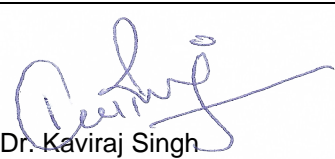




**Verification and certification report form for  
CDM programme of activities  
(Version 03.0)**

*Complete this form in accordance with the instructions attached at the end of this form.*

**BASIC INFORMATION**

<b>Title and UNFCCC reference number of the programme of activities (PoA)</b>	Title: SHINE-Distribution of LED Lightbulbs in India UNFCCC Ref.No.- 10484	
<b>Version number(s) of the PoA-DD(s) to which this report applies</b>	07	
<b>Version number of the verification and certification report</b>	1.0	
<b>Completion date of the verification and certification report</b>	24/02/2021	
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring period Number: Second Monitoring period duration: 16/03/2020 – 31/07/2020 (both days inclusive)	
<b>Number and version number of the monitoring report to which this report applies</b>	Number:01 Version:02	
<b>Coordinating/managing entity (CME)</b>	Brightspark Energy Private Limited	
<b>Host Parties</b>	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	India	Yes
<b>Applied methodologies and standardized baselines</b>	AMS-II.C- Demand-side energy efficiency activities for specific technologies, Version 15.0	
<b>Mandatory sectoral scopes</b>	Sectoral Scope 3: Energy demand	
<b>Conditional sectoral scopes, if applicable</b>	Not Applicable	
<b>Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report</b>	59,964 tCO <sub>2e</sub>	
<b>Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report</b>	20,898 tCO <sub>2e</sub>	
<b>Name and UNFCCC reference number of the DOE</b>	Earthood Services Private Limited E-0066	
<b>Name, position and signature of the approver of the verification and certification report</b>	 Dr. Kaviraj Singh Managing Director	

## SECTION A. Executive summary

PoA aims at replacing the in-efficient incandescent lightbulbs ("ICLs") and fluorescent lamps (FLs), with more energy efficient LED lamps/tubes in India. The usage of distributed LED bulbs leads to reduction of fossil-fuel based electricity consumption and thereby contributing to the reduction of green-house gas emissions.

Brightspark Energy Pvt Ltd is the CME for the PoA, which is currently the only CME. Ecoeye Co., Ltd., ("Ecoeye") and Korean Impact Carbon Corporation ("KICC") have fully financed all LED bulbs distributed to the households of included CPAs, and the total project cost per LED bulb is USD 1.65 including the cost of a LED/7/. Ecoeye and KICC are also the CPA implementers of the CPAs under verification.

The PoA targets only for grid connected consumers who voluntarily decided to be a part of this programme. The PoA has reduced 20,898 tCO<sub>2</sub>e during the current monitoring period (16/03/2020-31/07/2020).

### Scope of Verification:

The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE. The verification includes review of implementation and operation of the PoA as set out in the registered PoA-DD & CPA-DDs viz., 10484-P1-0001-CP1, 10484-P1-0002-CP1, 10484-P1-0003-CP1, 10484-P1-0004-CP1 in the monitoring period.

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the CMEs and is based on the following:

- (i) The approved methodology AMS II.C version 15 "Demand-side energy efficiency activities for specific technologies", applied in the POA-DD/1/ & CPA-DDs/8-11/
- (ii) The registered and approved PoA-DD & CPA-DD and monitoring plan
- (iii) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accords
- (iv) The CDM Validation and Verification Standard (VVS) for PoA, version 2.0/13/
- (v) The CDM Project Standard (PS) for PoA/14/ and Project Cycle Procedure (PCP) for PoA version 2.0/15/
- (vi) Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions

The verification has considered both quantitative and qualitative aspects on stated/reported emission reductions. The monitoring report (all versions) and corresponding supporting documentation was assessed in accordance with the rules defined by UNFCCC, as appropriate to the PoA. The verification is not meant to provide any consulting or recommendations to the CME/others. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the monitoring activities.

### Verification Process:

The verification process is conducted as per internal CDM Quality Manual, which includes the following steps.

- a) Contract with Brightspark Energy Private Ltd. and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
- b) Completeness check of Monitoring Report
- c) Publication of Monitoring Report at UNFCCC website
- d) Desk review (refer Section D.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section C of this report) to be applied)
- e) Remote audit (refer Section D.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team consistent of Team Leader and all Technical Experts, as a minimum
- f) Follow up activities e.g., interviews (refer Section D.3 of this report)
- g) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)
- h) Independent technical review of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)
- i) Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section G and H of this report).

- j) Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

### Verification Conclusion:

Based on the outcome of the verification process of the registered PoA "SHINE-Distribution of LED Light Bulbs in India" and its 4 CPAs (10484-P1-0001-CP1, 10484-P1-0002-CP1, 10484-P1-0003-CP1, 10484-P1-0004-CP1), for the monitoring period **16/03/2020 – 31/07/2020** (including both dates) we confirm that the implementation of referenced registered PoA and CPAs is complying with applicable CDM rules and regulations. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology, AMS II.C Version 15 and the monitoring plan contained in the PoA-DD and the CPA DDs.

Earthood Services Private Limited is able to certify that the emission reductions from the registered CDM PoA "SHINE-Distribution of LED Light Bulbs in India" in India having UNFCCC reference 10484 during the period **16/03/2020 – 31/07/2020** (including both days) amount to 20,898 tCO<sub>2</sub>e. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

## SECTION B. Verification team, technical reviewer and approver

### B.1. Verification team members

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Mahala	Deepika	Central Office	Y	N*	Y	Y
2.	Meth Expert	IR	Kumar	Sanjeev	Central Office	Y	N*	N	N
3.	Technical Expert	IR	Mahala	Deepika	Central Office	Y	N*	Y	Y
4.	Verifier	IR	Vatsa	Vaishali	Central Office	Y	N*	Y	Y
5.	Local Expert	IR	Mahala	Deepika	Central Office	Y	N*	Y	Y

\*Remote telephonic survey was conducted instead of physical on-site audit. Details for remote on-site survey have been discussed in detail in section D.2 of the report.

### B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Gautam	Ashok	Central Office
2.	TA to TR	IR	Gautam	Ashok	Central Office
3.	Approver	IR	Singh	Kaviraj	Central Office

## SECTION C. Application of materiality in conducting the verification

### C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Error in Data Transfer from Digital Records, Hard copy	Low	CME enters the data in calculation of ERs as	Since most of the monitoring parameter is confirmed through

	Records to ER Spread sheet for the monitoring parameters and sampling survey results. The errors could result from human errors during the information transfer from the source to emission reduction sheet.		available through survey/sampling. The monitored parameters are used in the calculation of emission reductions.	ex post monitoring survey conducted by CME, the verification team checked and verified the 44 households from ex post monitoring survey and project database on sampling basis. The operational rate of LEDs and sample surveys for other parameters (hard copies) were also checked. PoA-DD, CPA-DD and reference documents are also compared with ER spread sheet to check for any material error during data transfer. Interview were also conducted to the end users to confirm the primary data on sampling basis.
2.	Erroneous consideration of fixed parameters, error in calculation.	Low	The details of the parameters fixed ex-ante are provided in PoA-DD/CPA-DD used for emission reduction calculation.	All parameters are checked from the registered documents (i.e. CPA-DD/PoA/DD). The formula used are also checked from the registered documents.

## C.2. Consideration of materiality in conducting the verification

Prescribed range of ERs/annum	500,000 or more	300,001 to 500,000	300,000 or less	PoAs comprising only small-scale CPAs	PoAs comprising only micro-scale CPAs
Prescribed threshold	0.5%	1.0%	2.0%	5.0%	10.0%

The identified/selected materiality threshold for the PoA under current monitoring period is 10% as PoA is microscale in accordance with para 308 of CDM VVS for PoA, Version 2.0/7/.

	MR Version (Public)	MR Version (Final)
Emission reductions	20,898	20,898
Identified Threshold	10.0%	10.0%

Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data (Total)  Total (100%)	Sample selected for verification Sample (100%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
10484-P1-0001-CP1, 10484-P1-0002-CP1, 10484-P1-0003-CP1, 10484-P1-0004-CP1						
Ni baseline (60W)/(100W) Number of pieces of baseline lamps replaced.	Once at the time of project Implementation	12,27,618	100% of database checked for total number and 44 samples interviewed used for cross check user	None	NA	NA

			details			
$n_i$ baseline scrapped (60W)/(100W) Number of pieces of baseline lamps destroyed	Once at the time of project Implementation	12,27,618	100% of database checked for total number and 44 samples interviewed used for cross check user details	None	NA	NA
$n_i$ project (9W)/(12W)/(14W) Number of pieces of 9W/12W/14W project lamps distributed	Once at the time of project Installation	12,17,584	100% of database checked for total number and 44 samples interviewed used for cross check user details.	None	NA	NA
$n_i$ operational (9W)/(12W)/(14W) Total number of 9W/12W/14W project lamps that are operational during monitoring period	Annual	12,17,584 <sup>1</sup> * 25 for CPA1+ 52 for CPA2 +64 for CPA3 + 33 for CPA4 (checked samples)	11 samples of each CPA from monitored samples have been checked. Total 44(4*11)	None	NA	NA
$O_i$ project (9W)/(12W)/(14W) / baseline (60W)/(100W) Average annual operating hours of type 'i' project /baseline lamp	Once concurrent with first ex-post monitoring	4	100%(same as first verification)	None	NA	NA
$\rho_i$ baseline 60W, 100 W Rated power of 60 W & 100 W baseline lamps replaced	Once at the time of project Installation	12,17,584	100%	None	NA	NA

<sup>1</sup> Survey agency had calculated the LEDs to be surveyed in accordance to "Guideline-Sampling and surveys for CDM project activities and programmes of activities" for each type of LEDs. Further number of sample households were identified based on the average number of LEDs distributed per households and those randomly selected households were surveyed. That is why the number of each type of LEDs surveyed is more than the calculated numbers (fulfilling the minimum number requirement). DOE has tallied and verified these numbers in MR and from the survey sheet submitted.

$P_i$ project 9W, 12W, 14W Rated power of the LEDs of 9W, 12W and 14W project lamps (Watts)	Once at the time of project Installation	12,17,584	100%	None	NA	NA
Ly Average annual technical grid losses	-	1	1	None	NA	NA

The verification team confirms that the final total ERs claimed in the MR under verification are free from material errors.

## SECTION D. Means of verification

### D.1. Desk/document review

The desk review involves;

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions;

The list of documents/evidences reviewed during the verification is provided under Appendix 3 of this report.

### D.2. On-site inspection

Duration of on-site inspection: NA*				
No.	Activity performed on-site	Site location	Date	Team member
1.	Interview of the monitoring personnel and CME representative	-	29/01/2021-01/02/2021	Deepika Mahala and Vaishali Vatsa
2.	Interview of the end-users related to the deployed project devices	-	29/01/2021-01/02/2021	Deepika Mahala and Vaishali Vatsa

\*No site-visit was conducted, alternative means were adopted under which remote survey was also conducted.

#### Mandatory Site-visit

The site-visit for the current verification was mandatory, as two of the conditions for verification((b) and(c) below) that require a mandatory site visit were applicable.

Para 321 of VVS for PoA, version 2.0 /14/ says that It is mandatory for the DOE to conduct an on-site inspection at verification for the included CPA if:

- It is the first verification for the DOE with regard to this CPA;
- More than three years have elapsed since the last on-site inspection conducted for verification for the CPA; or
- The CPA has achieved more than 300,000 tCO<sub>2e</sub> of GHG emission reductions or net anthropogenic GHG removals since the last verification when an on-site inspection was conducted.

Though the site visit is mandatory, however it could not be conducted physically for this verification because at the time of verification, the country where DOE office is based, India was still witnessing the second

highest number of COVID-19 infected people in the world, and total number of infected cases reaching at 11.3 million /24/. Under such circumstances, the verification team is avoiding the risk of contracting the virus by not doing the on-site visit. Therefore, site visit was not conducted for this issuance due to outbreak of global pandemic Covid-19, increased risk of exposure and contraction due to travel as the cases in the country are still spurring/38/.

Also, it was duly assessed if the site visit can be postponed /41/. The delay to site visit would mean that the verification would have to be postponed. However, communications on this topic were made with CME, and evidence was provided by CME that delay to the verification would lead to a delayed issuance. This would result in a contractual breach of (and termination/rescission of) underlying Emissions Reductions Purchase Agreement and loss of all future revenue for the CME as verified from ERPA /7/. On the basis of above, the verification team decided to follow the UN EB 106 Para 26 decision/42/, and adopted an alternative approach, which is discussed in the below paragraphs.

### **UN EB decision on Mandatory DOE on-site visits:**

UN EB 106 report (Para 26) mentions the decision EB took on 20th March, in relation to DOE on-site visit which was applicable from 23rd March 2020 to 23rd June 2020/42/. The Executive Board of the Clean Development Mechanism (CDM) agreed on 23 June 2020, on an exceptional basis considering the COVID-19 pandemic, to extend the period in which CDM Designated Operational Entities (DOEs) may apply alternative measures of validation/verification to mandatory on-site inspections until 31 December 2020 which has now been extended till 30/06/2021 in EB 108/43/.

Therefore, for the reasons stated above, and in line with UN EB guidelines, the assessment team conducted the verification for this PoA batch using alternative means as defined in the CDM VVS-PoA, ver. 2.0/14/.

DOE verification team applied standard auditing techniques while verifying the PA verification, as discussed below.

### **Alternative means applied:**

Following alternative means have been used to verify the project details:

1. Remote Survey including CME/CPA Implementer, end users and the personnel's involved in monitoring and preparation of the monitoring report and related documents. Random samples for 44 LED user (details on sampling provided in section D.3) were drawn from the sample survey sheet and interviewed through audio calls.
2. Photographic evidences of the monitoring equipment, Monitoring Survey (Filled) sheets and LED Bulbs with project logo
3. Screenshots of computer assisted personal interview (CAPI)
4. Monitoring personnel certificates copies
5. E-videos of ICL Destruction
6. Review of Other Documentary evidences (ER sheet, Usage and monitoring sheet, Sample Size sheet, ICL destruction Certificate)

### **D.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Garg	Vineet	CQC	29/01/2021-01/02/2021	Monitoring Plan, Project Implementation,	Deepika Mahala, Vaishali Vatsa
2.	Das	Kishore	CQC	29/01/2021-01/02/2021	Monitoring Survey	Deepika Mahala, Vaishali Vatsa
3.	-	Imran	Vendor to CME	29/01/2021-01/02/2021	Monitoring Survey	Deepika Mahala, Vaishali Vatsa
4.	-	Hemanth	Vendor to CME	29/01/2021-01/02/2021	Monitoring Survey	Deepika Mahala, Vaishali Vatsa
Sampling for end users						

**CDM-PoA-VCR-FORM**

5.	Yellaiah	Chakali	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
6.	Mallesham	Kalakuntla	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
7.	Swamy	K.	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
8.	Nagaraju	N.	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
9.	Mallaih	T.	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
10.	Goud	D.Swamy	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
11.	Balnarsaih	V.	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
12.	Lachavva	B.	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
13.	Kumar	Mandala	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
14.	Goud	L.Chandra	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
15.	Reddy	P.Yella	End-user	29/01/2021	DOE Remote Survey	Vaishali Vatsa
16.	Bora	Jatin	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
17.	Kurmi	Buddha	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
18.	Borah	Ananda	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
19.	Bora	Pramadhar	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
20.	Bhumij	Sankar	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
21.	Pachani	Apurba	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
22.	Hazarika	Poresh	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
23.	Das	Goutam	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
24.	Suklabaidya	Jitendra	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
25.	Nath	Pransadhan	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
26.	Das	Gahin	End-user	29/01/2021	DOE Remote Survey	Deepika Mahala
27.	Kumar	Amit	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
28.	Yadav	Ajeet	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
29.	-	Ashok	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
30.	Ali	Faiyaz	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
31.	-	Asif	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
32.	-	Rishipal	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
33.	-	Mohit	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
34.	-	Premraj	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
35.	-	Shivaji	End-user	01/02/2021	DOE Remote	Deepika Mahala



					Survey	
36.	-	Ansara	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
37.	Singh	Daryav	End-user	01/02/2021	DOE Remote Survey	Deepika Mahala
38.	Mallaiah	Akula	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
39.	liamma	Seggam	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
40.	Reddy	Kundur	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
41.	Rao	Majeli	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
42.	Laxmi	Chidara	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
43.	Rambabu	Veligeti	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
44.	Reddy	M.Narender	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
45.	Ramulu	Koorapati	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
46.	Somaiah	Y.	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
47.	Venkanna	Kandapally	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa
48.	Krishnamurthy	B.	End-user	01/02/2021	DOE Remote Survey	Vaishali Vatsa

#### D.4. Sampling approach

##### CME Sampling Approach

A simple random sampling plan was carried out as a part of SSC-CPA-wide Sampling Plan for all specific case CPAs covered in this monitoring period. The CME has applied Simple random Sampling separately for four CPAs for different monitoring parameters as per validated PoA DD and CPA DDs. 95/10 confidence precision was mainly applied by CME in the sampling, which is better than the 90/10 confidence precision prescribed in sampling tool. The confidence and precision level applied by the CME meets the methodological requirements. The sampling approach undertaken by CME is duly explained under Section B.1 of monitoring report.

##### DOE's Sampling Approach

In order to meet the requirements of Standard for Sampling and surveys for CDM project activities and programmes of activities, the verification team applied acceptance sampling in the verification. The verification team selected random samples of CME's sampled records, checked the acceptability (or otherwise) of the data for each such record with CME's sample records, and then based on the number of records where there is agreement, determined if the CME's sample records meet the requirements.

According to para 30 of Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 8 /37/ , The maximum errors associated with the determination have been kept at following level:

- (a) A 10 per cent chance that the DOE will wrongly reject the project participants' or the coordinating/managing entity's records (i.e. reject a set of records of acceptable quality);
- (b) A 10 per cent chance that the DOE will wrongly accept the project participants' or the coordinating/managing entity's records (i.e. accept a set of records which is unacceptable).

Verification team has applied following AQL and UQL level using its own judgement:

0.5% AQL- Acceptable quality level (AQL) or the level of assurance, that is the proportion of acceptable discrepancies between the project participants' or the coordinating/managing entity's sample records and the DOE sample records

20% UQL- Unacceptable quality level (UQL), that is the proportion of unacceptable discrepancies between the project participants' or the coordinating/managing entity's sample records and the DOE sample records

The current verification is for 10484-P1-0001-CP1 to 10484-P1-0004-CP1.

Considering the above input values, a sample size of 11 (for each of the CPA i.e., total 44 samples) were required as per Table 1 in the referred Standard for the monitoring period.

The CME has conducted two different samplings for the following two parameters:

- **$n_i$  operational** (*Number of operational project lamps during the monitoring period*)

As discussed under section D.2 of the report, the remote site visit was chosen as an alternative means for not covering the samples physically. All the households had same answer as reported in the survey sheet. thus, no discrepancy was observed. Accordingly, Acceptance number (c) thus determined for the sample size is 0 and a sample size of 11 meets the criteria in line with "Standard for Sampling and surveys for CDM project activities and programmes of activities, Version 8,"/37/.

#### D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
<b>General</b>	-	-	-
Compliance of the monitoring report with the monitoring report form	-	-	-
Remaining forward action requests from validation and/or previous verifications	-	-	-
CPAs considered for verification and covered in this report	-	-	-
<b>Programme of activities</b>	-	-	-
Compliance of the programme implementation with the registered PoA-DD	-	-	-
Implementation and operation of the management system	-	-	-
Post-registration changes	-	-	-
• Corrections	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents <sup>2</sup>	-	-	-
• Changes to the programme design	-	-	-
• Addition of CPA inclusion template	-	-	-
• Change of coordinating/managing entity	-	-	-
• Changes specific to afforestation and reforestation activities	-	-	-
<b>Component project activities</b>	-	-	-
Compliance of the CPA implementation with the included CPA design document	-	CAR#02	-
Post-registration changes	-	-	-
• Temporary deviations from registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
• Corrections	-	-	-
• Changes to the start date-of the crediting period	-	-	-
• Inclusion of a monitoring plan	-	-	-
• Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	-	-	-
• Changes to the project design	-	-	-

<sup>2</sup> Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

• Changes specific to afforestation and reforestation activities	-	-	-
Compliance of the registered monitoring plan with applied methodologies and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	-	-
• Data and parameters fixed ex ante or at renewal of crediting period	-	-	-
• Data and parameters monitored	CL#01	CAR#01 CAR#03	-
• Implementation of sampling plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	-	-
Assessment of data and calculation of emission reductions or net removals	-	-	-
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	-	-	-
• Calculation of project GHG emissions or actual net GHG removals by sinks	-	-	-
• Calculation of leakage GHG emissions	-	-	-
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	-	-	-
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	-	-	-
• Remarks on difference from estimated value in included CPA	-	-	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
<b>Total</b>	01	03	00

## SECTION E. Verification findings

### E.1. General

#### E.1.1. Compliance of the monitoring report with the monitoring report form

<b>Means of verification</b>	Monitoring report is prepared using the correct and latest template available on UN-webpage for PoA i.e. CDM-PoA-MR-FORM Version 03.0/6/. The verification team confirms that the monitoring report/2/ has been appropriately prepared using the latest applicable monitoring report form/6/, and that all sections are completed.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	Latest version of MR/2/ has been used and all the guidelines of the template have been followed by the CME to prepare the monitoring report.

#### E.1.2. Remaining forward action requests from validation and/or previous verifications

No FAR was found to be raised during the previous verification/46/ and validation of the PoA/45/.

#### E.1.3. CPAs considered for verification and covered in this report

Title and UNFCCC reference number of the CPA included in the PoA as of the end of this monitoring period	Is the CPA considered for this verification? (yes/no)	The date when the CPA was included	Version of the PoA-DD	Confirmation that a request for issuance including the CPA has been published for the previous monitoring period (Y/N)
--	---	------------------------------------	-----------------------	--

SHINE – Distribution of LED Lightbulbs in India-1, 10484-P1-0001-CP1	Yes	11/01/2020	7.0	Yes <sup>3</sup>
SHINE – Distribution of LED Lightbulbs in India-2, 10484-P1-0002-CP1	Yes	11/01/2020	7.0	Yes <sup>4</sup>
SHINE – Distribution of LED Lightbulbs in India-3, 10484-P1-0003-CP1	Yes	11/01/2020	7.0	Yes <sup>5</sup>
SHINE – Distribution of LED Lightbulbs in India-4, 10484-P1-0004-CP1	Yes	11/01/2020	7.0	Yes <sup>6</sup>

## E.2. Programme of activities

### E.2.1. Compliance of the programme implementation with the registered programme design document

Means of verification	The registered PoA involves distribution of LED bulbs in India.																										
	Brightspark Energy Pvt. Limited (BEPL) is the CME as checked from project webpage/23/ and interview of the CME and other monitoring personnel's/36/. This is consistent with the registered PoA-DD/1/.																										
	Ecoeye Co., Ltd. and other Korean entities are responsible for fully financing the implementation of included CPAs. Ecoeye Co. Ltd and Korean Impact Carbon Corporation are also the CPA implementers of the CPAs along with Brightspark Energy Pvt. Limited (BEPL) as checked from the registered CPA DDs/8-11/. The CME with the help of the CPA Implementer and other financing parties (Ecoeye Co., Ltd and other Korean Companies) has implemented the CPAs as checked from the CME and financing party's agreement/16/. The overall distribution work of the project bulbs was undertaken by a third-party commissioned by the CME.																										
	The CPAs of the PoA involves distribution of LED bulbs:																										
	<table><tr><th colspan="4">Technical Specification of the LED Bulbs:</th></tr><tr><td>Manufacturer</td><td>Crompton FIEM HPL</td><td>HPL</td><td>HPL</td></tr><tr><td>Wattage (W)</td><td>9</td><td>12</td><td>14</td></tr><tr><td>Lumen output (lm)</td><td>900</td><td>1,350</td><td>1,400</td></tr><tr><td>Rated Lifetime (hours)</td><td>25,000</td><td>25,000</td><td>25,000</td></tr><tr><td>Compliance with BIS</td><td>Yes</td><td>Yes</td><td>Yes</td></tr></table>				Technical Specification of the LED Bulbs:				Manufacturer	Crompton FIEM HPL	HPL	HPL	Wattage (W)	9	12	14	Lumen output (lm)	900	1,350	1,400	Rated Lifetime (hours)	25,000	25,000	25,000	Compliance with BIS	Yes	Yes
Technical Specification of the LED Bulbs:																											
Manufacturer	Crompton FIEM HPL	HPL	HPL																								
Wattage (W)	9	12	14																								
Lumen output (lm)	900	1,350	1,400																								
Rated Lifetime (hours)	25,000	25,000	25,000																								
Compliance with BIS	Yes	Yes	Yes																								
	The specification for the LED Bulbs provided meets the eligibility requirements of																										

<sup>3</sup> [https://cdm.unfccc.int/PoAIssuance/iss\\_db/poaiss27688622/view](https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss27688622/view)

<sup>4</sup> [https://cdm.unfccc.int/PoAIssuance/iss\\_db/poaiss27688622/view](https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss27688622/view)

<sup>5</sup> [https://cdm.unfccc.int/PoAIssuance/iss\\_db/poaiss27688622/view](https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss27688622/view)

<sup>6</sup> [https://cdm.unfccc.int/PoAIssuance/iss\\_db/poaiss27688622/view](https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss27688622/view)

the PoA-DD /1/ on page 39. The details were verified from the manufacturer specification/17/ provided by the CME. Each household is allotted a unique ID also known as UKSC no. which is same as their electricity bill no. Since, no two household can have same bill no, or say UKSC no., the double counting is avoided. At the time of installation of LED lamps, ICS lamps (baseline lamps) are also collected for destruction, thus meeting requirement stated under para 48 of applied methodology/12/.

The LEDs distributed under the PoA follow the Bureau of Indian Standards (BIS) mandated technical specifications i.e. IS 16102:2012 for self-ballasted LEDs or that of equivalent international standard/17/. Additionally, it was also confirmed that the lumen output of the project LEDs is between 90% to 150% of the lumen output of the baseline lamps under section of C.1. of the MR. Thus, meeting the criterion stated on page 18 of the PoA DD/1/ and also required by para 3 of applied methodology/12/.

The reported numbers of LEDs distributed in households in each CPA were cross verified with the online database/18/ hosted in <http://cqc.nirmalaentp.com/>, which is being populated by a mobile application using a smart phone/tablets through live entries. For ER calculation an excel sheet was imported from the database for each CPA/33/ and it was found that the number of LEDs in the excel sheet matches with the number of LEDs in the online database for the entire monitoring period.

During the interviews (44 samples) the installation of LED bulbs claimed by the PP were cross-checked from the officials involved in the project implementation and management and found to be in-line with the technical description provided in the PoA-DD/1/ and Monitoring report/2/ as well it was confirmed that the ICLs have been collected for destruction.

This monitoring period includes the implementation and monitoring of 4 CPAs as part of registered PoA. The implementation of all CPAs, as referenced above, are within the geographical boundary of PoA as mentioned in PoA DD/1/.

The total Number of LED bulbs and the start date of the LED /19/ distribution under each CPA is verified as following:

CPA (10484 -P1- 0001-CP1):

Wattage			Start date of LED distribution
14W	12W	9W	13/08/2018
4,906	0	73,204	

CPA (10484 – P1-0002-CP1):

Wattage			Start date of LED distribution
14W	12W	9W	12/08/2018
4,643	120,701	127,946	

CPA (10484 –P1- 0003-CP1):

Wattage			Start date of LED distribution
14W	12W	9W	06/03/2020
0	510,776	375,864	

CPA (10484 –P1- 0004-CP1):

Wattage			Start date of LED distribution
14W	12W	9W	05/10/2018
0	0	10,034	

The total products disseminated and ICLs collected under each CPA was confirmed through sales database/33/. The CME has also conducted surveys to determine the monitored parameters. Please refer to section E.3.4.2. and E.3.4.3. of this report for

	<p>detailed assessment of the monitoring conducted by the CME.</p> <p>The verification team checked selected number of samples through remote site visit to confirm the implementation of the project in line with PoA DD/1/ and the CPA DDs/8-11/. During the remote survey, the installation of LEDs claimed by the CME were checked by interviewing the end-users (44 samples) and confirming the product description and the replaced ICLs.</p> <p>The verification team after reviewing the evidence shared by the CME and through the remote survey was able to confirm that the quantity, specification and target group of the LEDs is consistent with the PoA DD/1/ and respective CPA DDs/8-11/. The verification team confirms that:</p> <ul style="list-style-type: none"><li>• The CPA(s) are implemented within the boundary of the PoA as described in the registered PoA-DD/1/.</li><li>• The CME is same as that mentioned in the registered PoA-DD/1/</li><li>• The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered PoA-DD/1/ and included CPA-DDs/8-11/.</li><li>• All physical features of the CPA proposed in the included CPA-DDs/8-11/ are in place.</li><li>• The project participants/CPA implementer has operated the CPAs as per the included CPA-DDs/8-11/.</li></ul> <p>The emission reductions being claimed during this monitoring period is less than the estimated emission reductions in the registered CPA-DDs/8-11/.</p> <p>The exact figures are given in the table below:</p> <table><tr><th>CPA UNFCCC reference number</th><th>Amount achieved during this Monitoring period (t CO2e)</th><th>Amount estimated ex ante (t CO2e)</th></tr><tr><td>10484-P1-0001-CP1</td><td>3,335</td><td>3,585</td></tr><tr><td>10484- P1-0002-CP1</td><td>3,027</td><td>12,424</td></tr><tr><td>10484- P1-0003-CP1</td><td>14,114</td><td>43,488</td></tr><tr><td>10484- P1-0004-CP1</td><td>422</td><td>467</td></tr><tr><td>Total</td><td>20,898</td><td>59,964</td></tr></table> <p>The information (including data and variables) as mentioned in the MR/2/ is found to be in line with the details provided in the PoA-DD/1/.</p> <p>The verification team found the project description contained in the registered PoA-DD/01/ to be complete and accurate. The monitoring report was compared and verified against the PoA-DD/1/ and was found in line with it.</p>	CPA UNFCCC reference number	Amount achieved during this Monitoring period (t CO2e)	Amount estimated ex ante (t CO2e)	10484-P1-0001-CP1	3,335	3,585	10484- P1-0002-CP1	3,027	12,424	10484- P1-0003-CP1	14,114	43,488	10484- P1-0004-CP1	422	467	Total	20,898	59,964
CPA UNFCCC reference number	Amount achieved during this Monitoring period (t CO2e)	Amount estimated ex ante (t CO2e)																	
10484-P1-0001-CP1	3,335	3,585																	
10484- P1-0002-CP1	3,027	12,424																	
10484- P1-0003-CP1	14,114	43,488																	
10484- P1-0004-CP1	422	467																	
Total	20,898	59,964																	
Findings	No findings were raised																		
Conclusion	<p>The verification team confirms that :</p> <ul style="list-style-type: none"><li>• The physical features (LED bulb) of the implementation were in accordance with the registered PoA-DD/01/.</li><li>• The distribution of LED bulb is completed and the maximum limit of the LEDs to be distributed under each CPA i.e., 6 per households as given in the respective CPA-DDs were found to be followed.</li><li>• The actual operation is in line to the respective CPA-DDs/8-11/, which is further explained under Section E.3 of this report.</li><li>• The total number of CERs achieved for all the CPAs is less than the estimated ERs for the same period.</li><li>• The difference in emission reductions achieved for each specific case CPA in comparison to the estimated quantity in the registered CPA DD/8-11/ are justified in detail under section E.3.6.5 and E.3.6.6. of this report.</li></ul>																		

## E.2.2. Implementation and operation of the management system

<b>Means of verification</b>	The verification team through the interview of the CME personnel and O&M personnel during the telephonic call (as listed under section D.2) assessed the management systems in place to implement the monitoring of the PoA. This included the roles and responsibilities, data collection, transfer and aggregation
------------------------------	--

	procedures, data storage and archiving for the monitoring system as mentioned under section D of the MR /2/. The implementation of the operational and management system was cross-checked from the evidence such as the database server/18/. The assessment team has also checked training credentials of the monitoring & data recording personnel /20/, ICL replacement records /33/ and the sales data records /33/. The roles and responsibilities, data collection, transfer and aggregation procedures, data storage and archiving for the monitoring system have been provided in the MR /2/.
<b>Findings</b>	No findings were raised
<b>Conclusion</b>	The monitoring plan as contained in the respective CAP-DDs/8-11/ were reviewed against the monitoring requirements of the applied methodology AMS-II.C. version 15/12/ as well as PoA-DD/1/ with reference to the technology involved. The verification team confirms that the monitoring management system of the PoA is in place with the responsibilities properly identified and established and the monitoring plan is in accordance with the applied methodology AMS-II.C. version 15 /12/.

### E.2.3. Post-registration changes

#### E.2.3.1. Corrections

N/A

#### E.2.3.2. Inclusion of a monitoring plan

N/A

#### E.2.3.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

N/A

#### E.2.3.4. Changes to the programme design

N/A

#### E.2.3.5. Addition of CPA inclusion template

N/A

#### E.2.3.6. Change of coordination/managing entity

N/A

#### E.2.3.7. Changes specific to afforestation and reforestation activities

N/A

### E.3. Component project activities

#### E.3.1. Compliance of the CPA implementation with the included CPA design document

<b>Means of verification</b>	<p>The CPAs are grouped in this section (i.e., Section E.3) for the purpose of verification and reporting as these are of similar nature (technology). The CPAs involve the installation of LEDs to reduce fossil-fuel based electricity consumption in the lighting usage of India's residential and commercial sector. There are four CPAs (10484-P1-0001-CP1, 10484-P1-0002-CP1, 10484-P1-0003-CP1 &amp; 10484-P1-0004-CP1 under the PoA ) implemented by Brightspark Energy Pvt Ltd./21/ which is being verified during the current monitoring period. The same has been confirmed during the interview of the CME and also from the Sales database /33/. The product is disseminated in residential and commercial sectors of India. It was also verified through the interview and from the installed project light videos that the LED lights were distributed and installed in the domestic premises where installation of LED is not possible due to unawareness and high cost.</p> <p>The CPA implementers in all the four CPAs are:</p> <ol style="list-style-type: none"> <li>1) Brightspark Energy Private Ltd. (also the CME)</li> <li>2) Ecoeye Co. Ltd.</li> </ol>
------------------------------	--

## 3) Korea Impact Carbon Corporation

The roles and responsibilities were confirmed from ERDA Contract (Emissions Reduction Development Funding Agreement between C-Quest Capital LED Asia Ltd. and Ecoeye Co., Ltd. and Korea Impact Carbon Corporation) /7/ Brightspark Energy Private Limited is a provider of project management services for C-Quest Capital's projects in Africa and Asia as confirmed from corporate organization structure of CQC/22/.

The implementation status of the LED bulbs under the 4 CPAs were checked through the remote surveys. Site-visit was avoided due to the pandemic situation around the globe and the same has been explained in detail under section D.2. of the report. Thereby, following the alternative means for verifying the project related details as described under section D.2. LED Bulbs installed by the CME as observed through the evidence shared by CME during the desk review and photos provided during the remote survey, which is in-line to the PoA-DD/1/.

The CPAs of the PoA involves the distribution of LED light bulbs replacing the ICLs:

Technical Specification of the LED Bulbs:			
Manufacturer	Crompton FIEM HPL	HPL	HPL
Wattage (W)	9	12	14
Lumen output (lm)	900	1,350	1,400
Rated Lifetime (hours)	25,000	25,000	25,000
BIS Compliance	Yes	Yes	Yes

The specification for the LED bulbs mentioned meets the eligibility requirements stated in the PoA-DD on page 41 /1/. The LEDs distributed under the PoA follow the Bureau of Indian Standards (BIS) mandated technical specifications i.e. IS 16102:2012 for self-ballasted LEDs or that of equivalent international standard/17/. Additionally, it was also confirmed that the lumen output of the project LEDs is between 90% to 150% of the lumen output of the baseline lamps under section of C.1. of the MR. Thus, meeting the criterion stated on page 18 of the PoA DD/1/ and also required by para 3 of applied methodology/12/. The details were verified from the technical specification document provided by the CME/17/.

The verification team has conducted remote site visit to confirm the implementation of CPAs in line with the CPA DDs/8-11/. The remote site visits involved telephonic calls. During the telephonic call, interviews with the end users, the CME representatives and other project personnel involved in the implementation of PoA confirmed the installation of LED bulbs claimed by the CME and ICLs collected and destructured by CME and found to be in-line with the technical description provided in the PoA-DD/1/ and Monitoring report/2/.

The monitoring period in this monitoring report is from 16/03/2020 to 31/07/2020. The details of each CPA are as follows:

CPA Ref.	Inclusion date	Start date of the CPA	Crediting period start date	Project Device	Total LED sold		
SHINE – Distribution of LED Lightbulbs in India-1, 10484-P1-0001-CP1	11/01/2020	13/08/2018	12/01/2020	LED Bulb	Wattage		
					14W	12W	9W
					4,906	0	73,204
SHINE – Distribution of LED Lightbulbs in India-2, 10484-P1-	11/01/2020	27/11/2018	12/01/2020	LED Bulb	Wattage		
					14W	12W	9W
					4,643	120,701	127,946



0002-CP1								
SHINE – Distribution of LED Lightbulbs in India-3, 10484-P1-0003-CP1	11/01/2020	06/03/2020	06/03/2020	LED Bulb	Wattage			
					14W	12W	9W	
					0	510,776	375,864	
SHINE – Distribution of LED Lightbulbs in India-4, 10484-P1-0004-CP1	11/01/2020	05/10/2018	12/01/2020	LED Bulb	Wattage			
					14W	12W	9W	
					0	0	10,034	

The difference in the actual LEDs sold and the LEDs considered for the CPAs have been explained below:

CPA-1 - There was no difference in the no. of LEDs sold and the no. of LEDs considered for ER calculation/3/.

CPA-2 - There was difference of 2 LEDs due to the issue in the application used for monitoring database. Due to this, more LEDs were distributed instead of 6 LEDs/HH and the same was recorded in the database automatically. The app issue was immediately corrected, but CME in order to be conservative and to meet the PoA-DD requirement of maximum 6 LEDs/HH has not considered these extra LEDs for the ER calculation/4/. It has considered maximum of 6 LEDs/HH.

CPA-3 - There is difference of few LEDs, because of software issue in the application. Due to this, more LEDs were distributed instead of 6 LEDs/HH and the same was recorded in the database automatically. The app issue was immediately corrected, but CME in order to be conservative and to meet the PoA-DD requirement of maximum 6 LEDs/HH has not considered these extra LEDs for the ER calculation/5/. It has considered maximum of 6 LEDs/HH.

CPA-4 – There was no difference in the no. of LEDs sold and the no. of LEDs considered for ER calculation/3/.

The reference number, inclusion date of each CPA and crediting period start date of each CPA have been checked and verified from the UN website/23/ and the details were found to be correct and consistent. The start date of the CPAs was checked from the CPA\_Database /33/ and the installation invoices of the first customer shared by the CME/19/.

The LEDs were distributed across geographical boundary of India. The location where the LEDs were distributed was verified from the geo-coordinates provided by the representative during the remote survey and was confirmed through documentary evidence provided during the current verification.

The wattage and number of LED sold is verified from the sales database/33/. DOE selected 11 samples for remote survey from each CPA (total 44 samples) by conducting random sampling /32/. The wattage and number of LEDs distributed were cross-verified for each of the HHs during the RSV. The team also checked the website for the database/18/ recorded by the digital app at the time of distribution and monitoring/26/.

The description of the LED has been verified from the evidence shared by the CME like photographs/27/, technical description of the LEDs/17/ and also based on the confirmation from the remote-site inspection of the samples in order to assess that the physical features of the LEDs as available in registered CPA-DDs/8-11/. The monitoring procedures are in place and the CME has operated the PoA & CPAs as per the registered PoA-DD/01/ and CPA-DDs/8-11/.

	Each of the independent subsystems/measures included in the CPA of a PoA is having following energy savings (MWh/year) per LED:			
		12W	14W	9W
	CPA-1	-	0.198	0.118
	CPA-2	-	0.213	0.126
	CPA-3	0.200	-	0.116
	CPA-4	-	-	0.121
<p>The energy savings is less than 20GWh per year threshold. In-line to the CPA-DDs/8-11/ each of the CPAs under the PoA consists of micro-scale CDM units. Thus, the compliance of the CPA with the SSC threshold at aggregate CPA level is not required.</p> <p>The verification team confirms that the project has been implemented in the registered CPA DDs/8-11/.</p>				
<b>Findings</b>	CAR#02 was raised and resolved.			
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>The verification team is in opinion that physical features of the CPAs have been implemented in accordance with the registered CPA-DDs/8-11/.</li> <li>No specific monitoring equipment had to be installed according to the monitoring plan.</li> <li>It is also confirmed, through the review of the supporting documentation that physical features of the component CPAs have been implemented in accordance with the CPA-DDs/8-11/.</li> <li>The CPAs were also found to be completely operational in line with the CPA-DDs/8-11/.</li> <li>The information provided in the relevant sections of the monitoring report appropriately describe the implementation and operational status of the PoA.</li> </ul>			

### E.3.2. Post-registration changes

#### E.3.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

No Changes observed

#### E.3.2.2. Corrections

No Changes observed

#### E.3.2.3. Changes to the start-date of the crediting period

The start date of crediting period was changed for 10484-P1-0003-CP1 from 12/01/2020 to 06/03/2020. This was notified via mail to UN on 22/03/2020 and approved by UN on 26/03/2020.

#### E.3.2.4. Inclusion of a monitoring plan

No Changes observed

#### E.3.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

No Changes observed

#### E.3.2.6. Changes to the project design

No Changes observed

#### E.3.2.7. Changes specific to afforestation and reforestation activities

No Changes observed

### E.3.3. Compliance of the registered monitoring plan with applied methodologies and standardized baselines

<b>Means of verification</b>	The monitoring plan as contained in respective CPA DDs/8-11/ were reviewed against the monitoring requirements of the applied methodology AMS-II.C. version 15 /12/ as well as PoA DD/01/ with reference to the technology involved. Based on this review it was found that the monitoring plan contained in the CPA DDs/8-11/ includes all the required parameters to be monitored in the context of the CPA design and description and allows proper determination of emission reductions in accordance with PoA DD/01/ and applied methodology AMS-II.C version 15/12/. The CME and CPA Implementer was interviewed by the team leader as a part of alternative means for site visit exemption to cross-check compliance of the registered monitoring plan.
<b>Findings</b>	No findings were raised.
<b>Conclusion</b>	The monitoring plan is concordant to the approved methodology AMS-II.C. version 15 /12/, that is included in each respective CPA DD/8-11/.

### E.3.4. Compliance of monitoring activities with the registered monitoring plan

#### E.3.4.1. Data and parameters fixed ex ante or at renewal of crediting period

##### Combined margin emission factor for Indian, $EF_{CO_2,elec,y}$ , $tCO_2/MWh$

<b>Means of verification</b>	The value for $EF_{CO_2,elec,y}$ for Indian grid is 0.92. This is a default value of combined margin emission factor as available on the CEA website /28/. The value was also checked with the registered PoA-DD/1/ and included CPA-DDs/8-11/.
<b>Findings</b>	No Findings were raised.
<b>Conclusion</b>	The value in the monitoring report/2/ and corresponding emission reduction calculations spreadsheet/3-5/ are consistent with the registered PoA-DD/1/ & CPA DDs/8-11/. The applied value is correct and justified.

##### Rated average operating hours for LED type I, $L_{i,9W}$ , Hours

<b>Means of verification</b>	The average rated operating hours of 9W LED is 25,000 which was sourced from the life test reports of the LED/29/. The value of this parameter was checked with the registered PoA-DD/1/ and included CPA-DDs/8-11/.
<b>Findings</b>	No Findings were raised.
<b>Conclusion</b>	The value in the monitoring report/2/ and corresponding emission reduction calculations spreadsheet/3-5/ are consistent with the registered PoA-DD/1/ & CPA DDs/8-11/. The applied value is correct and justified.

##### Rated average operating hours for LED type I, $L_{i,12W}$ , Hours

<b>Means of verification</b>	The average rated operating hours of 12W LED is 25,000 which was sourced from the life test reports of the LED/29/. The value of this parameter was checked with the registered PoA-DD/1/ and included CPA-DDs/8-11/.
<b>Findings</b>	No Findings were raised.
<b>Conclusion</b>	The value in the monitoring report/2/ and corresponding emission reduction calculations spreadsheet/3-5/ are consistent with the registered PoA-DD/1/ & CPA DDs/8-11/. The applied value is correct and justified.

##### Rated average operating hours for LED type I, $L_{i,14W}$ , Hours

<b>Means of verification</b>	The average rated operating hours of 14W LED is 25,000 which was sourced from the life test reports of the LED/29/. The value of this parameter was checked with the registered PoA-DD/1/ and included CPA-DDs/8-11/.
<b>Findings</b>	No Findings were raised.
<b>Conclusion</b>	The value in the monitoring report/2/ and corresponding emission reduction calculations spreadsheet/3-5/ are consistent with the registered PoA-DD/1/ & CPA DDs/8-11/. The applied value is correct and justified.

#### E.3.4.2. Data and parameters monitored

##### Number of pieces of 60W/100W baseline lamps replaced, $n_{i, baseline (60W)/(100W)}$ , Number

<b>Means of verification</b>	<b>Criteria/Required Elements</b>	<b>Assessment / Observation</b>

	Measuring /Reading /Recording frequency	It is monitored once at the time of project implementation.																													
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance with the registered PoA-DD/01/ and applied methodology/12/																													
	Monitoring equipment	Not Applicable																													
	Calibration frequency /interval:	Not Applicable																													
	Is(are) calibration(s) valid for the whole reporting period?	NA																													
	How were the values in the monitoring report verified?	<p>The parameter is monitored by collecting data using smart phones/ tablet app module and the values were verified from the CPA-database shared by CME/33/</p> <p>The value of the parameter for all the CPAs is mentioned below.</p> <p>The total no. of ICLs actually replaced were as follows:<sup>7</sup></p> <table border="1"> <thead> <tr> <th></th><th>100 W</th><th>60 W</th></tr> </thead> <tbody> <tr> <td><b>10484-P1-0001-CP1</b></td><td>4,906</td><td>73,204</td></tr> <tr> <td><b>10484-P1-0002-CP1</b></td><td>4,643</td><td>127,946</td></tr> <tr> <td><b>10484-P1-0003-CP1</b></td><td>510,776</td><td>375,864</td></tr> <tr> <td><b>10484-P1-0004-CP1</b></td><td>0</td><td>10,034</td></tr> </tbody> </table> <p>The total no. of ICLs considered for ER calculation were as follows:</p> <table border="1"> <thead> <tr> <th></th><th>100 W</th><th>60 W</th></tr> </thead> <tbody> <tr> <td><b>10484-P1-0001-CP1</b></td><td>4,906</td><td>73,204</td></tr> <tr> <td><b>10484-P1-0002-CP1</b></td><td>125,343</td><td>127,945</td></tr> <tr> <td><b>10484-P1-0003-CP1</b></td><td>510,526</td><td>375,660</td></tr> <tr> <td><b>10484-P1-0004-CP1</b></td><td>0</td><td>10,034</td></tr> </tbody> </table> <p>Selected numbers of households (11 samples for each CPA i.e., 44 samples in total) were interviewed by the verification team to confirm that the end users have submitted ICL for destruction. The end users confirmed that they submitted equal number of ICLs for destruction as many as the LEDs were installed in their houses. Additionally, they confirmed the wattage of the ICLs.</p> <p>Thus, the applied value of the parameter is correct.</p>		100 W	60 W	<b>10484-P1-0001-CP1</b>	4,906	73,204	<b>10484-P1-0002-CP1</b>	4,643	127,946	<b>10484-P1-0003-CP1</b>	510,776	375,864	<b>10484-P1-0004-CP1</b>	0	10,034		100 W	60 W	<b>10484-P1-0001-CP1</b>	4,906	73,204	<b>10484-P1-0002-CP1</b>	125,343	127,945	<b>10484-P1-0003-CP1</b>	510,526	375,660	<b>10484-P1-0004-CP1</b>	0
	100 W	60 W																													
<b>10484-P1-0001-CP1</b>	4,906	73,204																													
<b>10484-P1-0002-CP1</b>	4,643	127,946																													
<b>10484-P1-0003-CP1</b>	510,776	375,864																													
<b>10484-P1-0004-CP1</b>	0	10,034																													
	100 W	60 W																													
<b>10484-P1-0001-CP1</b>	4,906	73,204																													
<b>10484-P1-0002-CP1</b>	125,343	127,945																													
<b>10484-P1-0003-CP1</b>	510,526	375,660																													
<b>10484-P1-0004-CP1</b>	0	10,034																													
If applicable, has the reported data been cross-checked with other available data?	The values for each of the CPAs have also been cross-checked from the online server 'cqc.nirmalaentp.com'/18/ which has details of each household saved in the software through which the data was being collected through app using smart phones/tablet/26/. It is noteworthy that the information on the website in uneditable/incorruptible, thus the data has been																														

<sup>7</sup> Please refer to section E.3.1 of the report for the reason in the difference of the number of ICLs replaced/LEDs Deployed and the no. of LEDs/ICLs considered for ER calculation.

		checked from a credible source.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No finding was raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

**Number of pieces of 60W/100W baseline lamps destroyed,  $n_i$  baseline scrapped (60W)/(100W), Number**

Means of verification	Criteria/Required Elements	Assessment / Observation
	Measuring /Reading /Recording frequency	It is monitored once at the time of project implementation.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance with the registered PoA-DD/01/ and applied methodology/12/
	Monitoring equipment	Not Applicable
	Calibration frequency /interval:	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	NA
	How were the values in the monitoring report verified?	The CME has provided ICL destruction certificates/30/ which confirms the number of destructed units. The certificate has been provided by a recognized organization named Auctus E-recycling solutions/30/.
		The value of the parameter for all the CPAs is mentioned below. The total no. of ICLs actually destroyed were as follows: <sup>8</sup>

<sup>8</sup> Please refer to section E.3.1 of the report for the reason in the difference of the number of ICLs replaced/LEDs Deployed and the no. of LEDs/ICLs considered for ER calculation.

		<table border="1"> <tr> <th></th> <th>100 W</th> <th>60 W</th> </tr> <tr> <td>10484-P1-0001-CP1</td> <td>4,906</td> <td>73,204</td> </tr> <tr> <td>10484-P1-0002-CP1</td> <td>125,350</td> <td>128,377</td> </tr> <tr> <td>10484-P1-0003-CP1</td> <td>510,776</td> <td>375,864</td> </tr> <tr> <td>10484-P1-0004-CP1</td> <td>0</td> <td>10,034</td> </tr> </table> <p>The total no. of ICLs considered for ER calculation were found to be:</p> <table border="1"> <tr> <th></th> <th>100 W</th> <th>60 W</th> </tr> <tr> <td>10484-P1-0001-CP1</td> <td>4,906</td> <td>73,204</td> </tr> <tr> <td>10484-P1-0002-CP1</td> <td>125,343</td> <td>127,945</td> </tr> <tr> <td>10484-P1-0003-CP1</td> <td>510,526</td> <td>375,660</td> </tr> <tr> <td>10484-P1-0004-CP1</td> <td>0</td> <td>10,034</td> </tr> </table> <p>The number of units were same as the installed units for all the CPAs except for CPA 2. Please refer Appendix 4 CL#01 for details.</p> <p>The number of units were same as the installed units for all the CPAs.          Selected numbers of households (11 samples for each CPA i.e., 44 samples in total) were interviewed by the verification team to confirm that the end users have submitted ICL for destruction. The end users confirmed that they submitted equal number of ICLs for destruction as many as the LEDs were installed in their houses. Additionally, they confirmed the wattage of the ICLs.</p> <p>Thus, the applied value of the parameter is correct.</p>		100 W	60 W	10484-P1-0001-CP1	4,906	73,204	10484-P1-0002-CP1	125,350	128,377	10484-P1-0003-CP1	510,776	375,864	10484-P1-0004-CP1	0	10,034		100 W	60 W	10484-P1-0001-CP1	4,906	73,204	10484-P1-0002-CP1	125,343	127,945	10484-P1-0003-CP1	510,526	375,660	10484-P1-0004-CP1	0	10,034
		100 W	60 W																													
	10484-P1-0001-CP1	4,906	73,204																													
	10484-P1-0002-CP1	125,350	128,377																													
	10484-P1-0003-CP1	510,776	375,864																													
10484-P1-0004-CP1	0	10,034																														
	100 W	60 W																														
10484-P1-0001-CP1	4,906	73,204																														
10484-P1-0002-CP1	125,343	127,945																														
10484-P1-0003-CP1	510,526	375,660																														
10484-P1-0004-CP1	0	10,034																														
If applicable, has the reported data been cross-checked with other available data?	The values for each of the CPAs have also been cross-checked from online server 'cqc.nirmalaentp.com'/18/ which has details of each household saved in the software through which the data was being collected through app using smart phones/tablet/26/. It is noteworthy that the information on the website is uneditable/incorruptible, thus the data has been checked from a credible source.																															
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The number of baseline lamps scrapped were cross-checked with the number of baseline lamps scrapped mentioned in the ICL destruction certificates /30/) as per the QA/QC procedure stated in the monitoring report /2/ and were found to be same.																															
In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.																															
<b>Findings</b>	CL#01 was raised and resolved.																															
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered																															

	monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.
--	--

**Number of pieces of 9W/12W/14W project lamps distributed, n<sub>i project (9W),(12W),(14W)</sub> Number**

Means of verification	Criteria/Required Elements	Assessment / Observation																																							
	Measuring /Reading /Recording frequency	It is monitored once at the time of project implementation.																																							
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance to the registered PoA-DD/01/ and applied methodology/12/																																							
	Monitoring equipment	Not Applicable																																							
	Calibration frequency /interval:	Not Applicable																																							
	Is(are) calibration(s) valid for the whole reporting period?	NA																																							
	How were the values in the monitoring report verified?	<p>The parameter is monitored by collecting data using smart phones/ tablet app module. The values were checked from the CPA-Database shared by CME /33/.</p> <p>The value of the parameter for all the CPAs is following: The total no. of LEDs actually distributed were as follows:</p> <table><tr><td></td><td>14 W</td><td>12 W</td><td>9 W</td></tr><tr><td>10484-P1-0001-CP1</td><td>4,906</td><td>0</td><td>73,204</td></tr><tr><td>10484-P1-0002-CP1</td><td>4,643</td><td>120,701</td><td>127,946</td></tr><tr><td>10484-P1-0003-CP1</td><td>0</td><td>510,776</td><td>375,864</td></tr><tr><td>10484-P1-0004-CP1</td><td>0</td><td>0</td><td>10,034</td></tr></table> <p>The total no. of LEDs considered for ER calculation were found to be:</p> <table><tr><td></td><td>14 W</td><td>12 W</td><td>9 W</td></tr><tr><td>10484-P1-0001-CP1</td><td>4,906</td><td>0</td><td>73,204</td></tr><tr><td>10484-P1-0002-CP1</td><td>4,642</td><td>120,701</td><td>127,945</td></tr><tr><td>10484-P1-0003-CP1</td><td>0</td><td>510,526</td><td>375,660</td></tr><tr><td>10484-P1-0004-CP1</td><td>0</td><td>0</td><td>10,034</td></tr></table> <p>Selected numbers of households (11 samples for each CPA i.e, 44 samples in total) were interviewed by the verification team to confirm that the identity of the end user and the total number and type of units the end users have received.</p>		14 W	12 W	9 W	10484-P1-0001-CP1	4,906	0	73,204	10484-P1-0002-CP1	4,643	120,701	127,946	10484-P1-0003-CP1	0	510,776	375,864	10484-P1-0004-CP1	0	0	10,034		14 W	12 W	9 W	10484-P1-0001-CP1	4,906	0	73,204	10484-P1-0002-CP1	4,642	120,701	127,945	10484-P1-0003-CP1	0	510,526	375,660	10484-P1-0004-CP1	0	0
	14 W	12 W	9 W																																						
10484-P1-0001-CP1	4,906	0	73,204																																						
10484-P1-0002-CP1	4,643	120,701	127,946																																						
10484-P1-0003-CP1	0	510,776	375,864																																						
10484-P1-0004-CP1	0	0	10,034																																						
	14 W	12 W	9 W																																						
10484-P1-0001-CP1	4,906	0	73,204																																						
10484-P1-0002-CP1	4,642	120,701	127,945																																						
10484-P1-0003-CP1	0	510,526	375,660																																						
10484-P1-0004-CP1	0	0	10,034																																						

		Thus, the applied values are correct and are consistently reported in the MR/2/ and ER sheet /3-5/.
	If applicable, has the reported data been cross-checked with other available data?	The values for each of the CPAs have also been cross-checked from online server 'cqc.nirmalaentp.com'/18/ which has details of each household saved in the software through which the data was being collected through app using smart phones/tablet/26/. It is noteworthy that the information on the website in uneditable/incorruptible, thus the data has been checked from a credible source.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No findings were raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

**Total number of 9W/12W/14W project lamps that are operational during monitoring period,  $n_i$  operational**  
**(9W),(12W),(14W) Number**

<b>Means of verification</b>	<b>Criteria/Required Elements</b>	<b>Assessment / Observation</b>
	Measuring /Reading /Recording frequency	Parameter is monitored annually.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance with the registered PoA-DD/01/ and applied methodology/12/
	Monitoring equipment	Not Applicable
	Calibration frequency /interval:	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	NA



	<p>How were the values in the monitoring report verified?</p>	<p>The parameter is calculated by using the data from the surveys.</p> <p>During the survey, following points are confirmed:</p> <ol style="list-style-type: none"> <li>1. Mark of SHINE logo on the product</li> <li>2. Number and type(wattage) of lamps</li> <li>3. Working or not working.</li> </ol> <p>Lamps in the households having all these points are considered operational. The operational rate is multiplied by the total number of lamps of '9W/12W/14W' type to get the final value of the parameter.</p> <p>The value of the parameter for all the CPAs is following:</p> <table border="1"> <thead> <tr> <th></th> <th>14 W</th> <th>12 W</th> <th>9 W</th> </tr> </thead> <tbody> <tr> <td>10484-P1-0001-CP1</td> <td>4,906</td> <td>0</td> <td>73,204</td> </tr> <tr> <td>10484-P1-0002-CP1</td> <td>4,642</td> <td>120,701</td> <td>127,945</td> </tr> <tr> <td>10484-P1-0003-CP1</td> <td>0</td> <td>510,526</td> <td>375,660</td> </tr> <tr> <td>10484-P1-0004-CP1</td> <td>0</td> <td>0</td> <td>10,034</td> </tr> </tbody> </table> <p>The reported values were cross-checked from the CPA-Database/33/ for total number of units and monitoring survey sheet/31/ for the value operational rate shared by CME. The values have been verified from the monitoring survey forms /22/ which was filled at the time of surveys conducted by the third-party hired by the CME.</p> <p>Additionally, Selected numbers of households (11 samples for each CPA i.e, 44 samples in total) were interviewed by the verification team to confirm following:</p> <ul style="list-style-type: none"> <li>• The identity of the end user</li> <li>• The total number and type(9W/12W,14W) of units received</li> <li>• Whether they are working or not.</li> <li>• Does it have shine logo or not.</li> </ul> <p>All the households reported their product being functional with the project logo on it.</p> <p>Thus, the applied value of the parameter was found to be correctly applied in the ER sheet/3-5/ and consistently reported in the MR/2/.</p>		14 W	12 W	9 W	10484-P1-0001-CP1	4,906	0	73,204	10484-P1-0002-CP1	4,642	120,701	127,945	10484-P1-0003-CP1	0	510,526	375,660	10484-P1-0004-CP1	0	0	10,034
	14 W	12 W	9 W																			
10484-P1-0001-CP1	4,906	0	73,204																			
10484-P1-0002-CP1	4,642	120,701	127,945																			
10484-P1-0003-CP1	0	510,526	375,660																			
10484-P1-0004-CP1	0	0	10,034																			
	<p>If applicable, has the reported data been cross-checked with other available data?</p>	<p>The values for each of the CPAs has been cross-checked from online server 'cqc.nirmalaentp.com'/18/ which has details of each household saved in the software through which the data was being collected using smart phones/tablet/26/. It is noteworthy that the information on the website in non-editable/incorruptible, thus the data has been checked from a credible source.</p>																				

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No finding was raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

**Average annual operating hours of type 'i' project lamp,  $O_i$  project (9W)/(12W)/(14W)/ baseline (60W)/(100W), Hours**

Average annual operating hours of type 1 project lamp, 31 project (9W)/(12W)/(14W)/ baseline (60W)/(100W), Hours														
Means of verification	Criteria/Required Elements	Assessment / Observation												
	Measuring /Reading /Recording frequency	Monitored Once prior to 1 <sup>st</sup> ex-post monitoring Survey.												
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance with the registered PoA-DD/01/ and applied methodology/6/												
	Monitoring equipment	Run-time meters General feature: <ul style="list-style-type: none"><li>• Supports sim card</li><li>• Stores data of POWER ON and POWER OFF</li><li>• Device sends ON and OFF Signal with 'textlocal' with time stamp.</li></ul> Technical Specification/17/ <table><tr><td>Socket Input/ Output Voltage</td><td>AC 110≈250V</td></tr><tr><td>Temperature transducer induction range</td><td>-10°C-50°C</td></tr><tr><td>Load maximum Working current</td><td>10A</td></tr><tr><td>Working current</td><td>110≈180 mA</td></tr><tr><td>Working Temperature</td><td>-20°C≈ 55°C</td></tr><tr><td>Storage Temperature</td><td>-20°C≈ 70°C</td></tr></table>	Socket Input/ Output Voltage	AC 110≈250V	Temperature transducer induction range	-10°C-50°C	Load maximum Working current	10A	Working current	110≈180 mA	Working Temperature	-20°C≈ 55°C	Storage Temperature	-20°C≈ 70°C
	Socket Input/ Output Voltage	AC 110≈250V												
Temperature transducer induction range	-10°C-50°C													
Load maximum Working current	10A													
Working current	110≈180 mA													
Working Temperature	-20°C≈ 55°C													
Storage Temperature	-20°C≈ 70°C													

		Super capacitor maximum maintaining time	15s≈18s											
	Calibration frequency /interval:	Calibration is not required as confirmed from the declaration of manufacturer shared by the CME /34/												
	Is(are) calibration(s) valid for the whole reporting period?	NA												
	How were the values in the monitoring report verified?	<p>The CME had monitored the parameter through surveys conducted during before the first ex-post monitoring. The CME collected DISCOM data from the electricity board. This data formed the population to withdraw the samples. The randomly picked samples were the houses where the run meters were installed to measure the average operating hours for a minimum period of 90 days.</p> <p>These run meters continuously measured the operating hours. The run-time meters store the data along with the time stamp due to the GSM sim card.</p> <p>The parameter is determined only once at the time of first ex-post monitoring. Thus, the values determined during the previous verification/46/ are applicable to the current verification also.</p> <p>The value of the parameter for each of the CPAs is as following:</p> <table border="1"> <thead> <tr> <th></th> <th><b>10484-P1-0001-CP1</b></th> <th><b>10484-P1-0002-CP1</b></th> <th><b>10484-P1-0003-CP1</b></th> <th><b>10484-P1-0004-CP1</b></th> </tr> </thead> <tbody> <tr> <td>Operating Hours</td> <td>2,186.35</td> <td>2,347.0</td> <td>2,153.5</td> <td>2,248.4</td> </tr> </tbody> </table> <p>Per day operating hours is obtained from the data stored which is</p> <p>5.99 hours for CPA-1</p> <p>6.43 hours for CPA-2</p> <p>5.9 hours for CPA-3</p> <p>6.16 hours for CPA-4.</p> <p>Annual average =</p> <p><math>5.99 \times 365 = 2,186.35</math> hours</p> <p><math>6.43 \times 365 = 2,347.0</math> hours</p> <p><math>5.9 \times 365 = 2,153.5</math> hours</p> <p><math>6.16 \times 365 = 2,248.4</math> hours</p> <p>The value of the parameter was found consistently reported in the MR/2/ and correctly applied in the ER sheet/3-5/.</p>				<b>10484-P1-0001-CP1</b>	<b>10484-P1-0002-CP1</b>	<b>10484-P1-0003-CP1</b>	<b>10484-P1-0004-CP1</b>	Operating Hours	2,186.35	2,347.0	2,153.5	2,248.4
		<b>10484-P1-0001-CP1</b>	<b>10484-P1-0002-CP1</b>	<b>10484-P1-0003-CP1</b>	<b>10484-P1-0004-CP1</b>									
Operating Hours	2,186.35	2,347.0	2,153.5	2,248.4										
If applicable, has the reported data been cross-checked with other available data?	Not applicable													

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No findings were raised.	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

**Rated power of 60 W & 100 W baseline lamps replaced,  $\rho_i$  baseline 60W, 100 W, Watts**

Means of verification	Criteria/Required Elements	Assessment / Observation
	Measuring /Reading /Recording frequency	Monitored Once at the time of project installation
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance with the registered PoA-DD/01/ and applied methodology/12/
	Monitoring equipment	NA
	Calibration frequency /interval:	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	NA
	How were the values in the monitoring report verified?	The values have been verified from the recorded database/33/ and photos of the nameplates with the rated power/27/.
	If applicable, has the reported data been cross-checked with other available data?	Selected numbers of households (11 samples for each CPA i.e, 44 samples in total) were interviewed by the verification team to confirm that the end users have submitted ICL for destruction. The end users confirmed that they submitted equal number of ICLs for destruction as many as the LEDs were installed in their houses. Additionally,

		they confirmed the wattage of the ICLs.  The values for each of the CPAs have also been cross-checked from online server 'cqc.nirmalaentp.com'/18/ which has details of each household saved in the software through which the data was being collected though app using smart phones/tablet/38/.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No finding was raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

**Rated power of the LEDs of 9W, 12W & 14W project lamps,  $P_i$  project lamps 9W, 12 W, 14W Watts**

Means of verification	Criteria/Required Elements	Assessment / Observation				
	Measuring /Reading /Recording frequency	Monitored Once at the time of project installation				
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The measuring and reporting frequency are in accordance with the registered PoA-DD/01/ and applied methodology/12/				
	Monitoring equipment	NA				
	Calibration frequency /interval:	Not Applicable				
	Is(are) calibration(s) valid for the whole reporting period?	NA				
	How were the values in the monitoring report verified?	The values have been verified from the recorded database/33/ and photos of the nameplates with the rated power/27/.				
		The rated power of the project lamps distributed under each of the CPAs were as follows:				
		10484-P1-	10484-P1-	10484-P1-	10484-P1-	

			<b>0001-CP1</b>	<b>0002-CP1</b>	<b>0003-CP1</b>	<b>0004-CP1</b>
		Rated Power of installed LEDs	9 W and 14 W	9 W, 12W and 14 W	9 W and 12 W	9 W
		The rated power was verified during the remote survey through the interview of the sampled HH/36/. Selected numbers of households (11 samples for each CPA i.e, 44 samples in total) were interviewed by the verification team to confirm that the identity of the end user and the total number and wattage of units the end users have received				
	If applicable, has the reported data been cross-checked with other available data?	The values for each of the CPAs have also been cross-checked from online server 'cqc.nirmalaentp.com'/18/ which has details of each household saved in the software through which the data was being collected through app using smart phones/tablet/26/.				
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Not Applicable				
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.				
<b>Findings</b>		CAR#03 was raised and resolved.				
<b>Conclusion</b>		The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.				

Average annual technical grid losses,  $L_y$ , %

Means of verification	Criteria/Required Elements	Assessment / Observation
	Measuring /Reading /Recording frequency	This value is fixed for the entire crediting period and was determined at CPA level.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology?	Yes. The measuring and reporting frequency are in accordance with the registered PoA-DD/01/ and CPA-DDs/8-11/

	(Yes / No)	
	Monitoring equipment	NA
	Calibration frequency /interval:	Not Applicable
	Is(are) calibration(s) valid for the whole reporting period?	NA
	How were the values in the monitoring report verified?	The value applied is a default value sourced from the applied methodology AMS.II.C Version 15.0 /12/  The default value is 10%
	If applicable, has the reported data been cross-checked with other available data?	NA
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	NA
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
<b>Findings</b>	No finding was raised	
<b>Conclusion</b>	The parameter has been monitored appropriately, in accordance with the registered monitoring plan/1/ (as per measurement methods and procedures to be applied) and applied methodology/12/. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan/1/.	

#### E.3.4.3. Implementation of sampling plan

<b>Means of verification</b>	<p>The assessment of CME's sampling is discussed below: The CME has applied separate sampling plan for all the 4 CPAs. According to Sampling and Survey standards,' version 8.0/37/, the sampling plan applied by the PP for the following CPAs are found to be appropriate. As per the sampling plan stated in the PoA DD/1/, a minimum 95% confidence interval and a 10% margin of error requirement is achieved for the sampled parameters. The revised PoA DD/1/ consistently mentions annual monitoring, the actual monitoring also has also been conducted annually.</p> <p><b>Target Population-</b> All the end users receiving the LED bulbs for <math>n_i</math> operational database was provided respective by DISCOM under each CPA.</p> <p><b>Sample Frame-</b> The sample frame is developed from the respective state utility customer account records for each CPA</p>
------------------------------	---

**Sampling Method and selection-** The method used in sampling was Simple random sampling in order to determine the sample size for monitoring the parameters. The LEDs were selected randomly for each CPA as checked from the screenshots of the random generator online website Stat Trek/44/.

There is only one country to be sampled, there is only one type of project lamp with different wattages (9W,12W & 14W).

**Sample Size for Parameter of Interest:**

The sampling has been applied to the following monitoring parameter:

- $n_{i \text{ operational}}$  (Number of operational project lamps during the monitoring period)

The sample size for parameter ' $n_{i \text{ operational}}$ ' was chosen using the equation inline to CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities/39/.

In this regard, sample size calculation spreadsheet /32/ was checked and found correct as per registered monitoring plan. The complete details are given in E.3 section of Monitoring Report/2/.

**Implementation of Sampling Survey and Field Survey Records:**

Based on interviews with the CME and the videos and pictures of the sampled HHs and surveyors during the remote survey, in addition to simply asking this question to the end users surveyors were also checking whether it was operational or not. Therefore, the implementation of surveys was considered reliable. The surveyors also took photos of distributed LED Bulbs which were checked during the desk review by the assessment team.

**Monitoring survey (by CME) duration:**

The monitoring survey (field survey / tests) was carried out by independent third party hired by CME/40/ between following duration for the current monitoring period.

CPA Ref.No.	Technology	From	To
10484-P1-0001-CP1	LED Bulb	31/10/2020	07/11/2020
10484-P1-0002-CP1	LED Bulb	16/10/2020	22/10/2020
10484-P1-0003-CP1	LED Bulb	30/09/2020	20/10/2020
10484-P1-0004-CP1	LED Bulb	03/11/2020	

**Reliability and precision calculation:**

The verification team has verified the Monitored survey results /31/ with the monitored data, where the actual achieved precision is calculated against the Guidelines outlined under "Standard for sampling and surveys for CDM project activities and Programme of Activities" /37/ and confirms that the calculation of achieved reliability was done correctly.

All parameters of interest are included in the ER spreadsheet/3-5/ for the CPAs under consideration. These were checked for the input values as well as formula applied and were found consistent. The reliability (demonstration of precision achieved after the survey results) is depicted in the Monitoring survey sheet/31/ corresponding to final Monitoring Report /2/, which were also found correct.

Thus, the verification team confirms that required precision has been met and the results are reliable.

**Findings**

CAR#01 and CAR#03 was raised and resolved.



<b>Conclusion</b>	The verification team confirmed that the sampling plan and the parameter values are in accordance with the monitoring plan provided in PoA DD /1/.
-------------------	--

### E.3.5. Compliance with the calibration frequency requirements for measuring instruments

<b>Means of verification</b>	There are no calibration requirements for the monitoring equipment stated in the PoA-DD /1/ and CPA-DDs/8-11/.
<b>Findings</b>	No findings were raised
<b>Conclusion</b>	There is no specific requirement prescribed in this regard in the registered monitoring plan/1/ and in monitoring methodology/12/. Therefore, the approach presented by CME was accepted.

### E.3.6. Assessment of data and calculation of emission reductions or net removals

#### E.3.6.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

<b>Means of verification</b>	<p>Baseline emissions have been calculated in-line with the methodology/12/ which is as follows:</p> $BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$ <p>As the project aims at distributing LEDs by replacing ICLs, thus no refrigerant is involved so the equation is modified as:</p> $BE_y = E_{BL,y} \times EF_{CO2,ELEC,y}$ <p>Where:</p> <table border="1"> <tr> <td><math>BE_y</math></td><td>Baseline emissions in year y (tCO<sub>2</sub>e)</td></tr> <tr> <td><math>E_{BL,y}</math></td><td>Energy consumption for the baseline (ICLs) in year y (kWh)</td></tr> <tr> <td><math>EF_{CO2,ELEC,y}</math></td><td>Electricity emissions factor.</td></tr> </table> <p>Energy consumption for baseline in year y is calculated as:</p> $E_{BL,y} = 0.95 \times \sum_i (n_i \times \rho_i \times o_i / (1 - l_y))$ <table border="1"> <tr> <td><math>n_i</math></td><td>Number of pieces of equipment of the group of 'i' baseline equipment (ICLs) replaced.</td></tr> <tr> <td><math>\rho_i</math></td><td>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).</td></tr> <tr> <td><math>o_i</math></td><td>Average annual operating hours of the group of 'i' baseline equipment (ICLs).</td></tr> <tr> <td><math>l_y</math></td><td>0.10</td></tr> <tr> <td>0.95</td><td>Net to gross adjustment factor</td></tr> </table> <p>The values of the parameters listed above have been verified under section E.6.1 and E.6.2. Equation was found to be correctly applied in the ER sheet /3-5/.</p>	$BE_y$	Baseline emissions in year y (tCO <sub>2</sub> e)	$E_{BL,y}$	Energy consumption for the baseline (ICLs) in year y (kWh)	$EF_{CO2,ELEC,y}$	Electricity emissions factor.	$n_i$	Number of pieces of equipment of the group of 'i' baseline equipment (ICLs) replaced.	$\rho_i$	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).	$l_y$	0.10	0.95	Net to gross adjustment factor
$BE_y$	Baseline emissions in year y (tCO <sub>2</sub> e)																
$E_{BL,y}$	Energy consumption for the baseline (ICLs) in year y (kWh)																
$EF_{CO2,ELEC,y}$	Electricity emissions factor.																
$n_i$	Number of pieces of equipment of the group of 'i' baseline equipment (ICLs) replaced.																
$\rho_i$	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).																
$l_y$	0.10																
0.95	Net to gross adjustment factor																
<b>Findings</b>	No findings were raised.																
<b>Conclusion</b>	<p>The verification team confirms that</p> <ol style="list-style-type: none"> <li>The complete data was available and is duly reported;</li> <li>As indicated above, the description with regard to cross-check of reported data is included under respective parameter above;</li> <li>Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals were followed;</li> <li>Appropriate emission factors, IPCC default factors and other reference values</li> </ol>																

	<p>were correctly applied.</p> <p>e) There is no pro-rata approach applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p>
--	---

### E.3.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	Project emissions for the project activity was found to be calculated in-line with the applied methodology /6/ which was as follows: $PE_y = E_{PE,y} \times EF_{CO2,ELEC,y} + PE_{ref,y}$	
	$PE_y$	Project emissions in year y (tco2e)
	$EP_{PJ,y}$	Energy consumption in project activity in year y. This shall be determined ex post based on monitored values
	$EF_{CO2,y}$	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
	$PE_{ref,y}$	Project emissions from physical leakage of refrigerant from the project equipment in year y (tco2e/y)
	As the project involves the distribution of LEDs by the replacement of ICLs hence no refrigerant is involved. Thus, the equation followed for project emissions as follows: $PE_y = E_{PE,y} \times EF_{CO2,ELEC,y}$ $E_{PE,y} = 0.95 \times \sum_i (n_i \times \rho_i \times o_i / (1 - l_y))$	
	$n_i$	Number of groups 'i' project devices operating during time interval t in year y.
	$\rho_i$	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
The value of the parameter listed above have been verified under section E.6.1 and E.6.2. Equation was found to be correctly applied in the ER sheet /8-11/.		
Findings	No findings were raised	
Conclusion	The verification team confirms that (a) The monitored data was available in accordance with the registered monitoring plan; (b) The monthly reported data was cross-checked, as prescribed in the revised approved PDD/01/, with the relevant supporting and was found consistent;I) Appropriate methods and formulae for calculating project emissions or baseline net GHG removals have been followed; (d) The assumptions, emission factors and default values that were applied in the calculations have been justified; (f) The first day on which CERs are being claimed has been correctly specified, where applicable.	

### E.3.6.3. Calculation of leakage GHG emissions

<b>Means of verification</b>	The PoA DD/01/, CPA DDs/8-11/ and applied monitoring methodology/12/
------------------------------	--

	prescribes leakage consideration only if the energy efficient technology involves equipment transferred from another activity. However, LEDs to be installed at the HHs are not transferred from any other activity. Thus, leakage emissions are not applicable. However, the leakage adjustment factor(0.95) that is required to adjust the baseline emissions has been duly accounted in emission reduction calculations.
<b>Findings</b>	No findings raised.
<b>Conclusion</b>	No additional leakage emissions (other than what is already considered in baseline calculations) were required in accordance with the methodology AMS-II C, version 15/12/ as the LEDs installed were not transferred from another project activity.

#### E.3.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

<b>Means of verification</b>	<p>The following equations were used to determine the Emission reduction as provided in the monitoring report/2/ and applied in the corresponding ER calculations sheets/3-5/. The expressions used were found consistent with the registered PoA DD/01/, CPA DDs/8-11/ and the applied methodology AMS-II.C, version 15/12/:</p> <p>Total ER reductions achieved in the current monitoring period by the LED bulbs distributed in the relevant CPA is calculated using the following expressions:</p> <p>Emission reductions are calculated as follows:</p> $ER_y = (-E_y - PE_y) - LE_y$ <p>Where:</p> <table border="1"> <tr> <td><b>ER<sub>y</sub></b></td><td>emission reductions, t CO<sub>2</sub>e,</td></tr> <tr> <td><b>BE<sub>y</sub></b></td><td>Baseline Emissions</td></tr> <tr> <td><b>PE<sub>y</sub></b></td><td>Project Emissions</td></tr> <tr> <td><b>LE<sub>y</sub></b></td><td>Leakage Emissions</td></tr> </table> <p><math>ER_y = 24,122 - 3,224 - 0 = 20,898 \text{ tCO}_2\text{e}</math></p> <p>The final value of Emission reduction is <b>20,898 tCO<sub>2</sub>e</b></p> <p>Emission reduction from the project activity were based on baseline, project emissions only. The calculations presented in this regard in the final monitoring report /2/ and corresponding ER calculation sheet /3-5/were found appropriate and complying with provisions prescribed in the registered monitoring plan /01/ and applied methodology /12/</p> <p>The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.</p>	<b>ER<sub>y</sub></b>	emission reductions, t CO <sub>2</sub> e,	<b>BE<sub>y</sub></b>	Baseline Emissions	<b>PE<sub>y</sub></b>	Project Emissions	<b>LE<sub>y</sub></b>	Leakage Emissions
<b>ER<sub>y</sub></b>	emission reductions, t CO <sub>2</sub> e,								
<b>BE<sub>y</sub></b>	Baseline Emissions								
<b>PE<sub>y</sub></b>	Project Emissions								
<b>LE<sub>y</sub></b>	Leakage Emissions								
<b>Findings</b>	No findings were raised								
<b>Conclusion</b>	<p>The verification team confirms that:</p> <ol style="list-style-type: none"> <li>The complete data was available and is duly reported.</li> <li>As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.3.4.2 of this report);</li> <li>Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed;</li> <li>Appropriate emission factors, IPCC default factors and other reference values were correctly applied.</li> <li>There is no pro-rata approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</li> <li>The total number of ERs achieved during the current monitoring period is 20,898 tCO<sub>2</sub>e.</li> </ol>								

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e)	Leakage (tCO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (tCO <sub>2</sub> e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
SHINE – Distribution of LED Lightbulbs in India-1, 10484-P1-0001-CP1	3,919	584	0	0	3,335	3,335
SHINE – Distribution of LED Lightbulbs in India-2, 10484-P1-0002-CP1	3,492	465	0	0	3,027	3,027
SHINE – Distribution of LED Lightbulbs in India-3, 10484-P1-0003-CP1	16,215	2,101	0	0	14,114	14,114
SHINE – Distribution of LED Lightbulbs in India-4, 10484-P1-0004-CP1	496	74	0	0	422	422
<b>Total</b>	<b>24,122</b>	<b>3,224</b>	<b>0</b>	<b>0</b>	<b>20,898</b>	<b>20,898</b>

#### E.3.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

<b>Means of verification</b>	<p>As verified and evident from the final Monitoring Report/2/ and corresponding ER calculations sheet/3-5/, the actual emission reductions achieved by CPAs is included in the current monitoring period were less than estimated quantity in the CPA-DDs/8-11/ for the comparable period. This is largely due to lower number of LEDs that were installed in the CPAs compared to that envisaged in the CPA-DDs/8-11/.</p> <p>Considering, there is no increase in ERs no further verification effort was put in. The quantitative details of actual values of achieved ERs for the CPA and value estimated in the CPA- DDs/8-11/ is presented in the above table.</p>
<b>Findings</b>	No finding was raised.
<b>Conclusion</b>	The actual emission reductions achieved in any of specific CPAs are not higher than the estimated quantity of ERs in the CPA-DDs/8-11/. Accordingly, it was accepted by the verification team.

Title and UNFCCC reference number of the CPA	Actual values achieved by the CPAs during this monitoring period	Value estimated in ex ante calculation in the included CPA-DD(s)
SHINE – Distribution of LED Lightbulbs in India-1, 10484-P1-0001-CP1	3,335	3,585
SHINE – Distribution of LED Lightbulbs in India-2, 10484-P1-0002-CP1	3,027	12,424
SHINE – Distribution of LED Lightbulbs in India-3, 10484-P1-0003-CP1	14,114	43,488
SHINE – Distribution of LED Lightbulbs in India-4, 10484-P1-0004-CP1	422	467
<b>Total</b>	<b>20,898</b>	<b>59,964</b>

#### E.3.6.6. Remarks on difference from estimated value in included CPA

<b>Means of verification</b>	<p>Earthood Services Private Limited is able to certify that the emission reductions from the CDM project activity 10484 “SHINE-Distribution of LED Lightbulbs in India” in India for the monitoring period 16/03/2020-31/07/2020 (including both days) amount to 20,898 tCO<sub>2</sub>.</p> <p><b>Verified and certified emission reductions as per commitment period:</b></p> <table> <tr> <th>Commitment period</th><th>Amount</th></tr> <tr> <td>Upto 31/12/2012 (1<sup>st</sup> commitment period)</td><td>0 tCO<sub>2</sub>e</td></tr> <tr> <td>From 01/01/2013</td><td>20,898 tCO<sub>2</sub></td></tr> </table>	Commitment period	Amount	Upto 31/12/2012 (1 <sup>st</sup> commitment period)	0 tCO <sub>2</sub> e	From 01/01/2013	20,898 tCO <sub>2</sub>
Commitment period	Amount						
Upto 31/12/2012 (1 <sup>st</sup> commitment period)	0 tCO <sub>2</sub> e						
From 01/01/2013	20,898 tCO <sub>2</sub>						
<b>Findings</b>	No findings were raised						
<b>Conclusion</b>	The actual ERs achieved in included CPAs are not higher than the estimated quantity of ERs in the CPA-DDs/8-11/. Accordingly, it was accepted by verification team.						

#### E.3.7. Assessment of reported sustainable development co-benefits

<b>Means of verification</b>	This section was not applicable as no such document was found to be developed and published on the UNFCCC CDM website by the CME. Thus, in-line to para 361(a) of the VVS for PoA Version 2.0 /13/ PP had not monitored the sustainable development co-benefits.
<b>Findings</b>	No findings were raised
<b>Conclusion</b>	Not applicable as it was not monitored by the PP.

#### E.3.8. Global stakeholder consultation

<b>Means of verification</b>	The global stakeholder consultation was not found applicable because period under verification is 2 <sup>nd</sup> monitoring period.
<b>Findings</b>	No findings were raised
<b>Conclusion</b>	The requirement is applicable for situations when global stakeholder consultation was carried out after the publication of first monitoring report. Therefore, this was not found applicable.

## SECTION F. Internal quality control

A draft verification report prepared by verification team is reviewed by an independent technical review team (one or more members) to confirm whether all the internal procedures established and implemented by ESPL were duly complied with and such opinion/conclusion was reached in an objective manner that complies with the applicable CDM rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the verification team.

During the technical review process additional findings may be identified or the closed-out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same in such case providing the comments/findings/issues that needs to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized by the Managing Director on behalf of Earthood Services Private Limited.

## SECTION G. Verification opinion

Earthood Services Private Limited (ESPL), contracted by Brightspark Energy Pvt Ltd. (the CME for the PoA), has performed the independent verification of the emission reductions for the registered CDM PoA 10484 "SHINE-Distribution of LED Light Bulbs in India" for the monitoring period 16/03/2020-31/07/2020(both days included) as reported in the Monitoring Report (final) Version 2 dated 17/02/2021. The CME is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

This verification report is for the CPAs (10484-P1-0001-CP1, 10484- P1-0002-CP1, 10484- P1-0003-CP1, 10484- P1-0004-CP1) which were included at the UNFCCC webpage at the end of the current monitoring period. A single monitoring report has been prepared by the CME for the same in which implementation of all referred CPAs along with monitoring results is included.

ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow as per CDM VVS for PoA Version 2.

The verification activities were conducted in accordance with ESPL's CDM Quality Manual System. The verification process has resulted in conclusion that the included CPAs confirm to the registered PoA DD as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodology, AMS II.C Version 15.

As a result, it is confirmed that the emission reductions from the CDM PoA 10484 "SHINE-Distribution of LED Light Bulbs in India" are correctly reported in the Monitoring Report (final) Version 2 dated 17/02/2021 and corresponding ER sheets for the monitoring period 16/03/2020-31/07/2020 (including both days) amount as 20,898 tCO<sub>2</sub>e. Therefore, this will be submitted as part of a request for issuance as per CDM PCP for PoA, Version 2.

## SECTION H. Certification statement

Earthood Services Private Limited (ESPL), contracted by Brightspark Energy Pvt Ltd. (the CME for the PoA), has performed the first independent verification of the emission reductions for the registered CDM PoA 10484 "SHINE-Distribution of LED Light Bulbs in India" for the monitoring period 16/03/2020-31/07/2020 (both days included) as reported in the Monitoring Report Version 2 dated 17/02/2021/2/.

The verification is based on the registered PoA-DD/1/, CPA-DDs/8-11/ and the monitoring report for this project. Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakech accord, as well as those defined by the CDM Executive Board.

The management of the Brightspark Energy Pvt Ltd is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Final Monitoring Report Version 2 dated 17/02/2021/2/. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 2 dated 17/02/2021/2/.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the monitoring period 16/03/2020 up to 31/07/2020 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 2 dated 17/02/2021/2/ for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, ESPL planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

ESPL confirms the following:

**Reporting period:** From 16/03/2020 up to 31/07/2020 (including both dates)

**Verified and certified emission in the above reporting period:**

	Amount	Unit
Certified emission reductions (CERs)	20,898	tCO <sub>2</sub> e

## Appendix 1. Abbreviations

Abbreviations	Full texts
AQL	Acceptable Quality Level
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
CER	Certified Emission Reduction
CL	Clarification Request
CME	Coordinating or Managing Entity
CPA	Component Project Activity
CP	Crediting period
DISCOM	Power Distribution Company
DOE	Designated Operational Entity
DNA	Designated National Authority
EB	Executive Board
ESPL	Earthood Services Private Limited
FAR	Forward action request
GHG	Green House Gases
ICL	Incandescent Light
IPCC	Intergovernmental Panel on Climate change
LED	Light Emitting Diode
MIS	Management Information System
POA	Programme Of Activity
PSU	Primary Sampling Unit.
TA	Technical Area
TR	Technical Reviewer
VVS	Validation and Verification Standard
UNFCCC	United Nation Framework convention on Climate change

## Appendix 2. Competence of team members and technical reviewers

Competence Statement	
<b>Name</b>	Deepika Mahala
<b>Country</b>	India
<b>Education</b>	M. Sc. (Environmental Management), GGSIP University B.Sc. Hons. (Chemistry), Sri Venkateshwar College, DU
<b>Experience</b>	3 Years +
<b>Field</b>	Climate Change
Approved Roles	
<b>Team Leader</b>	YES
<b>Validator</b>	YES
<b>Verifier</b>	YES
<b>Methodology Expert</b>	ACM0002, AMS.I.D., AMS.I.A, AMS.III.AV, AMS.II.G
<b>Local expert</b>	YES (India)
<b>Financial Expert</b>	NO
<b>Technical Reviewer</b>	YES
<b>TA Expert</b>	YES (TA 1.2 & TA 3.1)



<b>Reviewed by</b>	Shreya Garg	<b>Date</b>	14/09/2018
<b>Approved by</b>	Anshika Gupta	<b>Date</b>	14/09/2018

Competence Statement			
<b>Name</b>	Vaishali Vatsa		
<b>Education</b>	M.Sc. (Environmental Studies and Resource Management), TERI University		
<b>Experience</b>	4 months		
<b>Field</b>	Climate Change		
Approved Roles			
<b>Team Leader</b>	NO		
<b>Validator</b>	Yes		
<b>Verifier</b>	Yes		
<b>Methodology Expert</b>	NO		
<b>Local expert</b>	NO		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	NO		
<b>TA Expert (X.X)</b>	NO		
<b>Trainee</b>	NO		
<b>Reviewed by</b>	Shreya Garg	<b>Date</b>	30/12/2019
<b>Approved by</b>	Anshika Gupta	<b>Date</b>	02/01/2020

Competence Statement			
<b>Name</b>	Sanjeev Kumar		
<b>Country</b>	India		
<b>Education</b>	B. Tech. (Chemical Engineering) M.Tech. (Energy Management)		
<b>Experience</b>	13.5 years +		
<b>Field</b>	Climate Change, Environment, Energy		
Approved Roles			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		
<b>Verifier</b>	YES		
<b>Methodology Expert</b>	YES (ACM0002, ACM0006, ACM0004, ACM0009, ACM0012, ACM0001, AMS I.D, AMS I.F, AMS I.C, AMS I.A, AMS II.C, AMS II.D, AMS II.E, AMS III.H, AMS III.AR, AM0009, AM0013, AM0025, AM0056, AM0028, AM0029, AM0008, AMS III.R, ACM0003)		
<b>Local expert</b>	YES (India)		
<b>Financial Expert</b>	NO		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (TA 1.1, TA 1.2, 4.1, 13.1)		
<b>Reviewed by</b>	Shreya Garg	<b>Date</b>	16/12/2020
<b>Approved by</b>	Anshika Gupta	<b>Date</b>	16/12/2020

Competence Statement	
<b>Name</b>	Ashok Gautam

<b>Country</b>	India		
<b>Education</b>	M. Sc. (Environmental Sciences) M. Tech. (Energy & Environmental Management)		
<b>Experience</b>	16 Years +		
<b>Field</b>	Energy, Climate Change & Environment		
<b>Approved Roles</b>			
<b>Team Leader</b>	YES		
<b>Validator</b>	YES		
<b>Verifier</b>	YES		
<b>Methodology Expert</b>	AMS-I.D., AMS-I.A., AMS-I.C., AMS-I.E, AMS-II.D., AMS-II.G., AMS-III.E., AMS-III.H., AMS-III.Q, AMS-III.Z., AMS-III.AV., AMS III.AR, AM0029, AM0025, AM0056, ACM0001, ACM0002, ACM0004, ACM0012, ACM0006, AM0018, ACM0009, AM0034, AMS.I.B, ACM0003		
<b>Local expert</b>	YES (India)		
<b>Financial Expert</b>	YES		
<b>Technical Reviewer</b>	YES		
<b>TA Expert</b>	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1)		
<b>Reviewed by</b>	Shreya Garg	<b>Date</b>	25/05/2020
<b>Approved by</b>	Kaviraj Singh	<b>Date</b>	25/05/2020

### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Brightspark Energy Limited	Registered PoA-DD	Version 7.0	CME
2	Brightspark Energy Limited	Monitoring Report	Version 02 Dated: 17/02/2021	CME
3	Brightspark Energy Limited	ER sheet (CPA-1& CPA-4)	Corresponding to the current MP	CME
4	Brightspark Energy Limited	ER sheet (CPA-2)	Corresponding to the current MP	CME
5	Brightspark Energy Limited	ER sheet (CPA-3)	Corresponding to the current MP	CME
6	UNFCCC	CDM-PoA-MR-FORM	Version 3.0	Others
7	Brightspark Energy Limited	ERDA Contract (Emissions Reduction Development Funding Agreement between C-Quest Capital LED Asia Ltd. and Ecoeye Co., Ltd. and Korea Impact Carbon Corporation)	10/01/2020	CME
8	Brightspark Energy Pvt Ltd	Registered CPA DD for CPA 01: SHINE – Distribution of LED Lightbulbs in India-1	Version 3.0 Dated: 10/01/2020	Others
9	Brightspark Energy Pvt Ltd	Registered CPA DD for CPA 02: SHINE – Distribution of LED Lightbulbs in India-2	Version 3.0 Dated: 10/01/2020	Others
10	Brightspark Energy	Registered CPA DD for CPA 03: SHINE – Distribution of LED Lightbulbs in India-3	Version 3.0 Dated: 10/01/2020	Others

	Pvt Ltd			
11	Brightspark Energy Pvt Ltd	Registered CPA DD for CPA 04: SHINE – Distribution of LED Lightbulbs in India-4	Version 3.0 Dated: 10/01/2020	Others
12	UNFCCC	Methodology: AMS II.C“Demand-side energy efficiency activities for specific technologies”	Version 15.0	
13	UNFCCC	CDM VVS for PoA	Version 2.0	
14	UNFCCC	CDM PS for PoA	Version 2.0	
15	UNFCCC	CDM PCP for PoA	Version 2.0	
16	Brightspark Energy Pvt Ltd	CME and Financing party agreement	-	CME
17	Crompton, HPL, FIEM	Technical Specifications of LED bulbs	-	CME
18	Brightspark Energy Pvt Ltd	LED distribution Brightspark Energy Pvt Ltd <a href="http://cqc.nirmalaentp.com/web/login">http://cqc.nirmalaentp.com/web/login</a>	-	CME
19	Brightspark Energy Pvt Ltd	CPA Start date evidence: CPA-1: CPA-2: CPA-3: CPA-4:	13/08/2018 12/08/2018 06/03/2020 05/10/2018	CME
20	Brightspark Energy Pvt Ltd	Training Records (Attendance sheet, Training session photographs)	-	CME
21	Brightspark Energy Pvt Ltd	CME and CPA Implementer Agreement	10/01/2020	CME
22	Brightspark Energy Pvt Ltd	Corporate organization structure of CQC-Director's Certificate	-	CME
23	UNFCCC	Project Webpage: <a href="https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/MN26BFZ0CHPIR47GQ1L3YES9XVKTUD/view">https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/MN26BFZ0CHPIR47GQ1L3YES9XVKTUD/view</a>	-	Others
24	Worldometer	<a href="https://www.worldometers.info/coronavirus/country/india/">https://www.worldometers.info/coronavirus/country/india/</a>	Last accessed:23/02/2021	Others
25	ESPL	Random Samples Screenshots	-	Others
26	Brightspark Energy Pvt Ltd	Screenshot of the application interface	-	CME
27	Brightspark Energy Pvt Ltd	Photos of nameplates of replaced baseline lamps and project lamps	-	CME
28	GOI	CO2 Baseline database	Version 13.0	Others
29	Bharat Test House  HI Physix Laboratory  Amit test and calibration centre	Test report for life and other specifications: 9W- Test report no. 20170620001  Test report for life and other specifications: 9W- Test report no. HPL/Test/20010001/01 Test report for life and other specifications: 12W- Test report no. HPL/Test/19120535/01  Test report for life and other specifications: 14W- Test report no. HPL/Test/20010001/01	20/06/2017  17/01/2020  27/12/2019  17/08/2018	CME

30	Auctus E-recycling solutions	ICL Destruction certificates	Various	CME
31	Brightspark Energy Pvt Ltd	Monitoring Survey Sheets (in Sampling Sheet) For CPA 1, CPA2, CPA3 and CPA4	-	CME
32	Brightspark Energy Pvt Ltd	Sample Size Calculation Sheet - CPA-1 Sample Size calculation sheet - CPA-2 Sample size calculation sheet – CPA-3 Sample Size calculation sheet- CPA-4	-	CME
33	Brightspark Energy Pvt Ltd	CPA-Database for CPA-1 CPA-Database for CPA-2 CPA-Database for CPA-3 CPA-Database for CPA-4 (in sample size calculation sheet)	-	CME
34	Brightspark Energy Pvt Ltd	Declaration of run-time meter calibration requirement from the manufacturer	12/06/2020	CME
35	Brightspark Energy Pvt Ltd	Baseline survey sheet for operating hours	-	CME
36	ESPL	RSV documents	29/01/2021-01/02/2021	Others
37	UNFCCC	Standard for sampling and surveys for CDM project activities and Programme of Activities	Version 8.0	Others
38	Centre for disease control and prevention	<a href="https://wwwnc.cdc.gov/travel/notices/covid-2/coronavirus-india">https://wwwnc.cdc.gov/travel/notices/covid-2/coronavirus-india</a>	Last accessed on 23/02/2021	Others
39	UNFCCC	CDM guidelines for Sampling and surveys for CDM project activities and programmes of activities	Version 4.0	Others
40	Brightspark Energy Pvt Ltd	Monitoring Survey Agreement between CQCL and Oximus Advisory Services Pvt. Ltd.	28/02/2020	CME
41	ESPL	OSV Exemption form	23/12/2020	Others
42	UNFCCC	EB-106: <a href="https://cdm.unfccc.int/Meetings/MeetingInfo/DB/UOTJ9DN2736GFQE/view">https://cdm.unfccc.int/Meetings/MeetingInfo/DB/UOTJ9DN2736GFQE/view</a>	June,2020	Others
43	UNFCCC	EB-108: <a href="https://cdm.unfccc.int/Meetings/MeetingInfo/DB/RP47A8YIBLO9TD3/view">https://cdm.unfccc.int/Meetings/MeetingInfo/DB/RP47A8YIBLO9TD3/view</a>	December,2020	Others
44	Brightspark Energy Pvt Ltd	Stat Trek Screenshots	-	CME
45	Carbon Check (India) Private Ltd	Validation report <a href="https://cdm.unfccc.int/filestorage/4/K/M/4KMPI8TF2R1EDNGXVUJ63BQLA709CS/Validation%20report.pdf?t=Und8cXA0cDV5fDBXFurTQh-FMqeR7Kzlkfpw">https://cdm.unfccc.int/filestorage/4/K/M/4KMPI8TF2R1EDNGXVUJ63BQLA709CS/Validation%20report.pdf?t=Und8cXA0cDV5fDBXFurTQh-FMqeR7Kzlkfpw</a>	Version 5.0 24/072019	
46	ESPL	Verification report for MP1 <a href="https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss27688622/view">https://cdm.unfccc.int/PoAIssuance/iss_db/poaiss27688622/view</a>	Version 3.0 06/10/2020	

## Appendix 4. Clarification requests, corrective action requests and forward action requests

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

<b>FAR ID</b>	01	<b>Section no.</b>	E.2	<b>Date :</b> DD/MM/YYYY
<b>Description of FAR</b>				
<b>Project participant response</b>				<b>Date :</b> DD/MM/YYYY
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY

Table 2. CL from this verification

<b>CL ID</b>	01	<b>Section no.</b>	E.3.1	<b>Date :</b> 05/01/2021
<b>Description of CL</b>				
For CPA 10484-P1-0002-CP1, The ICLs destroyed are more than the LEDs distributed. CME shall justify.				
<b>Project participant response</b>				<b>Date :</b> 19/02/2021
During the starting phase of distribution under CPA 10484-P1-0002-CP1 there was some technical issue in the mobile application used for registering end users. Therefore, distribution team distributed the LEDs in replacement of ICL and recorded the entries manually during this period. When this matter came into the notice of CME, this process got stopped and new working devices provided to the team for online recording. The electronic database doesn't allow manual intervention and hence, CME can't record those manual entries in the database and decided to forgo the distributed LED bulbs. However, the ICL collected from those end users were handed over to the destruction agency as per the monitoring plan. This is the reason that number of collected ICLs is more than the distributed LEDs.				
<b>Documentation provided by project participant</b>				
-				
<b>DOE assessment</b>				<b>Date:</b> 24/02/2021
There was some technical issue in the mobile application of the database recording stated by CME. The distributed LEDs couldn't be recorded but the ICLs collected by the team was handed over to the ICL destruction team. Thus, it appears in the ICLs destruction certificates which were obtained from a third-party organization. However, CME has not considered the LEDs distributed during this period for ER calculation as confirmed from the CPA database which reflects the no. of LEDs distributed equals to the number of ICLs collected or the ICLs destructed for estimated ERs. Thus, it was confirmed from review of the ER summary sheet, that the extra numbers of ICLs destructed have not been used in the calculation. The approach was found to be justified.  Thus, the CL is closed.				

Table 3. CAR from this verification

<b>CAR ID</b>	01	<b>Section no.</b>	E.3.4.3.	<b>Date :</b> 05/01/2021
<b>Description of CAR</b>				
1. Following inconsistencies were observed in the MR:				
a) The monitoring survey end date mentioned in the MR for CPA1 was found to be inconsistent with the date mentioned in the Sampling CPA1 sheet (Tab:Survey data, Column: C)				
b) The monitoring survey dates mentioned in the MR for CPA2 was found to be inconsistent with the date mentioned in the Sampling CPA2 sheet (Tab:Survey data, Column: C)				
c) Inconsistent number of baseline lamps were reported for CPA-2 and CPA-3 for monitored parameter $n_{i,baseline}$ (100W/60W) under section E.2 of MR (Version 1.0)				
<b>Project participant response</b>				<b>Date :</b> 19/02/2021

1.	<p>a) &amp; b) Monitoring survey dates have now been corrected in revised MR.</p> <p>c) number of baseline lamps under section E.2 are mentioned correctly.</p>
<b>Documentation provided by project participant</b>	
Revised MR ver. 02	
<b>DOE assessment</b>	<b>Date:</b> 24/02/2021
<ol style="list-style-type: none"> <li>1. CME has now corrected the monitoring survey end date of CPA-1 under section C.1 of the revised MR.</li> <li>2. CME has now corrected the monitoring survey end date of CPA-2 under section C.1 of the revised MR.</li> <li>3. The number of baseline lamps were found to be correctly mentioned under E.2 of the revised MR.</li> </ol> <p>Thus, CAR#01 stands closed.</p>	

<b>CAR ID</b>	02	<b>Section no.</b>	E.3.1.	<b>Date :</b> 05/01/2021
<b>Description of CAR</b>				
Following observations were made at the time of RSV:				
<p>a) <u>For CPA-2</u></p> <ol style="list-style-type: none"> <li>1. For end user named Poresh Hazarika (Discom Service Number:188000005717), the number of LEDs mentioned in the monitoring survey sheet was found to be inconsistent with the number of LEDs confirmed by the customer during the RSV (9W-5 no., 12W-1 no.)</li> </ol>				
<u>For CPA-3:</u>				
<ol style="list-style-type: none"> <li>2. The number of LEDs mentioned in the monitoring survey sheet for end-user named: Amit Kumar (Discom Service Number:711903330711) was found to be inconsistent with the number of LEDs claimed by end-user during RSV (9W:3 no.s, 12W:3no.s). Also, the customer claimed that his baseline device was LED bulbs and not ICLs. CME to explain how the baseline scenario in this case was found to be followed as LED bulb was replaced with another LED bulb.</li> <li>3. The number of LEDs mentioned in the monitoring survey sheet for end-user named: Parvesh (Discom Service Number:7011013097080) was found to be inconsistent with the number of LEDs claimed by end-user during RSV (9W:2 no's, 12W: 4no.s)</li> <li>4. For end-user named Ansara (Discom Service no.7352496000) the monitoring survey sheet (cells AQ25:AU 25) mentions that all the LEDs were found to be operational. However, during the RSV the end-user mentioned that one of the LED was fused.</li> <li>5. For end-user named Daryav Singh (Discom Service no.7584005050229) the monitoring survey sheet for CPA-3 (cells AQ27:AU 27) mentions that all the LEDs were found to be operational. However, during the RSV the end-user mentioned that one of the LED was fused.</li> </ol>				
<u>For CPA-4:</u>				
<ol style="list-style-type: none"> <li>6. For end-user named Chidara Bhagya Laxmi (Discom Service no.1450108315) the monitoring survey sheet for CPA-4 (cells AQ9:AS 9) mentions that all the LEDs were found to be operational. However, during the RSV the end-user mentioned that one of the LED was fused.</li> <li>7. For the following end-users CME is requested to provide the soft copy of electricity bill as only last three digits of connection number could be confirmed during the RSV call <ul style="list-style-type: none"> <li>• Veligeti Rambabu (CPA-4) (Service No.1450108774)</li> <li>• N.Nagaraju (CPA-1) (Service No.032800792)</li> <li>• T. Mallaiah (CPA-1) (Service No. 012200566)</li> <li>• Mandala Kumar (CPA-1) (Service No.040200251)</li> <li>• P.Yella Reddy (CPA-1) (Service No. 011200186)</li> </ul> </li> </ol>				
<b>Project participant response</b>				<b>Date :</b> 19/02/2021
<u>For CPA-2:</u>				
<ol style="list-style-type: none"> <li>1. At the time of RSV, end user mentioned the incorrect number of LED received. CME team has visited again to the user's house and physically verified the project LEDs distributed &amp; working in the premises. The number of LED working at site are in consistence with the database records. Team has recorded a short video also on site verifying the actual numbers of LED distributed. Same has been submitted to DOE for further verification.</li> </ol>				
<u>For CPA-3</u>				
<ol style="list-style-type: none"> <li>2. &amp; 3. At the time of RSV, end user mentioned the incorrect number of LED received. CME team has visited again to the user's house and physically verified the project LEDs distributed &amp; working in the premises. The number of LED working at site are in consistence with the database records. Team has recorded a short video also on site verifying the actual numbers of LED distributed. Same has been submitted to DOE for further verification.</li> </ol>				

4. & 5. At the time of RSV end user mentioned that their one or more LED got fused, but at the same time they have confirmed that the fused LEDs got replaced by the project LEDs under warranty scheme. Therefore, the numbers of LEDs working at site are the same as mentioned in the database.

For CPA-4

6. At the time of RSV end user has mentioned that their one or more LED got fused, but at the same time they have confirmed that the fused LEDs got replaced by the project LEDs under warranty. Therefore, the numbers of LEDs working at site are the same as mentioned in the database.

7. Soft copies of electricity bills for the mentioned users' have been submitted to the verification team.

#### Documentation provided by project participant

1. Video records
2. Electricity bills

#### DOE assessment

Date: 24/02/2021

1. The video shared by CME was reviewed by the assessment team and it was confirmed from the video that number of LEDs distributed to end-user Poresh Hazarika (Discom Service Number:188000005717) was found to be correctly mentioned in the monitoring survey sheet.
2. The video shared by CME was reviewed by the assessment team and it was confirmed from the video that number of LEDs distributed to end-user Amit Kumar (Discom Service Number:711903330711) was found to be correctly mentioned in the monitoring survey sheet.
3. The video shared by CME was reviewed by the assessment team and it was confirmed from the video that number of LEDs distributed to end-user Parvesh (Discom Service Number:7011013097080) was found to be correctly mentioned in the monitoring survey sheet.
4. The end-user named Anasara (CPA-3, Discom Service no.7352496000) during RSV confirmed that all the bulbs are operational and the one bulb which got was replaced with a new bulb. Thus, as the bulb which got fused was replaced by new bulb, so all the 6 bulbs were found to be operational as mentioned in the database.
5. The end-user named Daryav Singh (CPA-3, Discom Service no.7584005050229) during RSV confirmed that all the bulbs are operational and the one bulb which got was replaced with a new bulb. Thus, as the bulb which got fused was replaced by new bulb, so all the 6 bulbs were found to be operational as mentioned in the database.
6. The end-user named Chidara Bhagya Laxmi (CPA-4, Discom Service no.1450108315) during RSV confirmed that all the bulbs are operational and the one bulb which got was replaced with a new bulb. Thus, as the bulb which got fused was replaced by new bulb, so all the 6 bulbs were found to be operational as mentioned in the database.
7. CME has shared the hard copies of the electricity bills for the mentioned users which was checked to confirm the connection number.

Thus, CAR#02 stands closed.

CAR ID	03	Section no.	E.3.4.2, E.3.4.3	Date : 05/01/2021
Description of CAR				
<ol style="list-style-type: none"> <li>1. For parameter pi project 9W, 12W, 14W, The MR on page 20 reports only 9W and 14W LEDs. However, it was observed in the ER sheet that 12W LEDs have also been distributed under this CPA.</li> <li>2. The figures presented under section E.3.'subsection e) <b>Demonstration of whether the required confidence/precision has been met</b>', are inconsistent with the sampling result sheets.</li> </ol>				
Project participant response				Date : 19/02/2021
<ol style="list-style-type: none"> <li>1. Necessary correction has been made in the revised MR.</li> <li>2. All the numbers have now been corrected under section E.3 of the revised MR.</li> </ol>				
Documentation provided by project participant				
Revised MR ver. 02				
DOE assessment				Date: 24/02/2021
<ol style="list-style-type: none"> <li>1. CME has corrected the wattages of LED distributed under CPA-2 and has made it in-line to the ER sheet.</li> <li>2. CME has now revised the table under section (e) Demonstration of whether the required confidence/precision has been met of E.3 section of MR and was found to be in-line with the sampling result sheets of each CPA.</li> </ol>				
Thus, CAR#03 stands closed.				

Table 4. FAR from this verification

<b>FAR ID</b>	07	<b>Section No.</b>		<b>Date :</b> DD/MM/YYYY
<b>Description of FAR</b>				
<b>Project participant response</b>				<b>Date :</b> DD/MM/YYYY
<b>Documentation provided by project participant</b>				
<b>DOE assessment</b>				<b>Date:</b> DD/MM/YYYY

- - - -

## Document information

Version	Date	Description
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>Ensure consistency with version 02.0 of the “CDM validation and verification standard for programmes of activities” (CDM-EB93-A08-STAN);</li> <li>Make structural and editorial improvements.</li> </ul>
02.0	29 December 2017	Revision to align with the requirements of the “CDM validation and verification standard for programme of activities” (version 01.0).
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		