendra Singh which confirms that the 9W LED given to him is replaced with the 7W LED by the PP on 08-April-2023 and the same was confirmed during the remote audit from 07-October-2023 to 08-October-2023 by VVB through the interview of Vijendra Singh. Hence, accepted.

Hence, CAR#02 is CLOSED.

Type	Date	08-December-2023		
CAR#03	Reference	Section of Ver protocol: Section 1 and 2		
Description of the Non-Conformance				
Introductory Table				
1. Font style not consistent as per the Filling guideline of MR Template v4.2.				
Section 1.6				
2. PP has not mentioned that is both start and end date of project crediting period is inclusive or not?				
Section 1.11				
3. Add Evidences for SD contributions as appendices as per VCS MR Template V 4.2 as per the requirement of MR template v4.2.				
Section 2.1				
4. As per VCS MR Template V 4.2 socio-economic impacts is not mentioned.				
1 st Response from PP	Date	10-January-2024		
Introductory Table				
1. Font style is now consistent in line with the guidelines stated in MR template version 4.2.				
Section 1.6				
2. Project crediting period (Fixed; 10 years; 06-March-2020 to 05-March-2030) is inclusive of both the start date and the end date. Same has been added in the revised MR being submitted to the VVB.				
Section 1.11				
3. Evidences for SD contributions have been added in the appendix of the revised MR being submitted to the VVB.				
Section 2.1				
4. Socio-economic impact under the grouped project has been mentioned in section 2.1 of revised MR being submitted to the VVB.				
1 st Assessment by Audit Team	Status	Closed	Date	21-February-2024
Introductory Table				

1. It is confirmed that PP corrected the font size and now it is consistent with the guideline of in MR template version 4.2. Hence, finding is closed.

Section 1.6

2. Verification Team confirmed that PP updated the revised MR and now it is correct. Hence, finding is closed.

Section 1.11

3. Now PP provided the details of SDG in appendix C in revised MR and it is deemed to be correct. Hence, finding is closed.

Section 2.1

4. It is found that PP provided the Socio-economic impact and it is deemed to be correct. Hence, finding is correct.

Hence, CAR#03 is CLOSED

Type	Date	10-October-2023
CL#01	Reference	Section of Ver protocol: Section 1 and 3
Description of the Non-Conformance		
1. Section 1.10 1.1. Please provide self-declaration about No Double Claiming with Emissions Trading Programs or Binding Emission Limits as per Section 3.24.3 and 3.24.4 of latest VCS Standard; Version 4.5 1.2. Please provide the reference as per the latest VCS Standard; Version 4.5 2. Section 3.1 2.1. Please clarify whether any replacement of installed LEDs has been carried out during the current monitoring period.		
1 st Response from PP	Date	30-October-2023
1. Section 1.10 1.1. PP would like to clarify that in line with section 3.24.3 of the VCS Standard version 4.5, the project did not reduce GHG emissions from activities that are included in an emission trading program or any other mechanism that includes GHG allowance trading. Self-declaration in accordance section 3.24.3 of the VCS standard is being submitted to the verifying VVB.		

1.2. PP would like to state that reference to VCS standard version 4.5 has been removed in Section 1.10 of the revised MR being submitted to the VVB. Section 1.10 has been filled in accordance with the VCS Monitoring Report template version 4.2 since as per “August 2023 Overview of VCS Program Updates and effective dates” (Please refer to point 23 on page 6), updates to section 3.24.7 is effective for all project requests submitted on or after 1 March 2024. To summarise, evidence of the emails and public statement regarding no double claiming of scope 3 emissions has been submitted to the VVB during verification of the project as well as added in the appendix- B of the revised MR being submitted to the VVB.

2. Section 3.1

2.1. PP would like to state that replacement of a defective 7 W LED has been carried out in the current monitoring period for which grievance record has been submitted to the VVB. Further, majority of 7W ,9W and 12 W LEDs have already completed their warranty period with respect to the current monitoring period (as they were distributed in year 2020) under this grouped project. Year wise distribution of LEDs can be referred from section 3.1 of the revised MR.

1 st Assessment by Audit Team	Status	Open/Closed	Date	25-November-2023
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1. Section 1.10

1.1. Assessment team confirms that PP has submitted the self-declaration which is found correct. Hence, accepted.

1.2. Assessment team confirms that PP has made the required changes and these are found correct in the MR Version 1.1 dated 14-November-2023 is correct. Hence, accepted.

2. Section 3.1

2.1. Assessment team confirms that PP has made the required changes and submitted the supporting documents which are found correct. Hence, accepted.

Hence, CL#01 is CLOSED.

Type	Date	DD/MM/YYYY
FAR	Reference	
Description of the Non-Conformance		
1 st Response from PP	Date	DD/MM/YYYY

~~1st Assessment~~ by Audit Team	Status	Open/Closed	Date	~~DD/MM/YYYY~~

APPENDIX C: SAMPLING SURVEY SHEET QUESTIONNAIRE

1. Sampling Survey Questionnaire employed by Client during Monitoring survey of the samples identified for the preparation of monitoring survey report/27/. PP submitted the same and VKU assessment team has verified the evidences i.e., Sample survey Forms, Sample user survey photo taken during survey/23/

S. No.	Questions
1.	On which date survey was conducted?
2.	What was the time of the survey?
3.	LEDs - info: - a) What is the discom service number? b) What is the model of LEDs? c) Location where the survey was conducted?
4.	What are details of the respondent- a) Name b) Age c) Registered user or not d) In case registered user is not available respondent's relationship with registered user e) Contact details
5.	Status and conditions of project LEDs a) Total number of LEDs distributed to the HH? b) LEDs Wattage? c) Number of LEDs found installed? d) The LEDs marked with Shine logo? e) The number of LEDs found installed equal to number of LEDs distributed? f) No of project LEDs found operational and non-operational project? g) The reason for failure of project LEDs? h) Were the damaged /defective project LEDs replaced by PA implementer? i) Damaged /defective project LEDs replaced by (LEDs, CFL, Fluoresce lamp, ICL)
6.	Replaced of defective/damage project LEDs a) Number of defective /damaged project LEDs replaced b) Is the project logo present on replaced LEDs c) Was replacement undertaken at the time of survey? d) Wattage of replaced LEDs?

2. Sampling Survey Questionnaire put to use by VKU during Remote Assessment with End Users/39/

Appendix: 2 Household/Stakeholder's Details for LED visited by Verification Team as per VVB Sample selected

Sr. No.....	
Household / Stakeholder's name (Indicate relationship with owner in case of different person)	
ID of the related sales agreement	
Location (Village / District / Region / neighbourhood)	
Device Model / Type	
Date of purchase and installation	
ID of the device (If any)	
Is the baseline Incandescent Lamp in use?	
Is the LED in operation? How many? (Mention for each type separately-In case any)	
Operational hours of LED in use (Per day preferentially, other measures allowed and for each type separately)	
Rated Power of LED in use (Mention for each type separately-In case any)	
Do you know how to contact CME/PP in case of any problem/complaint/suggestion?	

How much electricity it saves? (% of electricity bill saved/day preferentially, other measures allowed but try to keep homogeneity)	
Opinion of the User (Their independent opinion after using the LEDs)	
The user is happy with the LED. (Include any comments of the user)	
Signature of the user: (If the user doesn't want to sign, respect the decision)	

APPENDIX D: SCOPE -3 EMISSIONS REQUIREMENTS

Public Notice for VCS Project 2657

SHINE- Distribution of LED Lightbulbs in India-3

This is to bring to your kind notice that Brightspark Energy Private Limited is implementing a grouped project titled “SHINE- Distribution of LED Lightbulbs in India-3” (VCS ID 2657). It involves the distribution of energy-efficient Light Emitting Diodes (LEDs) to grid-connected households in the state of Uttar Pradesh (West). For this purpose, we had procured LEDs from different manufacturers including HPL Electric & Power Ltd which were further distributed via Kiosk based approach and direct installation in grid-connected households with support of various distributing agencies including JSN Marketing Services.

Verified Carbon Units (VCUs) may be issued for the Greenhouse Gas emission reductions and removals for which Brightspark Energy Private Limited (BEPL) will be claiming carbon credits under VERRA. Based on the existing carbon rights transfer agreement signed between the parties, BEPL will be sharing the carbon credits generated from this grouped project with the entities i.e., Korea Impact Carbon Corporation (KICC).

This notice intends to apprise you about the project, to avoid any potential risk of double claiming of Scope 3 emissions under this grouped project.

Screenshot of Public Statement on C-Quest Capital Website⁹

⁹ <https://cquestcapital.com/latest/public-notices/>

The screenshot of the email sent to distribution agent to avoid double claiming of Scope 3 Emissions under this grouped project are provided below:

From: Sundeep Mittal
Sent: 17 April 2023 20:32
To: jsnmktg17@rediffmail.com
Cc: Tridip Goswami; Siddhartha Pakrashi; Madhurjya Gogoi; Pooja Verma; Akhilesh Joshi; Arun Sharma; Neha Oli; Divyang Suri
Subject: Scope 3 Emission : SHINE- Distribution of LED Lightbulbs in India

Kind Attention: MJ Khan (Proprietor)

Dear Sir,

This is to bring to your kind notice that Brightspark Energy Private Limited is implementing grouped projects mentioned below:

- SHINE- Distribution of LED Lightbulbs in India- 3 (VCS ID 2657) in Uttar Pradesh (west)
- SHINE- Distribution of LED Lightbulbs in India-5 (VCS ID 2695) in Bihar
- SHINE- Distribution of LED Lightbulbs in India-6 (VCS ID 2700) in Uttar Pradesh (east)
- SHINE- Distribution of LED Lightbulbs in India-8 (VCS ID 3821) in Karnataka

These projects involve distribution of energy-efficient Light Emitting Diodes (LEDs) to grid-connected households. For this purpose, we had involved your organisation for supplying LEDs to the end users.

Verified Carbon Units (VCUs) may be issued for the greenhouse gas emission reductions and removals for which Brightspark Energy Private Limited (BEPL) will be claiming carbon credits under VERRA. This mail intends to apprise you about the project, to avoid any potential risk of double claiming of Scope 3 emissions under this grouped project.

Regards,

Sundeep Mittal,

Project Manager

C-Quest Capital Brightspark Energy Pvt Ltd

Corporate Office: Unit No. 1706-08, 17th Floor, Narain Manzil,

Barakhamba Road, Connaught Place, New Delhi - 110001

Regd Add: Level 14 & 15, Concorde Towers, UB City

1 Vittal Mallaya Road, Bangalore, Karnataka - 560 001, India

Mob - +91 9555333414

Web: <https://cquestcapital.com/>

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Screenshot of email sent to representative from Distribution Agency involved in VCS 2657

APPENDIX E: COMPETENCE STATEMENTS

Team Leader



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Barun Kumar
Nationality	Indian
Countries of Experience	India, South Africa, Kenya, Uganda, DR Congo, Zambia, Madagascar, Fiji
Education Qualification	B.Sc. (Environmental Science and Water Management) M.Sc. (Ecology & Environmental Sciences)
Year of Experience	12 Years +
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	TA 1.2 - Renewables TA 3.1 – Energy Demand TA 6.1 – Construction TA 7.2 – Transport TA 13.1 – Solid waste and wastewater TA 14.1 – Forestry

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	YES
Verifier	YES
Team Leader	YES
Technical Reviewer	YES
Local Expert (Country Wise)	YES
TA Expert (1.2, 3.1, 6.1, 7.1, 13.1, 14.1)	YES
Financial Expert	NO

Reviewed by	Apoorva Gupta (Quality Manager)	Date	08/10/2023
Approved by	Dr. Vikas Kumar Aharwal (Founder & Director)	Date	08/10/2023

Validator/Verifier-Trainee-



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Aastha Verma
Nationality	Indian
Countries of Experience	India
Education Qualification	B.Sc. (Zoology Hons.) M.Sc. (Environmental Science)
Year of Experience	1 year
Area of Expertise	Climate Change & Environment
Eligible Sectoral Scope	NA

Roles

Project Trainee	NO
Validator/Verifier Trainee	YES
Validator	NO
Verifier	NO
Team Leader	NO
Technical Reviewer	NO
Local Expert (Country Wise)	NO
TA Expert (X.X)	NO
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	19/05/2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	19/05/2023

Project Trainee-



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Anand Kumar
Nationality	Indian
Countries of Experience	India
Education Qualification	M.Sc. (Environmental Science) B.Sc. (Chemistry Hons.)
Year of Experience	Fresher (Done 3 months Internship in VKU)
Area of Expertise	NA
Eligible Sectoral Scope	NA

Roles

Project Trainee	YES
Validator/Verifier Trainee	NO
Validator	NO
Verifier	NO
Team Leader	NO
Technical Reviewer	NO
Local Expert (Country Wise)	NO
TA Expert (X.X)	NO
Financial Expert	NO

Reviewed by	Vandana Gupta (Quality Manager)	Date	31/03/2023
Approved by	Vivek Kumar Ahirwar (Technical Manager)	Date	31/03/2023

Technical Reviewer-



Certification Pvt. Ltd.

VKU.F50W. Competence Statement

COMPETENCE STATEMENT

Name	Vivek Kumar Ahirwar
Nationality	Indian
Countries of Experience	India, Madagascar, Thailand, Nepal, South Africa, Vietnam, Mozambique, Kenya, Ethiopia, Spain, Singapore, Zimbabwe, Columbia, Zambia, Libya, Indonesia, Myanmar
Education Qualification	B.E.(Mechanical) M.Tech.(Energy Management)
Year of Experience	15 Years +
Area of Expertise	Climate Change & Environment & Industry
Eligible Sectoral Scope	TA 1.1 Thermal Energy & Biomass TA 1.2 Renewables/Non-renewables TA 2.1 Energy Distribution TA 3.1 Energy Demand TA 13.1 Solid waste and Wastewater

Roles

Project Trainee	NO
Validator/Verifier Trainee	NO
Validator	YES
Verifier	YES
Team Leader	YES
Technical Reviewer	YES
Local Expert (Country Wise)	YES
TA Expert (TA 1.1, 1.2, 2.1, 3.1, 13.1)	YES
Financial Expert	YES

Reviewed by	Apoorva Gupta (Quality Manager)	Date	11/10/2023
Approved by	Barun Kumar (Technical Manager)	Date	11/10/2023