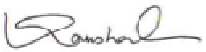
Verification and certification report form for CDM programme of activities

(version 01.0)

VERICATION 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	02	
Completion date of the verification and certification report	15/07/2015	
Monitoring period number	03	
Duration of this monitoring period	01/11/2013 to 31/12/2014 (both days inclusive)	
Number and version number of the monitoring report to which this report applies	Batch 1 Version 02	
Coordinating/managing entity (CME)	Bureau of Energy Efficiency	
Host 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	230,042 tCO_2e	
Total certified GHG emission reductions or net GHG removals for this monitoring period for the included CPA(s) covered in this report	142,532 tCO_2e	
Name of DOE	KBS Certification Services Pvt. Ltd.	

Name, position and signature of the approver of the verification and certification report	 Kaushal Goyal Managing Director KBS Certification Services Pvt. Ltd.

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 1,680,272 CFLs/P04/ in the 5 implemented CPAs covered under this monitoring report/P02/. Detailed implementation status of these 5 CPAs has been discussed in subsequent sections of this report and PP has also reported the same in monitoring report, thus complying with §244(b) of PS, V9/B06/ and §383 of VVS, V9/B06/. The 5 active CPAs covered under this monitoring report/P02/ are located in the Five (5) districts across 3 states of India (host country), namely Delhi, Punjab and Andhra Pradesh.

KBS Certification Services Pvt. Ltd. has performed the third 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 5 CPAs in accordance with the §315(b) of PS, V9/B06/ has been considered for this verification. This verification report covers 5 out of 50 CPAs included under the PoA as on 31/12/2014. 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. KBS 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, first MP verification report and 2nd 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;

KBS Certification 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, Technical Expert, Local Expert	IR	Pal	Kaushik	Central office	✓	✓	✓	✓
2.	Verifier, Technical Expert, Local Expert	IR	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	Kandari	Sanjay	Central office
2.	Expert to Technical Reviewer	IR	Kakkar	Gagandeep	Central office
3.	Manager (Technical & Certification)	IR	Kakkar	Gagandeep	Central office

SECTION C. Means of verification

C.1. Desk review

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A desk review is undertaken, involving but not limited to,

- A review of the data and information presented to verify their completeness;
- A review of the monitoring plan and monitoring methodology, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- 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.

List of all documents reviewed or referenced during the verification is included in the Appendix 3 below.

C.2. On-site inspection

The site visit for this verification assessment was undertaken by {Kaushik Pal (Team Leader, Technical Expert, Local Expert), Akhilesh Joshi (Verifier, Technical Expert, Local Expert)} and details are mentioned below -

Duration of on-site inspection: 11/06/2015 to 16/06/2015				
No.	**Activity performed on-site**	**Site location**	**Date**	**Team member**
1.	Implementation and Operation of the CDM project activity based on Registered Monitoring Plan and physical features of the project activity as per PoA-DD and CPA-DDs	State: Punjab, Andhra Pradesh, Delhi Country: India	11/06/2015 – 16/06/2015	Kaushik Pal (Andhra Pradesh) Akhilesh Joshi (Delhi, Punjab)
2.	Information flows for generating, aggregating and reporting the monitoring parameters	State: Punjab Country: India	11/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)
3.	Competency of the operating personnel and monitoring personnel	State: Punjab Country: India	11/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)
4.	Ex Post Sampling Survey and data collection procedures	State: Punjab Country: India	11/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)
5.	Quality Control and Quality Assurance procedures against the registered monitoring plan	State: Punjab Country: India	11/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)
6.	Calculation and assumptions made in determining the GHG data and emission reductions	State: Punjab Country: India	11/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)
7.	Compliance with CDM criterion and relevant guidance with respect to registered monitoring plan	State: Punjab Country: India	11/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)
8.	Level of accuracy of the monitoring activity	State: Punjab Country: India	11/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)
9.	Installation and operation of the distributed CFLs (through random sampling approach)	State: Punjab, Andhra Pradesh, Delhi Country: India	11/06/2015 – 16/06/2015	Kaushik Pal(Andhra Pradesh) Akhilesh Joshi(Delhi, Punjab)

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Garg	Vineet Kumar	CQC	11/06/2015	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	15/06/2015	Competency of the operating personnel, Quality Control and Quality Assurance procedures	Akhilesh Joshi
3.	Telkar	Hemant Kumar	CQC	15/06/2015	Competency of the operating personnel	Kaushik Pal
4.	Das	Sourabh	Neosphere Ambiance	16/06/2015	Ex Post Sampling Survey and data collection procedures	Akhilesh Joshi
5.	31 households in Andhra Pradesh, 63 households in Delhi, 66 households in Punjab			11/06/2015 – 16/06/2015	Installation and operation of the distributed CFLs (through random sampling approach)	Kaushik Pal Akhilesh Joshi

C.4. Sampling approach

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In accordance with the §24(a) of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1)[/B13/] and based on verification team's professional judgment, the verification team has chosen a random sample size of 160 households (which is having 542 CFL) against the electronic database[/P13/]. The selected samples include a randomly selected households located in the aforementioned states of 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 §25 of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1)).
- The sample size considered appropriate as the Table 1 of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1)[/B13/] has already provided the sample size for verifying PP's data to be 61, for AQL=1% and UQL=10%.
- The maximum errors associated with the determination indicated in §26 of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1) 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 160 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/P13/ as well as from back up data of surveyed Households during First ex-post monitoring survey/P22/ 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/P22/ to confirm the electronic database/P13/ provided to the verification team and no discrepancy found in samples verified.

In line with the requirements of §24 of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1), verification team has visited a total of 160 households during the site visit and has found PPs 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 04.1)/B13/ 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.	CFLs Distributed as per electronic database/P13/, /P22/				ICLs Collected as per electronic database/P13/, /P22/			
	11W	14W	18W	20W	60 W	60 W	100 W	100 W
3223-0001	22	-	-	61	22	-	-	61
3223-0029	31	-	89	-	31	-	89	-
3223-0032	-	39	-	44	-	39	-	44
3223-0036	28	-	105	-	28	-	105	-
3223-0037	25	-	98	-	25	-	98	-
TOTAL	**106**	**39**	**292**	**105**	**106**	**39**	**292**	**105**

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/B17/				LFR observed during on site visit (%)				Remarks on observed LFR compared to ex ante LFR assumed during on site visit
	11W	14W	18W	20W	11W	14W	18W	20W	
3223-0001	5	-	-	15	22.72	-	-	24.59	Lower then the ex ante LFR assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.
3223-0029	7	-	18	-	22.58	-	20.22	-	Lower then the ex ante LFR assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.
3223-0032	-	8	-	9	-	20.51	-	20.45	Lower then the ex ante LFR assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.
3223-0036	6	-	22	-	21.42	-	20.95	-	Lower then the ex ante LFR assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.
3223-0037	6	-	20	-	24.00	-	20.40	-	Lower then the ex ante LFR assumed during 4th year (i.e. 25.57%) from completion of CFL distribution.

Thus, the verification team confirms that the ex-ante LFR value assumed for estimation of emission reduction (i.e. ex-ante LFR value of 25.57% for the year 4 from completion of distribution) 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	2	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			
• Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline	0	0	0
• Corrections	0	0	0
• Inclusion of a monitoring plan in a registered PoA-DD (including its generic CPA-DD(s))	0	0	0
• Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline	0	0	0
• 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
• 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			
• Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline	0	0	0
• Corrections	0	0	0
• Changes to the start date of the crediting period	0	0	0
• Inclusion of a monitoring plan to an included CPA-DD	0	0	0
• Permanent changes to the monitoring plan as described in the included CPA-DD, applied methodology, or applied standardized baseline	0	0	0
• Changes to the programme design of the included CPA-DD	0	0	0
• Types of changes specific to afforestation and reforestation component project activities	0	0	0
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	0	0	0
Compliance of monitoring activities with the registered monitoring plan			
• Data and parameters fixed ex ante or at renewal of crediting period	0	0	0
• Data and parameters monitored			
• Implementation of sampling plan	1	0	0

Compliance with the calibration frequency requirements for measuring instruments	0	0	0
Assessment of data and calculation of emission reductions or net removals			
• Calculation of baseline GHG emissions or baseline net GHG removals by sinks	0	1	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	**1**	**3**	**0**

SECTION D. Internal quality control

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The draft verification report prepared by team leader is reviewed by an independent technical reviewer (having competence of relevant technical area himself/herself or through an independent technical area expert) to confirm the internal procedures established by KBS are duly followed and the verification report/opinion is reached in an objective manner and complies with the applicable CDM requirements. The independent technical reviewer may approve or reject the draft verification report. The findings may be identified even at this stage, which needs to be satisfactorily resolved, before the request for issuance is submitted to UNFCCC. The final decision is taken by the Manager Technical and Certification. The technical reviewer and Manager (Technical & Certification) can be same person.

The final decision is authorized by Managing Director, KBS once the report is approved by the Manager (Technical & Certification).

SECTION E. Verification opinion

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The verification team confirms that the the evidence is of sufficient quantity, appropriate quality and reliable. The reported values, notation, units and sources in the monitoring report for all the monitoring parameters have been cross checked with the emission reduction sheet and monitoring report. During the course of verification and on site visit, the data submitted by CME was cross verified with the values mentioned in the emission reduction sheet[/P04/] and monitoring report[/P02/]. The procedure for data monitoring, recording, transfer and compilation was also verified and found in compliance with the monitoring plan as mentioned in the registered PoA-DD and CPA-DDs[/B04/].

Evidences (Documents/interview/site visit) referred for verification of individual monitoring parameter and fixed parameters are defined in section I.4 respectively. It is confirmed by the assessment team that the reported emission reductions have been conservatively calculated. A list of referred documents for verification is also included in Appendix 3 of this report.

Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 142,532 tCO_2e emission reductions during period from 01/11/2013 up to 31/12/2014.

SECTION F. Certification statement

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KBS Certification 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 01/11/2013 up to 31/12/2014 (including both dates) in the Monitoring Report Version 01 (first version) dated 13/05/2015. This verification report covers 5 out of 50 CPAs included under the PoA as on 31/12/2014.

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

The management of the Bureau of Energy Efficiency is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project Final Monitoring Report Version 02 dated 24/06/2015. The calculation and determination of GHG emission reductions from the project is the responsibility of the management of the Bureau of Energy Efficiency. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 02 dated 24/06/2015.

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 01/11/2013 up to 31/12/2014 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 02 dated 24/06/2015 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, KBS 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.
KBS confirms the following;

Reporting period: From 01/11/2013 up to 31/12/2014 (including both dates)

Verified and certified emission in the above reporting period:

	Amount	Unit
Certified emission reductions (CERs)	142,532	tCO_2e

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/P01/ 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 and CAR-02 has been raised in this context. PP asked to clarify, whether 2nd Ex post monitoring survey conducted for any of the CPAs considered in this monitoring report. Refer Appendix 4 of this report for more details.
Conclusion	In accordance with §381 of VVS, V9/B06/, verification team confirms that final monitoring report/P02/ is completed using the latest valid version of the applicable PoA monitoring report form/B11/.

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

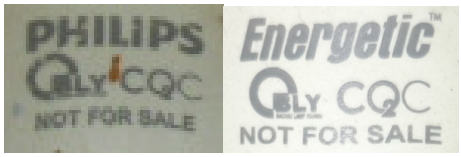
Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period	Is the specific-case CPA considered for this verification? (yes/no)	Version number of the registered PoA-DD to which the specific-case CPA complies with	Confirmation that a request for issuance including 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	Yes
3223-0031	No	Version 09	Yes
3223-0032	Yes	Version 09	Yes
3223-0033	No	Version 09	Yes
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	No	Version 09	Yes
3223-0039	No	Version 09	Yes
3223-0040	No	Version 09	Yes
3223-0041	No	Version 09	Yes
3223-0042	No	Version 09	Yes
3223-0043	No	Version 09	Yes
3223-0044	No	Version 09	Yes
3223-0045	No	Version 09	Yes
3223-0046	No	Version 09	Yes
3223-0047	No	Version 09	Yes
3223-0048	No	Version 09	Yes
3223-0049	No	Version 09	Yes
3223-0050	No	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	The project was implemented and equipment installed as described in the registered PoA-DD. 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/B04/. Each and every replacement of the ICL with CFL has been recorded in the electronic database/P13/ with a unique identification number (i.e.

	consumer no/ RR no provided by the state electricity boards). As per the Project Implementation Manual developed by CPA Implementer[/P24/] and as mentioned in the section A.4.2 of registered PoA-DD[/B04/] 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 - • 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 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[/P25/]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 located 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"[/P18/] as mentioned in the Registered PoA DD[/B04/] 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:  Verification team checked the BLY PoA project details in UNFCCC website (UN reference number: PoA 3223)[/B08/], 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. The verification team has cross checked the distribution and installation of the CFLs by applying random sampling approach. KBS has conducted an on- site visit and confirmed that the programme has been implemented and operated as described in the registered PoA DD[/B04/]. The distribution of the CFLs is recorded in accordance with the monitoring information provided in the registered PoA DD[/B04/]. During on site visit the verification team has not identified any changes or deviation from the monitoring information proposed by the PP in the registered PoA DD[/B04/].
Findings	No finding has been raised.
Conclusion	In accordance with §385 of VVS, V9[/B06/], verification team confirms through on site visit and document review process, that project implementation is in compliance with the registered PoA DD[/B04/].

H.2. Implementation and operation of the management system

Means of verification	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[/P19/]. 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[/B04/].

	The overall monitoring system under all the CPAs has been summarized in the Monitoring Report[/P02/]. 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: • 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 In addition to this CPA investors are monitoring the following: • 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 The management system and control, internal audit procedures of the CPA investors were reviewed during the site visit, which establishes the operational and management structure implemented. The CPA implementers has implemented and operated the PoA as per the registered monitoring plan as mentioned in the PoA DD[/B04/]. 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[/P13/].Each Staff member involved in the PoA has been provided adequate training[/P21/] about PoA activity before starting of distribution of CFLs. 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 and 14W CFL for 60W ICL and 18W and 20W CFL for 100W ICL) and the destruction of ICLs surrendered by the users. CQC has followed the monitoring plan as mentioned in the registered PoA-DD[/B04/] to ensure high integrity of data and quality of verification reports.
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[/B04/]. 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[/B04/].
The report applies to the second verification of the following CPAs:

CME -Unique Identification No.	UNFCCC Ref. No.	SSC CPA Title
001-CQC-AP	3223-0001	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
029-CQC-DL	3223-0029	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
042-CQC-DL	3223-0032	Bachat Lamp Yojana" in Moti Nagar District of North Circle, Mangol Puri District of Northwest Circle, North Delhi Power Limited, Delhi, India
036-CQC-PB	3223-0036	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
037-CQC-PB	3223-0037	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

Implementation Status of Individual CPAs (5 CPAs)

UNFCCC Reference No.	Start date of CFL distribution/ installation	End date of CFL distribution/ installation	Date of completion of destruction of ICLs	Start Date of 1st ex post Monitoring survey	End Date of 1st ex post Monitoring Survey
3223-0001	11/05/2011	09/10/2011	21/10/2011	23/12/2011	06/01/2012
3223-0029	16/01/2012	10/04/2012	03/06/2012	07/11/2012	05/12/2012
3223-0032	19/10/2011	06/01/2012	25/01/2012	26/11/2012	30/11/2012
3223-0036	05/12/2011	03/03/2012	19/03/2012	12/10/2012	16/10/2012
3223-0037	20/02/2012	04/05/2012	23/05/2012	18/10/2012	22/10/2012

This schedule of distribution was found in line with registered PoA DD and CPA DDs/B04/. This was verified with the electronic database/P13/ and the letter from the CPA implementers (CQC) to CME (BEE)/P20/. This distribution schedule and corresponding dates were also verified during site visit interview with the respective households. KBS has conducted an on- site visit and confirmed that the programme has been implemented and operated as described in the included CPA-DDs/B04/.
The total number of CFLs proposed for installation by the PP in the registered CPA-DDs of 5 implemented CPAs is 2464278/B04/. Verification team checked the technical specification of the project lamps from the master purchase agreement/P06/as provided by the CFL manufacturer (i.e.Philips, Halonix, Energetic and Glomore) and found that same is in line with the CPA-DDs/B04/ as well as MR/P02/. However, based on the participation of the consumers, PP had distributed a total number of 1680272 CFLs/P04/. The distribution of the CFLs is recorded in accordance with the monitoring information provided in the included CPA DDs/B04/. During on site visit the verification team has not identified any changes or deviation from the monitoring information proposed by the PP in the included CPA DDs/B04/.

The distribution team of the PP 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/P02/. The dates are in line with the electronic database/P13/ as well as the confirmation letter issued by the CME (BEE)/P20/. 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/P20/ and ER spreadsheet/P04/to assess total number of 1680272 CFLs/P04/ and concludes that 1680272 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/P10b/. 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/P13/. The ICLs collected were stored in respective boxes based on the wattage type and send to the various destruction agancies/P08/ 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"/P10a/. 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/P13/during on site visit.

The disposal of the fused CFLs 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 /B09c/. Since there are no active guidelines about CFL disposal, the replaced/fused CFLs are presently stored in the respective divisions/ circle offices and will be disposed off during 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/B06/, verification team confirms through on site visit and document review process, that project implementation is in compliance with the included CPA DDs/B04/.

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

>>
Start dates of crediting period were changed for the included 5 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 by CDM EB
3223-0001	30/05/2010	29/05/2011	09/09/2013
3223-0029	15/12/2011	10/04/2012	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

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	The monitoring plan of the PoA is in accordance with the applied methodology/B01/. The monitoring has been carried out in accordance with the monitoring plan contained in the Registered PoA-DD/B04/.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/B04/ of the PoA is in accordance with the applied methodology/B01/. The monitoring approach for each parameter described in the Registered PoA-DD/B04/ was found consistent in terms of unit, measurement procedures and monitoring frequency.
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/B04/. Monitoring plan as mentioned in the Registered PoA-DD/B04/ complies with the requirement of the applied methodology AMS-II.J. (Version 03)/B01/in the context of the project activity. Thus, it conforms to the requirement of §388 of VVS V9/B06/.

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

The values of $EF_{CO2,ELEC,y}$, O_i , L_i,X_i and **NTG** have been fixed *ex-ante* during registration of the PoA and respective CPAs. Accordingly, the values were checked and confirmed with the registered CPA DDs/B04/.

1. Data/Parameter, Unit: $EF_{CO2,ELEC,y}$ **,tCO_2/MWh**

CO_2 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 (tCO_2/MWh)

SSC-CPA UNFCCC Ref No	Verified Value
3223-0001	0.856
3223-0029, 3223-0032, 3223-0036, 3223-0037	0.903

Consistent with the Registered CPA-DDs/B04/ 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/B04/ 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 /P11/.

4. Data/Parameter, Unit: **L_i,Hours**
rated average operating hours for CFL type *i*
Verified Value - 10,000 hours
Consistent with the Registered CPA-DDs/B04/ and fixed ex-ante

	5. Data/Parameter, Unit: **X_i,Hours/ year** Operating hours per year for CFL type *i* Verified Value - 1,277.5 hours per 365 day year; 1,281 hours for leap year Consistent with the Registered CPA-DDs[/B04/] 6. Data/Parameter, Unit: **NTG, -** Net-to-gross adjustment factor Verified Value - 0.95 Consistent with the Registered CPA-DDs[/B04/] 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[/B04/] .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[/B04/] and registered CPA-DDs[/B04/]. 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. **Data/Parameter, Unit: $N_{Destroyed}$, Number** The data is recorded in consent deeds[/P25/] 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[/P25/] 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. The verification team cross checked the reported data in the MR[/P02/] and ER sheet [/P04/] with the electronic database [/P13/]. Also confirmed the same through the ICL destruction certificate issued by various destruction agencies for individual CPAs [/P10/]. The handing over of working ICLs and destruction activities were recorded via video recorder and/or photography [/P09/].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 [/P08/] and total number of ICLs destroyed is verified through ICL destruction certificate issued by various destruction agencies for individual CPAs [/P10/]. **Data/Parameter, Unit: $Q_{PJ,\,i}$, Number** The data is recorded in consent deeds[/P25/] at the time of CFL distribution to the individual household. Number of each type of CFL distributed is recorded in the consent deeds[/P25/] 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. The verification team cross checked the reported data in the MR[/P02/] and ER sheet [/P04/] with the confirmation letter issued by CPA implementer to CME[/P20/]. Also confirmed the same through the ex post monitoring survey report [/P15/]. 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[/B01/] 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[/P04/]. This is a conservative approach. Also, it is confirmed that only the fused CFLs, which were replaced under warranty period and prior to the monitoring survey were counted as operating. **Data/Parameter, Unit: $P_{i,\,BL}$, W** The data of collected working ICLs is recorded in consent deeds[/P25/] 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. Final value of number of ICLs collected and destructed is taken from ICL

destruction certificate issued by various destruction agencies for individual CPAs /P10/.

$P_{i, BL}$ = 60 W x fraction of 60 W ICLs destructed + 100 W x fraction of 100 W ICLs destructed.

The verification team cross checked the calculation of parameter in the ER spread sheet /P04/ with the values of number of ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs /P10/. Also, the value is found conservative compared to the number of CFLs distributed as per the electronic database /P13/.

Number and type of ICLs were collected in the boxes. In accordance with the collected ICLs, various destruction agencies issued destruction certificate/P10/ to verify the numbers of ICLs collected which is mentioned in the electronic database /P13/.

Data/Parameter, Unit: $P_{i, PJ}$, W

The data of distributed CFLs of each type is recorded in consent deeds/P25/ 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.

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/P04/.

$P_{i, PJ}$ = (11 W x fraction of 11 W CFLs distributed) + (14 W x fraction of 14 W CFLs distributed)+(18 W x fraction of 18 W CFLs distributed) + (20 W x fraction of 20 W CFLs distributed).

The verification team cross checked the calculation of parameter in the ER spread sheet /P04/ with the values of number of CFLs as per the confirmation letter issued by CPA implementer to CME/P20/.

Number and type of CFLs purchased and delivered to CPA implementers was used to verify the number recorded in the electronic database /P13/. This was also cross referred to the ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs /P10/.

Data/Parameter, Unit: "*Lamp distribution data*" , --

The data is recorded in consent deeds/P25/ 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.

The verification team cross checked the information of the visited households during the on-site visit against the electronic database/P13/ as well as from back up data of surveyed households during 1st ex post monitoring survey conducted by CPA implementers/P15/.

The date of CFL distribution from electronic database/P13/ was cross verified from the consent deeds/P25/ on sample basis.

Data/Parameter, Unit: N, --

Calculated as mentioned in the Annexure 4 of respective CPA-DDs/B04/. The verification team cross checked the sample size considered by CPA implementers during 1st ex post monitoring survey/P15/from the value of sample size mentioned in the registered CPA-DDs/B04/.

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. To be conservative the minimum number of households surveyed was kept as hundred (100). The CPA implementer(s) has chosen a sample size higher than the one calculated in individual CPA-DDs/B04/.

Data/Parameter, Unit: $LFR_{i,y}$, %

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 than compared with the *ex-ante* LFR which is calculated using the formula provided in methodology/B01/. Lower value of the ex-ante LFR and ex post LFR is considered for ER calculation. The verification team cross checked the reported data in the MR/P02/ and ER spread sheet/P04/ with the ex post monitoring survey report/P15/.

The LFR observed during sampling survey as part of on-site visit is lower than the

	ex-ante value considered for ER calculation. Also checked the SSC WG clarification number "SSC 354"[/B19/], which clarifies that in the absence of the mortality curve developed in accordance with a national or international standard, the *ex post* LFR obtained from the monitoring survey shall only be used to confirm the *ex-ante* LFR or increase in the *ex-ante* LFR To obtain a reliable estimate LFR, sampling size of the survey is determined by minimum 90% confidence interval and maximum 10% error margin. The PP considered higher number of households for the first ex post monitoring survey compared to the sample size calculated based on the Annexure-4 of registered CPA-DDs[/B04/]. The larger sample size also offered a better representation of the entire sample (as it reduced sampling error).Refer section 3.2 of this verification report. **Data/Parameter, Unit: TD_y, %** The data is recorded yearly, based on publicly available tariff order documents, including actual T&D loss values submitted by electricity distribution companies (DISCOM) within the project area and approved by the electricity regulatory bodies that regulate these distribution companies. These tariff order documents are available on the websites of the state level electricity regulatory bodies and these web links are referred in the ER spreadsheet[/P04/]. These tariff orders correspond with the current monitoring period year (2013-14 and 2014-15) and hence are considered to be appropriate. The verification team cross checked the calculation of parameter in the ER spread sheet[/P04/] with the values of T&D losses declared by state level electricity regulatory bodies[/B16/]. The CME selected the T&D loss value for each CPA specific to individual electricity distribution companies within the CPA area, using the T&D loss values confirmed by the electricity regulatory commission in recent tariff order documents corresponding with the current monitoring period (2013-14 and 2014-15) published by electricity regulatory commissions that oversee these distribution companies. Same T&D loss value considered for CPA 3223-0001, due to non-availability of the latest tariff order from APERC for FY 2014-15.
Findings	CAR-03 has been raised in this context. PP asked to clarify, whether 2nd Ex post monitoring survey conducted for any of the CPAs considered in this monitoring report. Refer Appendix 4 of this report for more details.
Conclusion	It is confirmed that the monitoring parameter has been measured / determined without material misstatements. **Data/Parameter, Unit: $N_{Destroyed}$, Number** The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs [/P10/]and also checked the photographic and video graphic evidences of boxes storing working ICLs with labelling of contents, wattages and destruction of ICLs[/P09/]. Verification team confirms that the value of parameter considered from certificates of ICL destruction as mentioned in the table 3 below is acceptable. **Data/Parameter, Unit: $Q_{PJ,i}$, Number** The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs [/P10/]. Verification team can confirm that the value of parameter considered as equal to the number of ICLs destructed[/P10/] is less/more than the value of CFLs found installed and operating as per ex post monitoring survey report [/P15/].The lower value between number of ICLs collected & destroyed and CFLs found in ex post monitoring survey is considered for ER calculation[/P04/]. This is also in accordance with the QA/QC procedure mentioned in the registered PoA-DD and CPA-DDs[/B04/]. Verification team can confirm that the value of parameter considered as mentioned in the table 3 below is acceptable. **Data/Parameter, Unit: $P_{i,BL}$, W** The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs [/P10/]. 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. **Data/Parameter, Unit: $P_{i,PJ}$, W** The verification team checked the CFLs distribution electronic database[/P13/] as well as the confirmation letter issued by CPA implementer to CME[/P20/].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[/P15/] as mentioned in the table 3 below is acceptable.

	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[/P13/]. Verification team can confirm that the unique identification of each household (CFL recipient) is correct. **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[/P04/]is considered as higher than the estimated value in registered CPA-DDs[/B04/] in order reduce the error margin and a more accurate survey results. The assumption taken by CPA implementers is on conservative side and hence acceptable. **Data/Parameter, Unit: $LFR_{i,y}$, %** The verification team checked the first ex post monitoring survey report[/P15/] as well as ex ante estimate of $LFR_{i,y}$ in ER spread sheet[/P04/]. 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 year 2, LFR applied is 12.78%, for year 3 LFR applied is 19.18% and for year 4 LFR applied is 25.57%) is conservative compared to the value found during first ex post monitoring survey[/P15/] which is in line with SSC-354[/B19/]. **Data/Parameter, Unit: TD_y, %** The verification team checked the T&D losses value declared by respective state level electricity regulatory bodies[/B16/].Verification team can confirm that the value of parameter considered as in the table 3 below is acceptable.

Table 3: Final Verified values of individual implemented CPAs (5 number)

Parameter / CPA UNFCCC Ref. No.	$Q_{PJ,i}$	$LFR_{i,y}$		N	$P_{i,BL}$	$P_{i,PJ}$	$N_{destroyed}$		TD_y	
		$LFR_{i,2(/3)}$	$LFR_{i,3(/4)}$				60W	100W	2013 - 14	2014 - 15
3223-0001	417,511	19.18%	25.57%	1,800	86.97	17.07	140,515	290,732	15.63%	15.63%
3223-0029	245,394	12.78%	19.16%	1,246	89.72	16.20	67,185	194,306	17.37%	15.60%
3223-0032	400,942	12.78%	19.16%	1,246	84.43	17.66	161,881	253,945	17.37%	15.60%
3223-0036	311,086	12.78%	19.16%	1,404	89.85	16.22	81,825	240,487	17.00%	16.00%
3223-0037	250,561	12.78%	19.16%	1,404	91.22	16.46	55,381	197,000	17.00%	16.00%

I.4.3. Implementation of sampling plan

Means of verification	In accordance with §22(a) of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1)[/B13/] and §17 of methodology AMS-II.J. (Version03)[/B01/], 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. 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. $$n = \frac{z^2}{r^2}\frac{1-p}{p}$$ 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 1 is 6.39% based on 10,000 hours of rated operating life of CFLs) Thus, the sample size, n – n= $(1.645)^2$/ $(0.1)^2$*(1-p)/p

	n=270.6025 *(1-p)/p Hence, n = 270.6025 * (1-0.0639)/ 0.0639 = 3,964.1784 = 3,965 CFLs (roundup value) The above-mentioned formula as mentioned in the Annex 4 of registered PoA-DD/B04/ 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 first ex post monitoring survey as mentioned in Annexure-2 of the MR/P02/ for each implemented CPAs is more than the estimated value as per the above mentioned formula. Thus, the PP applied sample size meets the required level of confidence/precision in accordance with the methodology in accordance with §22 of Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1). The CPA implementers has carried out the first ex post monitoring survey and designed the sampling plan/P23/ in accordance with the registered PoA DD/B04/. The 1st ex post monitoring survey was carried out by adapting the questionnaire template as prescribed in Annex 1 of the applied methodology/B01/. Verification team checked the same from monitoring survey forms/P17/ used by surveyor. 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 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/B04/ 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 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 04.1)/B13/.
Findings	CL-01 has been raised in this context. PP asked to clarify, whether 2nd Ex post monitoring survey conducted for any of the CPAs considered in this monitoring report. Refer Appendix 4 of this report for more details.
Conclusion	The sample size selected confirms the desired 90% level of confidence and with a 10% margin of error. Hence, the 1st 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 04.1)/B13/.

I.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.

I.6. Assessment of data and calculation of emission reductions or net removals

I.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	-
Conclusion	-

I.6.2. Calculation of project GHG emissions or actual net GHG removals by sinks

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

I.6.3. Calculation of leakage GHG emissions

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

I.6.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks

Means of verification

Emissions Reduction (ER_y)

Emission reduction (ER_y) is net electricity savings ($NES_{,y}$) times an emission factor ($EF_{CO2,ELEC,y}$)

$$ER_y = NES_{,y} \times EF_{CO2,ELEC,y} \quad \textbf{(1)}$$

Where:

ER_y	Emission reductions in year y (tCO_2e)
NES_y	Net electricity saved in year *y* (kWh)
$EF_{CO2,ELEC,y}$	Grid Emission factor (GEF) in year *y*,(tCO_2e/MWh); The calculated GEF value is fixed ex-ante in the SSC-CPA.

Net Energy Savings (NES_y)

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

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

Where:

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

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
ESi	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. PP has submitted the electronic copy of the project database[/P13/] 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[/P15/] 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[/B16/]. 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"[/B01/] 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 5 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_2e)
	$ES_{2(3)}$	$ES_{3(4)}$	$NES_{2(3)}$	$NES_{3(4)}$	NES_y	ER_y
3223-0001	83.66	20.55	31,790	7,191	38,981	33,367
3223-0029	41.17	68.45	10,132	15,283	25,415	22,949
3223-0032	15.42	84.12	6,201	30,689	36,890	33,311
3223-0036	31.44	78.33	9,763	22,279	32,042	28,933
3223-0037	48.14	63.32	12,043	14,505	26,548	23,972

Findings	No finding has been raised.
Conclusion	The verification team confirms that – a) All data has been available and all the parameters have been monitored in accordance with the registered PoA-DD and CPA-DDs[/B04/]. b) The reported data have been cross-checked against other sources available as explained above in section I.4, where applicable; c) 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[/B04/] and applicable methodology[/B01/]. d) The monitoring report includes all parameters and the monitored data at the intervals required by the methodology[/B01/] and PoA-DD[/B04/]. e) 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_2e)	Project emissions or actual net GHG removals by sinks (tCO_2e)	Leakage (tCO_2e)	GHG emission reductions or net GHG removals by sinks (tCO_2e)		
				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	-	-	-	-	33,367	33,367
3223-0029	-	-	-	-	22,949	22,949
3223-0032	-	-	-	-	33,311	33,311
3223-0036	-	-	-	-	28,933	28,933
3223-0037	-	-	-	-	23,972	23,972
Total	-	-	-	-	142,532	142,532

I.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 38.04% lower than the estimated emission reductions stated in the registered CPA DDs/B04/. This is due to the fact that the projected figure was total 2,464,278 numbers of CFLs in the 5 implemented CPAs as mentioned in the registered CPA-DDs/B04/and the distributed figure is total 1,680,272 CFLs/P04/. The comparison has been provided below.
Findings	No finding has been raised.
Conclusion	The estimated emission reductions for the PoA for comparable period (426 days) is 230,042 tCO_2e while the actual emission reductions achieved during the monitoring period are 142,532 tCO_2e

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	45,094	33,367
3223-0029	45,034	22,949
3223-0032	47,118	33,311
3223-0036	48,092	28,933
3223-0037	44,704	23,972
Total	230,042	142,532

I.6.6. Remarks on difference from estimated value in registered PDD

Means of verification	N/A
Findings	N/A
Conclusion	N/A

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
CO2e	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
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
KBS	KBS Certification Services Pvt. Ltd.
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

Personnel Name:	Kaushik Pal		
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope	**Technical Area**		
Energy Industries (renewable/non-renewable)	TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar		
	TA 1.2 Energy generation from renewable energy sources		
Energy Demand	TA 3.1 Energy Demand		
Approved by (Manager C & T)	Gagandeep Kakkar		
Approval date:	31/12/2014		

Personnel Name:	Akhilesh Joshi		
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☐	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope	**Technical Area**		
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
Energy Demand	TA 3.1: Energy Demand		
Manufacturing Industries	TA 4.1 Cement sector		
Approved by (Manager C & T)	Gagandeep Kakkar		
Approval date:	31/12/2014		

Personnel Name:	Sanjay Kandari		
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☒
Technical Reviewer	☒	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope	**Technical Area**		
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
Approved by (Manager C & T)	Gagandeep Kakkar		
Approval date:	31/12/2014		

Personnel Name:		Gagandeep Kakkar	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☐	Local Expert (India)	☒
Area(s) of Technical Expertise			
Sectoral Scope		**Technical Area**	
Energy Industries (renewable/non-renewable sources)		TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
Energy demand		TA 3.1. Energy Demand	
Chemical industry		TA 5.1. Chemical Industry	
Solvent Use		TA 12.1: Chemical process industries	
Waste Handling and Disposal		TA 13.1 Waste Handling and Disposal	
Approved by (Manager C & T)		Sanjay Kandari	
Approval date:		31/12/2014	

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
P01	PP (CQC)	Webhosted Monitoring report (batch 1) version '01'	Dated 13/05/2015	CME
P02	PP (CQC)	Final Monitoring report (Batch 1) version '02'	Dated 24/06/2015	CME
P03	PP (CQC)	ER Calculation spread sheet version '01'	Dated 13/05/2015	CME
P04	PP (CQC)	ER Calculation spread sheet version '02'	Dated 24/06/2015	CME
P05	DOE (KBS)	Verification contract between CME (BEE), Investors (CQC) and DOE (KBS)	Dated 28/04/2015	CME
P06	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	PP(CQC)
P07	The Bureau of Indian Standards	• 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	Other
P08	PP (CQC)	• 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 signed	• Between CQC and GEMS dated 25/08/2011 • Between CQC and IPCA dated 14/09/2012	PP(CQC)

		between C-Quest Capital Malaysia Limited and Indian Pollution Control Association for CPAs implemented in Delhi and Punjab		
P09	GEMS and IPCA	Photographic and video graphic evidences of boxes storing ICLs with labelling of contents, wattages and destruction of ICLs (for each CPA)	-	PP(CQC)
P10	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	PP(CQC)
P11	Various testing Laboratories	• 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	PP(CQC)
P12	CME	Tri-partite agreements between BEE, CQC and DISCOM for each CPA	Various dates for each CPA	PP(CQC)
P13	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	-	PP(CQC)
P14	PP (CQC)	ICL collection and CFL distribution procedure followed by Investors (for each CPA)	-	PP(CQC)
P15	BIRD and Neosphere Ambiance Pvt. Ltd.	• First ex-post monitoring survey reports determining monitoring parameters "$Q_{PJ,i}$" and "$LFR_{i,y}$" by Business and Industrial Research Division (BIRD), IMRB International for CPA 3223-0001 • 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	PP(CQC)
P16	Electricity Regulatory Authority of	Supportive evidences for T&D Losses: Year 2013-14:	ER spread sheet /P04/	PP(CQC)

	States of Andhra Pradesh, Punjab and Delhi	• "APSPDCL-Filing of ARR & Proposed Tariffs for Retail Supply Business for FY 2014-15 (D=11.61%, Pg 5) • APERC- TRANSMISSION TARIFFS For the period FY2009-10 to FY2013-14 (T=4.02%, Pg 6)" • Tariff Order PSPCL 2013-14 (T&D = 17.00%, Pg 60) • Order on True Up for FY 2011-12, Aggregate Revenue Requirement and Distribution Tariff (Wheeling & Retail Supply) for FY 2013-14 (T=4.85%, Pg 212) • DERC- Determination of Transmission and Wheeling Charges order dated 24.12.2013 (D=12.52%, Pg 23) " Year 2014-15 • "APSPDCL-Filing of ARR & Proposed Tariffs for Retail Supply Business for FY 2014-15 (D=11.61%, Pg 5) • APERC- TRANSMISSION TARIFFS For the period FY2009-10 to FY2013-14 (T=4.02%, Pg 6)" • Tariff Order PSPCL 2014-15 (T&D = 16.00%, Pg 154) • "Order on True Up for FY 2012-13, 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%)		
P17	BIRD and Neosphere Ambiance Pvt. Ltd.	Sample Copy of the Filled Survey Questionnaire used by surveyor during First ex-post monitoring survey (for each CPA)	-	PP(CQC)
P18	PP (CQC)	Photographic evidence of each type of installed CFL lamps showing unique identification (logo)	-	PP(CQC)
P19	PP (CQC)	Proof of operational & management structure for BLY PoA as per the diagram mentioned in the web hosted MR.	-	PP(CQC)
P20	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 – "Application of closure of CPA no. under BLY-PoA and submission of SSC-CPA database" ➢ Letter by BEE to CQC – "Acceptance of the End Date of CFL Distribution of CPA no. under BLY PoA"	Various dates for each CPA	PP(CQC)
P21	PP (CQC)	Training Record for persons involved in the distribution of CFLs conducted by Investors (CQC)	Various dates	PP(CQC)
P22	Neosphere Ambiance	Back up data for $Q_{PJ,i}$ survey and first LFR for each type of lamp	-	PP(CQC)

	Pvt. Ltd.			
P23	Neosphere Ambiance Pvt. Ltd.	First ex-post monitoring survey process flow sheet (extracted from monitoring survey report) for each CPA	-	PP(CQC)
P24	PP (CQC)	Project implementation plan outlining the various procedures like delivery mechanism ,distribution, data to be recorded, ICL collection, storage and disposal etc.	-	PP(CQC)
P25	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	PP(CQC)
P26	Neosphere Ambiance Pvt. Ltd.	Second 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	PP(CQC)
P27	UNFCCC	Acceptance by UNFCCC regarding Revised Start date of Crediting period as proposed by CME	Email Dated 09/09/2013	Other
B01	UNFCCC	AMS-II.J. "Demand-side activities for efficient lighting technologies" (Version 3.0)	Web link	CDM EB
B02	UNFCCC	Kyoto Protocol (1997)	Web link	CDM EB
B03	UNFCCC	Decision 3/CMP.1, Decision 4/CMP.1 and Decision 1/CMP.2	Web link	CDM EB
B04	UNFCCC	Registered POA –DD and included CPA-DDs for CDM project: "CFL lighting scheme – "Bachat Lamp Yojana", UNFCCC PoA project reference 3223	Web link	CDM EB
B05	UNFCCC	a) Validation report for CDM PoA: "CFL lighting scheme – "Bachat Lamp Yojana", UNFCCC PoA project reference no 3223 dated 25/03/2010 b) Validation reports for 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)	Web link	CDM EB
B06	UNFCCC	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)	Web link	CDM EB
B07	CDM EB	E-mail from CDM Secretariat confirming the Batch 1 monitoring report /P01/ made publically available from 20/05/2015	E-mail dated 20/05/2015	CDM EB
B08	CDM EB	Project Webpage of POA 3223 "CFL lighting scheme – "Bachat Lamp Yojana"	Web link	CDM EB
B09	-	Various Websites Referred	a. http://cdm.unfccc.int/index.html b. www.itouchmap.com c. http://envfor.nic.in/	others
B10	DOE (KBS)	Verification Protocol	Dated 29/06/2015	DOE(KBS)
B11	CDM EB	Guidelines for completing the PoA monitoring report form as part of Monitoring report form for CDM	Dated 01/04/2015	CDM EB

		programme of activities (version 01.0)		
B12	The Bureau of Indian Standards	• IS 15111:2002 (Part 1 & 2) • IS 418:2004	Web link	Others
B13	CDM EB	Standard for "Sampling and surveys for CDM project activities and programmes of activities" (version 04.1)	Web link	CDM EB
B14	CDM EB	Guidelines for sampling and surveys for CDM project activities and programme of activities (version 03.0)	Web link	CDM EB
B15	The Bureau of Indian Standards	BIS Guidelines for Implementation of IS 15111:2002 (Part 1 & 2) – Self-Ballasted Lamps	Web link	Others
B16	Electricity Regulatory Authority of States of Andhra Pradesh, Punjab and Delhi	Web links for respective State Electricity Regulatory Commissions	• http://www.aperc.gov.in/ • http://pserc.nic.in • http://www.cserc.gov.in/	Others
B17	DOE (KBS)	Back up data of surveyed Households surveyed by verification team during on site visit	-	DOE (KBS)
B18	CDM EB	SSC WG clarification number SSC-354 on AMS-II.J. (Version 03)	Web link	CDM EB

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

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

N/A, there is no remaining FAR from validation and/or previous verification

FAR ID	xx	**Section no.**		**Date:** DD/MM/YYYY
Description of FAR				
-				
CME response				**Date:** DD/MM/YYYY
-				
Documentation provided by the CME				
-				
DOE assessment				**Date:** DD/MM/YYYY
-				

Table 2. CL from this verification

CL ID	01	**Section no.**	I.4.3	**Date:** 22/06/2015
Description of CL				
CME to clarify, whether 2nd Ex post monitoring survey conducted for any of the CPAs considered in this monitoring report?				
CME response				**Date:** 24/06/2015
The 2nd ex-post monitoring surveys for all the five CPAs included in the Batch 1 of the MR have been conducted. But for the applied monitoring period for 5 CPAs, 1st ex-post monitoring survey is applicable. Hence, information related to the 2nd monitoring survey is not included in the MR. However the reports of 2nd Ex-post monitoring survey are being submitted to DOE for reference.				

Documentation provided by the CME	
2nd ex-post monitoring survey report conducted by Neosphere Ambiance (third party entity) for all 5 CPAs	
DOE assessment	**Date:** 29/06/2015
CME has clarified that 2nd Ex post monitoring survey has already been completed for the 5 CPAs considered in this monitoring report. DOE has checked the third party monitoring survey reports submitted by CME and confirmed that ex post LFR values are lower than Ex ante LFR values applied for calculation of emission reductions. The response provided by CME is acceptable. Also, the 2nd ex post monitoring survey is due only for one CPA (3223-0001) during this monitoring period. Therefore, the CL is closed.	

Table 3. CAR from this verification

CAR ID	01	**Section no.**	G.1	**Date:** 22/06/2015
Description of CAR				
Details of the referred tools by applied methodology (AMS-II.J.) has not been mentioned in the section A.1.1 of MR.				
CME response				**Date:** 24/06/2015
Applied tool "Tool to calculate the emission factor for an electricity system" (Version 1.1) for CPA3223-001 has now been mentioned in section A.1.1 of the revised MR.				
Documentation provided by the CME				
Revised MR version 02 dated 24/06/2015				
DOE assessment				**Date:** 29/06/2015
CME as a response, have now mentioned the referred tool and version under section A.1.1. of the revised MR. This is in line with the CPA-DD and therefore the CAR is closed.				

CAR ID	02	**Section no.**	G.1	**Date:** 22/06/2015
Description of CAR				
Total GHG emission reductions achieved in this monitoring period for the specific-case CPA(s), including information on how double counting is avoided , has not been provided under section D.1. of MR.				
CME response				**Date:** 24/06/2015
Total GHG emission reductions achieved in the monitoring period from 01/11/2013 to 31/12/2014 for the specific-case CPA(s) and information on how double counting is avoided , is now mentioned in section D.1. of the revised MR.				
Documentation provided by the CME				
Revised MR version 02 dated 24/06/2015				
DOE assessment				**Date:** 29/06/2015
CME as a response, have mentioned the amount of total GHG emission reductions achieved in this monitoring period and also, described the measures taken to avoid double counting of GHG emission reductions for individual CPAs. Therefore, this CAR is closed.				

CAR ID	03	**Section no.**	I.4.2.	**Date:** 22/06/2015
Description of CAR				
a. As per the included CPA-DD for CPA 3223-0032, the type of CFLs distributed in the CPA region are 14 W and 20 W. However, CME has considered the 11 W CFLs in calculation of emission reduction as mentioned in the ER spread sheet and Annexure 10 of MR. CME to substantiate the same. b. The figures for "No. of CFLs of type "i" claimed to be distributed in sample households" for CPA-3223-0001 in Annexure 5 of MR are inconsistent with the monitoring survey report. c. LFR value applied for individual CPAs as mentioned in Annexure 5 of MR is inconsistent with corresponding value as applied in ER spread sheet.				
CME response				**Date:** 24/06/2015
a. The CER calculation sheet is now corrected in accordance to the distributed CFLs. The corrected values of energy saving and generated ERs have now been included in the revised MR. b. The figures for "No. of CFLs of type "i" claimed to be distributed in sample households" for CPA-3223-0001 in Annexure 5 of MR was a typo error and has now been corrected to 1485. c. In Annexure 5 of revised MR, LFR value applied for individual CPAs is now made consistent with corresponding value as applied in ER spread sheet.				
Documentation provided by the CME				
Revised MR version 02 dated 24/06/2015 Revised ER spread sheet version 02 dated 24/06/2015				

DOE assessment	Date: 29/06/2015
a. CME as a response, have now corrected the type of CFLs distributed in the CPA 3223-0032 in the ER spread sheet. This is now consistent with the actual project implementation and hence acceptable. Therefore, this CAR is closed. b. CME as a response, have corrected the typo error in the Annexure 5 of the revised MR and revised MR is now consistent with the corresponding monitoring survey report. Therefore, this CAR is closed. c. CME as a response, have now corrected the LFR value applied for individual CPA and made consistent with corresponding ER spread sheet. Therefore, this CAR is closed.	

Table 4. FAR from this verification

N/A, there is no FAR raised in this verification

FAR ID	xx	Section No.		Date: DD/MM/YYYY
Description of FAR				
-				
CME response				**Date:** DD/MM/YYYY
-				
Documentation provided by the CME				
-				
DOE assessment				**Date:** DD/MM/YYYY
-				

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Document information

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