

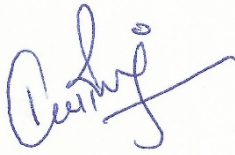


Verification and certification report form for CDM programme of activities
(version 01.0)

VERIFICATION AND CERTIFICATION REPORT

Title of the programme of activities (PoA)	CFL lighting scheme – “Bachat Lamp Yojana”	
UNFCCC reference number of the PoA	PoA 3223	
Version number(s) of the PoA-DD(s) applicable to this report	09	
Version number of the verification and certification report	04	
Completion date of the verification and certification report	12/09/2017	
Monitoring period number	Fourth Monitoring Period	
Duration of this monitoring period	01/01/2015 to 31/12/2015 (both days inclusive)	
Number and version number of the monitoring report to which this report applies	Batch 1 Version 03.1	
Coordinating/managing entity (CME)	Bureau of Energy Efficiency	
Host Party(ies)	Host Party(ies) of the PoA	Is this a host Party to a CPA covered in this report?(yes/no)
	India	Yes
Sectoral scope(s)	Sectoral Scope 3: Energy demand	
Selected methodology(ies)	Applied Methodology: AMS-II.J., Version 03	
Selected standardized baseline(s)	N/A	
Total estimated GHG emission reductions or net GHG removals for this monitoring period in the included CPA(s) covered in this report	627,624 tCO ₂ e	
Total certified GHG emission reductions or net GHG removals for this monitoring period for the included CPA(s) covered in this report	350,692 tCO ₂ e	
Name of DOE	Earthood Services Pvt. Ltd.	

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 5,232,250 CFLs^{/04/} in the 17 implemented CPAs covered under this monitoring report^{/02/}. Detailed implementation status of these 17 CPAs has been discussed in subsequent sections of this report and CME has also reported the same in monitoring report, thus complying with §244(b) of PS, V9^{/33/} and §383 of VVS, V9^{/33/}. The 17 active CPAs covered under this monitoring report^{/02/} are in the various districts across 3 states of India (host country), namely Delhi, Punjab and Andhra Pradesh.

Earthood Services Pvt. Ltd. has performed the fourth 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 17 CPAs in accordance with the §315(b) of PS, V9^{/33/} has been considered for this verification. This verification report covers 17 out of 50 CPAs included under the PoA as on 31/12/2015. The verification includes confirming the implementation of the monitoring plan of the registered PoA DD, CPA DDs 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 DDs and the monitoring plan, and the corresponding validation opinion;
- (b) The validation report, 1st MP verification report, 2nd MP verification report and 3rd 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 review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader, Verifier, Technical Expert, Meth. expert and Local Expert	EI	Joshi	Akhilesh	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
2.	Approver	IR	Singh	Kaviraj	Central office

SECTION C. Means of verification

C.1. Desk 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.

C.2. On-site inspection

Duration of on-site inspection: 28/01/2017 – 03/02/2017, 06/02/2017 - 13/02/2017				
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-DDs	Amritsar, Kapurthala, Tarn Taran, Jalandhar, Ropar and Mohali District of Punjab, Rohini, Shalimar Bagh, Moti Nagar, Model Town, Pitampura and Mangolpuri District of Delhi, Ranga Reddy and Hyderabad District of Telangana (former Andhra Pradesh)	28/01/2017 – 03/02/2017, 06/02/2017 - 13/02/2017	Akhilesh Joshi
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)			

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Garg	Vineet Kumar	CQC	28/01/2017	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	13/02/2017	Competency of the operating personnel, Quality Control and Quality Assurance procedures	Akhilesh Joshi
3.	Telkar	Hemant Kumar	CQC	12/02/2017	Competency of the operating personnel	Akhilesh Joshi
4.	Kumar	Puneet	EGREENS AP CONSULTING INDIA LLP	13/02/2017	Ex Post Sampling Survey and data collection procedures	Akhilesh Joshi
5.	362 households in Andhra Pradesh, 91 households in Delhi, 128 households in Punjab			28/01/2017 – 03/02/2017, 06/02/2017 - 13/02/2017	Installation and operation of the distributed CFLs (through random sampling approach)	Akhilesh Joshi

C.4. Sampling approach

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In accordance with the §26 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 05)^{39/} and based on verification team’s professional judgment, the verification team has chosen a random sample size of 581 households (which is having 1958 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 §27 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 05)).
- The sample size considered appropriate as the Table 1 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 05)^{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 §28 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 05) 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 581-household's located in the implemented CPAs of three states. 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 §26 of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 05), verification team has visited a total of 581 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 05)^{/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	31	29	-		56	29	56
3223-0029	25	30	-	37	-	30	37
3223-0031	26	24	-	79	-	24	79
3223-0032	40	-	65	-	88	65	88
3223-0036	26	26	-	78	-	26	78
3223-0037	28	27	-	63	-	27	63
3223-0038	25	38	-	51	-	38	51
3223-0039	24	23	-	60	-	23	60
3223-0041	25	39	-	58	-	39	58
3223-0043	34	16	-	117	-	16	117
3223-0044	41	50	-	72	-	50	72
3223-0045	51	50	-	133	-	50	133
3223-0046	46	52	-	121	-	52	121
3223-0047	46	41	-	140	-	41	140
3223-0048	34	33	-	58	-	33	58
3223-0049	33	34	-	69	-	34	69
3223-0050	46	23	-	78	-	23	78
TOTAL	581	535	65	1214	144	600	1358

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/ 14 W	18W/ 20 W	11W / 14 W	18W / 20 W	
3223-0001	10	21	34.48%	37.50%	Lower than the ex-ante LFR

					assumed during 6th year (i.e. 38.36% ¹) from completion of CFL distribution.
3223-0029	9	11	30.00%	29.73%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0031	7	23	29.17%	29.11%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0032	22	30	33.85%	34.09%	Lower than the ex-ante LFR assumed during 6th year (i.e. 38.36%) from completion of CFL distribution.
3223-0036	8	23	30.77%	29.49%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0037	8	19	29.63%	30.16%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0038	11	15	28.95%	29.41%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0039	6	16	26.09%	26.67%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0041	11	17	28.21%	29.31%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0043	5	33	31.25%	28.21%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0044	15	21	30.00%	29.17%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0045	14	39	28.00%	29.32%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0046	12	29	23.08%	23.97%	Lower than the ex-ante LFR assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.
3223-0047	10	34	24.39%	24.29%	Lower than the ex-ante LFR assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.
3223-0048	9	16	27.27%	27.59%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) from completion of CFL distribution.
3223-0049	8	16	23.53%	23.19%	Lower than the ex-ante LFR

¹ $LFR_{i,6} = (1281+1277.5+1277.5+1277.5+1281+1277.5) * (100-50) / (100*10000) = 38.36\%$

					assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.
3223-0050	7	22	30.43%	28.21%	Lower than the ex-ante LFR assumed during 5th year (i.e. 31.96%) 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.

C.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	1	0
Remaining forward action requests from validation and/or previous verification	0	0	0
Specific-case 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, monitoring methodology or 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 in a registered PoA-DD (including its generic CPA-DD(s)) 	0	0	0
<ul style="list-style-type: none"> Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline 	0	0	0
<ul style="list-style-type: none"> Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA 	0	0	0
<ul style="list-style-type: none"> Types of changes specific to afforestation and reforestation activities 	0	0	0
Component project activity(ies)			
Compliance of the CPA implementation with the included CPA design document	0	0	0
Post-registration changes			
<ul style="list-style-type: none"> Temporary deviations from 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"> Changes to the start date of the crediting period 	0	0	0
<ul style="list-style-type: none"> Inclusion of a monitoring plan to an included CPA-DD 	0	0	0
<ul style="list-style-type: none"> Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline 	0	0	0
<ul style="list-style-type: none"> Changes to the programme design of the included CPA-DD 	0	0	0
<ul style="list-style-type: none"> Types of changes specific to afforestation and reforestation component project activities 	0	0	0
Compliance of the monitoring plan with the monitoring	0	0	0

methodology including applicable tool and standardized baseline			
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	0	4	0
• Implementation of sampling plan	0	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 specific-case CPA	0	0	0
• Remarks on difference from estimated value in registered PDD	0	0	0
Others (please specify)	0	0	0
Total	0	5	0

SECTION D. 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 E. 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 fourth independent verification of the emission reductions for the registered CDM PoA 3223 "CFL lighting scheme – "Bachat Lamp Yojana" in India for the monitoring period 01/01/2015 up to 31/12/2015 as reported in the Monitoring Report (public) Version 01 dated 13/12/2016. 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 17 out of 50 CPAs included under the PoA as on 31/12/2015. A single monitoring report has been prepared by the CME for the same in which implementation of all referred CPAs along with monitoring results are 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 § 406 and 407 of CDM VVS Version 9.

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 CPAs 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 350,692 tCO₂e from the CDM PoA 3223 "CFL lighting scheme – "Bachat Lamp Yojana" are correctly reported in the Monitoring Report (final) Version 03.1 dated 11/09/2017 and corresponding ER spreadsheet for the monitoring period 01/01/2015 up to 31/12/2015 (including both days). Therefore, this will be submitted as part of request for issuance as per CDM PCP Version 9.

SECTION F. 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 01/01/2015 up to 31/12/2015 (including both dates) in the Monitoring Report Version 01 (first version) dated 13/12/2016. This verification report covers 17 out of 50 CPAs included under the PoA as on 31/12/2015.

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 03.1 dated 11/09/2017. 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 03.1 dated 11/09/2017.

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 01/01/2015 up to 31/12/2015 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 03.1 dated 11/09/2017 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 01/01/2015 up to 31/12/2015 (including both dates)

Verified and certified emission in the above reporting period:

	Amount	Unit
Certified emission reductions (CERs)	350,692	tCO ₂ e

SECTION G. Verification findings - General**G.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 01.0).
Findings	CAR-01 has been raised in this context. Refer Appendix 4 for detailed findings.
Conclusion	In accordance with §381 of VVS, V9 ^{/33/} , verification team confirms that final monitoring report ^{/02/} is completed using the latest valid version of the applicable PoA monitoring report form ^{/37/} .

G.2. Remaining forward action requests from validation and/or previous verification

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

G.3. Specific-case CPA(s) considered for verification and covered in this report


Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Is the specific-case CPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case CPA complies with	Confirmation that a request for issuance including the specific-case CPA has been published for the previous monitoring period (Y/N)
3223-0001	Yes	Version 09	Yes
3223-0002	No	Version 09	No
3223-0003	No	Version 09	No
3223-0004	No	Version 09	No
3223-0005	No	Version 09	No
3223-0006	No	Version 09	No
3223-0007	No	Version 09	No
3223-0008	No	Version 09	No
3223-0009	No	Version 09	No
3223-0010	No	Version 09	No
3223-0011	No	Version 09	No
3223-0012	No	Version 09	No
3223-0013	No	Version 09	No
3223-0014	No	Version 09	No
3223-0015	No	Version 09	No
3223-0016	No	Version 09	No
3223-0017	No	Version 09	No
3223-0018	No	Version 09	No
3223-0019	No	Version 09	No
3223-0020	No	Version 09	No
3223-0021	No	Version 09	No
3223-0022	No	Version 09	No
3223-0023	No	Version 09	No
3223-0024	No	Version 09	No
3223-0025	No	Version 09	No
3223-0026	No	Version 09	No
3223-0027	No	Version 09	No
3223-0028	No	Version 09	No
3223-0029	Yes	Version 09	Yes
3223-0030	No	Version 09	No
3223-0031	Yes	Version 09	Yes
3223-0032	Yes	Version 09	Yes

3223-0033	No	Version 09	No
3223-0034	No	Version 09	No
3223-0035	No	Version 09	No
3223-0036	Yes	Version 09	Yes
3223-0037	Yes	Version 09	Yes
3223-0038	Yes	Version 09	Yes
3223-0039	Yes	Version 09	Yes
3223-0040	No	Version 09	No
3223-0041	Yes	Version 09	Yes
3223-0042	No	Version 09	No
3223-0043	Yes	Version 09	Yes
3223-0044	Yes	Version 09	Yes
3223-0045	Yes	Version 09	Yes
3223-0046	Yes	Version 09	Yes
3223-0047	Yes	Version 09	Yes
3223-0048	Yes	Version 09	Yes
3223-0049	Yes	Version 09	Yes
3223-0050	Yes	Version 09	Yes

SECTION H. Verification findings – Programme of activities

H.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.</p> <p>In exchange of the less efficient working ICLs and INR 15, CPA implementer has distributed and installed the high power factor CFLs in the individual households located in the Delhi, Punjab and 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 has been 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 all the CPAs have 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 are 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>
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	 <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 has cross checked the distribution and installation of the CFLs by applying random sampling approach. ESPL has conducted an on- site visit and confirmed that the programme has been implemented and operated as described in the registered PoA-DD^{/31/}. The distribution of the CFLs is 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 §385 of VVS, V9 ^{/33/} , verification team confirms through on site visit and document review process, that project implementation is in compliance with the registered PoA DD ^{/31/} .

H.2. Implementation and operation of the management system

Means of verification	<p>In order to ensure a successful operation of the PoA and individual CPAs 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-DDs^{/31/}</p> <p>The overall monitoring system under all the CPAs 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 household in the implemented CPAs with the unique identification no • 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</p>
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	<p>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/14 W CFL for 60W ICL and 18W/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-DDs ^{/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 all the implemented CPAs.

H.3. Post-registration changes

H.3.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

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

H.3.2. Corrections

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

H.3.3. Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))

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

H.3.4. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline

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

H.3.5. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA

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

H.3.6. Types of changes specific to afforestation and reforestation activities

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

SECTION I. Verification findings – Component project activity(ies)**I.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-DDs ^{31/} . The report applies to the second verification of the following CPAs:		
	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
	3223-0029	029-CQC-DL	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
	3223-0031	041-CQC-DL	CFL lighting scheme – “Bachat Lamp Yojana” in Pitampura District of North Circle, Rohini District of Northwest Circle, North Delhi Power Limited, Delhi, India
	3223-0032	042-CQC-DL	Bachat Lamp Yojana” in Moti Nagar District of North Circle, Mangol Puri District of Northwest Circle, North Delhi Power Limited, Delhi, India
	3223-0036	036-CQC-PB	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
	3223-0037	037-CQC-PB	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
	3223-0038	038-CQC-PB	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
	3223-0039	039-CQC-PB	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
	3223-0041	044-CQC-PB	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
	3223-0043	031-CQC-AP	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
	3223-0044	032-CQC-AP	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
	3223-0045	033-CQC-AP	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
3223-0046	049-CQC-AP	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
3223-0047	050-CQC-AP	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
3223-0048	051-CQC-AP	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
3223-0049	052-CQC-AP	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy South Circle and Ranga Reddy East Circle with underlying Champapet and Saroonnagar Divisions respectively, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India
3223-0050	053-CQC-AP	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

Implementation Status of Individual CPAs (17 CPAs)

UNFCCC Reference No.	Period of CFL distribution/ installation	Date of completion of destruction of ICLs	Period of conducting 1 st ex post Monitoring survey	Period of conducting 2 nd ex post Monitoring survey
3223-0001	11/05/2011 - 09/10/2011	21/10/2011	23/12/2011 - 06/01/2012	15/12/2014 – 17/12/2014
3223-0029	16/01/2012 - 10/04/2012	03/06/2012	07/11/2012 - 05/12/2012	15/04/2015 – 17/04/2015
3223-0031	21/05/2012 - 03/07/2012	13/07/2012	20/11/2012 - 25/11/2012	18/11/2015 – 20/11/2015
3223-0032	19/10/2011 - 06/01/2012	25/01/2012	26/11/2012 - 30/11/2012	18/03/2015 – 20/05/2015
3223-0036	05/12/2011 - 03/03/2012	19/03/2012	12/10/2012 - 16/10/2012	27/03/2015 – 30/03/2015
3223-0037	20/02/2012 - 04/05/2012	23/05/2012	18/10/2012 - 22/10/2012	20/05/2015 – 22/05/2015
3223-0038	25/08/2012 - 27/10/2012	27/11/2012	14/02/2013 - 23/02/2013	15/10/2015 – 17/10/2015
3223-0039	08/09/2012 - 22/11/2012	27/11/2012	25/02/2013 - 06/03/2013	10/02/2016 – 12/02/2016
3223-0041	25/06/2012 - 14/08/2012	22/10/2012	26/10/2012 - 30/10/2012	13/10/2015 – 15/10/2015
3223-0043	26/05/2012 - 25/07/2012	31/07/2012	08/12/2012 - 13/12/2012	07/12/2015 – 09/12/2015
3223-0044	26/02/2012 - 20/04/2012	25/04/2012	21/09/2012 - 26/09/2012	15/09/2015 – 17/09/2015
3223-0045	11/08/2012 - 09/10/2012	17/10/2012	24/12/2012 - 29/12/2012	23/12/2015 – 26/12/2015
3223-0046	17/02/2013 - 17/05/2013	21/05/2013	21/10/2013 - 26/10/2013	17/10/2016 – 22/10/2016
3223-0047	21/01/2013 - 09/03/2013	12/03/2013	29/10/2013 - 04/11/2013	10/10/2016 – 15/10/2016
3223-0048	09/11/2012 -	27/12/2012	13/06/2013 -	28/05/2016 –

	23/12/2012		19/06/2013	01/06/2016
3223-0049	17/02/2013 - 18/05/2013	21/05/2013	28/10/2013 - 02/11/2013	01/10.2016 – 06/10/2016
3223-0050	04/06/2012 - 07/08/2012	24/08/2012	16/12/2012 - 22/12/2012	17/12/2015 – 19/12/2015

This schedule of distribution was found in line with registered PoA DD and CPA DDs^{/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-DDs^{/31/}.

The total number of CFLs proposed for installation by the CME as per the registered CPA-DDs of 17 implemented CPAs is 8,081,148^{/31/}. Verification team checked the technical specification of the project lamps from the master purchase agreement^{/06/} as provided by the CFL manufacturer (i.e. Philips, HPL, Halonix, Energetic and Glomore) and found that same is in line with the CPA-DDs^{/31/} as well as MR^{/02/}. However, based on the participation of the consumers, CPA Implementer had distributed a total number of 5,232,250 CFLs^{/04/} of 17 implemented CPAs considered in this MR^{/2/}. The distribution of the CFLs is recorded in accordance with the monitoring information provided in the included CPA DDs^{/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 DDs^{/31/}.

The distribution team of the CPA Implimenter 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 Delhi, Punjab and Andhra Pradesh states of India. The start date as well as completion date of installation of each CPA location is 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 each 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 5,232,250 CFLs^{/04/} and concludes that 5,232,250 CFLs have been 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 implementers. Verification team has cross checked the number of working ICLs collected through the certificate of handing over/ taking over issued by the ICL destruction agencies^{/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 various destruction agencies^{/08/} designated 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 has also been 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	No finding has been raised.
Conclusion	In accordance with §385 of VVS, V9 ^{/33/} , verification team confirms through on site visit and document review process, that project implementation is in compliance with the included CPA DDs ^{/31/} .

I.2. Post-registration changes

I.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.

I.2.2. Corrections

>>

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

I.2.3. Changes to the start date of the crediting period

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Start dates of crediting period were changed for the included 17 CPAs 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
3223-0029	15/12/2011	10/04/2012	09/09/2013
3223-0031	15/11/2011	07/07/2012	09/09/2013
3223-0032	15/03/2012	06/01/2012	09/09/2013
3223-0036	01/04/2012	03/03/2012	09/09/2013
3223-0037	30/11/2011	04/05/2012	09/09/2013
3223-0038	01/02/2012	27/10/2012	09/09/2013
3223-0039	01/07/2012	22/11/2012	09/09/2013
3223-0041	30/04/2012	14/08/2012	09/09/2013
3223-0043	31/07/2012	25/07/2012	09/09/2013
3223-0044	30/06/2012	20/04/2012	09/09/2013
3223-0045	30/08/2012	09/10/2012	09/09/2013
3223-0046	29/03/2012	29/03/2012	09/09/2013
3223-0047	29/03/2012	29/03/2012	09/09/2013
3223-0048	29/03/2012	23/12/2012	09/09/2013
3223-0049	29/03/2012	29/03/2012	09/09/2013
3223-0050	29/03/2012	08/08/2012	09/09/2013

I.2.4. Inclusion of a monitoring plan to an included CPA-DD

>>

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

I.2.5. Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline

>>

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

I.2.6. Changes to the programme design of the included CPA-DD

>>

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

I.2.7. Types of changes specific to afforestation and reforestation component project activities

>>

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

I.3. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	<p>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 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 CPAs 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 §388 of VVS V9 ^{/33/} .

I.4. Compliance of monitoring activities with the registered monitoring plan**I.4.1. Data and parameters fixed ex ante or at renewal of crediting period**

Means of verification	<p>The values of $EF_{CO_2,ELEC,y}$, 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 DDs^{/31/}.</p> <p>1. Data/Parameter, Unit: $EF_{CO_2,ELEC,y}$, tCO₂/MWh</p> <p>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"> <thead> <tr> <th>SSC-CPA UNFCCC Ref No</th><th>Verified Value</th></tr> </thead> <tbody> <tr> <td>3223-0001</td><td>0.856</td></tr> <tr> <td>3223-0029</td><td>0.903</td></tr> <tr> <td>3223-0031</td><td></td></tr> <tr> <td>3223-0032</td><td></td></tr> <tr> <td>3223-0036</td><td></td></tr> <tr> <td>3223-0037</td><td></td></tr> <tr> <td>3223-0038</td><td></td></tr> <tr> <td>3223-0039</td><td></td></tr> <tr> <td>3223-0041</td><td></td></tr> <tr> <td>3223-0043</td><td>0.865</td></tr> <tr> <td>3223-0044</td><td></td></tr> <tr> <td>3223-0045</td><td></td></tr> <tr> <td>3223-0046</td><td></td></tr> <tr> <td>3223-0047</td><td></td></tr> </tbody> </table>	SSC-CPA UNFCCC Ref No	Verified Value	3223-0001	0.856	3223-0029	0.903	3223-0031		3223-0032		3223-0036		3223-0037		3223-0038		3223-0039		3223-0041		3223-0043	0.865	3223-0044		3223-0045		3223-0046		3223-0047	
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3223-0046																															
3223-0047																															

	3223-0048 3223-0049 3223-0050	
	Consistent with the Registered CPA-DDs ^{/31/} and fixed ex-ante.	
	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-DDs ^{/31/} and fixed ex-ante	
	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/} .	
	4. Data/Parameter, Unit: L_i,Hours rated average operating hours for CFL type <i>i</i> Verified Value - 10,000 hours Consistent with the Registered CPA-DDs ^{/31/} and fixed ex-ante	
	5. Data/Parameter, Unit: X_i,Hours/ year Operating hours per year for CFL type <i>i</i> Verified Value - 1,277.5 hours per 365 day year; 1,281 hours for leap year (366 days) Consistent with the Registered CPA-DDs ^{/31/}	
	6. Data/Parameter, Unit: NTG, - Net-to-gross adjustment factor Verified Value - 0.95 Consistent with the Registered CPA-DDs ^{/31/} and fixed ex-ante.	
Findings	No finding has been raised.	
Conclusion	The values of ex ante fixed parameters have been verified from the registered CPA-DDs ^{/31/} . Same has been crosschecked with the source mentioned in the CPA-DDs 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.	

I.4.2. Data and parameters monitored

Means of verification	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.	
	1. Data/Parameter, Unit: N_{Destroyed}, Number Description: Number of ICLs collected and destroyed	
	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 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 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?	<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/}.</p> <p>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>
		<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 – “Number of CFLs distributed or installed as per database” is 22,743 (11 W) , 89,278 (18 W) “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</p>

		<p>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?	<p>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/}.</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. 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.</p> <p>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>			
	<p>3. Data/Parameter, Unit: $P_{i, BL}$, Watts</p> <p>Description: Rated power of the baseline ICLs of the group of “r”</p> <table border="1"> <tr> <td>Measuring /Reading /Recording frequency</td><td>Measured once during the crediting period. Calculated from actual number of ICLs collected and destructed 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> </table>		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)
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 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?	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 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/} .
	4. Data/Parameter, Unit: $P_{i,PJ}$, Watts	
	Description: Rated power of the CFLs of the group of "7" lighting devices (Watts)	
	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 the value of parameter considered in the Table 3 presented below this section is appropriate.</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 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?	<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 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>
	<p>6. Data/Parameter, Unit: N, --</p> <p>Description: Sample size of Monitoring Survey</p>	
	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/} 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 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/}.</p>
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.
	7. Data/Parameter, Unit: $LFR_{i,y}$, % Description: Lamp Failure Rate for CFL type i in year y (fraction)	
	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^{/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^{/04/} with the Ex post monitoring survey report^{/15,26/}.</p> <p>The LFR observed during DOE on site visit in fourth, fifth and 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>

		Also checked the SSC WG clarification number "SSC 354" ^{n/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.	
	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>			
	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 bodies ^{/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?	Yes. The QA/QC procedure are in place, internal checks have been done by the CME and established during the onsite assessment. 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.
Findings	CAR-02, CAR-03, CAR-04 and CAR-05 has been raised in this context. 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 the table 3 below is acceptable.</p> <p>Data/Parameter, Unit: $Q_{PJ, i}$, Number The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs^{/10/}. Verification team can confirm that the value of parameter considered as equal to the number of ICLs destructed^{/10/} is less/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-DDs^{/31/}. Verification team can confirm that the value of parameter considered as mentioned in the table 3 below is acceptable.</p> <p>Data/Parameter, Unit: $P_{i, BL}$, W The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs^{/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 table 3 below 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 the table 3 below 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 ER spread sheet^{/04/} is considered as higher than the estimated value in registered CPA-DDs^{/31/} in order to reduce 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 report^{/15,26/} as well as ex ante estimate of $LFR_{i,y}$ in ER spread sheet^{/04/}. Verification team confirms that the sample size of households considered by CPA implementers 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 first and second ex post monitoring survey^{/15,26/} which is in line with SSC-354^{/44/}.</p> <p>Data/Parameter, Unit: TD_y, % 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>	

Table 3: Final Verified values of individual implemented CPAs (17 number)

Parameter CPA UNFCCC Ref. No.	Q _{P,J,i}	LFR _{i,y}				N	P _{i,BL}	P _{i,PJ}	N _{destroyed}		TD _y	
		LFR _{i,2}	LFR _{i,3}	LFR _{i,4}	LFR _{i,5}				60W	100W	2013 - 14	2014 - 15
3223-0001	417,510	-	-	25.57%	31.97%	1,800	86.97	17.05	140,515	290,732	10%	10%
3223-0029	245,395	-	19.16%	25.57%	-	1,246	89.72	16.20	67,185	194,306	10%	10%
3223-0031	107,813	-	19.16%	25.57%	-	1,246	91.88	16.57	22,751	89,256	10%	10%
3223-0032	400,890	-	19.18%	25.57%	-	1,246	84.43	17.66	161,881	253,945	10%	10%
3223-0036	311,086	-	19.16%	25.57%	-	1,404	89.85	16.22	81,825	240,487	10%	10%
3223-0037	250,561	-	19.16%	25.57%	-	1,404	91.22	16.47	55,381	197,000	10%	10%
3223-0038	336,769	-	19.16%	25.57%	-	1,404	92.73	16.75	62,700	282,181	10%	10%
3223-0039	378,906	-	19.16%	25.57%	-	1,404	91.62	16.54	80,369	303,123	10%	10%
3223-0041	331,494	-	19.16%	25.57%	-	1,404	89.15	16.11	91,055	244,558	10%	10%
3223-0043	181,697	-	19.16%	25.57%	-	1,741	88.77	16.02	52,854	135,388	10%	10%
3223-0044	216,780	-	19.16%	25.57%	-	1,741	88.14	15.93	64,651	153,377	10%	10%
3223-0045	302,288	-	19.16%	25.57%	-	1,741	89.60	16.18	80,228	228,392	10%	10%
3223-0046	378,614	12.78%	19.18%	-	-	1,741	95.71	17.25	41,014	341,752	10%	10%
3223-0047	279,330	12.78%	19.18%	-	-	1,741	90.29	16.30	68,418	213,349	10%	10%
3223-0048	319,239	-	19.16%	25.57%	-	1,741	90.02	16.25	80,608	242,571	10%	10%
3223-0049	401,294	12.78%	19.18%	-	-	1,741	88.69	16.01	114,989	291,729	10%	10%
3223-0050	257,391	-	19.16%	25.57%	-	1,741	91.55	16.52	56,759	212,064	10%	10%

I.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 05)^{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 implementers.</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-DDs was consistently applied by investors for all the implemented CPAs under this MR. Verification team confirms that the actual number of CFLs sampled during the second ex post monitoring survey as mentioned in Annexure-2 of the MR^{102/} 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</p>
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	<p>Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 05). 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 surveyed on random basis were much lower than the actual number of households surveyed during the 1st and 2nd ex post monitoring survey conducted by CPA 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 2nd 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 05)^{/39/}.</p>
Findings	No findings has been raised.
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 §22 of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 05) ^{/39/} .

1.5. 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.

1.6. Assessment of data and calculation of emission reductions or net removals

1.6.1. 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

1.6.2. Calculation of project GHG emissions or actual 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

1.6.3. Calculation of leakage GHG emissions

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

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

Means of verification	<p>Emissions Reduction (ER_y)</p> <p>Emission reduction (ER_y) is net electricity savings ($NES_{y,y}$) times an emission factor ($EF_{CO2,ELEC,y}$)</p> $ER_y = NES_{y,y} \times EF_{CO2,ELEC,y} \quad (1)$
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Where:

ER_y Emission reductions in year y (tCO₂e)

NES_y Net electricity saved in year y (kWh)

$EF_{CO_2,ELEC,y}$ Grid Emission factor (GEF) in year y , (tCO₂e/MWh);
The calculated GEF value is fixed ex-ante in the SSC-CPA.

Net Energy Savings (NES_y)

The net energy saved is derived using the equation (2) below:

$$NES_{y,y} = \sum_i Q_{PJ,i} * (1 - LFR_{i,y}) * ES_i * [1 / (1 - TD_y)] * NTG \quad (2)$$

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 *ex post* Q_{PJ} survey, which is to take place within the first 12 months of CFL distribution.

i Counter for lighting device type e.g. 40W incandescent bulb, 14 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 (4) below and adjusted ex-post based on monitoring survey results.

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.

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)

$P_{i,PJ}$ Rated power of the project lighting devices (CFLs) of the group of “ i ” lighting devices(Watts)

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 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.

The final calculated values are presented in table 4 below.

Table 4: Summary of the calculated values for 17 implemented CPAs

Parameter CPA UNFCCC Ref. No.	Energy Saving by project CFL in each year (in KWh)			Net Energy Saved by Project CFL (in MWh)				Actual Emission Reduction (tCO ₂ e)
	ES _{2/3}	ES _{3/4}	ES _{4/5}	NES _{2/3}	NES _{3/4}	NES _{4/5}	NES _y	ER _y
3223-0001	-	68.76	20.55	-	22,555	6,162	28,717	24,580
3223-0029	25.47	68.45	-	5,334	13,197	-	18,531	16,732
3223-0031	48.23	47.97	-	4,437	4,063	-	8,500	7,674
3223-0032	1.17	84.12	-	400	26,496	-	26,896	24,286
3223-0036	15.72	78.34	-	4,173	19,147	-	23,319	21,056
3223-0037	32.18	63.32	-	6,881	12,465	-	19,346	17,468
3223-0038	79.51	17.55	-	22,848	4,644	-	27,492	24,824
3223-0039	85.40	10.51	-	27,611	3,129	-	30,740	27,757
3223-0041	57.52	35.79	-	16,269	9,321	-	25,590	23,107
3223-0043	52.20	40.74	-	8,093	5,816	-	13,909	12,030
3223-0044	27.55	64.70	-	5,096	11,020	-	16,116	13,939
3223-0045	72.21	21.59	-	18,626	5,127	-	23,753	20,545
3223-0046	37.35	62.89	-	13,019	20,312	-	33,330	28,830
3223-0047	17.35	77.16	-	4,462	18,388	-	22,850	19,764
3223-0048	-	91.92	2.32	-	25,038	583	25,621	22,162
3223-0049	34.85	58.00	-	12,876	19,855	-	32,731	28,311
3223-0050	-	57.25	38.60	-	12,573	7,807	20,380	17,627

Findings

No finding has been raised.

Conclusion

The verification team confirms that –

- All data has been available and all the parameters have been monitored in accordance with the registered PoA-DD and CPA-DDs^{/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.

Specific-case CPA reference number	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)		
				Results achieved in the period up to 31 December 2012	Results achieved in the period from 1 January 2013 onwards	Results achieved in the entire monitoring period
3223-0001	-	-	-	-	24,580	24,580
3223-0029	-	-	-	-	16,732	16,732
3223-0031	-	-	-	-	7,674	7,674
3223-0032	-	-	-	-	24,286	24,286

3223-0036	-	-	-	-	21,056	21,056
3223-0037	-	-	-	-	17,468	17,468
3223-0038	-	-	-	-	24,824	24,824
3223-0039	-	-	-	-	27,757	27,757
3223-0041	-	-	-	-	23,107	23,107
3223-0043	-	-	-	-	12,030	12,030
3223-0044	-	-	-	-	13,939	13,939
3223-0045	-	-	-	-	20,545	20,545
3223-0046	-	-	-	-	28,830	28,830
3223-0047	-	-	-	-	19,764	19,764
3223-0048	-	-	-	-	22,162	22,162
3223-0049	-	-	-	-	28,311	28,311
3223-0050	-	-	-	-	17,627	17,627
Total				-	350,692	350,692

1.6.5. Comparison of actual GHG emission reductions or net GHG removals by sinks with estimates in included specific-case 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-DDs ^{/31/} . This is due to the fact that the projected figure was total 8,081,148 numbers of CFLs in the 17 implemented CPAs as mentioned in the registered CPA-DDs ^{/31/} and the distributed figure is total 5,232,250 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 (365 days) is 627,624 tCO ₂ e while the actual emission reductions achieved during the monitoring period are 350,692 tCO ₂ e.

Specific-case CPA reference number	Value estimated in ex ante calculation in the included specific-case CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
3223-0001	35,433	24,580
3223-0029	35,315	16,732
3223-0031	33,115	7,674
3223-0032	36,775	24,286
3223-0036	37,642	21,056
3223-0037	35,099	17,468
3223-0038	42,523	24,824
3223-0039	35,223	27,757
3223-0041	36,619	23,107
3223-0043	29,067	12,030
3223-0044	33,270	13,939
3223-0045	42,691	20,545
3223-0046	39,455	28,830
3223-0047	34,781	19,764
3223-0048	40,500	22,162
3223-0049	45,617	28,311
3223-0050	34,499	17,627

Total	627,624	350,692
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I.6.6. Remarks on difference from estimated value in registered PDD

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

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	13 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 (1.2, 3.1, 4.1)	YES		
Reviewed by	Abhishek Mahawar	Date	09/09/2016
Approved by	Ashok Kumar Gautam	Date	09/09/2016

Competence Statement			
Name	Sanjeev Kumar		
Country	India		
Education	B. Tech. (Chemical Engineering) M.Tech. (Energy Management)		
Experience	13 years		
Field	Climate Change, Environment, Energy		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	YES (AMD ID, ACM0002, ACM0006, AMSID, AMS IF, AMSIC, AMS IA, ACM004, AM0009, AMSIID, AMSIIE, ACM0004, ACM0009, ACM0012, AM0008, ACM0001, AM0013, AM0025, AMSIIH)		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	06/07/2017
Approved by	Ashok Kumar Gautam	Date	06/07/2017

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' Monitoring Report (Batch 1) version '02' Monitoring Report (Batch 1) version '02.1' Monitoring Report (Batch 1) version '03' 	Dated 13/12/2016 Dated 17/03/2017 Dated 04/04/2017 Dated 22/07/2017	CME
02	PP (CQC)	Final Monitoring report (Batch 1) version '03.1'	Dated 11/09/2017	CME
03	PP (CQC)	<ul style="list-style-type: none"> ER Calculation spread sheet version '01' ER Calculation spread sheet version '02' ER Calculation spread sheet version '03' Sample Size calculation spread sheet for 1st and 2nd Ex post monitoring survey for each CPA 	Dated 13/12/2016 Dated 17/03/2017 Dated 22/07/2017	CME
04	PP (CQC)	ER Calculation spread sheet version '03.1'	Dated 11/09/2017	CME
05	DOE (ESPL)	Verification contract between CME (BEE), Investors (CQC) and DOE (ESPL)	Dated 23/11/2016	CME
06	PP (CQC)	Supply Agreement / Purchase Order between C-Quest Capital Malaysia Limited and CFL Manufacturers (HPL Electric & Power Pvt. Ltd., Energetic Lighting India Private Limited and Halonix Limited)	Between CQC and HPL dated 04/08/2010 Between CQC and Energetic dated 20/12/2011 Between CQC and Halonix dated 28/09/2012	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)	<ul style="list-style-type: none"> Full Scale ICL Collection and Disposal Agreements signed between C-Quest Capital Malaysia Limited and Global E-Waste Management and Services for CPAs implemented in Andhra Pradesh Full Scale ICL Collection and Disposal Agreements 	<ul style="list-style-type: none"> Between CQC and GEMS dated 25/08/2011 Between CQC and IPCA dated 14/09/2012 	Others

		signed between C-Quest Capital Malaysia Limited and Indian Pollution Control Association for CPAs implemented in Delhi and Punjab		
09	GEMS and IPCA	Photographic and video graphic evidences of <u>boxes storing ICLs with labelling of contents, wattages and destruction of ICLs</u> (for each CPA)	-	Others
10	GEMS and IPCA	a) Certificate of ICL Collection and Destruction issued by ICL Destruction Agency for each CPA b) Certificate of Handing over/ taking over of ICLs issued by ICL Destruction Agency for each CPA c) Inventory list for Certificate of Handing of ICLs issued by ICL Destruction Agency for each CPA d) Certificate of Verification of Quantity of ICLs issued by ICL Destruction Agency for each CPA	Various dates for each CPAs	Others
11	Various testing Laboratories	<ul style="list-style-type: none"> Life test reports issued by Central Electrical Testing Laboratory for 11W, 18W and 20W type Energetic CFLs Life test reports issued by Balaji Control for 11W and 18W type Glomore CFLs Life test reports issued by National Physical Laboratory for 11W and 18W type Halonix CFLs Life test reports issued by National Physical Laboratory for 14W and 20W type Phillips CFLs 	Various dates for each type of CFL and each Manufacturer	Others
12	CME	Tri-partite agreements between BEE, CQC and DISCOM for each CPA	Various dates for each CPA	Others
13	PP (CQC)	Copy of the electronic database for each CPA 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) for each CPA	-	Others
14	PP (CQC)	ICL collection and CFL distribution procedure followed	-	Others

		by Investors (for each CPA)		
15	Neosphere Ambiance Pvt. Ltd.	First ex-post monitoring survey reports determining monitoring parameters " $Q_{PJ,i}$ " and " $LFR_{i,y}$ " by Neosphere Ambiance Pvt. Ltd. for all CPAs in Delhi, Punjab and Andhra Pradesh	Various dates for each CPA	Others
16	Electricity Regulatory Authority of States of Andhra Pradesh, Punjab and Delhi	Supportive evidences for T&D Losses: Year 2014-15: <ul style="list-style-type: none"> • TSERC Tariff order of Retail Supply Tariffs for FY 2015-16 (D=13.45%, Pg 75; T=4.02, Pg 18) • Tariff Order PSPCL 2014-15 (T&D = 16.00%, Pg 154) • Order on True up for FY 2012-13 and Aggregate Revenue Requirement and Distribution Tariff (Wheeling & Retail Supply) for FY 2014-15 for Tata Power Delhi Distribution Limited Pg.243/ (T= 3.59%+0.95%, D = 11.06%) Year 2015-16 <ul style="list-style-type: none"> • TSERC Tariff order of Retail Supply Tariffs for FY 2015-16 (D=13.45%, Pg 75; T=4.02, Pg 18) • Tariff Order PSPCL FY 2016-17 (T&D = 15.50%, Pg 118) • Order on True up for FY 2013-14 and Aggregate Revenue Requirement and Distribution Tariff (Wheeling & Retail Supply) for FY 2015-16 for Tata Power Delhi Distribution Limited Pg.304/ (T= 3.14%+0.70%, D = 10.56%) 	ER spread sheet ⁷⁰⁴⁷	Others
17	Neosphere Ambiance Pvt. Ltd.	Sample Copy of the Filled Survey Questionnaire used by surveyor during First ex-post monitoring survey (for each CPA)	-	Others
18	PP (CQC)	Photographic evidence of each type of installed CFL lamps showing unique identification (logo)	-	PP(CQC)
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 all CPAs of Delhi, Punjab and Andhra Pradesh respectively: ➤ Letter from CQC to BEE –	Various dates for each CPA	Others

		<p>“Application of closure of CPA no. under BLY-PoA and submission of SSC-CPA database”</p> <p>➤ Letter by BEE to CQC – “Acceptance of the End Date of CFL Distribution of CPA no. under BLY PoA”</p>		
21	PP (CQC)	Training Record for persons involved in the distribution of CFLs conducted by Investors (CQC)	Various dates for each State	Others
22	<ul style="list-style-type: none"> Neosphere Ambiance Pvt. Ltd. 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"> Neosphere Ambiance Pvt. Ltd. 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 each CPA Second ex-post monitoring survey process flow sheet (extracted from monitoring survey report) for each 	-	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.	Various dates	Others
26	EGREENS AP CONSULTING INDIA LLP	Second ex-post monitoring survey reports determining monitoring parameters “LFR _{i,y} ” for all CPAs in Delhi, Punjab and Andhra Pradesh	Various dates for each CPA	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 activities for efficient lighting technologies” (Version 3.0)	Web link	Others
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 –	Web link	Others

		<p>“Bachat Lamp Yojana”, UNFCCC PoA project reference no 3223 dated 25/03/2010 b) Validation reports for all CPAs included in the current monitoring period 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)</p>		
33	UNFCCC	<p>a) Clean development mechanism validation and verification standard (Version: 09.0), b) Clean development mechanism project standard (Version: 09.0), c) Clean development mechanism project cycle procedure (Version: 09.0)</p>	Web link	Others
34	CDM EB	E-mail from CDM Secretariat confirming the Batch 1 monitoring report ^{01/} made publicly available from 02/01/2017	E-mail dated 06/01/2017 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	<p>a. http://cdm.unfccc.int/index.html b. www.itouchmap.com c. http://envfor.nic.in/</p>	Others
37	CDM EB	Guidelines for completing the PoA monitoring report form as part of Monitoring report form for CDM programme of activities (version 01.0)	Dated 01/04/2015	Others
38	The Bureau of Indian Standards	<ul style="list-style-type: none"> • 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 05)	Web link	Others
40	CDM EB	Guidelines for sampling and surveys for CDM project activities and programme of activities (version 04)	Web link	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 Andhra Pradesh, Punjab and Delhi	Web links for respective State Electricity Regulatory Commissions	<ul style="list-style-type: none"> • http://www.aperc.gov.in/ • http://pserc.nic.in • http://www.cserc.gov.in/ 	Others
43	DOE (ESPL)	Back up data of surveyed Households surveyed by verification team during on site visit	-	Others

44	CDM EB	SSC WG clarification number SSC-354 on AMS-II.J. (Version 03)	Web link	Others
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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 validation or previous verification report.

Table 2. CL from this verification

There is no finding from this verification report.

Table 3. CAR from this verification

CAR ID	01	Section no.	G.1	Date : 18/02/2017
Description of CAR				
Version of CDM Project standard referred under section D.1. of MR is not valid.				
Project participant response				Date : 17/03/2017
Version of project standard has been now corrected as Ver. 09.0 in the revised monitoring report.				
Documentation provided by project participant				
Revised MR Version 02 dated 17/03/2017				
DOE assessment				Date: 20/03/2017
CME as a response, have now corrected the version of the project standard referred under D.1. of MR to latest applicable version of Project Standard (version 09). The response provided by CME is acceptable. Therefore, this CAR is closed.				

CAR ID	02	Section no.	I.4.2	Date : 18/02/2017
Description of CAR				
CME has not used latest available values of T&D losses for individual CPAs for Year 2014-15 and Year 2015-16.				
Project participant response				Date : 17/03/2017
T&D losses for year 2014-15 and 2015-16 have now been corrected as per the latest available values in the revised MR and ER spreadsheet.				
Documentation provided by project participant				
Revised MR Version 02 dated 17/03/2017 Revised ER spreadsheet Version 02 dated 17/03/2017				
DOE assessment				Date: 20/03/2017
CME as a response, have corrected the T&D Losses values for CPAs implemented in the state of Andhra Pradesh (now Telangana State) as per the latest available approved values of T&D losses for the applicable year 2014-15 and 2015-16. Verification team confirms that CME has referred "Retail Supply Tariffs for FY 2015-16" of Telangana State (Previously part of Andhra Pradesh) and used the same value for both Years in the absence of actual value of T&D losses available for the year 2015-16. The response provided by CME is acceptable. Therefore, this CAR is closed.				

CAR ID	03	Section no.	I.4.2	Date : 20/07/2017
Description of CAR				

<p>PoA-DD and Monitoring Report mentions that the value of parameter “$P_{i,PJ}$” (Watts) is calculated as a weighted average using rated power of the CFLs as recorded in the database, i.e.</p> $P_{i,PJ} = (11 \text{ W} \times \text{fraction of 11 W CFLs distributed}) + (18 \text{ W} \times \text{fraction of 18 W CFLs distributed})$ <p>However, the excel spreadsheet calculates the parameter based on the fraction of rated power of the ICLs destroyed shown as the below:</p> $P_{i,PJ} = 11 \text{ W} \times \text{fraction of 60 W ICLs destroyed} + 18 \text{ W} \times \text{fraction of 100 W ICLs destroyed}$ <p>CME to substantiate the reason for using different formula for calculation of $P_{i,PJ}$ compared to registered monitoring plan.</p>	
Project participant response	Date : 22/07/2017
Values of the parameter $P_{i,PJ}$ have been corrected as per the defined formula for all the CPAs in the revised ER sheet.	
Documentation provided by project participant	
Revised ER spreadsheet dated 22/07/2017 Revised MR Version 03 dated 22/07/2017	
DOE assessment	Date: 24/07/2017
In response to the CAR, CME has revised the calculation of $P_{i,PJ}$ in line with the applied methodology and registered monitoring plan. However, CME has considered $Q_{PJ,i}$ values for calculation of $P_{i,PJ}$, which shows the actual number of CFL distributed under the project activity for each CPA. This is considered appropriate and therefore acceptable. Therefore, this CAR is closed.	

CAR ID	04	Section no.	I.4.2	Date : 20/07/2017
Description of CAR				
<p>Page 90 of the tariff order document (FY 2014-15) of Punjab State Power Corporation Limited (PSPCL), mentions “It is further submitted that Hon’ble PSERC considers the units on account of theft of energy for calculating the T&D losses”. Similarly, page 83 of the tariff order document (FY 2014-15) of North Delhi Power Limited (NDPL) mentions “... technical losses are normally in the range of 8.12% ...”.</p> <p>The CME is requested to provide further information on how the T&D loss values used in the emission reduction calculations exclude nontechnical losses and comply with the requirement of applied methodology AMSII.J. version 3 that states “Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include nontechnical losses such as commercial losses (e.g. theft /pilferage).</p>				
Project participant response				Date : 22/07/2017
In the available data (i.e. tariff orders) for the respective location, technical and non-technical grid losses are mentioned as combined. To exclude the non-technical loss from the published data is not feasible. 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. Revised MR and ER calculation sheet has been submitted.				
Documentation provided by project participant				
Revised ER spreadsheet dated 22/07/2017 Revised MR Version 03 dated 22/07/2017				
DOE assessment				Date: 24/07/2017
In reply to CAR, CME stated that in the available tariff orders for respective states, where individual CPAs are 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 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 accurate available data from State Grid Authorities. Therefore, this CAR is closed.				

CAR ID	05	Section no.	I.4.2	Date : 11/09/2017
Description of CAR				

PoA-DD (page 39, version 9) mentions that "The total number of CFLs that are eligible for calculating emission reductions for the monitoring interval y should be less than or equal to the number of ICLs replaced at the start of the project activity." Accordingly, the Monitoring Report (page 20 and 26) mentions that the claimed number of CFLs is capped by the number of ICLs collected & destroyed.

However, it is observed from the Monitoring Report (Annexure 5) and excel spreadsheet that the total number of CFLs that are eligible for emission reductions credits are determined by comparing the number of CFLs in service and operation during the first 12 months of distribution with the number of ICLs collected and destroyed, as shown in the equation below:

Number of CFLs eligible for emission reductions = Min. (Number of ICLs, Number of CFLs * LFR)

The CME is thus requested to provide additional information on how the proposed approach is in line with the applied methodology and registered monitoring plan.

Project participant response		Date : 11/09/2017
The number of CFLs that are eligible for emission reductions credits have been corrected in the revised MR and ER calculation sheet.		
Documentation provided by project participant		
Revised ER spreadsheet Version 03.1 dated 11/09/2017 Revised MR Version 03.1 dated 11/09/2017		
DOE assessment		Date: 12/09/2017
CME as a response, have corrected the approach for calculation of number of CFLs eligible for emission reduction as Minimum of Number of ICLs and Number of CFLs, multiplied by LFR obtained from 1 st Ex-post monitoring survey. Verification team confirms the approach is now in line with applied methodology and registered monitoring plan. 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
01.0	5 June 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: programme of activities, verifying and certifying		