



**Verification and certification report form for
CDM programme of activities
(version 02.0)**

BASIC INFORMATION		
Title and UNFCCC reference number of the programme of activities (PoA)	CFL lighting scheme – “Bachat Lamp Yojana” PoA 3223	
Version number(s) of the PoA-DD(s) to which this report applies	09	
Version number of the verification and certification report	02	
Completion date of the verification and certification report	29/03/2018	
Monitoring period number and duration of this monitoring period	Fifth Monitoring Period 01/01/2016 to 28/04/2017 (both days inclusive)	
Number and version number of the monitoring report to which this report applies	Batch 1 Version 02	
Coordinating/managing entity (CME)	Bureau of Energy Efficiency	
Host Parties	Host Parties of the PoA	Is this a host Party to a CPA covered in this report? (yes/no)
	India	Yes
Applied methodologies and standardized baselines	Applied Methodology: AMS-II.J., Version 03	
Mandatory sectoral scopes linked to the applied methodologies	Sectoral Scope 3: Energy demand	
Conditional sectoral scopes linked to the applied methodologies, if applicable	N/A	
Estimated amount of GHG emission reductions or GHG removals for this monitoring period in the included CPAs covered in this report	42,034 tCO ₂ e	
Certified amount of GHG emission reductions or GHG removals for this monitoring period for the included CPAs covered in this report	29,201 tCO ₂ e	
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited (Earthood) E-0066	

Name, position and signature of the approver of the verification and certification report



Dr. Kaviraj Singh
Managing Director

SECTION A. Executive summary

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This PoA and CPAs involve the replacement of existing less efficient incandescent lamps (ICLs) with higher efficient compact fluorescent lamps (CFLs), which results in energy savings. The project activity involves the distribution of 431,247 CFLs/04/ in the 1 implemented CPA 3223-0001 covered under this monitoring report/02/. Detailed implementation status of these 1 CPA 3223-0001 has been discussed in subsequent sections of this report and CME has also reported the same in monitoring report, thus complying with §260 of CDM Project standard for PoA, V1/33/ and §298 of CDM VVS for PoA, V1/33/. The 1 active CPA 3223-0001 covered under this monitoring report/02/ is in the Ranga Reddy district across Telangana state of India (host country).

Earthood Services Pvt. Ltd. has performed the fifth verification of the CDM PoA “CFL lighting scheme – “Bachat Lamp Yojana” and UNFCCC PoA Ref. Number 3223. The request from CME (BEE) for the delinking of Monitoring Report (MR) of 1 CPA 3223-0001 in accordance with the §256 of CDM PS for PoA, V1/33/ has been considered for this verification. This verification report covers 1 out of 50 CPAs included under the PoA as on 28/04/2017. The verification includes confirming the implementation of the monitoring plan of the registered PoA-DD, CPA-DD and the application of the monitoring methodology as per AMS-II.J, version 03.

A site visit was conducted to check the implementation of registered monitoring plan and verify the data submitted in the monitoring report. ESPL confirms the following has been reviewed;

- (a) The registered PoA-DD, CPA-DD and the monitoring plan, and the corresponding validation opinion;
- (b) The validation report, 1st MP verification report, 2nd MP verification report, 3rd MP verification report and 4th MP verification report;
- (c) The applied monitoring methodology;
- (d) The monitoring report to verify that it is as per the standardized format;
- (e) CER calculations sheets and all supporting documents;
- (f) Any other information and references relevant to the project activity's emission reductions;
- (g) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;

Earthood Services Pvt. Ltd. confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.

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, Verifier, Technical Expert, Meth. expert and Local Expert	EI	Joshi	Akhilesh	Central Office	✓	✓	✓	✓
2.	Observer	IR	Singh	Kaviraj	Central office		✓		

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	Kumar	Sanjeev	Central office
2	Technical expert (TA 3.1)	IR	Kumar	Sanjeev	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 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.	High	The parameter is used in the calculation of emission reductions.	Since most of the monitoring parameter is confirmed through ex post monitoring survey conducted by CME, the verification team physically checked and verified the 50 households (having 63 number 11 W CFL and 78 number 20 W CFL) from second ex post monitoring survey/26/ and project database/13/. Also compared PoA-DD, CPA-DD and reference documents with ER spread sheet to check for any material error during data transfer.

C.2. Consideration of materiality in conducting the verification

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The prescribed thresholds for materiality,

Prescribed range of ERs/annum	500,000+	300,000+ to 500,000	300,000	SSC PoAs	MSC PoAs
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 5% as PoA is small scale in accordance with §307 of CDM VVS for PoA, V1/33/.

	MR Version (Draft)	MR Version (Final)
Emission reductions/annum	29,201	29,201
Identified Threshold	5.0%	5.0%

In accordance to the §17 of the applied methodology, the sample size is determined by minimum 90/10 confidence /precision. Also, the size of the sample shall be no less than 100. However, CME has considered 350 sample households, which represents 882 CFLs in the second ex post monitoring survey/26/ for CPA 3223-0001. The verification team confirms that the sample size considered by CME is more conservative and shall give more accurate result.

Since most of the data is confirmed through ex post monitoring survey conducted by CME, the verification team has cross verified the ex-post survey data by applying sampling approach (50 number of households

compared to 350 number of households surveyed by CME for CPA 3223-0001). All ex-ante parameters were directly cross-checked from the PoA-DD/31/ and CPA-DD/31/. There was no gap identified in the values of ex-ante parameters.

SECTION D. Means of verification

D.1. Desk/document review

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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: 18/03/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	Implementation and Operation of the CDM PoA based on Registered Monitoring Plan and physical features of the project activity as per PoA-DD and CPA-DD	Ranga Reddy and Hyderabad District of Telangana (former Andhra Pradesh)	18/03/2018	Akhilesh Joshi Kaviraj Singh
2.	Information flows for generating, aggregating and reporting the monitoring parameters			
3.	Competency of the operating personnel and monitoring personnel			
4.	Ex Post Sampling Survey and data collection procedures			
5.	Quality Control and Quality Assurance procedures against the registered monitoring plan			
6.	Calculation and assumptions made in determining the GHG data and emission reductions			
7.	Compliance with CDM criterion and relevant guidance with respect to registered monitoring plan			
8.	Level of accuracy of the monitoring activity			
9.	Installation and operation of the distributed CFLs (through random sampling approach)			

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Garg	Vineet Kumar	CQC	18/03/2018	Implementation and Operation of the CDM project activity, Information flows for generating, aggregating and reporting the monitoring parameters, Calculation and assumptions made in determining the GHG data and emission reductions	Akhilesh Joshi
2.	Goswami	Tridip Kumar	CQC	18/03/2018	Competency of the operating personnel, Quality Control and Quality Assurance	Akhilesh Joshi

					procedures	
3.	Telkar	Hemant Kumar	CQC	18/03/2018	Competency of the operating personnel	Akhilesh Joshi
4.	Begasi	Mahender	NGV	18/03/2018	Competency of the operating personnel	Akhilesh Joshi
5.	Adam	Mahesh	NGV	18/03/2018	Competency of the operating personnel	Akhilesh Joshi
6.	Kumar	Puneet	EGREENS AP CONSULTING INDIA LLP	18/03/2018	Ex Post Sampling Survey and data collection procedures	Akhilesh Joshi
7.	50 households in Telangana (formerly part of Andhra Pradesh) State			18/03/2018	Installation and operation of the distributed CFLs (through random sampling approach)	Akhilesh Joshi

D.4. Sampling approach

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In accordance with the §27 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/39/ and based on verification team’s professional judgment, the verification team has chosen a random sample size of 50 households (which is having 141 CFL) against the electronic database/13/. The selected samples include randomly selected households located in the various divisions/ circles of the state Electricity Boards.

Further, the verification team has confirmed the following sampling approach-

- The sample size is based on the Acceptable Quality Level (AQL) of 1% and Unacceptable Quality Level (UQL) as 10% (as per §29 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)).
- The sample size considered appropriate as the Table 1 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/39/ has already provided the sample size for verifying CME’s data to be 61, for AQL=1% and UQL=10%.
- The maximum errors associated with the determination indicated in §30 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/39/ is considered as 5% for producer’s risk and 5% for consumer’s risk.

Based on the sampling approach the verification team has selected the 50-household’s located in the implemented CPA of Telangana (formerly part of Andhra Pradesh) state. The verification team used the survey forms to get the feedback from individual households during the on-site visit. The numbers of CFL sampled in the household were cross verified with the installed CFLs mentioned in the electronic database/13/ as well as from back up data of surveyed households during second ex-post monitoring survey/22/ to confirm the correctness of the data gathered at the time of survey. The result of verification team’s observation based on the chosen sample, are found consistent with the CFL distribution database of the CPA implementers. No discrepancy was found during on site visit. Thus, according to the result of verification team’s random sampling as a part of the on-site visit, it is confirmed that the number of CFLs distributed as per CPA implementers’ electronic database records are appropriate. On site assessment includes in particular the cross verification of the ex post sampling survey back up data/22/ to confirm the electronic database/13/ provided to the verification team and no discrepancy found in samples verified.

In line with the requirements of §27 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07), verification team has visited a total of 50 households during the site visit and has found CMEs survey records to be acceptable within the limits required as per Table 1 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/39/ which defines the sample size of 61.

The summary of the statistical survey carried out by the verification team during on site visit is presented below:

Table 1: Summary of verification team on-site survey

CPA UNFCCC Ref. No.	Number of Household visited/43/	CFLs Distributed as per electronic database/13/, /22/				ICLs Collected as per electronic database/13/, /22/	
		11W	14 W	18 W	20 W	60 W	100 W
3223-0001	50	63	-	-	78	63	78

Table 2: Summary of LFR_{i,y} observed by verification team during on-site survey

CPA UNFCCC Ref. No.	CFLs found fused/broken during on site visit/43/		LFR observed during on site visit (%)		Remarks on observed LFR compared to ex ante LFR assumed during on site visit
	11W	20 W	11W	20 W	
3223-0001	27	34	42.85%	43.58%	Lower than the ex-ante LFR assumed during 7th year (i.e. 44.75% ¹) from completion of CFL distribution.

Thus, the verification team confirms that the ex-ante LFR value assumed for estimation of emission reduction is found to be appropriate.

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
General			
Compliance of the monitoring report with the monitoring report form	0	0	0
Remaining forward action requests from validation and/or previous verification	0	0	0
CPA(s) considered for verification and covered in this report	0	0	0
Programme of activities			
Compliance of the programme implementation with the registered PoA-DD	0	0	0
Implementation and operation of the management system	0	0	0
Post-registration changes			
<ul style="list-style-type: none"> Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline 	0	0	0
<ul style="list-style-type: none"> Corrections 	0	0	0
<ul style="list-style-type: none"> Inclusion of a monitoring plan 	0	0	0
<ul style="list-style-type: none"> Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools 	0	0	0
<ul style="list-style-type: none"> Changes to the programme design or project design 	0	0	0
<ul style="list-style-type: none"> Change of coordinating/managing entity 	0	0	0
<ul style="list-style-type: none"> Changes specific to afforestation and reforestation activities 	0	0	0
Component project activities			
Compliance of the CPA implementation with the included CPA design document	0	1	0
Post-registration changes			
<ul style="list-style-type: none"> Temporary deviations from registered monitoring plan, applied methodology or applied standardized 	0	0	0

¹ LFR_{i,6} = (1281+1277.5+1277.5+1277.5+1281+1277.5+1277.5) * (100-50) / (100*10000) = 44.75%

baseline			
• Corrections	0	0	0
• Changes to the start date of the crediting period of component project activities	0	0	0
• Inclusion of a monitoring plan	0	0	0
• Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools	0	0	0
• Changes to the programme design of project design	0	0	0
• Changes specific to afforestation and reforestation component project activities	0	0	0
Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline	0	0	0
Compliance of monitoring activities with the registered monitoring plan			
• Data and parameters fixed ex ante or at renewal of crediting period	0	0	0
• Data and parameters monitored	1	0	0
• Implementation of sampling plan	1	0	0
Compliance with the calibration frequency requirements for measuring instruments	0	0	0
Assessment of data and calculation of emission reductions or net removals			
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	0	0	0
• Calculation of project GHG emissions or actual net GHG removals by sinks	0	0	0
• Calculation of leakage GHG emissions	0	0	0
• Summary of calculation of GHG emission reductions or net GHG removals by sinks	0	0	0
• Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA	0	0	0
• Remarks on difference from estimated value in included CPA	0	0	0
Assessment of reported sustainable development co-benefits	0	0	0
Global stakeholder consultation	0	0	0
Others (please specify)	0	0	0
Total	2	1	0

SECTION E. Verification findings

E.1. General

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

Means of verification	Verification team checked the monitoring report/01/ with "Instructions for filling out the monitoring report form for CDM programme of activities "mentioned as attachment to Monitoring report form for CDM programme of activities (version 02.0).
Findings	No finding has been raised.
Conclusion	In accordance with §338 of CDM VVS for PoA, V1/33/, verification team confirms that final monitoring report/02/ is completed using the latest valid version of the applicable PoA monitoring report form/37/.

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

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No pending FAR from previous validation and/or previous verifications. Therefore, this section is not applicable.

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)
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001	Yes	29/04/2010	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Thiruvananthapuram Urban Circle of Kerala State Electricity Board, Kerala, India; 3223-0002	No	26/04/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Thiruvananthapuram Rural Circle of Kerala State Electricity Board, Kerala, India; 3223-0003	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Pathanamthitta Circle of Kerala State Electricity Board, Kerala, India; 3223-0004	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Kottayam Circle of Kerala State Electricity Board, Kerala, India; 3223-0005	No	06/05/2011	Version 09	No

CFL lighting scheme – “Bachat Lamp Yojana” in Kottarakkara Circle of Kerala State Electricity Board, Kerala, India; 3223-0006	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Kollam Circle of Kerala State Electricity Board, Kerala, India; 3223-0007	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Palakkad Circle of Kerala State Electricity Board, Kerala, India; 3223-0008	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Shornur Circle of Kerala State Electricity Board, Kerala, India; 3223-0009	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Tirur Circle of Kerala State Electricity Board, Kerala, India; 3223-0010	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Manjeri Circle of Kerala State Electricity Board, Kerala, India; 3223-0011	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Kannur and Kalpetta Circles of Kerala State Electricity Board, Kerala, India; 3223-0012	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Kozhikode Circle of Kerala State Electricity Board, Kerala, India; 3223-0013	No	06/05/2011	Version 09	No

CFL lighting scheme – “Bachat Lamp Yojana” in Vadakara Circle of Kerala State Electricity Board, Kerala, India; 3223-0014	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Kasargod and Sreekandpuram Circles of Kerala State Electricity Board, Kerala, India; 3223-0015	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Thrissur Circle of Kerala State Electricity Board, Kerala, India; 3223-0016	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Ernakulam Circle of Kerala State Electricity Board, Kerala, India; 3223-0017	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Irinjalakkuda Circle of Kerala State Electricity Board, Kerala, India; 3223-0018	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Pala & Thodupuzha Circles of Kerala State Electricity Board, Kerala, India; 3223-0019	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Perumbavoor Circle of Kerala State Electricity Board, Kerala, India; 3223-0020	No	06/05/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in Allappuzha Circle of Kerala State Electricity Board, Kerala, India; 3223-0021	No	06/05/2011	Version 09	No

"Bachat Lamp Yojana" in KOLAR DISTRICT, ELECTRICAL DIVISION OF KOLAR CIRCLE, KGF DIVISION, BESCOM, KARNATAKA, INDIA; 3223-0022	No	06/05/2011	Version 09	No
ELECTRICAL DIVISION OF KOLAR CIRCLE, CHIKKABALLAPURA (CB PURA) DIVISION, BESCOM, KARNATAKA, INDIA; 3223-0023	No	06/05/2011	Version 09	No
"Bachat Lamp Yojana" in BANGALORE RURAL DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, CHANDAPURA DIVISION, BESCOM, KARNATAKA, INDIA; 3223-0024	No	06/05/2011	Version 09	No
CFL lighting scheme – "Bachat Lamp Yojana" in KOLAR DISTRICT, ELECTRICAL DIVISION OF KOLAR CIRCLE, KOLAR DIVISION, BESCOM, KARNATAKA, INDIA; 3223-0025	No	06/05/2011	Version 09	No
CFL lighting scheme – "Bachat Lamp Yojana" in BANGALORE RURAL DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, NELAMANGALA DIVISION, BESCOM, KARNATAKA, INDIA; 3223-0026	No	06/05/2011	Version 09	No

"Bachat Lamp Yojana" in RAMANAGARA DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, RAMANAGARA DIVISION, BESCOM, KARNATAKA, INDIA; 3223-0027	No	06/05/2011	Version 09	No
"Bachat Lamp Yojana" in BANGALORE RURAL DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, YELAHANKA DIVISION, BESCOM, KARNATAKA, INDIA; 3223-0028	No	06/05/2011	Version 09	Yes
CFL lighting scheme – "Bachat Lamp Yojana" in Shalimar Bagh District of North West Circle and Model Town District of North Circle, North Delhi Power Limited, Delhi, India ; 3223-0029	No	30/08/2011	Version 09	No
CFL lighting scheme – "Bachat Lamp Yojana" in Keshav Puram, Civil Lines and Shakti Nagar Districts of North Circle, North Delhi Power Limited, Delhi, India; 3223-0030	No	30/08/2011	Version 09	Yes
CFL lighting scheme – "Bachat Lamp Yojana" in Pitampura District of North Circle, Rohini District of Northwest Circle, North Delhi Power Limited, Delhi, India ; 3223-0031	No	30/08/2011	Version 09	Yes
Bachat Lamp Yojana" in Moti Nagar District of North Circle, Mangol Puri District of Northwest Circle, North Delhi Power Limited, Delhi, India; 3223-0032	No	30/08/2011	Version 09	No

CFL lighting scheme – “Bachat Lamp Yojana” in Bawana District, Badli District and Narela District of North West Circle, North Delhi Power Limited, Delhi, India; 3223-0033	No	30/08/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in NORTH GOA, ADMINISTRATIVE DIVISIONS OF BLOCK-II, GOA ELECTRICITY DEPARTMENT, GOA, INDIA; 3223-0034	No	01/09/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in South Goa, Administrative Divisions of Block- I, Goa Electricity Department, Goa , India; 3223-0035	No	01/09/2011	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Industrial, City Center, Hakima Gate and Civil Line Divisions of Amritsar City Circle and East and West Divisions of Amritsar Sub Urban Circle, Punjab State Power Corporation Limited, Punjab, India; 3223-0036	No	30/11/2011	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Kartarpur Division of Kapurthala Circle and Model Town, East and West Divisions of Jalandhar Circle, Punjab State Power Corporation Limited, Punjab, India; 3223-0037	No	30/11/2011	Version 09	Yes

CFL lighting scheme – “Bachat Lamp Yojana” in Rayya and City Tarn Taran Divisions of Tarn Taran Circle and Sub Urban, Jindal guru and Ajnala Divisions of Amritsar Sub Urban Circle, Punjab State Power Corporation Limited, Punjab, India; 3223-0038	No	30/11/2011	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Sub Tarn Taran, Patti and Bhikiwind Divisions of Tarn Taran Circle and City Kapurthala and Sub Urban Kapurthala Divisions of Kapurthala Circle, Punjab State Power Corporation Limited, Punjab, India; 3223-0039	No	30/11/2011	Version 09	No
CFL lighting scheme – “Bachat Lamp Yojana” in City Nakodar and Sub Urban Nakodar Divisions of Kapurthala Circle and Phagwara and Cantt. Divisions of Jalandhar Circle, Punjab State Power Corporation Limited, Punjab, India; 3223-0040	No	30/11/2011	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Mohali, Zirakpur and Lalru Divisions of Mohali Circle and Kharar Division of Ropar Circle, Punjab State Power Corporation Limited, Punjab, India; 3223-0041	No	30/11/2011	Version 09	No

CFL lighting scheme – “Bachat Lamp Yojana” in City Ferozpur, Sub-urban Ferozpur, Jalalabaad and Zira Divisions of Ferozpur Circle and Fazilka Division of Muktsar Circle, Punjab State Power Corporation Limited, Punjab, India; 3223-0042	No	30/11/2011	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Gachibowli Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0043	No	22/02/2012	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Kukatpally Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0044	No	22/02/2012	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Medchal Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0045	No	22/02/2012	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Hyderabad District, Hyderabad South Circle, Asmangadh and Charminar Divisions, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0046	No	29/03/2012	Version 09	Yes

CFL lighting scheme – “Bachat Lamp Yojana” in Hyderabad District, Hyderabad Central Circle and Hyderabad North Circle with underlying Azamabad and Green Lands Divisions respectively, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0047	No	29/03/2012	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Hyderabad District, Hyderabad North Circle, Bowenpally and Paradise Divisions, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0048	No	29/03/2012	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy South Circle and Ranga Reddy East Circle with underlying Champapet and Saroornagar Divisions respectively, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0049	No	29/03/2012	Version 09	Yes
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy South Circle, Vikarabad and Rajendra Nagar Divisions, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0050	No	29/03/2012	Version 09	Yes

E.2. Programme of activities

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

Means of verification	<p>The project was implemented and equipment installed as described in the registered PoA-DD/31/.</p> <p>In exchange of the less efficient working ICLs and INR 15, CPA implementer distributed and installed the high-power factor CFLs in the individual households located in the Telangana (formerly part of Andhra Pradesh) states of India. The distribution and installation of the CFLs were carried out by the CPA implementer as described in the registered PoA-DD/31/. Each and every replacement of the ICL with CFL were recorded in the electronic database/13/ with a unique identification number (i.e. consumer no/ RR no provided by the state electricity boards).</p> <p>As per the Project Implementation Manual developed by CPA Implementer/24/ and as mentioned in the section A.4.2 of registered PoA-DD/31/ and section A.2 of the respective CPA-DDs, the CFLs were distributed on 1) door to door distribution mode or 2) through dedicated distribution points. However, during verification, DOE has observed during on site visit that the verified CPA considered option 2) i.e distribution through dedicated points. The same was verified by the verifying DOE by -</p> <ul style="list-style-type: none"> • Interviewing benefited households under the CPA • By verifying the advertisement which was published in the local media • By verifying leaflet or any other advertisement material used by the investor to inform local households prior and during the CFL distribution period • By verifying agencies/individuals involved in the CFL distribution process <p>Each CFL was distributed against INR 15, which was also demonstrated via on-site interviews conducted by the verification team. By checking the sample consent deeds/25/during on site visit and on-site observation, verification team has found that not more than four (4) CFLs were installed for each household and CFLs were installed in family rooms, bedrooms and kitchens. The verification team further also confirmed during site visit that the CFLs distributed in the visited households are having three (3) unique identification logos of “CPA Implementers name”, “BLY” and “not for sale”/18/ as mentioned in the Registered PoA-DD/31/ to confirm the installed CFLs in the visited households are the project CFL. The following logo was found on project lamps during the on-site visit:</p> <div data-bbox="469 1305 997 1503" data-label="Image"> </div> <p>Verification team checked the BLY PoA project details in UNFCCC website (UN reference number: PoA 3223)/35/, whereby this is confirmed that no railway project is included in the BLY program and the boundary of this projects is not falling within one kilometer (1 km) of the project boundary of the included CPAs under BLY PoA project.</p> <p>The verification team cross checked the distribution and installation of the CFLs by applying random sampling approach. ESPL conducted an on- site visit and confirmed that the programme was implemented and operated as described in the registered PoA-DD/31/. The distribution of the CFLs was recorded in accordance with the monitoring information provided in the registered PoA-DD/31/. During on site visit the verification team has not identified any changes or deviation from the monitoring information proposed by the CME in the registered PoA-DD/31/.</p>
Findings	No finding has been raised.
Conclusion	In accordance with §341 of CDM VVS for PoA, V1/33/, verification team confirms through on site visit and document review process, that project implementation is in compliance with the registered PoA-DD/31/.

E.2.2. Implementation and operation of the management system

Means of verification	<p>In order to ensure a successful operation of the PoA and individual CPA and the credibility and verifiability of the ERs achieved, the CME has established a well-defined management and operational system/19/. The project management procedures cover management responsibilities, data monitoring procedures, training procedures, management reviews and corrective actions in case of any deviations. The organizational structure, responsibilities, competencies, non-conformance handling and management review for the project was found to be adequate. The assessment team confirms that management and operational system, the responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities stated in the monitoring plan of the registered PoA-DD and CPA-DD/31/</p> <p>The overall monitoring system under the CPA has been summarized in the Monitoring Report/02/. Bureau of Energy Efficiency (BEE), Ministry of Power, Government of India, being a CME has identified the responsible team to monitor all the CPAs and maintain the database for the following information:</p> <ul style="list-style-type: none"> • The list of participating households in the implemented CPAs with the unique identification number • Record of the ICL collected (total number per CPA wise and wattage) and CFL distributed • CFL type and wattage as per registered monitoring plan • Record of the geographical location of the CPAs • Maintaining the bilateral agreements with CPA investors <p>In addition to this CPA investors are monitoring the following:</p> <ul style="list-style-type: none"> • Ex-post survey of the all implemented CPAs through competent surveyors • ICL collection and destruction records • CFL distribution and maintain the records of the consent deeds with individual households • Start date and end date of CFL distribution data CPA wise • T&D loss calculation with the published data • Emission reduction calculation and reporting to CME <p>The management system and control, internal audit procedures of the CPA investors were reviewed during the site visit, which establishes the operational and management structure implemented.</p> <p>The CPA implementers has implemented and operated the PoA as per the registered monitoring plan as mentioned in the PoA-DD/31/. The operation of the CFL distribution process was organised by BEE and CFLs were distributed on door to door distribution mode. The information on the exchange of bulbs at the household was recorded using electronic database/13/. Each Staff member involved in the PoA has been provided adequate training/21/ about PoA activity before starting of distribution of CFLs.</p> <p>The overall planning, management and operation is controlled by the CQC, Principal project owner & implementer for the project and BEE (i.e. CME). The management team of CQC has applied all the procedures, databases, infrastructure for smooth roll out of the CFLs distribution in exchange of right ICLs (i.e. distribution of 11W CFL for 60W ICL and 20 W CFL for 100W ICL) and the destruction of ICLs surrendered by the users.</p> <p>CQC has followed the monitoring plan as mentioned in the registered PoA-DD/31/ to ensure high integrity of data and quality of verification reports.</p>
Findings	No finding has been raised.
Conclusion	The verification team hereby confirms that the responsibilities and authorities for monitoring and reporting of the PoA are in accordance with the monitoring plan as mentioned in the registered PoA-DD and CPA-DD/31/. The verification team also confirmed the formats for data management (electronic database) are verified on sample basis at the time of on-site visit for the implemented CPA.

E.2.3. Post-registration changes**E.2.3.1. Temporary deviations from the registered monitoring plan, applied methodology or applied standardized baseline**

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.2.3.2. Corrections

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.2.3.3. Inclusion of a monitoring plan

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.2.3.4. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline or other applied standards or tools

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.2.3.5. Changes to the programme design or project design

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.2.3.6. Change of coordination/managing entity

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.2.3.7. Changes specific to afforestation and reforestation activities

>> This section is not applicable.

E.3. Component project activities**E.3.1. Compliance of the CPA implementation with the included CPA design document**

Means of verification	The project was implemented as described in the registered CPA-DD/31/. The report applies to the second verification of the following CPA –				
	UNFCCC Ref No	CME -Unique Identification No.	SSC CPA Title		
	3223-0001	001-CQC-AP	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India		
	UNFCCC Reference No.	Period of CFL distribution/ installation	Date of completion of destruction	Period of conducting 1st ex post Monitoring	Period of conducting 2nd ex post Monitoring

		of ICLs	survey	survey
3223-0001	11/05/2011 - 09/10/2011	21/10/2011	23/12/2011 - 06/01/2012	15/12/2014 - 17/12/2014

This schedule of distribution was found in line with included CPA-DD/31/. This was verified with the electronic database/13/ and the letter from the CPA implementers (CQC) to CME (BEE)/20/. This distribution schedule and corresponding dates were also verified during site visit interview with the respective households. ESPL has conducted an on- site visit and confirmed that the programme has been implemented and operated as described in the included CPA-DD/31/.

The total number of CFLs proposed for installation by the CME as per the registered CPA-DD of the implemented CPA 3223-0001 is 548,300/31/. Verification team checked the technical specification of the project lamps (Glomax brand CFLs of 11 W and 20 W) from the master purchase agreement/06/as provided by the CFL supplier (i.e. V R Wonders Electricals and Electronics) and found that same is in line with the CPA-DD/31/ as well as MR/02/. However, based on the participation of the consumers, CPA Implementer had distributed a total number of 431,247 CFLs/04/in implemented CPA 3223-0001 considered in this MR/2/. The distribution of the CFLs is recorded in accordance with the monitoring information provided in the included CPA-DD/31/. During on site visit the verification team has not identified any changes or deviation from the monitoring information proposed by the CME in the included CPA-DD/31/.

The distribution team of the CPA Implementer distributed and installed the high power factor (>0.85) compact fluorescent lamps (CFLs) in exchange of existing less efficient working incandescent lamps (ICLs) for the households located in the Telangana (formerly part of Andhra Pradesh) state of India. The start date as well as completion date of installation of CFLs were incorporated in the MR/02/. The dates are in line with the electronic database/13/ as well as the confirmation letter issued by the CME (BEE)/20/. The single date for the start date of the CFL installation (earliest date across all locations of a particular CPA) and single date for completion date (latest date across all locations of a particular CPA) of the CFL installation has been considered for the implemented CPA (refer Section A.1 of MR). Verification team has checked the confirmation letter issued by CPA implementers/20/ and ER spreadsheet/04/to assess total number of 431,247 CFLs/04/ and concludes that 431,247 CFLs were distributed and installed in the households.

Collection and destruction of the working ICLs

The working ICLs removed after the installation of CFLs has been collected by the CFL distribution team of CPA implementer. Verification team has cross checked the number of working ICLs collected through the certificate of handing over/ taking over issued by the ICL destruction agency/10b/. The verification team has noted that the number of each type of ICLs was the same as that of each type of distributed CFLs as per the electronic database/13/. The ICLs collected were stored in respective boxes based on the wattage type and send to the designated destruction agency/08/ by CQC for the destruction. On receiving the ICLs, the waste management company acknowledged the receipt of working ICLs and issued "Certificate of Destruction"/10a/. A warranty program during the monitoring survey was also provided by the CQC to the CFLs recipients in case of non-operation of distributed CFLs within 1 year of the date of installation of CFLs. Verification team checked the same through the circle wise CFL replacement data as mentioned in the electronic database/13/during on site visit.

The disposal of the defective CFLs, which were collected as part of warranty programme by CPA Implementer has not yet happened and will be carried out in environmentally friendly manner in future as per the applicable standard of Ministry of Environment & Forests, Government of India/36c/. Since there are no active guidelines about CFL disposal, the replaced/fused CFLs are presently stored in the respective warehouses of CQC and will be disposed off within the project life time

	in accordance with the applicable standards / law of Ministry of Environment & Forests, Government of India.
Findings	CAR-03 has been raised in this context and closed based on CME response. Refer Appendix 4 of this report for more details.
Conclusion	In accordance with §341 of CDM VVS for PoA, V1/33/, verification team confirms through on site visit and document review process, that project implementation is in compliance with the included CPA-DD/31/.

E.3.2. Post-registration changes

E.3.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.3.2.2. Corrections

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.3.2.3. Changes to the start date of the crediting period of component project activities

>>

Start dates of crediting period was changed for the included CPA 3223-0001 as follows:

Reference number of the specific-case CPA	Start date of crediting period at the time of CPA inclusion	Revised start date of crediting period	Date of approval from CDM EB/27/
3223-0001	30/05/2010	29/05/2011	09/09/2013

E.3.2.4. Inclusion of a monitoring plan

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.3.2.5. Permanent changes to the registered monitoring plan or permanent deviation of monitoring from the applied methodology, standardized baseline, or other applied standards or tools

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.3.2.6. Changes to the programme design or project design

>> No Post Registration Changes are envisaged during this monitoring period. Therefore, this section is not applicable.

E.3.2.7. Changes specific to afforestation and reforestation component project activities

>> This section is not applicable.

E.3.3. Compliance of the registered monitoring plan with the methodology including applicable tool(s) and standardized baseline

Means of verification	The monitoring plan of the PoA is in accordance with the applied methodology/28/. The monitoring has been carried out in accordance with the monitoring plan contained in the Registered PoA-DD/31/. All parameters stated in the monitoring
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	<p>plan and the applied methodology has been fulfilled in the current monitoring period. All parameters used for emission reductions calculation have been verified and found satisfactory. The discussion regarding each parameter has been elaborated in the further sections of this report. The monitoring plan as mentioned in the Registered PoA-DD/31/ of the PoA is in accordance with the applied methodology/28/.</p> <p>The monitoring approach for each parameter described in the Registered PoA-DD/31/ was found consistent in terms of unit, measurement procedures and monitoring frequency.</p>
Findings	No finding has been raised.
Conclusion	In the opinion of the verification team the monitoring of the implemented CPA 3223-0001 has been carried out in accordance with the monitoring plan contained in the Registered PoA-DD/31/. Monitoring plan as mentioned in the Registered PoA-DD/31/ complies with the requirement of the applied methodology AMS-II.J. (Version 03)/28/ in the context of the project activity. Thus, it conforms to the requirement of §344 of CDM VVS for PoA,V1/33/.

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

Means of verification	<p>The values of $EF_{CO2,ELEC,y}$, O_i, L_i, X_i and NTG have been fixed <i>ex-ante</i> during registration of the PoA and respective CPAs. Accordingly, the values were checked and confirmed with the registered CPA-DD/31/.</p> <p>1. Data/Parameter, Unit: $EF_{CO2,ELEC,y}$, tCO₂/MWh CO2 emission factor for displacement of electricity in the respective Grid (viz. NEWNE and Southern) serving the household consumers that participate in the SSC-CPA project area during the monitoring interval y, calculated according to the latest approved version of AMS-I.D (tCO₂/MWh)</p> <table border="1"> <tr> <th>SSC-CPA UNFCCC Ref No</th><th>Verified Value</th></tr> <tr> <td>3223-0001</td><td>0.856</td></tr> </table> <p>Consistent with the Registered CPA-DD/31/ and fixed ex-ante.</p> <p>2. Data/Parameter, Unit: O_i, Hours / day Average daily operating hours of the baseline ICLs of the group of “i”, Verified Value - 3.5 hours per 24 hours period Consistent with the Registered CPA-DD/31/ and fixed ex-ante</p> <p>3. Data/Parameter, Unit: High PF CFL life test report and test curves,- Life test reports of CFLs Verified Value - Life Test Reports of all type of distributed CFLs have been verified and found acceptable /11/.</p> <p>4. Data/Parameter, Unit: L_i, Hours rated average operating hours for CFL type i Verified Value - 10,000 hours Consistent with the Registered CPA-DD/31/ and fixed ex-ante</p> <p>5. Data/Parameter, Unit: X_i, Hours/ year Operating hours per year for CFL type i Verified Value - 1,277.5 hours per 365 day year; 1,281 hours for leap year (366 days) Consistent with the Registered CPA-DD/31/</p> <p>6. Data/Parameter, Unit: NTG, - Net-to-gross adjustment factor Verified Value - 0.95 Consistent with the Registered CPA-DD/31/ and fixed ex-ante.</p>	SSC-CPA UNFCCC Ref No	Verified Value	3223-0001	0.856
SSC-CPA UNFCCC Ref No	Verified Value				
3223-0001	0.856				
Findings	No finding has been raised.				
Conclusion	The values of ex ante fixed parameters have been verified from the registered CPA-DD/31/. Same has been crosschecked with the source mentioned in the CPA-				

DD and found to be consistent. The verification team confirms that the values used/applied are correct and justified. Also, the ex-ante values have been correctly applied in the calculation of emission reductions.

E.3.4.2. Data and parameters monitored

Means of verification	<p>The monitoring has been carried out in accordance with the monitoring plan contained in the registered PoA-DD/31/. During the verification, all relevant monitoring parameter have been verified with regard to the appropriateness of the verification method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures.</p> <p>1. Data/Parameter, Unit: N_{Destroyed}, Number Description: Number of ICLs collected and destroyed</p> <table border="1"> <tr> <td>Measuring /Reading /Recording frequency</td><td>The data is recorded in ledgers from whole period of CFL distribution for each CPA as mentioned in section I.1. of this report, fixed value thereafter.</td></tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td><td>Yes.</td></tr> <tr> <td>Monitoring equipment</td><td>Not applicable</td></tr> <tr> <td>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</td><td>Not applicable</td></tr> <tr> <td>Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?</td><td>Not applicable</td></tr> <tr> <td>Calibration frequency /interval:</td><td>Not applicable</td></tr> <tr> <td>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?</td><td>Not applicable</td></tr> <tr> <td>Is the calibration of measuring equipment carried out by an accredited person or institution?</td><td>Not applicable</td></tr> <tr> <td>Is(are) calibration(s) valid for the whole reporting period?</td><td>Not applicable</td></tr> <tr> <td>Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?</td><td>Not applicable</td></tr> </table>	Measuring /Reading /Recording frequency	The data is recorded in ledgers from whole period of CFL distribution for each CPA as mentioned in section I.1. of this report, fixed value thereafter.	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.	Monitoring equipment	Not applicable	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable	Calibration frequency /interval:	Not applicable	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable	Is(are) calibration(s) valid for the whole reporting period?	Not applicable	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
Measuring /Reading /Recording frequency	The data is recorded in ledgers from whole period of CFL distribution for each CPA as mentioned in section I.1. of this report, fixed value thereafter.																				
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.																				
Monitoring equipment	Not applicable																				
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable																				
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable																				
Calibration frequency /interval:	Not applicable																				
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable																				
Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable																				
Is(are) calibration(s) valid for the whole reporting period?	Not applicable																				
Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable																				

	How were the values in the monitoring report verified?	<p>The data is recorded in consent deeds/25/ at the time of CFL distribution to the individual household. Number of working ICLs collected against each CFL distributed is recorded in the consent deeds/25/ at every location along with the date of distribution of CFLs for each household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME.</p> <p>Verification team confirms that the value of parameter considered in the CPA 3323-0001 presented below –</p> <p>60 W: 140,515 ICLs and 100 W: 290,732 ICLs</p>
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the reported data in the MR/02/ and ER sheet /04/ with the electronic database/13/. Also confirmed the same through the ICL destruction certificate issued by the destruction agency for individual CPA/10/
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>The handing over of working ICLs and destruction activities were recorded via video recorder and/or photography /09/. Verification team checked the same and found correct. After completion of CFL distribution activity, ICLs collected were stored in separate boxes according to the wattage and clearly labeled of their contents. Destruction of ICLs were organized by qualified independent service provider/08/ and total number of ICLs destroyed is verified through ICL destruction certificate issued by the destruction agency for individual CPA/10/.</p>
	<p>2. Data/Parameter, Unit: $Q_{PJ,i}$, Number Description: Number of CFLs of the group of “i” CFLs (11W, 14W, 18W & 20W CFLs) in operation during the first 12 months of distribution</p>	
	Measuring /Reading /Recording frequency	The data is confirmed from the first ex post Monitoring survey conducted after completion of distribution of CFLs, fixed value thereafter.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. In registered PoA-DD (page 37) , $Q_{P,j,i}$ is defined as "Number of CFLs of the group of "i" CFLs (e.g. 20W CFL) in operation during the first 12 months of distribution" which is in line with the applied methodology ,i.e. AMS-II.J. version 3 and registered monitoring plan.
	Monitoring equipment	Not applicable
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
How were the values in the monitoring report verified?	<p>The data is recorded in consent deeds/25/ at the time of CFL distribution to the individual household. Number of each type of CFL distributed is recorded in the consent deeds/25/ at every location along with the date of distribution of CFLs for each household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME.</p> <p>CME has followed the applied</p>	

		<p>methodology and compared the number of CFLs type i claimed to be installed with the number of ICLs collected and destroyed in the Monitoring report. The lower value between the CFL installed and ICL destroyed has been multiplied by percentage of CFLs found installed and operating during the 1st ex-post monitoring survey.</p> <p>For CPA 3223-0001 – “Number of CFLs distributed or installed as per database” is 140,515 (11 W) , 290,732 (20 W) “Number of ICLs collected and destroyed” is 140,515 (60 W), 290,732 (100 W)</p> <p>CME has considered the lower value between the above mentioned 2 values , which is 140,515 (11 W) , 290,732 (20 W) for CPA 3223-0001. This value has been multiplied by percentage of CFLs found installed and operating during the 1st ex-post monitoring survey to arrive at final value of $Q_{PJ,i}$ for CPA 3223-0001– 136,635 (11 W), 280,875 (20 W)</p> <p>Verification team confirms that the value of parameter considered as 136,635 (11 W) and 280,875 (20 W) is appropriate. This is also in accordance with the QA/QC procedure mentioned in the PoA-DD/31/.</p>	
	If applicable, has the reported data been cross-checked with other available data?	Yes. verification team cross checked the reported data in the MR/02/ and ER sheet /04/ with the values of number of ICLs collected as per ICL destruction certificate issued by the destruction agency for individual CPA/10/ and the confirmation letter issued by CPA implementer to CME/20/. Also confirmed the same through the first ex post monitoring survey report /15/.	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. After completion of CFL distribution activity monitoring survey was conducted by qualified and experience ISP. Monitoring survey conducted in accordance with the requirement of methodology/01/ so that the estimate of $Q_{PJ,i}$ obtained is unbiased and reliable. The lower	

value between number of ICLs collected & destroyed and CFLs found in first ex post monitoring survey is considered for ER calculation/04/. This is a conservative approach.

Also, it is confirmed that only the fused CFLs, which were replaced under warranty period and prior to the monitoring survey were counted as installed and operating.

3. Data/Parameter, Unit: **$P_{i, BL}$, Watts**

Description: Rated power of the baseline ICLs of the group of “I”

Measuring /Reading /Recording frequency	Measured once during the crediting period. Calculated from actual number of ICLs collected and destructed for each CPA.
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
Monitoring equipment	Not applicable
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
Calibration frequency /interval:	Not applicable
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
Is(are) calibration(s) valid for the whole reporting period?	Not applicable
Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable

	How were the values in the monitoring report verified?	<p>The data of collected working ICLs is recorded in consent deeds/25/ at the time of CFL distribution to the individual household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME.</p> <p>Final value of number of ICLs collected and destructed is taken from ICL destruction certificate issued by various destruction agencies for individual CPA/10/.</p> <p>$P_{i, BL} = 60 \text{ W} \times \text{fraction of } 60 \text{ W ICLs destructed} + 100 \text{ W} \times \text{fraction of } 100 \text{ W ICLs destructed}$</p> <p>Verification team confirms that the value of parameter considered below-</p> <p>$P_{i, BL} = [(140,515 / 431,247) \times 60 + (290,732 / 431,247) \times 100] = 86.97 \text{ W}$</p>
	If applicable, has the reported data been cross-checked with other available data?	<p>Yes. The verification team cross checked the calculation of parameter in the ER spread sheet/04/ with the values of number of ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs/10/. Also, the value is found consistent with the number of CFLs distributed as per the electronic database/13/.</p>
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>Number and type of ICLs were collected in the boxes. In accordance with the collected ICLs, various destruction agencies issued destruction certificate/10/ to verify the numbers of ICLs collected which is mentioned in the electronic database/13/.</p>
	<p>4. Data/Parameter, Unit: $P_{i, PJ}$, Watts</p> <p>Description: Rated power of the CFLs of the group of "I" lighting devices (Watts)</p>	
	Measuring /Reading /Recording frequency	Measured once during the crediting period for each CPA.

	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	Not applicable
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
How were the values in the monitoring report verified?	<p>The data of distributed CFLs of each type is recorded in consent deeds/25/ at the time of CFL distribution to the individual household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME.</p> <p>Final value of number of each type of CFL distributed is taken from lower value between number of ICLs collected & destroyed and number of CFLs found in first ex post monitoring survey is considered for ER calculation/04/.</p> <p>$P_{i,PJ} = (11 \text{ W} \times \text{fraction of } 11 \text{ W})$</p>	

		<p>CFLs distributed) + (14 W x fraction of 14 W CFLs distributed)+(18 W x fraction of 18 W CFLs distributed) + (20 W x fraction of 20 W CFLs distributed)</p> <p>Verification team confirms the value of parameter considered below –</p> $P_{i, PJ} = [(136,635/417,510) \times 11 \text{ W} + (280,875/417,510) \times 20 \text{ W}] = 17.05 \text{ W}$	
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the calculation of parameter in the ER spread sheet/04/ with the values of found in first ex post monitoring survey.	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>Number and type of CFLs purchased and delivered to CPA implementers was used to verify the number recorded in the electronic database/13/. This was also cross referred to the ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs/10/.</p>	
	<p>5. Data/Parameter, Unit: “Lamp distribution data” , --</p> <p>Description: The start and completion date of CFL distribution, Utility consumer number of CFL recipient households under the SSC-CPA entered into the SSC-CPA database.</p>		
	Measuring /Reading /Recording frequency	The data is recorded from start date of CFL distribution up to the end date of CFL distribution for each CPA.	
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.	
	Monitoring equipment	Not applicable	
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable	

	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	<p>The data is recorded in consent deeds/25/ at the time of CFL distribution to the individual household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME for record.</p> <p>The verification team checked the electronic database/13/ as well as the confirmation letter issued by CME/20/. Also, verification team confirmed the same during on site visit for sample households against the entry in ledger and electronic database/13/. Verification team can confirm that the start date and end date of CFL distribution mentioned in MR/02/is correct.</p>
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the information of the visited households during the on-site visit against the electronic database/13/ as well as from back up data of surveyed households during 1st ex post monitoring survey conducted by CPA implementer/15/.
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.	

		The date of CFL distribution from electronic database/13/ was cross verified from the consent deeds/25/.																						
	<p>6. Data/Parameter, Unit: N, --</p> <p>Description: Sample size of Monitoring Survey</p> <table border="1"> <tr> <td>Measuring /Reading /Recording frequency</td> <td>Measured at the time of each survey.</td> </tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td>Yes.</td> </tr> <tr> <td>Monitoring equipment</td> <td>Not applicable</td> </tr> <tr> <td>Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?</td> <td>Not applicable</td> </tr> <tr> <td>Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?</td> <td>Not applicable</td> </tr> <tr> <td>Calibration frequency /interval:</td> <td>Not applicable</td> </tr> <tr> <td>Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?</td> <td>Not applicable</td> </tr> <tr> <td>Is the calibration of measuring equipment carried out by an accredited person or institution?</td> <td>Not applicable</td> </tr> <tr> <td>Is(are) calibration(s) valid for the whole reporting period?</td> <td>Not applicable</td> </tr> <tr> <td>Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?</td> <td>Not applicable</td> </tr> <tr> <td>How were the values in the monitoring report verified?</td> <td>Calculated as mentioned in the Annexure 4 of respective CPA-DD/31/. The verification team cross checked the sample size considered by CPA implementers during 1st and 2nd ex post monitoring survey/15/ from the value of sample size mentioned</td> </tr> </table>		Measuring /Reading /Recording frequency	Measured at the time of each survey.	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.	Monitoring equipment	Not applicable	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable	Calibration frequency /interval:	Not applicable	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable	Is(are) calibration(s) valid for the whole reporting period?	Not applicable	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable	How were the values in the monitoring report verified?	Calculated as mentioned in the Annexure 4 of respective CPA-DD/31/. The verification team cross checked the sample size considered by CPA implementers during 1st and 2 nd ex post monitoring survey/15/ from the value of sample size mentioned
Measuring /Reading /Recording frequency	Measured at the time of each survey.																							
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.																							
Monitoring equipment	Not applicable																							
Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable																							
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable																							
Calibration frequency /interval:	Not applicable																							
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable																							
Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable																							
Is(are) calibration(s) valid for the whole reporting period?	Not applicable																							
Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable																							
How were the values in the monitoring report verified?	Calculated as mentioned in the Annexure 4 of respective CPA-DD/31/. The verification team cross checked the sample size considered by CPA implementers during 1st and 2 nd ex post monitoring survey/15/ from the value of sample size mentioned																							

		in the registered CPA-DD/31/.	
		Each SSC-CPA determined the representative sample size with minimum 90% confidence interval and 10% maximum error margin. The actual number of households to be surveyed was arrived at by dividing the number of sample CFL with the average number of CFLs distributed per household. The CPA implementer(s) has chosen a sample size higher than the one calculated in individual CPA-DD/31/.	
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team crosschecked the same from 1 st and 2 nd ex post monitoring survey reports for CPA 3223-0001/15/.	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.	
	<p>7. Data/Parameter, Unit: $LFR_{i,y}$, %</p> <p>Description: Lamp Failure Rate for CFL type i in year y (fraction)</p>		
	Measuring /Reading /Recording frequency	Monitored through subsequent ex post monitoring surveys which will take place in 3 years interval after the first ex post monitoring survey for each CPA separately.	
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The PDD follows the monitoring frequency of once every three years (i.e. within 1 st year, 4 th Year and 7 th Year from end date of distribution of CFL) for each CPA separately.	
	Monitoring equipment	Not applicable	
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable	
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable	
	Calibration frequency /interval:	Not applicable	

	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	<p>Ex post $LFR_{i,y}$ is determined by dividing the number of fused CFLs determined at the ex post monitoring survey by the number of CFLs distributed by the project activity ($Q_{PJ,i}$) determined by first ex post monitoring survey. The calculated LFR value is then compared with the <i>ex-ante</i> LFR which is calculated using the formula provided in methodology/28/.</p> <p>Lower value of the ex-ante LFR and ex post LFR for each CPA is considered for ER calculation.</p> <p><i>Ex post</i> LFR observed from the second monitoring survey for CPA 3223-0001 is mentioned below –</p> <p>11W – 25.40% and 20W – 25.57%</p> <p>LFR applied in the ER calculation is the <i>ex-ante</i> LFR which is calculated using the formula provided in methodology. Ex-ante LFR applied for year 5 is 31.97% and for Year 6 it is 38.36%.</p> <p>The verification team checked the first and second ex post monitoring survey report/15,26/ as well as ex ante estimate of $LFR_{i,y}$ in ER spreadsheet/04/. Verification team confirms that the sample size selected for ex-post monitoring survey for each CPA is appropriate and the value of parameter applied as ex ante value (year 5 is 31.97% and for</p>

			Year 6 it is 38.36%) is conservative compared to the value found during second ex post monitoring survey/26/ which is in line with SSC-354/44/.
		If applicable, has the reported data been cross-checked with other available data?	<p>Yes. The verification team cross checked the reported data in the MR/02/ and ER sheet/04/ with the Ex post monitoring survey report/15,26/.</p> <p>The LFR observed during DOE on site visit in seventh year of operation is lower than the ex-ante value considered for ER calculation (refer section C.4. of this report for DOE survey results for CPA 3223-0001).</p> <p>Also checked the SSC WG clarification number "SSC 354"/44/, which clarifies that in the absence of the mortality curve developed in accordance with a national or international standard, the <i>ex post</i> LFR obtained from the monitoring survey shall only be used to confirm the <i>ex-ante</i> LFR or increase in the <i>ex-ante</i> LFR.</p>
		Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>To obtain a reliable estimate LFR, sampling size of the survey is determined by minimum 90% confidence interval and maximum 10% error margin. The CME considered higher number of households for the first and second ex post monitoring survey/15,26/ compared to the sample size calculated based on the Annexure-4 of registered CPA-DD/31/. The larger sample size also offered a better representation of the entire sample (as it reduced sampling error).</p>
		<p>The monitoring has been carried out in accordance with the monitoring plan contained in the registered PoA-DD^{31/}. During the verification, all relevant monitoring parameter have been verified with regard to the appropriateness of the verification method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures.</p> <p>1. Data/Parameter, Unit: N_{Destroyed}, Number Description: Number of ICLs collected and destroyed</p>	

	Measuring /Reading /Recording frequency	The data is recorded in ledgers from whole period of CFL distribution for each CPA as mentioned in section I.1. of this report, fixed value thereafter.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	Not applicable
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	The data is recorded in consent deeds ^{/25/} at the time of CFL distribution to the individual household. Number of working ICLs collected against each CFL distributed is recorded in the consent deeds ^{/25/} at every location along with the date of distribution of CFLs for each household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME.

		Verification team confirms that the value of parameter considered in the Table 3 presented below this section.	
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the reported data in the MR ^{/02/} and ER sheet ^{/04/} with the electronic database ^{/13/} . Also confirmed the same through the ICL destruction certificate issued by various destruction agencies for individual CPAs ^{/10/}	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment. The handing over of working ICLs and destruction activities were recorded via video recorder and/or photography ^{/09/} . Verification team checked the same and found correct. After completion of CFL distribution activity, ICLs collected were stored in separate boxes according to the wattage and clearly labeled of their contents. Destruction of ICLs were organized by qualified independent service provider ^{/08/} and total number of ICLs destroyed is verified through ICL destruction certificate issued by various destruction agencies for individual CPAs ^{/10/} .	
	<p>2. Data/Parameter, Unit: $Q_{PJ,i}$, Number</p> <p>Description: Number of CFLs of the group of "i" CFLs (11W, 14W, 18W & 20W CFLs) in operation during the first 12 months of distribution</p>		
	Measuring /Reading /Recording frequency	The data is confirmed from the first Ex post Monitoring survey conducted after completion of distribution of CFLs, fixed value thereafter.	
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. In registered PoA-DD (page 37) , $Q_{PJ,i}$ is defined as "Number of CFLs of the group of "i" CFLs (e.g. 20W CFL) in operation during the first 12 months of distribution" which is in line with the applied methodology ,i.e. AMS-II.J. version 3 and registered monitoring plan.	
	Monitoring equipment	Not applicable	

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
How were the values in the monitoring report verified?	<p>The data is recorded in consent deeds^{/25/} at the time of CFL distribution to the individual household. Number of each type of CFL distributed is recorded in the consent deeds^{/25/} at every location along with the date of distribution of CFLs for each household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME.</p> <p>CME has followed the applied methodology and compared the number of CFLs type i claimed to be installed with the number of ICLs collected and destroyed in the Monitoring report. The lower value between the CFL installed and ICL destroyed has been multiplied by percentage of CFLs found installed and operating during the 1st Ex-post monitoring survey.</p>	

		<p>For Example, for CPA 3223-0031 –</p> <p>“Number of CFLs distributed or installed as per database” is 22,743 (11 W) , 89,278 (18 W)</p> <p>“Number of ICLs collected and destroyed” is 22,751 (60 W), 89,256 (100 W)</p> <p>CME has considered the lower value between the above mentioned 2 values , which is 22,743 (11 W), 89,256 (18 W) for CPA 3223-0031. This value has been multiplied by percentage of CFLs found installed and operating during the 1st Ex-post monitoring survey to arrive at final value of $Q_{PJ,i}$ for CPA 3223-0031–</p> <p>21,959 (11 W) and 85,854 (18 W)</p> <p>Verification team confirms that the value of parameter considered in the Table 3 presented below this section is appropriate. This is also in accordance with the QA/QC procedure mentioned in the PoA-DD^{/31/}.</p>	
	If applicable, has the reported data been cross-checked with other available data?	Yes. verification team cross checked the reported data in the MR ^{/02/} and ER sheet ^{/04/} with the values of number of ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs ^{/10/} and the confirmation letter issued by CPA implementer to CME ^{/20/} . Also confirmed the same through the first ex post monitoring survey report ^{/15/} .	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. After completion of CFL distribution activity monitoring survey was conducted by qualified and experience ISP. Monitoring survey conducted in accordance with the requirement of methodology ^{/01/} so that the estimate of $Q_{PJ,i}$ obtained is unbiased and reliable. The lower value between number of ICLs collected & destroyed and CFLs found in ex post monitoring survey is considered for ER calculation ^{/04/} . This is a conservative approach. Also, it is confirmed that only the fused CFLs, which were replaced	

		under warranty period and prior to the monitoring survey were counted as installed and operating.
	<p>3. Data/Parameter, Unit: P_i, BL, Watts Description: Rated power of the baseline ICLs of the group of “I”</p>	
	Measuring /Reading /Recording frequency	Measured once during the crediting period. Calculated from actual number of ICLs collected and destructed for each CPA.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	Not applicable
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	The data of collected working ICLs is recorded in consent deeds ^{/25/} at the time of CFL distribution to the individual household. After completion of distribution of CFLs the data is

		<p>transferred in electronic database (excel sheet) at CPA level and reported to CME.</p> <p>Final value of number of ICLs collected and destructed is taken from ICL destruction certificate issued by various destruction agencies for individual CPAs ^{/10/}.</p> <p>$P_{i, BL} = 60 \text{ W} \times \text{fraction of } 60 \text{ W ICLs destructed} + 100 \text{ W} \times \text{fraction of } 100 \text{ W ICLs destructed}$</p> <p>Verification team confirms that the value of parameter considered in the Table 3 presented below this section.</p>					
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the calculation of parameter in the ER spread sheet ^{/04/} with the values of number of ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs ^{/10/} . Also, the value is found conservative compared to the number of CFLs distributed as per the electronic database ^{/13/} .					
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>Number and type of ICLs were collected in the boxes. In accordance with the collected ICLs, various destruction agencies issued destruction certificate^{/10/} to verify the numbers of ICLs collected which is mentioned in the electronic database^{/13/}.</p>					
	<p>4. Data/Parameter, Unit: $P_{i, PJ}$, Watts</p> <p>Description: Rated power of the CFLs of the group of "I" lighting devices (Watts)</p> <table border="1"> <tr> <td>Measuring /Reading /Recording frequency</td> <td>Measured once during the crediting period for each CPA.</td> </tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td>Yes.</td> </tr> <tr> <td>Monitoring equipment</td> <td>Not applicable</td> </tr> </table>		Measuring /Reading /Recording frequency	Measured once during the crediting period for each CPA.	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.	Monitoring equipment
Measuring /Reading /Recording frequency	Measured once during the crediting period for each CPA.						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.						
Monitoring equipment	Not applicable						

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
How were the values in the monitoring report verified?	<p>The data of distributed CFLs of each type is recorded in consent deeds^{/25/} at the time of CFL distribution to the individual household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME.</p> <p>Final value of number of each type of CFL distributed is taken from lower value between number of ICLs collected & destroyed and CFLs found in ex post monitoring survey is considered for ER calculation^{/04/}.</p> <p>$P_{i,PJ} = (11 \text{ W} \times \text{fraction of 11 W CFLs distributed}) + (14 \text{ W} \times \text{fraction of 14 W CFLs distributed}) + (18 \text{ W} \times \text{fraction of 18 W CFLs distributed}) + (20 \text{ W} \times \text{fraction of 20 W CFLs distributed})$</p> <p>Verification team confirms that</p>	

		the value of parameter considered in the Table 3 presented below this section is appropriate.
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the calculation of parameter in the ER spread sheet ^{t/04/} with the values of number of CFLs as per the confirmation letter issued by CPA implementer to CME ^{/20/} .
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment. Number and type of CFLs purchased and delivered to CPA implementers was used to verify the number recorded in the electronic database ^{/13/} . This was also cross referred to the ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs ^{/10/} .
<p>5. Data/Parameter, Unit: "Lamp distribution data" , --</p> <p>Description: The start and completion date of CFL distribution, Utility consumer number of CFL recipient households under the SSC-CPA entered into the SSC-CPA database.</p>		
	Measuring /Reading /Recording frequency	The data is recorded from start date of CFL distribution up to the end date of CFL distribution for each CPA.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	Not applicable
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable

	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	<p>The data is recorded in consent deeds^{/25/} at the time of CFL distribution to the individual household. After completion of distribution of CFLs the data is transferred in electronic database (excel sheet) at CPA level and reported to CME for record.</p> <p>The verification team checked the electronic database^{/13/} as well as the confirmation letter issued by CME^{/20/}. Also, verification team confirmed the same during on site visit for sample households against the entry in ledger and electronic database^{/13/}. Verification team can confirm that the start date and end date of CFL distribution mentioned in MR^{/02/} is correct.</p>
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the information of the visited households during the on-site visit against the electronic database ^{/13/} as well as from back up data of surveyed households during 1 st ex post monitoring survey conducted by CPA implementers ^{/15/} .
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>The date of CFL distribution from electronic database^{/13/} was cross verified from the consent deeds^{/25/}.</p>	
6. Data/Parameter, Unit: N , --		

	Description: Sample size of Monitoring Survey	
	Measuring /Reading /Recording frequency	Measured at the time of each survey.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes.
	Monitoring equipment	Not applicable
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
How were the values in the monitoring report verified?	<p>Calculated as mentioned in the Annexure 4 of respective CPA-DDs^{/31/}. The verification team cross checked the sample size considered by CPA implementers during 1st ex post monitoring survey^{/15/f} from the value of sample size mentioned in the registered CPA-DDs^{/31/}.</p> <p>Each SSC-CPA determined the representative sample size with minimum 90% confidence interval and 10% maximum error margin. The actual number of households to be surveyed was arrived at by</p>	

		dividing the number of sample CFL with the average number of CFLs distributed per household. The CPA implementer(s) has chosen a sample size higher than the one calculated in individual CPA-DDs ^{/31/} .	
	If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team crosschecked the same from 1 st Ex post monitoring survey reports for each CPA ^{/15/} .	
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.	
<p>7. Data/Parameter, Unit: LFR_{i,y}, %</p> <p>Description: Lamp Failure Rate for CFL type <i>i</i> in year <i>y</i> (fraction)</p>			
	Measuring /Reading /Recording frequency	Monitored through subsequent ex post monitoring surveys which will take place in 3 years interval after the first ex post monitoring survey for each CPA separately.	
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The PDD follows the monitoring frequency of once every three years (i.e. within 1 st year, 4 th Year and 7 th Year from end date of distribution of CFL) for each CPA separately.	
	Monitoring equipment	Not applicable	
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable	
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable	
	Calibration frequency /interval:	Not applicable	
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable	
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable	

	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	<p>Ex post $LFR_{i,y}$ is determined by dividing the number of fused CFLs determined at the ex post monitoring survey by the number of CFLs distributed by the project activity ($Q_{PJ,i}$) determined by first ex post monitoring survey. The calculated LFR value is then compared with the <i>ex-ante</i> LFR which is calculated using the formula provided in methodology^{/28/}.</p> <p>Lower value of the ex-ante LFR and ex post LFR for each CPA is considered for ER calculation.</p> <p><i>Ex post</i> LFR observed from the second monitoring survey for each CPA is mentioned in Table 3 below.</p> <p>LFR applied in the ER calculation is the <i>ex-ante</i> LFR which is calculated using the formula provided in methodology. Ex-ante LFR applied for 2nd Year is 12.78%, for year 3 is 19.16%, for year 4 is 25.57% and for year 5 it is 31.97%.</p> <p>The verification team checked the first and second ex post monitoring survey report^{t/15,26/} as well as ex ante estimate of $LFR_{i,y}$ in ER spreadsheet^{/04/}. Verification team confirms that the sample size selected for ex-post monitoring survey for each CPA is appropriate and the value of parameter applied as ex ante value (for 2nd Year is 12.78%, for year 3 is 19.16%, for year 4 is 25.57% and for year 5 it is 31.97%) is conservative compared to the value found during second ex post monitoring survey^{/26/} which is in line with SSC-354^{/44/}.</p>
	If applicable, has the reported data been cross-checked with other available data?	<p>Yes. The verification team cross checked the reported data in the MR^{/02/} and ER sheet^{t/04/} with the Ex post monitoring survey report^{t/15,26/}.</p> <p>The LFR observed during DOE on site visit in fourth, fifth and</p>

		<p>sixth year of operation is lower than the ex-ante value considered for ER calculation (refer section C.4. of this report for DOE survey results for individual CPA).</p> <p>Also checked the SSC WG clarification number "SSC 354"^{44/}, which clarifies that in the absence of the mortality curve developed in accordance with a national or international standard, the <i>ex post</i> LFR obtained from the monitoring survey shall only be used to confirm the <i>ex-ante</i> LFR or increase in the <i>ex-ante</i> LFR.</p>					
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>To obtain a reliable estimate LFR, sampling size of the survey is determined by minimum 90% confidence interval and maximum 10% error margin. The CME considered higher number of households for the first and second <i>ex post</i> monitoring survey^{15,26/} compared to the sample size calculated based on the Annexure-4 of registered CPA-DDs^{31/}. The larger sample size also offered a better representation of the entire sample (as it reduced sampling error).</p>					
	<p>8. Data/Parameter, Unit: TD_y, % Description: Average annual technical grid losses</p> <table border="1"> <tr> <td>Measuring /Reading /Recording frequency</td> <td>CME has used default value of 10%, as per applied methodology AMS-II.J. version 3 in absence of the accurate available data, for average annual technical grid losses.</td> </tr> <tr> <td>Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)</td> <td>Yes. The PoA-DD confirms use of default value of 10% in the absence of accurate and reliable data from National or State Utility..</td> </tr> <tr> <td>Monitoring equipment</td> <td>Not applicable</td> </tr> </table>		Measuring /Reading /Recording frequency	CME has used default value of 10%, as per applied methodology AMS-II.J. version 3 in absence of the accurate available data, for average annual technical grid losses.	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The PoA-DD confirms use of default value of 10% in the absence of accurate and reliable data from National or State Utility..	Monitoring equipment
Measuring /Reading /Recording frequency	CME has used default value of 10%, as per applied methodology AMS-II.J. version 3 in absence of the accurate available data, for average annual technical grid losses.						
Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The PoA-DD confirms use of default value of 10% in the absence of accurate and reliable data from National or State Utility..						
Monitoring equipment	Not applicable						

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	Not applicable
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Not applicable
	Calibration frequency /interval:	Not applicable
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Not applicable
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Not applicable
	Is(are) calibration(s) valid for the whole reporting period?	Not applicable
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Not applicable
	How were the values in the monitoring report verified?	DOE has reviewed the latest applicable tariff orders on respective state grid regulatory authority websites and confirms that separate data for average annual technical grid losses is not available. Therefore, in accordance with applied methodology and registered monitoring plan, application of default value is the most appropriate and reliable method for calculation of Emission reductions. Verification team can confirm that the value of parameter considered is most reliable and appropriate value for the corresponding monitoring period.
If applicable, has the reported data been cross-checked with other available data?	Yes. The verification team cross checked the calculation of parameter in the ER spreadsheet/04/ with the values of T&D losses declared by state level electricity regulatory	

		body/42/ websites and confirms that separate data for average annual technical grid losses is not available.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	<p>Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment.</p> <p>The CME selected the T&D loss default value of 10% as per the applied methodology and registered PoA-DD, due to non-availability of accurate and reliable value of annual average technical grid losses from respective state level grid authorities.</p>
Findings	CL-02 has been raised in this context and closed based on CME response. Refer Appendix 4 of this report for more details.	
Conclusion	<p>It is confirmed that the monitoring parameter has been measured / determined without material misstatements.</p> <p>Data/Parameter, Unit: $N_{Destroyed}$, Number The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs /10/ and also checked the photographic and video graphic evidences of boxes storing working ICLs with labelling of contents, wattages and destruction of ICLs/09/. Verification team confirms that the value of parameter considered from certificates of ICL destruction as mentioned in this section above is acceptable.</p> <p>Data/Parameter, Unit: $Q_{PJ, i}$, Number The verification team checked the ICL destruction certificate issued by destruction agency for individual CPA/10/. Verification team can confirm that the value of parameter considered as equal to the number of ICLs destructed/10/ is more than the value of CFLs found installed and operating as per ex post monitoring survey report /15/. The lower value between number of ICLs collected & destroyed and CFLs found in ex post monitoring survey is considered for ER calculation/04/. This is also in accordance with the QA/QC procedure mentioned in the registered PoA-DD and CPA-DD/31/. Verification team can confirm that the value of parameter considered as mentioned in this section above is acceptable.</p> <p>Data/Parameter, Unit: $P_{i, BL}$, W The verification team checked the ICL destruction certificate issued by the destruction agency for individual CPA/10/. Verification team can confirm that the value of parameter calculated based on values of number of ICLs destructed as per certificates of ICL destruction as mentioned in this section above is acceptable.</p> <p>Data/Parameter, Unit: $P_{i, PJ}$, W The verification team checked the CFLs distribution electronic database/13/ as well as the confirmation letter issued by CPA implementer to CME/20/. Verification team can confirm that the value of parameter calculated based on lower value between number of ICLs collected & destroyed and CFLs found in ex post monitoring survey/15/ as mentioned in this section above is acceptable.</p> <p>Data/Parameter, Unit: "Lamp distribution data", -- The verification team confirmed the same during on-site visit for sampled households against the entry in electronic database/13/. Verification team can confirm that the unique identification of each household (CFL recipient) is correct.</p> <p>Data/Parameter, Unit: N, -- Assessment team confirms that the value of parameter "sample size of monitoring survey" for each CPA given in the MR/02/ is considered as higher than the estimated value in registered CPA-DD/31/ in order reduces the error margin and a more accurate survey results. The assumption taken by CPA implementers is on conservative side and hence acceptable.</p> <p>Data/Parameter, Unit: $LFR_{i,y}$, % The verification team checked the first and second ex post monitoring survey</p>	

	<p>report/15,26/ as well as ex ante estimate of $LFR_{i,y}$ in ER spread sheet/04/.</p> <p>Verification team confirms that the sample size of households considered by CPA implementers for conducting ex post monitoring survey is appropriate and the value of parameter applied as ex ante value (for year 5 is 31.97% and for year 6 it is 38.36%) is conservative compared to the value found during first and second ex post monitoring survey/15,26/ which is in line with SSC-354/44/.</p> <p>Data/Parameter, Unit: TD_y, %</p> <p>The verification team checked the T&D losses value declared by respective state level electricity regulatory bodies/42/. Verification team can confirm that the value of parameter considered as 10% default value in the table 3 below is appropriate.</p>
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E.3.4.3. Implementation of sampling plan

Means of verification	<p>In accordance with §24(a) of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/39/ and §17 of methodology AMS-II.J. (Version03)/28/, the verification team confirms the 90% level of confidence and with a 10% margin of error while determining the sample size for the monitoring survey by CPA implementer.</p> <p>To determine the sample size, n, to be surveyed, the following formula as proposed by POA-DD and CPA-DDs was used by the CPA implementers.</p> $n = \frac{z^2}{r^2} \frac{1-p}{p}$ <p>Where, n = sample size z = confidence level at 90% (standard value of 1.645) r = margin error at 10% p = estimated proportion of project CFLs installed and not working under the CPA (ex-ante calculated value for year 4 is 25.57% based on 10,000 hours of rated operating life of CFLs) Thus, the sample size, n –</p> $n = (1.645)^2 / (0.1)^2 * (1-p) / p$ $n = 270.6025 * (1-p) / p$ <p>Hence, $n = 270.6025 * (1-0.2557) / 0.2557 = 787.6786 = 788$ CFLs (roundup value)</p> <p>The above-mentioned formula as mentioned in the Annex 4 of registered PoA-DD/31/ and respective CPA-DD was consistently applied by investor for the implemented CPA under this MR. Verification team confirms that the actual number of CFLs sampled during the second ex post monitoring survey as mentioned in the MR/02/ for each implemented CPAs is more than the estimated value as per the above mentioned formula.</p> <p>Thus, the CME applied sample size meets the required level of confidence/precision in accordance with the methodology in accordance with §24 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07). Verification team confirms the same from the sample size calculation spread sheet/03/ submitted by CME.</p> <p>The CPA implementers has carried out the first and second ex post monitoring survey and designed the sampling plan/23/ in accordance with the registered PoA DD/31/. The 1st and 2nd ex post monitoring survey was carried out by adapting the questionnaire template as prescribed in Annex 1 of the applied methodology/28/. Verification team checked the same from monitoring survey forms/17/ used by surveyor.</p> <p>As per the registered sampling plan the number of representative households to be surveyed on random basis were lower than the actual number of households surveyed during the 1st and 2nd ex post monitoring survey conducted by CPA</p>
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	implementers. Verification team has independently checked the calculation of optimal sample size applying the formula as per registered PoA-DD/31/ and found the sample size is reproducible. The sample size selected also confirms the desired 90% level of confidence and with a 10% margin of error. Hence, the verification team confirms that the 1st and 2 nd ex post survey carried out by CPA implementers is in accordance with §24 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/39/.
Findings	CL-01 has been raised in this context and closed based on CME response. Refer Appendix 4 of this report for more details.
Conclusion	The sample size selected confirms the desired 90% level of confidence and with a 10% margin of error. Hence, the 1 st and 2 nd ex post survey carried out by CPA implementers is in accordance with §24 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 07)/39/.

E.3.4.4. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	No calibration requirement is applied as the project activity does not employ any monitoring equipment. Hence, this section is not applicable.
Findings	No finding has been raised.
Conclusion	This section is not applicable.

E.3.5. Assessment of data and calculation of emission reductions or net removals

E.3.5.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	No separate calculation of baseline GHG emissions as per methodology. This section is not applicable.
Findings	N/A
Conclusion	N/A

E.3.5.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	No separate calculation of project GHG emissions as per methodology. This section is not applicable.
Findings	N/A
Conclusion	N/A

E.3.5.3. Calculation of leakage GHG emissions

Means of verification	No separate calculation of leakage GHG emissions as per methodology. This section is not applicable.
Findings	N/A
Conclusion	N/A

E.3.5.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification	<p><u>Emissions Reduction (ER_y)</u></p> <p>Emission reduction (ER_y) is net electricity savings (NES_y) times an emission factor ($EF_{CO2,ELEC,y}$)</p> $ER_y = NES_y \times EF_{CO2,ELEC,y} \quad (1)$ <p>Where:</p> <p>ER_y Emission reductions in year y (tCO_{2e})</p> <p>NES_y Net electricity saved in year y (kWh)</p> <p>$EF_{CO2,ELEC,y}$ Grid Emission factor (GEF) in year y, (tCO_{2e}/MWh); The calculated GEF value is fixed ex-ante in the SSC-CPA.</p> <p><u>Net Energy Savings (NES_y)</u></p> <p>The net energy saved is derived using the equation (2) below:</p> $NES_y = \sum_i Q_{PJ,i} * (1 - LFR_{i,y}) * ES_i * [1 / (1 - TD_y)] * NTG \quad (2)$
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Where:

$$ES_i = (P_{i,BL} - P_{i,PJ}) * O_i * 365 / 1000 \quad (3)$$

Where,

NES_y	Net electricity saved in year y (kWh)
$Q_{PJ,i}$	Number (quantity) of CFLs of wattage “ i ” distributed or installed under the project activity. In total for all “ i ”, this value shall be equal to or less than the documented number of all baseline ICLs destroyed. Once all of the project CFLs are distributed or installed, $Q_{PJ,i}$ is a constant value independent from y . Under the PoA, $Q_{PJ,i}$ shall be obtained from the <i>ex post</i> Q_{PJ} survey, which is to take place within the first 12 months of CFL distribution. For CPA 3223-0001 the values applied are – 11 W – 136,635 , 20 W – 280,875 , Total – 417,510 number.
i	Counter for lighting device type e.g. 60W and 100W incandescent bulb, 11 W and 20 W CFL
n	Number of types of lighting devices
ES_i	Estimated annual electricity savings for equipment of type i , for the relevant technology viz. ICL or CFL(kWh)
$LFR_{i,y}$	Lamp Failure Rate for CFL equipment type i in year y (fraction). Under the PoA, this is calculated ex-ante using the equation and adjusted ex-post based on monitoring survey results. For CPA 3223-0001, the ex ante $LFR_{i,y}$ applied for Year 5 is 31.97% and for Year 6 is 38.36%.
TD_y	Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where CFLs are installed, expressed as a fraction. Under the PoA, each CPA would determine the TD_y from the most recent average annual audited data published either by the DISCOM or an official governmental body e.g. by the Central Electricity Authority (CEA) of India, Electricity Regulatory Commission(s). A default value of 10% shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable. For CPA 3223-0001 , default value of 10% has been used for calculation.
NTG	Under the PoA, the default value of 0.95 is applied.
$P_{i,BL}$	Rated power of the baseline lighting devices (ICLs) of the group of type i lighting devices (Watts). For CPA 3223-0001,the value applied is 86.97 W.
$P_{i,PJ}$	Rated power of the project lighting devices (CFLs) of the group of “ i ” lighting devices(Watts). For CPA 3223-0001, the value applied is 17.05 W.
O_i	Under the PoA, the value of 3.5 hours per 24 hrs period shall be applied in all SSC-CPAs.

The emission reduction of this project activity was determined based on the validated emission factor and ex ante lamp usage hours of 3.5 hours per day along with the number and the wattage of the CFL bulbs distributed in lieu of the ICL bulbs, Net-to-gross adjustment factor, actual lamp failure rate, T&D losses; from the following monitoring parameters. CME has submitted the electronic copy of the project database/13/ of the households which provides sufficient and appropriate information to cross check the CFL bulbs distributed in lieu of the ICL bulbs. The ex-post monitoring survey report/15/ is sufficient to cross check the actual lamp

	<p>failure rate. The T&D losses were cross checked from relevant zone wise electricity regulatory authority website/42/. The monitoring and reporting of data is in accordance with well-established operational procedures. The approved baseline methodology AMS-II.J., version 3 “Demand-side activities for efficient lighting technologies”/28/ has been applied for the project activity.</p> <p>Calculation of ERs for CPA 3223-0001 –</p> <p>The vintages of fifth year and sixth year are considered based on completion date of distribution of CFLs (i.e. 09/10/2011), which is also in line with the applied methodology/28/.</p> <p>Thus electricity savings(for each CFL distributed and each replaced ICL),</p> <p>for first 282 days in this monitoring period, i.e. y=5 (01/01/2016 to 08/10/2016)</p> $ES_5 = (86.97 - 17.05) * 3.5 * 282/1000$ $= 69.00 \text{ kWh}$ <p>for next 202 days in this monitoring period, i.e. y=6 (09/10/2016 to 28/04/2017)</p> $ES_6 = (86.97 - 17.05) * 3.5 * 202/1000$ $= 49.43 \text{ kWh}$ <p><u>Net Energy Savings</u></p> $NES_5 = 417,510 * (1 - 31.97\%) * 69.00 * (1 / (1 - 0.10)) * 0.95 = 20,687 \text{ MWh}$ $NES_6 = 417,510 * (1 - 38.36\%) * 49.43 * (1 / (1 - 0.10)) * 0.95 = 13,427 \text{ MWh}$ <p>Thus,</p> $NES_y = 20,687 + 13,427 = 34,114 \text{ MWh}$ <p><u>Emission Reductions</u></p> $ER_y = NES_y \times EF_{CO_2, ELEC, y}$ <p>Where, $EF_{CO_2, ELEC, y} = 0.856 \text{ tCO}_2/\text{MWh}$</p> <p>Thus, $ER_y = 34,114 * 0.856$</p> $= 29,201 \text{ tCO}_{2e}$ <p>The implementation of this PoA resulted in greenhouse gas emission reduction of 29,201 tonnes of CO₂ equivalent during the current monitoring period.</p>
Findings	No finding has been raised.
Conclusion	<p>The verification team confirms that –</p> <ol style="list-style-type: none"> All data has been available and all the parameters have been monitored in accordance with the registered PoA-DD and CPA-DD/31/. The reported data have been cross-checked against other sources available as explained above in section I.4, where applicable; The methods and formulae used to obtain the emission reductions are appropriate. The same has been done in accordance with the methods and formulae described in the registered monitoring plan/31/ and applicable methodology/28/. The monitoring report includes all parameters and the monitored data at the intervals required by the methodology/28/ and PoA-DD/31/. The emission factors and default values have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.

Title and UNFCCC reference number of the CPA	Baseline emissions or baseline net GHG removals by sinks (tCO ₂ e)	Project emissions or actual net GHG removals by sinks (tCO ₂ e)	Leakage (tCO ₂ e)	GHG emission reductions or net GHG removals by sinks (tCO ₂ e)		
				Amount achieved before 1 January 2013	Amount achieved from 1 January 2013	Amount achieved in the entire monitoring period
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001	-	-	-	0	29,201	29,201
Total	-	-	-	0	29,201	29,201

E.3.5.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included CPA

Means of verification	The actual emission reductions achieved for the monitoring period are lower than the estimated emission reductions stated in the registered CPA-DD/31/. This is due to the fact that the projected figure was total 548,300 numbers of CFLs in the implemented CPA 3223-0001 as mentioned in the registered CPA-DD/31/and the distributed figure is total 431,247 CFLs/04/. The comparison has been provided below.
Findings	No finding has been raised.
Conclusion	The estimated emission reductions for the PoA for comparable period (484 days) is 42,034 tCO ₂ e while the actual emission reductions achieved during the monitoring period are 29,201 tCO ₂ e.

Title and UNFCCC reference number of the CPA	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the CPAs during this monitoring period
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001	42,034	29,201
Total	42,034	29,201

E.3.5.6. Remarks on difference from estimated value in included CPA

Means of verification	Not Applicable. Since, the actual emission reductions achieved for the monitoring period are lower than the estimated emission reductions stated in the registered CPA-DD/31/.
Findings	Not Applicable.
Conclusion	Not Applicable.

E.3.6. Assessment of reported sustainable development co-benefits

Means of verification	Not Applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

E.3.7. Global stakeholder consultation

Means of verification	Not Applicable.
Findings	Not Applicable.
Conclusion	Not Applicable.

SECTION F. Internal quality control

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The draft verification report that is prepared by verification team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by ESPL were duly complied with and whether such opinion/conclusion were 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

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Earthood Services Private Limited (ESPL), contracted by Bureau of Energy Efficiency (the CME for the PoA), has performed the fifth independent verification of the emission reductions for the registered CDM PoA 3223 “CFL lighting scheme – “Bachat Lamp Yojana” in India for the monitoring period 01/01/2016 up to 28/04/2017 as reported in the Monitoring Report (public) Version 01 dated 10/01/2018/01/. The CME is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the PoA.

This verification report covers only 1 out of 50 CPAs included under the PoA as on 28/04/2017. A single monitoring report has been prepared by the CME for the same in which implementation of referred CPA 3223-0001 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 PoA VVS, Version 1.

The verification activities were conducted in accordance with ESPL’s CDM Quality Manual System as per the steps indicated under Section A of this report. The verification process has resulted in conclusion that the included CPA confirm to the PoA-DD as well as comply with applicable CDM rules and regulations and in accordance with applied monitoring methodology AMS II.J. Version 03. There were no issues that were

raised as FAR during validation and PRC validation, which required further attention from the verification team.

As a result, it is confirmed that the emission reductions as 29,201 tCO₂e from the CDM PoA 3223 “CFL lighting scheme – “Bachat Lamp Yojana” are correctly reported in the Monitoring Report (final) Version 02 dated 28/03/2018 and corresponding ER spreadsheet for the monitoring period 01/01/2016 up to 28/04/2017 (including both days). Therefore, this will be submitted as part of request for issuance as per CDM PoA PCP Version 1.

SECTION H. Certification statement

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Earthood Services Pvt. Ltd. has been contracted by Bureau of Energy Efficiency to undertake independent verification and certification for the greenhouse gas (GHG) emission reductions reported from the CDM PoA “CFL lighting scheme – “Bachat Lamp Yojana” and UNFCCC Reference Number 3223 for the monitoring period 01/01/2016 up to 28/04/2017 (including both dates) in the Monitoring Report Version 01 (first version) dated 10/01/2018. This verification report covers only 1 out of 50 CPAs included under the PoA as on 28/04/2017.

The verification is based on the registered PoA-DD, CPA--DDs 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 Bureau of Energy Efficiency 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 02 dated 28/03/2018. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Bureau of Energy Efficiency. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 02 dated 28/03/2018.

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 01/01/2016 up to 28/04/2017 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 02 dated 28/03/2018 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 01/01/2016 up to 28/04/2017 (including both dates)

Verified and certified emission in the above reporting period:

	Amount	Unit
Certified emission reductions (CERs)	29,201	tCO ₂ e

Appendix 1. Abbreviations

Abbreviations	Full texts
AMS	Approved Methodology Small Scale
APCPDCL	Andhra Pradesh Central Power Distribution Company Limited
BEE	Bureau of Energy Efficiency
BIS	Bureau of Indian Standard
BLY	Bachat Lamp Yojana
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CERs	Certified Emission Reductions
CFL	Compact Fluorescent Lamp
CL	Clarification Request
CME	Coordinating/Managing Entity
CO ₂ e	Carbon dioxide equivalent
COP	Conference of Parties
CPA	Component Project Activity
CQC	C-Quest Capital Malaysia Ltd.
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ERs	Emission Reductions
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GEMS	Global E-waste Management Service
GHGs	Greenhouse Gas(es)
H,M,L	High, Medium, Low
ICL	Incandescent Lamp
IS	Indian Standard
ISO	International Organization of Standardization
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
kWh	Kilo Watt Hour
LFR	Lamp Failure Rate
MR	Monitoring Report
MP	Monitoring Plan
MWh	Mega Watt Hour
NDPL	North Delhi Power Limited
PoA-DD	Programme of Activities- Design Document
PF	Power Factor
PoA	Programme of Activities
PS	CDM Project Standard
PCP	CDM Project Cycle Procedure
PSPCL	Punjab State Power Corporation Limited
QA/QC	Quality Assurance/Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation & Verification Standard

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Akhilesh Joshi

Country	India		
Education	B.Tech. (Chemical Engineering), MNIT Jaipur MBA (Oil & Gas), UPES Dehradun		
Experience	17 Years +		
Field	Cement, Energy Efficiency, Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-II.G., AMS-II.J., ACM0001, ACM0002, ACM0004		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	YES (TA 1.2, TA 3.1, TA 4.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement			
Name	Sanjeev Kumar		
Country	India		
Education	B. Tech. (Chemical Engineering) M.Tech. (Energy Management)		
Experience	13.5 years +		
Field	Climate Change, Environment, Energy		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	YES (ACM0002, ACM0006, ACM0004, ACM0009, ACM0012, ACM0001, AMS I.D, AMS I.F, AMS I.C, AMS I.A, AMS II.D, AMS II.E, AMS III.H, AM0009, AM0008, AM0013, AM0025, AM0056)		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, 4.1, 5.1, 13.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement			
Name	Kaviraj Singh		
Country	India		
Education	Ph.D. (Environmental Engineering), IIT Delhi Masters (Energy & Environmental), DAVV Indore		
Experience	15 Years +		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		

Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-II.D., ACM0006, AMS-I.A., AMS-I.C., AMS-II.B., AMS-III.H, ACM0002, ACM0001		
Local expert	YES (India)		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 13.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
01	PP (CQC)	<ul style="list-style-type: none"> Webhosted Monitoring report (Batch 1) version '01' Final Monitoring report (Batch 1) version '01.1' 	Dated 10/01/2018 Dated 21/03/2018	CME
02	PP (CQC)	Final Monitoring report (Batch 1) version '02'	Dated 28/03/2018	CME
03	PP (CQC)	<ul style="list-style-type: none"> ER Calculation spread sheet version '01' Sample Size calculation spread sheet for 1st and 2nd Ex post monitoring survey for each CPA 	Dated 10/01/2018 -	CME
04	PP (CQC)	ER Calculation spread sheet version '01.1'	Dated 21/03/2018	CME
05	DOE (ESPL)	Verification contract between CME (BEE), Investor (CQC) and DOE (ESPL)	Dated 22/01/2018	CME
06	PP (CQC)	Supply Agreement between C-Quest Capital Malaysia Limited and CFL Supplier (V R Wonders Electricals & Electronics, Haridwar, India) for CPA 3223-0001	Dated 10/02/2011	Others
07	The Bureau of Indian Standards	<ul style="list-style-type: none"> IS 15111-1 (2002): Self Ballasted Lamps for General Lighting Services, Part 1: Safety Requirements [ETD 23: Electric Lamps and their Auxiliaries] IS 15111-2 (2002): Self Ballasted Lamps for General Lighting Services, Part 2: Performance Requirements [ETD 23: Electric Lamps and their Auxiliaries] 	Dated January 2002	Others
08	PP (CQC)	Full Scale ICL Collection and Disposal Agreements signed between C-Quest Capital Malaysia Limited and Global E-	Between CQC and GEMS dated 25/08/2011	Others

		Waste Management and Services for CPA 3223-0001		
09	GEMS	Photographic and video graphic evidences of <u>boxes storing ICLs with labelling of contents, wattages and destruction of ICLs</u> (for CPA 3223-0001)	-	Others
10	GEMS	a) Certificate of ICL Collection and Destruction issued by ICL Destruction Agency for CPA 3223-0001 b) Certificate of Handing over/ taking over of ICLs issued by ICL Destruction Agency for CPA 3223-0001 c) Inventory list for Certificate of Handing of ICLs issued by ICL Destruction Agency for CPA 3223-0001 d) Certificate of Verification of Quantity of ICLs issued by ICL Destruction Agency for CPA 3223-0001	Certificates issued dated 30/08/2011, 07/09/2011, 08/09/2011, 17/09/2011, 22/09/2011 and 21/10/2011	Others
11	Balaji Control, Faridabad	Life test reports issued by Balaji Control for 11 W and 20 W type Glomore CFLs	Dated 12/07/2011	Others
12	CME	Tri-partite agreements between BEE, CQC and DISCOM for CPA 3223-0001	25/09/2009	Others
13	PP (CQC)	Copy of the electronic database for CPA 3223-0001 containing list of each household that receives CFLs (Consumer number, house address, name of the occupant, DISCOM, date of distribution of CFLs, number & watt of each replaced ICL & each distributed CFLs)	-	Others
14	PP (CQC)	ICL collection and CFL distribution procedure followed by Investors (for CPA 3223-0001)	-	Others
15	IMRB International, New Delhi, India	First ex-post monitoring survey reports determining monitoring parameters " $Q_{PJ,i}$ " and " $LFR_{i,y}$ " by IMRB International for CPA 3223-0001	Survey Dates between 23/12/2011 up to 06/01/2012	Others
16	Electricity Regulatory Authority of States of Andhra Pradesh	Supportive evidences for T&D Losses: TSSPDCL filing of ARR for retail supply business for 2018-19	http://tserc.gov.in/arrfilings.php	Others
17	IMRB International, New Delhi, India	Sample Copy of the Filled Survey Questionnaire used by surveyor during First ex-post monitoring survey (for CPA 3223-0001)	-	Others
18	PP (CQC)	Photographic evidence of each type of installed CFL lamps	-	PP(CQC)

		showing unique identification (logo)		
19	PP (CQC)	Proof of operational & management structure for BLY PoA as per the diagram mentioned in the web hosted MR.	-	Others
20	CME(BEE)	Supportive for CFL distribution start date and completion date for CPA 3223-0001: <ul style="list-style-type: none"> ➤ Letter from CQC to BEE – “Application of closure of CPA no. under BLY-PoA and submission of SSC-CPA database” ➤ Letter by BEE to CQC – “Acceptance of the End Date of CFL Distribution of CPA no. under BLY PoA” 	09/11/2011 21/12/2011	Others
21	PP (CQC)	Training Record for persons involved in the distribution of CFLs conducted by Investors (CQC)	-	Others
22	<ul style="list-style-type: none"> • IMRB International, New Delhi, India • EGREENS AP CONSULTING INDIA LLP 	<ul style="list-style-type: none"> • Back up data for $Q_{PJ,i}$ survey and first LFR for each type of lamp • Backup data for second LFR survey for each type of lamp 	-	Others
23	<ul style="list-style-type: none"> • IMRB International, New Delhi, India • EGREENS AP CONSULTING INDIA LLP 	<ul style="list-style-type: none"> • First ex-post monitoring survey process flow sheet (extracted from monitoring survey report) for CPA 3223-0001 • Second ex-post monitoring survey process flow sheet (extracted from monitoring survey report) for CPA 3223-0001 	-	Others
24	PP (CQC)	Project implementation plan outlining the various procedures like delivery mechanism, distribution, data to be recorded, ICL collection, storage and disposal etc.	-	Others
25	PP (CQC)	Sample copies of the consent deeds signed by the household consumers with CPA Implementer (Investor) forbidding them to re-sell the CFLs.	-	Others
26	EGREENS AP CONSULTING INDIA LLP	Second ex-post monitoring survey reports determining monitoring parameters “ $LFR_{i,y}$ ” for CPA 3223-0001	Survey dates between 15/12/2014 to 17/12/2014	Others
27	UNFCCC	Acceptance by UNFCCC regarding Revised Start date of Crediting period as proposed by CME	Email Dated 09/09/2013	Others
28	UNFCCC	AMS-II.J. “Demand-side	Web link	Others

		activities for efficient lighting technologies" (Version 3.0)		
29	UNFCCC	Kyoto Protocol (1997)	Web link	Others
30	UNFCCC	Decision 3/CMP.1, Decision 4/CMP.1 and Decision 1/CMP.2	Web link	Others
31	UNFCCC	Registered POA –DD and included CPA-DDs for CDM project: "CFL lighting scheme – "Bachat Lamp Yojana", UNFCCC PoA project reference 3223	Web link	Others
32	UNFCCC	a) Validation report for CDM PoA: "CFL lighting scheme – "Bachat Lamp Yojana", UNFCCC PoA project reference no 3223 dated 25/03/2010 b) Validation reports for inclusion of CPA 3223-0001 c) MP01 verification report of CQC, HPL (Batch 1) d) MP02 verification report of CQC (Batch 1) e) MP03 verification report of CQC (Batch 2) f) MP04 Verification report of CQC (Batch 1)	Web link	Others
33	UNFCCC	a) Clean development mechanism validation and verification standard for Programmes of Activities (Version: 01.0), b) Clean development mechanism project standard for Programmes of Activities (Version: 01.0), c) Clean development mechanism project cycle procedure for Programmes of Activities (Version: 01.0)	Web link	Others
34	CDM EB	E-mail from CDM Secretariat confirming the Batch 1 monitoring report/01/ made publicly available from 23/02/2018	E-mail dated 23/02/2018 from RIT team of UNFCCC	Others
35	CDM EB	Project Webpage of POA 3223 "CFL lighting scheme – "Bachat Lamp Yojana"	Web link	Others
36	-	Various Websites Referred	a. http://cdm.unfccc.int/index.html b. www.itouchmap.com c. http://envfor.nic.in/	Others
37	CDM EB	Guidelines for completing the PoA monitoring report form as part of Monitoring report form for CDM programme of activities (version 02.0)	Dated 07/06/2017	Others
38	The Bureau of Indian Standards	• IS 15111:2002 (Part 1 & 2) • IS 418:2004	Web link	Others
39	CDM EB	Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 07)	Dated 04/05/2017	Others

40	CDM EB	Guidelines for sampling and surveys for CDM project activities and programme of activities (version 04)	Dated 16/10/2015	Others
41	The Bureau of Indian Standards	BIS Guidelines for Implementation of IS 15111:2002 (Part 1 & 2) – Self-Ballasted Lamps	Web link	Others
42	Electricity Regulatory Authority of States of Telangana	Web link for respective State Electricity Regulatory Commissions	http://tserc.gov.in/arrfilings.php	Others
43	DOE (ESPL)	Back up data of surveyed Households surveyed by verification team during on site visit	Dated 18/03/2018	Others
44	CDM EB	SSC WG clarification number SSC-354 on AMS-II.J. (Version 03)	Web link	Others

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

Table 1. Remaining FAR from validation and/or previous verification
There is no finding from previous verification report.

Table 2. CL from this verification

CL ID	01	Section no.	E.3.4.3	Date : 20/03/2018
Description of CL				
CME to clarify, whether 3 rd ex post monitoring survey has been conducted for CPA 3223-0001 considered in this monitoring report?				
Project participant response				Date 21/03/2018
Considered monitoring period for the verified CPA lies under 5 th year and 6 th year. Therefore, third ex post monitoring survey is not applicable for this monitoring period. 3 rd ex post monitoring survey need to be conducted within 7 th year and same will be conducted within 7 th Year (before 8 th October 2018).				
Documentation provided by project participant				
-				
DOE assessment				Date: 22/03/2018
CME as a response, have clarified that 3 rd ex post monitoring survey will be conducted within 7 th Year (between 9 th October 2017 to 8 th October 2018) as per the requirement of methodology. However, the considered monitoring period during this verification falls in 5 th & 6 th Year and calculation of emission reduction were based on 2 nd monitoring survey, which is applicable to present monitoring period. Verification team confirms that the CME correctly applied the results of 2 nd ex post monitoring survey during the present monitoring period and 3 rd ex post monitoring survey will be required during next periodic verification. Therefore, this CL is closed.				

CL ID	02	Section no.	E.3.4.2	Date : 20/03/2018
Description of CL				
CME to clarify, why latest available values of T&D losses from respective state electricity board for individual CPA 3223-0001 has not been used?				
Project participant response				Date : 21/03/2018

Latest T&D losses mentioned in latest available document (TSSPDCL filing of ARR for retail supply business for 2018-19) T&D losses are mentioned as 14.58%. that is higher than the default value. But In the available data, technical and non-technical grid losses are mentioned as combined. To exclude the non-technical loss from the published data is not feasible. Therefore, as per applied methodology AMS-II.J. version 3 in absence of the accurate available data, a default value of 10% has been considered for average annual technical grid losses.

Documentation provided by project participant

<http://tserc.gov.in/arrfilings.php>

DOE assessment

Date: 22/03/2018

CME as a response, have clarified that in the available tariff orders for respective states, where individual CPA is situated, technical and non-technical grid losses not separated and a combined value is mentioned for T&D losses. Since, excluding the non-technical loss from the published data is not possible, CME has used default value of 10%, as per applied methodology AMS-II.J. version 3 in absence of the accurate available data, for average annual technical grid losses. DOE has reviewed the latest applicable tariff orders on respective state grid regulatory authority website and confirms that separate data for average annual technical grid losses is not available. Therefore, in accordance with applied methodology and registered monitoring plan, application of default value is the most appropriate and reliable method for calculation of emission reductions accurate available data from State Grid Authorities. Therefore, this CL is closed.

Table 3. CAR from this verification

CAR ID	03	Section no.	E.3.1	Date :	20/03/2018
Description of CL					
The project database reviewed for CPA 3223-0001, confirms that 11 W and 20 W CFLs were distributed in CPA area during distribution. However, CME has mentioned in some section of MR that 14 W CFLs were distributed in CPA 3223-0001. CME to substantiate the same?					
Project participant response					Date : 21/03/2018
The 14 W CFLs mentioned in some sections in webhosted MR were corrected to 11 W CFLs in revised MR. However, there is no change in ER calculation, since ER spreadsheet correctly mentioned distribution of 11 W and 20 W CFLs in CPA 3223-0001.					
Documentation provided by project participant					
Revised MR version 01.1 dated 21/03/2018					
DOE assessment					Date: 22/03/2018
CME as a response, have corrected the type of CFLs distributed in CPA 3223-0001 as 11 W and 20 W in revised MR. This is in line with supporting documents (i.e. CPA electronic database). Therefore, this CAR is closed.					

Table 4. FAR from this verification

There is no FAR from this verification.

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Document information

Version	Date	Description
02.0	29 December 20aaa	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		