

# VERIFICATION & CERTIFICATION REPORT

BUREAU OF ENERGY EFFICIENCY

## CFL LIGHTING SCHEME – “BACHAT LAMP YOJANA”

(UNFCCC PoA Ref. No. 3223)

Monitoring Period

(30/05/2010 to 31/12/2012, including both dates)

REPORT No.

CDM.13.VER.004.MP01

(FOR CPA NO. 3223-0001, 3223-0022 TO 3223-0050; BATCH 1)

<b>Date of this issue:</b> 14/05/2014	<b>KBS Ref. No.:</b> CDM.13.VER.004.MP01		
<b>PoA Title:</b>	CFL lighting scheme – “Bachat Lamp Yojana”		
<b>Organization:</b>	KBS Certification Services Pvt. Ltd.		
<b>Client:</b>	Bureau of Energy Efficiency		
<b>Monitoring Period:</b>	30/05/2010 to 31/12/2012 (including both dates)		
<b>Summary:</b>			
<p>KBS Certification Services Pvt. Ltd. Has performed the first 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 CQC (CPA implementer) and HPL (CPA implementer) from EMC, Kerala (CPA implementer) for 1<sup>st</sup> verification of BLY-PoA in accordance with the guidelines of 75<sup>th</sup> meeting of CDM-EB has been considered for this verification. This verification report covers 30 out of 50 CPAs included under the PoA as on 31/12/2012. 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;</p> <ul style="list-style-type: none"> <li>(a) The registered PoA DD, CPA DDs and the monitoring plan, and the corresponding validation opinion;</li> <li>(b) The validation report;</li> <li>(c) The applied monitoring methodology;</li> <li>(d) The monitoring report to verify that it is as per the standardized format;</li> <li>(e) CER calculations sheets and all supporting documents;</li> <li>(f) Any other information and references relevant to the project activity’s emission reductions;</li> <li>(g) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;</li> </ul> <p>KBS Certification Services Pvt. Ltd. Confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements.</p> <p>Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 653,203 tCO<sub>2</sub>e emission reductions during period 30/05/2010 upto 31/12/2012.</p>			
<b>Subject Group:</b> CDM Verification (VVS V5)	<b>Sectoral Scope(s):</b> 3	<b>Methodology:</b> AMS-II.J. (Version 3.0)	
<b>Verification Team:</b>		<b>Monitoring report:</b>	
<b>Team Leader</b>	Kaushik Pal	First version	17/09/2013
<b>Verifier</b>	Akhilesh Joshi Sayali Kumar Sameer Zope Megha Lotankar (Trainee)	Final version	31/03/2014
<b>Local Expert</b>	Akhilesh Joshi B. Rampradap Megha Lotankar		
<b>Technical Expert (03.1)</b>	Kaushik Pal Akhilesh Joshi B. Rampradap		
<b>Independent Technical Reviewer Team:</b>		<b>Verification status:</b>	
<b>Date</b>	15/05/2014	<input type="checkbox"/> Findings not closed.	
<b>Technical Reviewer</b>	Sanjay Kandari	<input type="checkbox"/> Draft verification opinion	
<b>Technical Expert (03.1)</b>	Gagandeep Kakkar	<input checked="" type="checkbox"/> Final verification opinion	
<b>Manager T&amp;C</b>	Gagandeep Kakkar		
<b>Date</b>	15/05/2014		

<b>Authorized Signatory:</b>		<b>Indexing Terms</b>
<b>Date</b>	15/05/2014	<input checked="" type="checkbox"/> No distribution without permission from client
<b>Managing Director</b>	Kaushal Goyal	
<b>Revision history:</b>		<input type="checkbox"/> Limited distribution <input type="checkbox"/> Unrestricted distribution
<b>Date</b>	<b>Rev. No.</b>	[X]
26/12/2013	0	
11/01/2014	1	
11/04/2014	2	
14/04/2014	3	
14/05/2014	4	

## Abbreviations

AMS	Approved Methodology Small Scale
APCPDCL	Andhra Pradesh Central Power Distribution Company Limited
BEE	Bureau of Energy Efficiency
BESCOM	Bangalore Electricity Supply Company Ltd.
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 <sub>2</sub> 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
FAR	Forward Action Request
GEMS	Global E-waste Management Service
GHGs	Greenhouse Gas(es)
H,M,L	High, Medium, Low
HPL	HPL Electric & Power Pvt. Ltd.
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
NGV	Nirmala Green Ventures
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
WHEP	WHEP Foundation

## Conversion Factors and Definitions

1 MWh = 1,000 kWh

<b>Table of Contents</b>	<b>Page</b>
1. INTRODUCTION .....	6
1.1 Objective	6
1.2 Scope	6
1.3 Description of the Project Activity	6
2. METHODOLOGY .....	10
2.1 Review of Documentation	10
2.2 Site Visits	10
2.3 Reporting of Findings	12
2.4 Verification Assessment	12
2.5 Internal Quality Control	12
3. VERIFICATION FINDINGS .....	13
3.1 Remaining Issues (FARs from Previous Validation or Verification)	13
3.2 Compliance of project implementation with registered PoA-DD and CPA-DD	13
3.3 Compliance of monitoring plan with the monitoring methodology including applicable tool(s)	24
3.4 Post registration changes, if any	25
3.5 Compliance of monitoring activities with registered monitoring plan	25
3.6 Compliance with the calibration frequency requirements for measuring instruments	32
3.7 Data not monitored (ex ante or external parameters)	33
3.8 Assessment of Data & calculation of GHG Emission Reductions	34
3.9 Assessment of GHG Emission Reductions in first and second commitment period	36
3.10 Quality of Evidence to Determine Emission Reductions	37
3.11 Management System and Quality Assurance	37
3.12 Application of Materiality	38
4. RECOMMENDATIONS / FORWARD ACTION REQUEST .....	39
5. VERIFICATION & CERTIFICATION STATEMENT .....	40
6. REFERENCES .....	41
7. FINDINGS DOCUMENT .....	46
8. CERTIFICATE OF COMPETENCE .....	58

## 1. INTRODUCTION

### 1.1 Objective

KBS has been commissioned by Bureau of Energy Efficiency to perform an independent verification of its registered CDM PoA "CFL lighting scheme – "Bachat Lamp Yojana", and CPAs UNFCCC ref. no. 3223-001, 3223-022 to 3223-050, for the reported GHG emission reductions for the given monitoring period 30/05/2010 upto 31/12/2012 (both dates included). Based on the request from CME (BEE) for the delinking of Monitoring Report (MR) of CQC (CPA implementer) and HPL (CPA implementer) from EMC, Kerala (CPA implementer) for 1st verification of BLY-PoA under the guidelines of 75th meeting of CDM-EB has been considered for this verification. The CDM PoA & CPA must undergo independent third party verification and certification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

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

- The project activity has been implemented and operated as per the registered PoA DD, CPA DD and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- Monitoring report and other supporting documents are complete;
- The actual monitoring systems & procedures and monitoring report conforms with the requirements of the approved monitoring plan and the approved monitoring methodology;
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.

### 1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on review of monitoring report, supporting information and

- (a) The registered PoA DD, CPA DD, including the monitoring plan and the corresponding validation opinion(s);
- (b) Monitoring report for the monitoring period under verification including CER calculations sheets and all supporting documents;
- (c) The applied monitoring methodology;
- (d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- (e) All information and references relevant to the project activity's resulting in emission reductions

The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

KBS has, based on the recommendations in the latest version of CDM Validation and Verification Standard, employed a rule-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

### 1.3 Description of the Programme of Activity

<i>Project Parties:</i>	<i>India (Host)</i>
	<i>Netherlands</i>
<i>Title of project activity:</i>	<i>CFL lighting scheme – "Bachat Lamp Yojana"</i>
<i>UNFCCC Registration No:</i>	<i>UNFCCC registration No. 3223</i>
<i>PoA Registration date:</i>	<i>29/04/2010</i>
<i>Applied methodology:</i>	<i>AMS-II.J, version 03</i>
<i>CPA-wise start date of crediting period:</i>	<i>Refer Table 1 below</i>

<b>Project Participants:</b>	<i>Bureau of Energy Efficiency, C- Quest Capital Malaysia Limited</i>
<b>Location of the project activity:</b>	<i>The project activity CPAs covered under this monitoring report spreads across 4 States in India (Host Country). The States that fall within this project boundary include Delhi, Punjab, Andhra Pradesh and Karnataka. The CPA project area covers fourteen (14) districts in the four states.</i>

**Table 1: Start Date of Crediting Period of Individual CPAs**

<b>CPA UNFCCC Ref. No.</b>	<b>Crediting period Start date (in DD/MM/YYYY)</b>
3223-0001	29/05/2011
3223-0022	01/07/2011
3223-0023	31/08/2011
3223-0024	31/08/2011
3223-0025	31/08/2011
3223-0026	19/08/2011
3223-0027	31/08/2011
3223-0028	01/07/2011
3223-0029	10/04/2012
3223-0030	*
3223-0031	07/07/2012
3223-0032	06/01/2012
3223-0033	*
3223-0034	*
3223-0035	*
3223-0036	03/03/2012
3223-0037	04/05/2012
3223-0038	27/10/2012
3223-0039	22/11/2012
3223-0040	*
3223-0041	14/08/2012
3223-0042	*
3223-0043	25/07/2012
3223-0044	20/04/2012
3223-0045	09/10/2012
3223-0046	*
3223-0047	*
3223-0048	23/12/2012
3223-0049	*
3223-0050	08/08/2012

\* The cells are left blank as the respective CPAs are not implemented during this monitoring period. The implementation status of these nine(9) unimplemented CPAs is reported in Table -5 of this verification report.

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 involves the distribution of 7,539,074 CFLs<sup>/P04/</sup> in the 21 implemented CPAs out of 30 CPAs covered under this monitoring report<sup>/P02/</sup>. Other 9 CPAs, among them 2 CPAs of HPL and 7 CPAs of CQC, are not implemented during this monitoring period, due to financial crisis of CDM market<sup>/P26/</sup>. Detailed implementation status of 9 CPAs has been discussed in section 3.2 of this report. All the active CPAs are located in the fourteen (14) districts across 4 states of India (host country), namely Delhi, Punjab, Andhra Pradesh and Karnataka.

The latitude and longitude information on the major cities and towns within the project boundary, where CFLs were distributed (i.e. 21 implemented CPAs) is mentioned in the Table 2 below:

**Table 2: Geographic Location of Implemented CPAs**

UNFCCC Ref. No.	State	District /Town/ City	Latitude	Longitude
			Decimal Degree +	Decimal Degree +
3223-0001	Andhra Pradesh	Ranga Reddy	21.125498	81.914063
3223-0022	Karnataka	Kolar	13.9384	78.2613
3223-0023	Karnataka	Chikkaballapur	13.5228	77.8367
3223-0024	Karnataka	Bangalore Rural	13.8023	77.0704
3223-0025	Karnataka	Kolar	13.1363	78.1363
3223-0026	Karnataka	Bangalore Rural	13.0992	77.3888
3223-0027	Karnataka	Ramanagara	12.7145	77.2767
3223-0028	Karnataka	Bangalore Rural	13.1075	77.6002
3223-0029	Delhi	Shalimar Bagh, Model Town	28.7127	77.1623
3223-0031	Delhi	Pitampura, Rohini	28.6896	77.1312
3223-0032	Delhi	Mangol Puri, Moti Nagar	28.6602	77.1384
3223-0036	Punjab	Amritsar	31.634	74.8723
3223-0037	Punjab	Kapurthala, Jalandhar	31.3071	75.5782
3223-0038	Punjab	Tarn Taran , Amritsar	31.45	74.9253
3223-0039	Punjab	Tarn Taran, Kapurthala	31.2817	74.8574
3223-0041	Punjab	Mohali, Ropar	30.7488	76.6413
3223-0043	Andhra Pradesh	Ranga Reddy	17.4359	78.3417
3223-0044	Andhra Pradesh	Ranga Reddy	17.4833	78.4166
3223-0045	Andhra Pradesh	Ranga Reddy	17.6283	78.5746
3223-0048	Andhra Pradesh	Hyderabad	17.4654	78.478
3223-0050	Andhra Pradesh	Ranga Reddy	17.3325	77.9047

The location details of the major cities and towns as provided in the monitoring report were cross verified and confirmed by the verification team from itouchmap website<sup>B09b/</sup> and the location details of the visited towns were also confirmed at the time of site visit.

The purpose of the PoA is to decrease the energy consumption of Households over Delhi, Punjab, Andhra Pradesh and Karnatakastates of India by replacing incandescent lamps (ICLs) with compact fluorescent lamps (CFLs).

In CFLs, the electrical current from the ballast flows through the gas, causing it to emit ultraviolet radiations. The phosphor coating converts the ultraviolet radiation emitted to visible light spectrum. The four wattage type CFLs (11W,14W, 18W and 20W) distributed under the project activity would deliver at least the replaced ICL equivalent lumens as derived from the Indian standard IS 418:2004<sup>B12/</sup> for ICLs. The 11W (620 lumen output) and 14W CFLs (760 lumen output) is replacing 60W ICLs having 620 lumen output, 18 W and 20W CFLs is replacing 100W ICLs having the same lumen output of 1,240. Thus, almost for the same lumen output, the CFLs consume less power (wattage) than the ICLs. Moreover the rated lifetime of the CFLs is 10,000 hours which is much greater than the replaced ICLs, having a rated life of 1,000 hours. The project lamps were



manufactured and supplied by Philips Electronics India Limited, HPL, Halonix, Energetic and Glomare as per the purchase agreement<sup>/P06/</sup>.

Thus, reduction in the power demand has been achieved by using energy efficient CFLs, resulting a reduction of Green house gas (GHG) emissions.

Each household has received a maximum number of 4 CFLs which is as per the registered PoA DD<sup>/B04/</sup>. This is also confirmed during on site visit that none of the visited household has received more than 4 CFLs in exchange of equal number of working ICLs. The project CFLs is in compliance with Indian Standard IS 15111:2002<sup>/B12/</sup>, which is the national standard for self-ballasted compact CFLs in India. The CFLs have unique identified logo<sup>/P18/</sup>. The information of the exchange of lamps at the households was recorded in the electronic database<sup>/P13/</sup>. The electronic database have all the unique details including the Consumer No, RR Number (Address), Name, Electricity Board sub-division name, Name of Electricity Circle, Number and type of CFLs given (14 W and 20 W), Number and type of working ICLs collected (60 W and 100 W), Date of installation.

## 2. METHODOLOGY

KBS follows a rule based verification approach, wherein, as a first step, the contract review is undertaken as per latest version of CDM Accreditation Standard. Subsequently, after the contract is signed, the monitoring report of the project activity is made publicly available at UNFCCC website as per CDM procedures.

A desk review of the project documentation is undertaken, which is followed by an onsite visit by the members of verification team in accordance with the latest version of CDM AS. The verification protocol is filled by the verification team that is based on standard auditing practices and latest version of CDM VVS, to capture the assessment of applicable CDM requirements viz., latest version of CDM Project Standard, registered PoA DD, CPA DD, applied methodology and/or tools and recent decisions. The verification protocol provides transparent means to record the observations and compliances by the verification team members and the nonconformities, if any. The verification protocol is an internal document, and is available on request. Following are the major milestones for the verification under consideration.

### ***Duration of verification***

<i>Verification Contract</i>	06/05/2013
<i>Publication of MR</i>	20/09/2013
<i>On site verification</i>	21/10/2013 to 26/10/2013 06/11/2013 to 11/11/2013
<i>Draft Verification Report</i>	26/12/2013
<i>Final Verification Report</i>	14/05/2014

### 2.1 Review of Documentation

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.

The list of documents reviewed is included in the section 'References'

### 2.2 Site Visits

A site visit is undertaken by members of verification team, involving but not limited to,

- An assessment of the implementation and operation of the proposed CDM PoA as per the registered PoA DD, CPA DD;
- A review of information flows for generating, aggregating and reporting the monitoring parameters;
- Interviews with relevant personnel to confirm that the operational and data collection procedures are implemented in accordance with the approved monitoring plan;
- A cross-check between information provided in the monitoring report and data from other sources such as plant log books, inventories, purchase records or similar data sources;
- A check of the monitoring equipment, including calibration performance and observations of monitoring practices against the requirements of each CPA-DDs and the selected methodology;
- A review of calculations and assumptions made in determining the GHG data and emission reductions;

- An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

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

<b>Location</b>	States: Punjab, Delhi, Andhra Pradesh, Karnataka; Country: India	
<b>Dates</b>	21/10/2013 – 26/10/2013, 06/11/2013 - 11/11/2013, 04/04/2014-05/04/2014	
<b>Key points discussed</b>	<b>Name of person interviewed</b>	<b>Designation, Organization</b>
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	Tridip Kumar Goswami Vineet Kumar Garg Mahesh Sharma Hemant Kumar Telkar Shashi Kiran Prasanna K. T. A. V. Manjunath M. C. Prabhakar Sagar Thimmaiah K. Madhupal Reddy B. Rahul Kumar A. Lingesh Goud C. Naresh Kumar Niranjan Basu	Head of Compliance, CQC CDM consultant, CQC Manager Projects, HPL Oversite Manager, CQC Sr. Manager, HPL Project Manager, HPL Sr. Supervisor, HPL Sr. Supervisor, HPL Supervisor, HPL NGV NGV NGV NGV Managing Trustee, WHEP
Information flows for generating, aggregating and reporting the monitoring parameters	Tridip Kumar Goswami Vineet Kumar Garg Mahesh Sharma	Head of Compliance, CQC CDM consultant, CQC Manager Projects, HPL
Competency of the operating personnel and monitoring personnel	Tridip Kumar Goswami Vineet Kumar Garg Mahesh Sharma Hemant Kumar Telkar Damodar B.	Head of Compliance, CQC CDM consultant, CQC Manager Projects, HPL Oversite Manager, CQC Executive Engineer, BESCOM
Ex Post Sampling Survey and data collection procedures	Tridip Kumar Goswami Vineet Kumar Garg Mahesh Sharma Hemant Kumar Telkar Mohan M.	Head of Compliance, CQC CDM consultant, CQC Manager Projects, HPL Oversite Manager, CQC CEO, Maverick Consulting
Quality Control and Quality Assurance procedures against the registered monitoring plan	Tridip Kumar Goswami Vineet Kumar Garg Mahesh Sharma Hemant Kumar Telkar	Head of Compliance, CQC CDM consultant, CQC Manager Projects, HPL Oversite Manager, CQC
Calculation and assumptions made in determining the GHG data and emission reductions	Tridip Kumar Goswami Vineet Kumar Garg Mahesh Sharma	Head of Compliance, CQC CDM consultant, CQC Manager Projects, HPL
Compliance with CDM criterion and relevant guidance with respect to registered	Tridip Kumar Goswami Vineet Kumar Garg	Head of Compliance, CQC CDM consultant, CQC

monitoring plan	Mahesh Sharma	Manager Projects, HPL
Level of accuracy of the monitoring activity	Tridip Kumar Goswami Vineet Kumar Garg Mahesh Sharma	Head of Compliance, CQC CDM consultant, CQC Manager Projects, HPL
Installation and operation of the distributed CFLs (through random sampling approach)	202 households in Andhra Pradesh, 102 households in Delhi, 153 households in Punjab, 98 households in Karnataka.	

## 2.3 Reporting of Findings

During the course of verification the findings may be raised as under;

CAR is raised if one of the following occurs:

- Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during verification(s) have not been resolved by the project participants.

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

FAR is raised during verification if the monitoring and reporting require attention and/or adjustment for the next verification period.

The verification report contains (section 7) all CARs, CLs and FARs raised during this verification in transparent manner and provides clear information of the issues raised, response received and its resolutions, including the changes in the documents. Additionally, major changes between the webhosted MR and final MR are presented under Section 6 (below the Reference) for easy reference.

## 2.4 Verification Assessment

Based on the desk review and site visit the team leader fills in the verification protocol to identify and record the findings in the context of the project activity. The findings are communicated to the client in the findings document (section 7 of report). The project documentation, including responses to the findings is reviewed by the team leader in consultation with team members, wherever appropriate. The team leader prepares the draft verification report subject to closure or non-closure of the findings.

## 2.5 Internal Quality Control

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 T&C can be same person.

The final decision is authorized by Managing Director, KBS once the report is approved by the Manager T&C.

### 3. VERIFICATION FINDINGS

#### 3.1 Remaining Issues (FARs from Previous Validation or Verification)

The current verification is for the first monitoring period of the PoA. All raised CARs and CLs were successfully closed during the validation of the CDM PoA and Validation of the included CPAs. Assessment team has confirmed from the validation report<sup>/B05/</sup> available at project web page<sup>/B08/</sup> that there is no issue pending from validation.

#### 3.2 Compliance of project implementation with registered PoA-DD and CPA-DD

##### Discussion:

The project was implemented and equipment installed as described in the registered PoA-DD and CPA-DDs<sup>/B04/</sup>.

The report applies to the first verification of the following CPAs:

**Table 3: Title and UNFCCC Reference Number of Individual 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
022-HPL-KR	3223-0022	“Bachat Lamp Yojana” in KOLAR DISTRICT, ELECTRICAL DIVISION OF KOLAR CIRCLE, KGF DIVISION, BESCOM, KARNATAKA, INDIA
024-HPL-KR	3223-0023	“Bachat Lamp Yojana” in CHIKKABALLAPURA DISTRICT, ELECTRICAL DIVISION OF KOLAR CIRCLE, CHIKKABALLAPURA (CB PURA) DIVISION, BESCOM, KARNATAKA, INDIA
025-HPL-KR	3223-0024	“Bachat Lamp Yojana” in BANGALORE RURAL DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, CHANDAPURA DIVISION, BESCOM, KARNATAKA, INDIA
028-HPL-KR	3223-0025	CFL lighting scheme – “Bachat Lamp Yojana” in KOLAR DISTRICT, ELECTRICAL DIVISION OF KOLAR CIRCLE, KOLAR DIVISION, BESCOM, KARNATAKA, INDIA
023-HPL-KR	3223-0026	CFL lighting scheme – “Bachat Lamp Yojana” in BANGALORE RURAL DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, NELAMANGALA DIVISION, BESCOM, KARNATAKA, INDIA
026-HPL-KR	3223-0027	“Bachat Lamp Yojana” in RAMANAGARA DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, RAMANAGARA DIVISION, BESCOM, KARNATAKA, INDIA
027-HPL-KR	3223-0028	“Bachat Lamp Yojana” in BANGALORE RURAL DISTRICT, ELECTRICAL DIVISION OF BANGALORE RURAL CIRCLE, YELAHANKA DIVISION, BESCOM, KARNATAKA, 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
030-CQC-DL	3223-0030	CFL lighting scheme – “Bachat Lamp Yojana” in Keshav Puram, Civil Lines and Shakti Nagar Districts of North Circle, North Delhi Power Limited, Delhi, India
041-CQC-DL	3223-0031	CFL lighting scheme – “Bachat Lamp Yojana” in Pitampura District of North Circle, Rohini District of Northwest 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
043-CQC-DL	3223-0033	CFL lighting scheme – “Bachat Lamp Yojana” in Bawana District, Badli District and Narela District of North West Circle, North Delhi Power Limited, Delhi, India
034-HPL-GO	3223-0034	CFL lighting scheme – “Bachat Lamp Yojana” in NORTH GOA, ADMINISTRATIVE DIVISIONS OF BLOCK-II, GOA ELECTRICITY DEPARTMENT, GOA, INDIA
035-HPL-GO	3223-0035	CFL lighting scheme – “Bachat Lamp Yojana” in South Goa, Administrative Divisions of Block- I, Goa Electricity Department, Goa , 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
038-CQC-PB	3223-0038	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
039-CQC-PB	3223-0039	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
040-CQC_PB	3223-0040	CFL lighting scheme – “Bachat Lamp Yojana” in City Nakodar and Sub Urban Nakodar Divisions of Kapurthala Circle and Phagwara and Cantt. Divisions of Jalandhar Circle, Punjab State Power Corporation Limited, Punjab, India
044-CQC-PB	3223-0041	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
045-CQC-PB	3223-0042	CFL lighting scheme – “Bachat Lamp Yojana” in City Ferozpur, Sub-urban Ferozpur, Jalalabaad and Zira Divisions of Ferozpur Circle and Fazilka Division of Muktsar Circle, Punjab State Power Corporation Limited, Punjab, India
031-CQC-AP	3223-0043	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
032-CQC-AP	3223-0044	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

033-CQC-AP	3223-0045	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
049-CQC-AP	3223-0046	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
050-CQC-AP	3223-0047	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
051-CQC-AP	3223-0048	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
052-CQC-AP	3223-0049	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy South Circle and Ranga Reddy East Circle with underlying Champapet and Saroornagar Divisions respectively, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India
053-CQC-AP	3223-0050	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

The PoA involves the distribution of CFL in exchange of ICL bulbs and INR: 15.00 for household use. The total number of CFL distributed under the above mentioned CPAs (21 implemented CPAs) are 7,539,074<sup>/P04/</sup>. The details of implementation of the 21 implemented CPAs are provided below –

**Table 4: Implementation Status of Individual CPAs (21 implemented 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 1 <sup>st</sup> ex post Monitoring survey	End Date of 1 <sup>st</sup> ex post Monitoring Survey
3223-0001	11/05/2011	09/10/2011	21/10/2011	23/12/2011	06/01/2012
3223-0022	02/04/2011	01/07/2011	17/02/2012	27/08/2011	08/09/2011
3223-0023	08/07/2011	31/08/2011	27/02/2012	22/02/2012	05/03/2012
3223-0024	01/08/2011	31/08/2011	12/03/2012	17/02/2012	27/02/2012
3223-0025	01/04/2011	01/07/2011	22/02/2012	27/08/2011	05/09/2011
3223-0026	04/08/2011	31/08/2011	02/03/2012	29/02/2012	05/03/2012
3223-0027	20/05/2011	19/08/2011	07/03/2012	17/02/2012	28/02/2012
3223-0028	06/07/2011	31/08/2011	16/03/2012	17/02/2012	28/02/2012
3223-0029	16/01/2012	10/04/2012	03/06/2012	07/11/2012	05/12/2012
3223-0031	21/05/2012	03/07/2012	13/07/2012	20/11/2012	25/11/2012
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
3223-0038	25/08/2012	27/10/2012	27/11/2012	14/02/2013	23/02/2013
3223-0039	08/09/2012	22/11/2012	27/11/2012	25/02/2013	06/03/2013
3223-0041	25/06/2012	14/08/2012	22/10/2012	26/10/2012	30/10/2012
3223-0043	26/05/2012	25/07/2012	31/07/2012	08/12/2012	13/12/2012
3223-0044	26/02/2012	20/04/2012	25/04/2012	21/09/2012	26/09/2012
3223-0045	11/08/2012	09/10/2012	17/10/2012	24/12/2012	29/12/2012
3223-0048	09/11/2012	23/12/2012	27/12/2012	13/06/2013	19/06/2013
3223-0050	04/06/2012	07/08/2012	24/08/2012	16/12/2012	22/12/2012



This schedule of distribution was found in line with registered PoA DD and CPA DDs. This was verified with the electronic database<sup>/P13/</sup> and the letter from the CPA implementers (HPL and CQC) to CME (BEE)<sup>/P20/</sup>. 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 registered PoA DD<sup>/B04/</sup>.

The total number of CFLs proposed for installation by the PP in the registered CPA-DDs of 21 implemented CPAs is 10,960,806<sup>/B04/</sup>. Verification team checked the technical specification of the project lamps from the master purchase agreement<sup>/P06/</sup> as provided by the CFL manufacturer (i.e. Philips, HPL, Halonix, Energetic and Glomore ) and found that same is in line with the PoA DD<sup>/B04/</sup> as well as MR<sup>/P02/</sup>. However, based on the participation of the consumers, PP had distributed a total number of 7,539,074 CFLs<sup>/P04/</sup>. The distribution of the CFLs is recorded in accordance with the monitoring information provided in the registered PoA DD<sup>/B04/</sup>. 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.

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, Karnataka and Andhra Pradesh states of India. The start date as well as completion date of installation of each CPA location is incorporated in the section B.1 of the MR<sup>/P02/</sup>. The dates are in line with the electronic database<sup>/P13/</sup> as well as the confirmation letter issued by the CME (BEE)<sup>/P20/</sup>. 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<sup>/P20/</sup> and ER spreadsheet<sup>/P04/</sup> to assess total number of 7,539,074 CFLs<sup>/P04/</sup> and concludes that 7,539,074 CFLs have been distributed and installed in the households.

Present status of the inactive (unimplemented) CPAs during the 1st Monitoring period (30/05/2010 - 31/12/2012) is mentioned below -

**Table 5: Implementation Status of Individual CPAs (9 unimplemented CPAs)**

CME -Unique Identification No.	UNFCCC Ref. No.	Status of Implementation
030-CQC-DL	3223-0030	The CPA was not implemented during the 1st Monitoring period (30/05/2010-31/12/2012). The reason sighted by CPA implementor (CQC) is due to non availability of financing for procurement of CFLs for distribution. Verification team confirms the same through interview with CME (BEE) and CPA implementor (CQC).
043-CQC-DL	3223-0033	The CPA was not implemented during the 1st Monitoring period (30/05/2010-31/12/2012). The reason sighted by CPA implementor (CQC) is due to non availability of financing for procurement of CFLs for distribution. Verification team confirms the same through interview with CME (BEE) and CPA implementor (CQC).
034-HPL-GO	3223-0034	CPA Implementor decided not to implement the project due to low CER price . Verification team confirmed the same through letter sent by CPA implementer (HPL) to CME (BEE) dated 08/08/2013 <sup>/P26/</sup>
035-HPL-GO	3223-0035	CPA Implementor decided not to implement the project due to low CER price . Verification team confirmed the same through letter sent by CPA implementer (HPL) to CME (BEE) dated 08/08/2013 <sup>/P26/</sup>
040-CQC_PB	3223-0040	The CPA was not implemented during the 1st Monitoring period (30/05/2010 -31/12/2012). The reason sighted by CPA implementor (CQC) is due to non availability of financing for procurement of CFLs for distribution. Verification team confirms the same through interview with CME (BEE) and CPA implementor (CQC).
045-CQC-PB	3223-	The CPA was not implemented during the 1st Monitoring period



	0042	(30/05/2010 -31/12/2012). The reason sighted by CPA implementor (CQC) is due to non availability of financing for procurement of CFLs for distribution. Verification team confirms the same through interview with CME (BEE) and CPA implementor (CQC).
049-CQC-AP	3223-0046	The CPA was not implemented during the 1st Monitoring period (30/05/2010 -31/12/2012). The completion date of CFL distribution under this CPA is 17/05/2013 as confirmed by the CME through letter issued to CPA implementer (CQC) dated 15/07/2013 <sup>/P26/</sup> . Verification team confirms that the CPA is considered inactive due to the fact that it was not implemented during the 1st Monitoring period (30/05/2010 - 31/12/2012).
050-CQC-AP	3223-0047	The CPA was not implemented during the 1st Monitoring period (30/05/2010 -31/12/2012). The completion date of CFL distribution under this CPA is 09/03/2013 as confirmed by the CME through letter issued to CPA implementer (CQC) dated 09/04/2013 <sup>/P26/</sup> . Verification team confirms that the CPA is considered inactive due to the fact that it was not implemented during the 1st Monitoring period (30/05/2010 - 31/12/2012).
052-CQC-AP	3223-0049	The CPA was not implemented during the 1st Monitoring period (30/05/2010 -31/12/2012). The completion date of CFL distribution under this CPA is 18/05/2013 as confirmed by the CME through letter issued to CPA implementer (CQC) dated 20/09/2013 <sup>/P26/</sup> . Verification team confirms that the CPA is considered inactive due to the fact that it was not implemented during the 1st Monitoring period (30/05/2010 - 31/12/2012).

#### CFL Distribution and Installation:

In exchange of the less efficient working ICLs and INR 15, CPA implementers have distributed and installed the high power factor CFLs in the individual households located in the Delhi, Punjab, Karnataka and Andhra Pradesh states of India. The distribution and installation of the CFLs were carried out by the CPA implementers as described in the registered PoA DD<sup>/B04/</sup>. Each and every replacement of the ICL with CFL has been recorded in the electronic database<sup>/P13/</sup> 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 Implementers<sup>/P24/</sup> and as mentioned in the section A.4.2 of registered PoA-DD<sup>/B04/</sup> 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<sup>/P25/</sup> 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”<sup>/P18/</sup> as mentioned in the Registered PoA DD<sup>/B04/</sup> 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)<sup>/B08/</sup>, 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.

#### Verification of sampling approach applied by PP:

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. (Version 03)<sup>/B01/</sup>, 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 –

$$n = (1.645)^2 / (0.1)^2 * (1-p) / p$$

$$n = 270.6025 * (1-p) / p$$

$$\text{Hence, } n = 270.6025 * (1-0.0639) / 0.0639 = 3,964.1784 = 3,965 \text{ CFLs (roundup value)}$$

The above-mentioned formula as mentioned in the Annex 4 of registered PoA-DD<sup>/B04/</sup> 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-5 of the MR<sup>/P02/</sup> 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<sup>/P23/</sup> in accordance with the registered PoA DD<sup>/B04/</sup>. The 1<sup>st</sup> ex post monitoring survey was carried out by adapting the questionnaire template as prescribed in Annex 1 of the applied methodology<sup>/B01/</sup>. Verification team checked the same from monitoring survey forms<sup>/P17/</sup> 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 1<sup>st</sup> 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<sup>B04/</sup> 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)<sup>B13/</sup>.

#### Sampling approach applied by verification team for cross verification:

In accordance with the §24(a) of Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 04.1)<sup>B13/</sup> and based on verification team’s professional judgment, the verification team has chosen a random sample size of 555 households (which is having 2,003 CFL) against the electronic database<sup>P13/</sup>. 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 §24b and §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)<sup>B13/</sup> 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 §25 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 555 household’s located in the implemented CPAs of four states. The verification team used the survey forms as shown in the Annexure-1 of this report 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<sup>P13/</sup> as well as from back up data of surveyed Households during First ex-post monitoring survey<sup>P22/</sup> 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<sup>P22/</sup> to confirm the electronic database<sup>P13/</sup> 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 555 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)<sup>B13/</sup> 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 6: Summary of verification team on-site survey**

CPA UNFCCC Ref. No.	CFLs Distributed as per electronic database <sup>P13/, /P22/</sup>				ICLs Collected as per electronic database <sup>P13/, /P22/</sup>			
	11W	14W	18W	20W	60 W	60 W	100 W	100 W
3223-0001	56	-	-	76	56	-	-	76
3223-0022	8	-	32	-	8	-	32	-
3223-0023	6	-	49	-	6	-	49	-
3223-0024	0	-	43	-	0	-	43	-

3223-0025	4	-	35	-	4	-	35	-
3223-0026	1	-	52	-	1	-	52	-
3223-0027	9	-	60	-	9	-	60	-
3223-0028	2	-	57	-	2	-	57	-
3223-0029	68	-	67	-	68	-	67	-
3223-0031	60	-	66	-	60	-	66	-
3223-0032	-	74	-	74	-	74	-	74
3223-0036	33	-	97	-	33	-	97	-
3223-0037	33	-	65	-	33	-	65	-
3223-0038	52	-	48	-	52	-	48	-
3223-0039	42	-	82	-	42	-	82	-
3223-0041	44	-	67	-	44	-	67	-
3223-0043	34	-	61	-	34	-	61	-
3223-0044	55	-	62	-	55	-	62	-
3223-0045	57	-	63	-	57	-	63	-
3223-0048	28	-	62	-	28	-	62	-
3223-0050	52	-	67	-	52	-	67	-
<b>TOTAL</b>	<b>644</b>	<b>74</b>	<b>1135</b>	<b>150</b>	<b>644</b>	<b>74</b>	<b>1135</b>	<b>150</b>

**Table 7: Summary of LFR<sub>i,y</sub> observed by verification team during on-site survey**

CPA UNFCCC Ref. No.	CFLs found fused/broken during on site visit <sup>B17/</sup>				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	8	-	-	10	14.28	-	-	13.15	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL distribution.
3223-0022	1	-	5	-	12.50	-	15.62	-	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL distribution.
3223-0023	1	-	7	-	16.66	-	14.28	-	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL distribution.
3223-0024	0	-	6	-	-	-	13.95	-	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL distribution.
3223-0025	0	-	4	-	0	-	11.42	-	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL distribution.
3223-0026	0	-	8	-	0	-	15.38	-	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL distribution.
3223-0027	1	-	9	-	11.11	-	15.0	-	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL distribution.
3223-0028	0	-	7	-	0	-	12.28	-	Lower then the ex ante LFR assumed during 3 <sup>rd</sup> year (i.e. 19.22%) from completion of CFL

									distribution.
3223-0029	8	-	8	-	11.76	-	11.94	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0031	5	-	6	-	8.33	-	9.09	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0032	-	8	-	7	-	10.81	-	9.45	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0036	4	-	10	-	12.12	-	10.30	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0037	3	-	7	-	9.09	-	10.76	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0038	3	-	3	-	5.76	-	6.25	-	Lower then the ex ante LFR assumed during 1 <sup>st</sup> year from completion of CFL distribution.
3223-0039	2	-	5	-	4.76	-	6.09	-	Lower then the ex ante LFR assumed during 1 <sup>st</sup> year (i.e. 6.39%) from completion of CFL distribution.
3223-0041	4	-	7	-	9.09	-	10.44	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0043	3	-	6		8.82	-	9.83	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0044	5	-	7	-	9.09	-	11.29	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0045	4	-	5	-	7.01	-	7.93	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) from completion of CFL distribution.
3223-0048	1	-	3	-	3.57	-	4.83	-	Lower then the ex ante LFR assumed during 1 <sup>st</sup> year (i.e. 6.39%) from completion of CFL distribution.
3223-0050	4	-	6	-	7.69	-	8.95	-	Lower then the ex ante LFR assumed during 2 <sup>nd</sup> year (i.e. 12.81%) 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 6.39% for the 1<sup>st</sup> year and 12.81% for the 2<sup>nd</sup> year from completion of distribution) is found to be appropriate.

### 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<sup>/P10b/</sup>. 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<sup>/P13/</sup>. The ICLs collected were stored in respective boxes based on the wattage type and send to the various destruction agencies<sup>/P08/</sup> designated by CQC and HPL respectively for the destruction. On receiving the ICLs, the waste management company acknowledged the receipt of working ICLs and issued "Certificate of Destruction"<sup>/P10a/</sup>. A warranty program during the monitoring survey has also been provided by the CQC and HPL 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<sup>/P13/</sup> 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<sup>/B09c/</sup>. 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.

### Management and Operation

The CPA implementers has implemented and operated the PoA as per the registered monitoring plan as mentioned in the PoA DD<sup>/B04/</sup>. 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<sup>/P13/</sup>. Each Staff member involved in the PoA has been provided adequate training<sup>/P21/</sup> about PoA activity before starting of distribution of CFLs.

The overall planning, management and operation is controlled by the CQC & HPL, Principal project owner & implementer for the project and BEE (i.e. CME). The management teams of both CQC and HPL 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 and HPL have followed the monitoring plan as mentioned in the registered PoA-DD<sup>/B04/</sup> to ensure high integrity of data and quality of verification reports.

### Comparison of actual emission reductions with the estimated emission reductions:

The actual emission reductions achieved for the monitoring period are 18.67% lower than the estimated emission reductions stated in the registered CPA DDs<sup>/B04/</sup>. This is due to the fact that the projected figure was total 10,960,806 numbers of CFLs in the 21 implemented CPAs as mentioned in the registered CPA-DDs<sup>/B04/</sup> and the distributed figure is total 7,539,074 CFLs<sup>/P04/</sup>. The comparison has been provided below:

Monitoring period	Total Emission reductions as per the registered CPA-DDs for 21 implemented CPAs (tCO <sub>2</sub> e)	Total Actual values achieved for 21 implemented CPAs (tCO <sub>2</sub> e)
30/05/2010 to 31/12/2012 (Both dates included)	803,213	653,203



**Table 8: Comparison of actual ERs achieved and estimated ERs as per registered CPA-DDs**

UNFCCC Ref. No.	CPA specific Monitoring period length in number of days	Actual Emission Reduction (tCO <sub>2</sub> e)	Projected Emission Reduction as per CPA-DD(tCO <sub>2</sub> e)	Remarks on difference between estimated and actual emission reductions
3223-0001	583	42,097	55,286	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0022	550	79,584	76,298	The difference is due to the fact that more number of higher wattage CFLs (18 W CFL compared to 11 W CFL) is distributed which leads to higher P <sub>i,BL</sub> value compared to the projected value in registered CPA-DD <sup>/B04/</sup> .
3223-0023	489	64,958	68,352	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0024	489	65,087	64,250	The difference is due to the fact that more number of higher wattage CFLs (18 W CFL compared to 11 W CFL) is distributed which leads to higher P <sub>i,BL</sub> value compared to the projected value in registered CPA-DD <sup>/B04/</sup> .
3223-0025	489	60,622	67,738	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0026	501	64,655	68,352	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0027	489	63,218	67,049	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0028	550	61,228	68,352	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0029	266	16,339	31,625	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0031	178	4,918	19,468	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0032	361	32,885	45,680	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup> .
3223-0036	304	24,156	38,864	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the

				projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0037	242	15,731	28,438	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0038	66	5,861	9,033	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0039	40	3,948	4,509	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0041	140	11,763	16,774	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0043	160	6,939	15,285	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0044	256	13,152	28,608	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0045	84	6,118	11,588	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0048	9	695	1,159	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>
3223-0050	146	9,249	16,505	The difference is due to the less number of CFLs distributed due to less number of participating households compared to the projected number of households in registered CPA-DD <sup>/B04/</sup>

#### Findings:

CAR-03, CAR-04, CAR-07 and CAR-13 was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The verification team confirms that in the current monitoring period -

- The twenty one (21) number of CPAs out of thirty (30) CPAs covered under this verification report were implemented as of 31/12/2012 (end date of this monitoring period). The same was verified during the site inspection and found to be correct confirming the implementation and operation of the PoA. The status of nine (9) CPAs which were not implemented during this monitoring period has been given in detail in Table 5, section 3.2 of this report.
- There is no deviation, revision in monitoring plan or notification/request for approval for the changes from the description in the registered PoA-DD and CPA-DDs <sup>/B04/</sup> in the current monitoring period. The sample size selected also 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)<sup>/B13/</sup>.
- c) Verification team by means of an on-site visit confirms that all the physical features of the project activity in the registered PoA-DD were in place and that the project participants have operated the project activity as per the registered PoA-DD, CPA-DDs. DOE also confirms that there is no gap between the information stated in the registered PoA-DD, CPA-DDs and the monitoring report. Verification team confirms that the requirements of §227 of the VVS V5<sup>/B06a/</sup> has been met.
  - d) In accordance with §228 of VVS V5<sup>/B06a/</sup> the verification team reviewed the registered PoA-DD, CPA-DDs<sup>/B04/</sup>, including the monitoring plan and the corresponding validation report<sup>/B05/</sup>, the applied monitoring methodology<sup>/B01/</sup>, relevant decisions from the CMP and the CDM EB and found that the MR<sup>/P02/</sup> for this monitoring period is line with all the above mentioned documents.
  - e) The estimated emission reductions for the PoA for comparable period (947 days) is 803,213 tCO<sub>2</sub>e while the actual emission reductions achieved during the monitoring period are 653,203 tCO<sub>2</sub>e.

### 3.3 Compliance of monitoring plan with the monitoring methodology including applicable tool(s)

#### Discussion:

The monitoring plan of the PoA is in accordance with the applied methodology<sup>/B01/</sup>. The monitoring has been carried out in accordance with the monitoring plan contained in the Registered PoA-DD<sup>/B04/</sup>. 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<sup>/B04/</sup> of the PoA is in accordance with the applied methodology<sup>/B01/</sup>.

The monitoring approach for each parameter described in the Registered PoA-DD<sup>/B04/</sup> was found consistent in terms of unit, measurement procedures and monitoring frequency.

#### Findings:

CAR-08 was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

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<sup>/B04/</sup>. Monitoring plan as mentioned in the Registered PoA-DD<sup>/B04/</sup> complies with the requirement of the applied methodology AMS-II.J. (Version 03)<sup>/B01/</sup> in the context of the project activity. Thus, it conforms to the requirement of §232 of VVS V5<sup>/B06a/</sup>.

### 3.4 Post registration changes, if any

#### Discussion:

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

### 3.5 Compliance of monitoring activities with registered monitoring plan

#### Discussion:

The monitoring has been carried out in accordance with the monitoring plan contained in the registered PoA-DD<sup>/B04/</sup> and registered CPA-DDs<sup>/B04/</sup>. 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. It is confirmed that the monitoring parameter has been measured / determined without material misstatements.

**Table 9: Final Verified values of individual implemented CPAs (21 number)**

Parameter CPA UNFCCC Ref. No.	Q <sub>PJ,i</sub>	LFR <sub>i,y</sub>		N	P <sub>i,BL</sub>	P <sub>i,PJ</sub>	N <sub>destroyed</sub>		TD <sub>y</sub>	
		LFR <sub>i,1</sub>	LFR <sub>i,2</sub>				60W	100W	2011 -12	2012 -13
3223-0001	417,511	6.39%	12.81%	1,800	86.97	17.07	140,515	290,732	17.96%	17.96%
3223-0022	550,750	6.39%	12.81%	2,200	95.00	17.12	72,496	507,408	18.64%	18.64%
3223-0023	498,509	6.39%	12.81%	2,200	95.79	17.26	54,985	467,507	18.64%	18.64%
3223-0024	498,664	6.39%	12.81%	2,200	95.95	17.29	52,925	469,809	18.64%	18.64%
3223-0025	478,484	6.39%	12.81%	2,200	93.97	16.94	76,098	428,497	18.64%	18.64%
3223-0026	487,892	6.39%	12.81%	2,200	97.41	17.55	33,538	483,877	18.64%	18.64%
3223-0027	503,651	6.39%	12.81%	2,200	92.45	16.68	100,575	432,398	18.64%	18.64%
3223-0028	463,234	6.39%	12.81%	2,200	97.16	17.50	34,849	455,341	18.64%	18.64%
3223-0029	245,394	6.39%	12.81%	1,546	89.76	16.21	67,185	194,306	17.41%	17.41%
3223-0031	107,834	6.39%	12.81%	1,246	91.88	16.58	22,751	89,256	17.41%	17.41%
3223-0032	400,942	6.39%	12.81%	1,246	84.43	17.66	161,881	253,945	17.41%	17.41%
3223-0036	311,086	6.39%	12.81%	1,404	89.83	16.22	81,825	240,487	19.00%	19.00%
3223-0037	250,585	6.39%	12.81%	1,574	91.22	16.46	55,381	197,000	19.00%	19.00%
3223-0038	336,768	6.39%	12.81%	1,404	92.73	16.73	62,700	282,181	19.00%	18.40%
3223-0039	378,906	6.39%	12.81%	1,404	91.62	16.53	80,369	303,123	19.00%	18.40%
3223-0041	331,494	6.39%	12.81%	1,404	89.15	16.10	91,055	244,558	19.00%	18.40%
3223-0043	181,697	6.39%	12.81%	1,741	88.77	16.03	52,854	135,388	17.96%	17.96%
3223-0044	216,780	6.39%	12.81%	1,741	88.14	15.92	64,651	153,377	17.96%	17.96%
3223-0045	302,288	6.39%	12.81%	1,741	89.60	16.18	80,228	228,392	17.96%	17.96%
3223-0048	319,238	6.39%	12.81%	1,741	90.02	16.25	80,608	242,571	17.96%	17.96%
3223-0050	257,391	6.39%	12.81%	1,741	91.52	16.52	56,759	212,064	17.96%	17.96%

### 3.5.1. Data/Parameter, Unit: N<sub>Destroyed</sub>, Number

Number of ICLs collected and destroyed

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	For emission reduction calculation.
<i>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</i>	No monitoring equipment used.
<i>Measuring/Reading/Recording frequency</i>	Once in the crediting period. The data is recorded in electronic database from start date of CFL distribution up to the end date of CFL distribution for each CPA.
<i>Data collection (from data generation, aggregation, to recording, calculation and reporting)</i>	The data is recorded in consent deeds <sup>/P25/</sup> 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 <sup>/P25/</sup> 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.
<i>Verified value</i>	As mentioned in table above in section 3.5 of this report.
<i>Cross checks</i>	The verification team cross checked the reported data in the MR <sup>/P02/</sup> and ER sheet <sup>/P04/</sup> with the electronic database <sup>/P13/</sup> . Also confirmed the same through the ICL destruction certificate issued by various destruction agencies for individual CPAs <sup>/P10/</sup> .
<i>QA/QC procedures applied</i>	The handing over of working ICLs and destruction activities were recorded via video recorder and/or photography <sup>/P09/</sup> . 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 <sup>/P08/</sup> and total number of ICLs destroyed is verified through ICL destruction certificate issued by various destruction agencies for individual CPAs <sup>/P10/</sup> .
--	--

#### Findings:

CAR-10d was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs <sup>/P10/</sup> and also checked the photographic and video graphic evidences of boxes storing working ICLs with labelling of contents, wattages and destruction of ICLs <sup>/P09/</sup>. Verification team confirms that the value of parameter considered from certificates of ICL destruction as mentioned in the table above in section 3.5 of this report is acceptable.

#### 3.5.2. Data/Parameter, Unit: $Q_{PJ, h}$ Number

Number of CFLs of the group of "r" CFLs (11W, 14W, 18W & 20W CFLs) in operation during the first 12 months of distribution

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	For emission reduction calculation.
<i>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</i>	No monitoring equipment used.
<i>Measuring/Reading/Recording frequency</i>	Once in the crediting period (within 1 year from end date of distribution of CFL for each CPA). The data is recorded in electronic database from start date of CFL distribution up to the end date of CFL distribution for each CPA. Value also confirmed from ex post Monitoring survey conducted after completion of distribution of CFLs.
<i>Data collection (from data generation, aggregation, to recording, calculation and reporting)</i>	The data is recorded in consent deeds <sup>/P25/</sup> at the time of CFL distribution to the individual household. Number of each type of CFL distributed is recorded in the consent deeds <sup>/P25/</sup> 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.
<i>Verified value</i>	As mentioned in table above in section 3.5 of this report.
<i>Cross checks</i>	The verification team cross checked the reported data in the MR <sup>/P02/</sup> and ER sheet <sup>/P04/</sup> with the confirmation letter issued by CPA implementer to CME <sup>/P20/</sup> . Also confirmed the same through the ex post monitoring survey report <sup>/P15/</sup> .
<i>QA/QC procedures applied</i>	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 <sup>/B01/</sup> so that the estimate of $Q_{PJ, h}$ 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 <sup>/P04/</sup> . 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.

#### Findings:

CAR-10c was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs<sup>/P10/</sup>. Verification team can confirm that the value of parameter considered as equal to the number of ICLs destroyed<sup>/P10/</sup> is less/more than the value of CFLs found installed and operating as per ex post monitoring survey report<sup>/P15/</sup>. The lower value between number of ICLs collected & destroyed and CFLs found in ex post monitoring survey is considered for ER calculation<sup>/P04/</sup>. This is also in accordance with the QA/QC procedure mentioned in the registered PoA-DD and CPA-DDs<sup>/B04/</sup>.

#### 3.5.3. Data/Parameter, Unit: $P_{i, BL}$ , W

Rated power of the baseline ICLs of the group of "I".

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	For emission reduction calculation.
<i>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</i>	No monitoring equipment used.
<i>Measuring/Reading/Recording frequency</i>	Measured once during the crediting period. Weighted average calculated using rated power of the baseline ICLs as recorded in CPA electronic database <sup>/P13/</sup>
<i>Data collection (from data generation, aggregation, to recording, calculation and reporting)</i>	The data of collected working ICLs is recorded in consent deeds <sup>/P25/</sup> 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 destroyed is taken from ICL destruction certificate issued by various destruction agencies for individual CPAs <sup>/P10/</sup> . $P_{i, BL} = 60 \text{ W} \times \text{fraction of } 60 \text{ W ICLs destroyed} + 100 \text{ W} \times \text{fraction of } 100 \text{ W ICLs destroyed}$
<i>Verified value</i>	As mentioned in table above in section 3.5 of this report.
<i>Cross checks</i>	The verification team cross checked the calculation of parameter in the ER spread sheet <sup>/P04/</sup> with the values of number of ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs <sup>/P10/</sup> . Also, the value is found conservative compared to the number of CFLs distributed as per the electronic database <sup>/P13/</sup> .
<i>QA/QC procedures applied</i>	Number and type of ICLs were collected in the boxes. In accordance with the collected ICLs, various destruction agencies issued destruction certificate <sup>/P10/</sup> to verify the numbers of ICLs collected which is mentioned in the electronic database <sup>/P13/</sup> .

#### Findings:

CAR-10c and CAR-10e was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The verification team checked the ICL destruction certificate issued by various destruction agencies for individual CPAs<sup>/P10/</sup>. Verification team can confirm that the value of parameter calculated based on values of number of ICLs destroyed as per certificates of ICL destruction as mentioned in table above in section 3.5 of this report is acceptable.

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

Rated power of the CFLs of the group of "I" lighting devices (Watts).

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	For emission reduction calculation.
<i>Monitoring equipment</i>	No monitoring Equipment used.

(type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	
Measuring/Reading/Recording frequency	Measured once during the crediting period. Weighted average calculated using rated power of the project CFLs as recorded in CPA electronic database <sup>/P13/</sup>
Data collection (from data generation, aggregation, to recording, calculation and reporting)	The data of distributed CFLs of each type is recorded in consent deeds <sup>/P25/</sup> 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 <sup>/P04/</sup> . $P_{i, PJ} = (11 \text{ W} \times \text{fraction of 11 W CFLs distributed}) + (14 \text{ W} \times \text{fraction of 14 W CFLs distributed}) + (18 \text{ W} \times \text{fraction of 18 W CFLs distributed}) + (20 \text{ W} \times \text{fraction of 20 W CFLs distributed})$
Verified value	As mentioned in table above in section 3.5 of this report.
Cross checks	The verification team cross checked the calculation of parameter in the ER spread sheet <sup>/P04/</sup> with the values of number of CFLs as per the confirmation letter issued by CPA implementer to CME <sup>/P20/</sup> .
QA/QC procedures applied	Number and type of CFLs purchased and delivered to CPA implementers was used to verify the number recorded in the electronic database <sup>/P13/</sup> . This was also cross referred to the ICLs collected as per ICL destruction certificate issued by various destruction agencies for individual CPAs <sup>/P10/</sup> .

#### Findings:

CAR-10c was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The verification team checked the CFLs distribution electronic database<sup>/P13/</sup> as well as the confirmation letter issued by CPA implementer to CME<sup>/P20/</sup>. 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<sup>/P15/</sup> as mentioned in table above in section 3.5 of this report is acceptable.

#### 3.5.5. Data/Parameter, Unit: “Lamp distribution data” , --

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.

	<i>Discussion and verification assessment</i>
Purpose of data	Data is to verify number of ICLs replaced and whether the recipient is from implemented CPA project area.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	No monitoring Equipment used.
Measuring/Reading/Recording frequency	The details of each CFL recipient is recorded from start date of CFL distribution up to end date of CFL distribution in electronic database <sup>/P13/</sup> . Information has been recorded in the consent deeds <sup>/P25/</sup> during CFL distribution consisting of name of the recipient, address, and electricity consumer number (unique identification).
Data collection (from data generation, aggregation, to	The data is recorded in consent deeds <sup>/P25/</sup> 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

<i>recording, calculation and reporting)</i>	reported to CME for record.
<i>Verified value</i>	-
<i>Cross checks</i>	The verification team cross checked the information of the visited households during the on-site visit against the electronic database <sup>/P13/</sup> as well as from back up data of surveyed households during 1 <sup>st</sup> ex post monitoring survey conducted by CPA implementers <sup>/P15/</sup> .
<i>QA/QC procedures applied</i>	The date of CFL distribution from electronic database <sup>/P13/</sup> was cross verified from the consent deeds <sup>/P25/</sup> on sample basis.

#### Findings:

CAR-10c and CAR-10b were raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The verification team confirmed the same during on-site visit for sampled households against the entry in electronic database<sup>/P13/</sup>. Verification team can confirm that the unique identification of each household (CFL recipient) is correct.

#### 3.5.6. Data/Parameter, Unit: N, --

##### Sample size of Monitoring Survey

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	Data is to verify number the correctness of the sample size considered during the ex post monitoring survey conducted by the CPA implementers.
<i>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</i>	No monitoring Equipment used.
<i>Measuring/Reading/Recording frequency</i>	Calculated once at the time of each monitoring survey.
<i>Data collection (from data generation, aggregation, to recording, calculation and reporting)</i>	Calculated as mentioned in the Annexure 4 of respective CPA-DDs <sup>/B04/</sup>
<i>Verified value</i>	As mentioned in table above in section 3.5 of this report.
<i>Cross checks</i>	The verification team cross checked the sample size considered by CPA implementers during 1 <sup>st</sup> ex post monitoring survey <sup>/P15/</sup> from the value of sample size mentioned in the registered CPA-DDs <sup>/B04/</sup> .
<i>QA/QC procedures applied</i>	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 <sup>/B04/</sup> .

#### Findings:

CAR-10a, CL-11a and CL-14 were raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

Assessment team confirms that the value of parameter "sample size of monitoring survey" for each CPA given in the ER spread sheet<sup>/P04/</sup> is considered as higher than the estimated value in registered



CPA-DDs<sup>/B04/</sup> in order to reduce the error margin and achieve more accurate survey results. The assumption taken by CPA implementers is on the conservative side and hence acceptable.

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

Lamp Failure Rate for CFL type i in year y (fraction).

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	For emission reduction calculation.
<i>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</i>	No monitoring Equipment used.
<i>Measuring/Reading/Recording frequency</i>	Monitored through subsequent ex post monitoring surveys which will take place in 3 years interval after the first ex post monitoring survey (within 1 year of completion of CFL distribution) which was conducted by CPA implementers on dates mentioned in the section 3.2 of this report.
<i>Data collection (from data generation, aggregation, to recording, calculation and reporting)</i>	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 <sup>/B01/</sup> . Lower value of the <i>ex ante</i> LFR and <i>ex post</i> LFR is considered for ER calculation.
<i>Verified value</i>	As mentioned in table above in section 3.5 of this report.
<i>Cross checks</i>	The verification team cross checked the reported data in the MR <sup>/P02/</sup> and ER spread sheet <sup>/P04/</sup> with the ex post monitoring survey report <sup>/P15/</sup> . The LFR observed during sampling survey as part of on-site visit is lower than the <i>ex-ante</i> value considered for ER calculation. Also checked the SSC WG clarification number "SSC 354" <sup>/B19/</sup> , 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.
<i>QA/QC procedures applied</i>	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 <sup>/B04/</sup> . 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.

### Findings:

CAR-10b, CAR-10c, CL-11b, CL-11c, CL-11d and CL-11e were raised and closed successfully. This is discussed in detail in section 7 of this report.

### Opinion:

The verification team checked the first ex post monitoring survey report<sup>/P15/</sup> as well as *ex ante* estimate of  $LFR_{i,y}$  in ER spread sheet<sup>/P04/</sup>. 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 1, LFR applied is 6.39% and for year 2 LFR applied is 12.81%) is conservative compared to the value found during first ex post monitoring survey<sup>/P15/</sup> which is in line with SSC-354<sup>/B19/</sup>.

### 3.5.8. Data/Parameter, Unit: $TD_y$ , %

Average annual technical grid losses.

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	For emission reduction calculation.
<i>Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)</i>	No monitoring Equipment used.
<i>Measuring/Reading/Recording frequency</i>	Data taken from most recent publicly available tariff order documents as per the web links mentioned in the ER spreadsheet <sup>/P04/</sup> .
<i>Data collection (from data generation, aggregation, to recording, calculation and reporting)</i>	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 <sup>/P04/</sup> .
<i>Verified value</i>	As mentioned in table above in section 3.5 of this report.
<i>Cross checks</i>	<p>The verification team cross checked the calculation of parameter in the ER spread sheet<sup>/P04/</sup> with the values of T&amp;D losses declared by state level electricity regulatory bodies<sup>/B16/</sup>. At the time of verification/publication of MR, there was no publicly available actual achieved T&amp;D losses figure for the year 2012-13 and therefore PP had considered the approved T&amp;D losses figure of year 2011-12 for the year 2012-13. Verification team has raised a clarification (CL-11(g)) in this regard and closed satisfactorily based on the response of PP about non availability of actual verified data of T&amp;D losses for 2012-13.</p> <p>Although the "Tariff Order" for 2012-13 has been published by the regulatory authorities during the verification of this monitoring period, but still the actual achieved T&amp;D losses value cannot be verified from the same rather the projected figures were provided in the tariff order. Verification team is in view that approved/actual figures are more appropriate than the projected figure as mentioned in the latest tariff orders.</p>
<i>QA/QC procedures applied</i>	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 published by electricity regulatory commissions that oversee these distribution companies.

#### Findings:

CAR-10f, CL-11f and CL-11g were raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The verification team checked the T&D losses value declared by respective state level electricity regulatory bodies<sup>/B16/</sup>. Verification team can confirm that the value of parameter considered as in table above in section 3.5 of this report is acceptable.

### 3.6 Compliance with the calibration frequency requirements for measuring instruments

#### Discussion:

No calibration requirement is applied as the project activity does not employ any monitoring equipment. Hence, this section is not applicable.



### 3.7 Data not monitored (ex ante or external parameters)

#### 3.7.1. Data/Parameter, Unit: $EF_{CO_2,ELEC,y}, tCO_2/MWh$

CO<sub>2</sub> 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<sub>2</sub>/MWh)

	<i>Discussion and verification assessment</i>	
<i>Purpose of data</i>	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)	
<i>Verified value</i>	SSC-CPA UNFCCC Ref No	Verified Value
	3223-0001	0.856
	3223-0022, 3223-0023 ,3223-0024, 3223-0025, 3223-0026, 3223-0027, 3223-0028	0.9027
	3223-0029, 3223-0031, 3223-0032, 3223-0036, 3223-0037, 3223-0038 3223-0039, 3223-0041	0.903
	3223-0043, 3223-0044, 3223-0045 3223-0048,3223-0050	0.865
<i>Source of value</i>	The User Guide of CDM Baseline CO <sub>2</sub> emission database by Central Electricity Authority (CEA), India(versions 4.0, 5.0 and 6.0), as stated in respective registered CPA-DDs <sup>/B04/</sup>	
<i>Justification</i>	Consistent with the Registered CPA-DDs <sup>/B04/</sup> and fixed ex-ante	

#### 3.7.2. Data/Parameter, Unit: $O_i$ ,Hours / day

Average daily operating hours of the baseline ICLs of the group of "I",

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)
<i>Verified value</i>	3.5 hours per 24 hours period
<i>Source of value</i>	Default Value as mentioned in the applied methodology <sup>/B01/</sup>
<i>Justification</i>	Consistent with the Registered CPA-DDs <sup>/B04/</sup> and fixed ex-ante

#### 3.7.3. Data/Parameter, Unit: $L_i$ ,Hours

rated average operating hours for CFL type i

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)
<i>Verified value</i>	10,000 hours
<i>Source of value</i>	Life test reports of CFLs <sup>/P11/</sup>
<i>Justification</i>	Consistent with the Registered CPA-DDs <sup>/B04/</sup> and fixed ex-ante

#### 3.7.4. Data/Parameter, Unit: High PF CFL life test report and test curves,-

Life test reports of CFLs

	<i>Discussion and verification assessment</i>
<i>Purpose of data</i>	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)
<i>Verified value</i>	Life Test Reports of all type of distributed CFLs have been verified and found acceptable <sup>/P11/</sup> .
<i>Source of value</i>	Life test reports obtained from accredited laboratory <sup>/P11/</sup>
<i>Justification</i>	Consistent with the Registered CPA-DDs <sup>/B04/</sup>

### 3.7.5. Data/Parameter, Unit: $X_i$ , Hours/ year

Operating hours per year for CFL type  $i$

	Discussion and verification assessment
Purpose of data	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)
Verified value	1,277.5 hours per 365 day year; 1,281 hours for leap year
Source of value	Calculated value
Justification	Consistent with the Registered CPA-DDs <sup>/B04/</sup>

### 3.7.6. Data/Parameter, Unit: NTG, -

Net-to-gross adjustment factor

	Discussion and verification assessment
Purpose of data	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)
Verified value	0.95
Source of value	Default Value as mentioned in the applied methodology <sup>/B01/</sup>
Justification	Consistent with the Registered CPA-DDs <sup>/B04/</sup> and fixed ex-ante

#### Discussion:

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<sup>/B04/</sup>.

#### Findings:

CAR-09 was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

The values of ex ante fixed parameters have been verified from the registered CPA-DDs<sup>/B04/</sup>. 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 has been correctly applied in the calculation of emission reductions.

## 3.8 Assessment of Data & calculation of GHG Emission Reductions

#### Discussion:

#### Emissions Reduction ( $ER_y$ )

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

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

Where:

$ER_y$  Emission reductions in year  $y$  (tCO<sub>2</sub>e)

$NES_y$  Net electricity saved in year  $y$  (kWh)

$EF_{CO2,ELEC,y}$  Grid Emission factor (GEF) in year  $y$ , (tCO<sub>2</sub>e/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:

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

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 <i>ex post</i> $Q_{PJ}$ 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.

**Table 10: Summary of the calculated values for 21 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 <sub>2</sub> e)
	ES <sub>1</sub>	ES <sub>2</sub>	NES <sub>1</sub>	NES <sub>2</sub>	NES <sub>y</sub>	
3223-0001	89.30	20.79	40,414	8,766	49,180	42,097
3223-0022	99.48	50.42	59,890	28,273	88,163	79,584
3223-0023	100.32	34.08	54,664	17,297	71,961	64,958
3223-0024	100.49	34.14	54,773	17,331	72,104	65,087
3223-0025	81.95	49.87	42,862	24,295	67,157	60,622
3223-0026	102.02	34.66	54,408	17,216	71,624	64,655
3223-0027	93.62	36.07	51,539	18,494	70,032	63,218
3223-0028	101.76	34.57	51,525	16,303	67,828	61,228
3223-0029	68.48	-	18,095	-	18,095	16,339
3223-0031	46.91	-	5,447	-	5,447	4,918
3223-0032	84.35	-	36,418	-	36,418	32,885
3223-0036	78.32	-	26,751	-	26,751	24,156
3223-0037	63.32	-	17,421	-	17,421	15,731
3223-0038	17.56	-	6,491	-	6,491	5,861
3223-0039	10.51	-	4,373	-	4,373	3,948
3223-0041	35.79	-	13,027	-	13,027	11,763
3223-0043	40.73	-	8,022	-	8,022	6,939
3223-0044	64.70	-	15,205	-	15,205	13,152
3223-0045	21.59	-	7,073	-	7,073	6,118
3223-0048	2.32	-	804	-	804	695
3223-0050	38.33	-	10,694	-	10,694	9,249

#### Findings:

CAR-12 was raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Opinion:

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<sup>/B04/</sup>.
- The reported data have been cross-checked against other sources available as explained above in section 3.5 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<sup>/B04/</sup> and applicable methodology<sup>/B01/</sup>.
- The monitoring report includes all parameters and the monitored data at the intervals required by the methodology<sup>/B01/</sup> and PoA-DD<sup>/B04/</sup>.
- The emission factors and default values have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.
- The final MR template has all the information as prescribed in the “Guidelines for completing the MR form (version 03.2)”<sup>/B18/</sup> and MR is as per the valid standardized template.

### 3.9 Assessment of GHG Emission Reductions in first and second commitment period

Since, end date of the 1<sup>st</sup> monitoring period of the PoA is 31/12/2012. Hence, the total value of emission reduction achieved during the 1<sup>st</sup> monitoring period is within the first commitment period.

Item	Actual values achieved up to 31 December 2012 (first commitment period)	Actual values achieved from 1 January 2013 onwards (second commitment period)
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	653,203	-

### 3.10 Quality of Evidence to Determine Emission Reductions

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<sup>/P13/</sup> 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<sup>/P15/</sup> 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<sup>/B16/</sup>. 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”<sup>/B01/</sup> has been applied for the project activity.

Based on the emission reduction from the CPAs have been verified to be 653,203 tCO<sub>2</sub> equivalent for the period 30/05/2010 to 31/12/2012 (both dates inclusive).

Evidences (Documents/interview/site visit) referred for verification of individual monitoring parameter and fixed parameters are defined in section 3.5 and section 3.7 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 section 6 of this report.

#### Finding:

CAR-09(e) and CAR-07(d) were raised and closed successfully. This is discussed in detail in section 7 of this report.

#### Conclusion:

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<sup>/P04/</sup> and monitoring report<sup>/P02/</sup>. 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<sup>/B04/</sup>.

### 3.11 Management System and Quality Assurance

#### Discussion:

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<sup>/P19/</sup>. 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<sup>/B04/</sup>.

The overall monitoring system under all the CPAs has been summarized in the figure 2 & 3 of section C of the Monitoring Report<sup>/P02/</sup>. 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 CFI 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.

**Finding:**

CAR-01, CAR-02, CL-05, CAR-06 and CAR-08 was raised and closed successfully. This is discussed in detail in section 7 of this report.

**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<sup>/B04/</sup>. The verification team also confirmed the formats for data mangement (electronic database) are verified on sample basis at the time of on site visit for all the implemented CPAs.

### 3.12 Application of Materiality

**Discussion:**

In accordance with EB 69, Annex 06, paragraph 7(a), the “Guideline on the application of materiality in verifications” (Version 01.0)<sup>/B11/</sup> is not applicable for the verification of PoA.

#### **4. RECOMMEDATIONS / FORWARD ACTION REQUEST**

There are no recommendations/FAR raised during current verification for the Project activity.

## 5. VERIFICATION & CERTIFICATION STATEMENT

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 Ref. Number 3223 for the monitoring period 30/05/2010 up to 31/12/2012 (including both dates) in the Consolidated Monitoring Report Version 01.2 (first version) dated 17/09/2013. This verification report covers 30 out of 50 CPAs included under the PoA as on 31/12/2012.

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 Delinked Monitoring Report Version 01.7 dated 31/03/2014. 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 01.7 dated 31/03/2014.

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 30/05/2010 up to 31/12/2012 (including both dates) based on the reported emission reductions in the Final Monitoring Report Version 01.7 dated 31/03/2014 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;

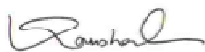
**Reporting period:** From 30/05/2010 up to 31/12/2012 (including both dates)

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

	Amount	Unit
Certified emission reductions (CERs)	653,203	tCO <sub>2</sub> e

Location: Faridabad, Haryana, India

Date: 15/05/2014



Kaushal Goyal

Managing Director

KBS Certification Services Pvt. Ltd.



## 6. REFERENCES

### Documents submitted by the PP

Sr. No.	Documents
/P01/	Webhosted Consolidated Monitoring report version '01.2' dated 17/09/2013
/P02/	Final Delinked Monitoring report (Batch 1) version '01.7' dated 31/03/2014
/P03/	ER Calculation spread sheet corresponding to /P01/
/P04/	ER Calculation spread sheet corresponding to /P02/
/P05/	Verification contract between CME (BEE), Investors (CQC and HPL) and DOE (KBS Certification Services Private Limited) dated 06/05/2013
/P06/	<ul style="list-style-type: none"> <li>Supply Agreement / Purchase Order between C-Quest Capital Malaysia Limited and CFL Manufacturers (HPL Electric &amp; Power Pvt. Ltd., Energetic Lighting India Private Limited and Halonix Limited)</li> <li>"Undertaking for HPL as a CFL manufacturer" dated 15/12/2010 by HPL Electric &amp; Power Pvt. Ltd.</li> </ul>
/P07/	<ul style="list-style-type: none"> <li>IS 15111-1 (2002): Self Ballasted Lamps for General Lighting Services, Part 1: Safety Requirements [ETD 23: Electric Lamps and their Auxiliaries]</li> <li>IS 15111-2 (2002): Self Ballasted Lamps for General Lighting Services, Part 2: Performance Requirements [ETD 23: Electric Lamps and their Auxiliaries]</li> </ul>
/P08/	<ul style="list-style-type: none"> <li>Full Scale ICL Collection and Disposal Agreement signed between HPL Electric &amp; Power Pvt. Ltd. and ECO Birdd Recycling Company Private Ltd. for CPAs in Karnataka</li> <li>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</li> <li>Full Scale ICL Collection and Disposal Agreements signed between C-Quest Capital Malaysia Limited and Indian Pollution Control Association for CPAs implemented in Delhi and Punjab</li> </ul>
/P09/	Photographic and video graphic evidences of <u>boxes storing ICLs</u> with <u>labelling of contents, wattages and destruction of ICLs</u> (for each CPA)
/P10/	<ul style="list-style-type: none"> <li>a) Certificate of ICL Collection and Destruction issued by ICL Destruction Agency for each CPA</li> <li>b) Certificate of Handing over/ taking over of ICLs issued by ICL Destruction Agency for each CPA</li> <li>c) Inventory list for Certificate of Handing of ICLs issued by ICL Destruction Agency for each CPA</li> </ul>

	d) Certificate of Verification of Quantity of ICLs issued by ICL Destruction Agency for each CPA
/P11/	<ul style="list-style-type: none"> <li>Life test reports issued by National Physical Laboratory for 11W and 18W type HPL CFLs</li> <li>Life test reports issued by Central Electrical Testing Laboratory for 11W, 18W and 20W type Energetic CFLs</li> <li>Life test reports issued by Balaji Control for 11W and 18W type Glomore CFLs</li> <li>Life test reports issued by National Physical Laboratory for 11W and 18W type Halonix CFLs</li> <li>Life test reports issued by National Physical Laboratory for 14W and 18W type Phillips CFLs</li> </ul>
/P12/	Tri-partite agreements between BEE, Investors and DISCOM for each CPA
/P13/	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
/P14/	ICL collection and CFL distribution procedure followed by Investors (for each CPA)
/P15/	<ul style="list-style-type: none"> <li>First ex-post monitoring survey reports determining monitoring parameters "<math>Q_{PJ,i}</math>" and "<math>LFR_{i,y}</math>" by Maverick Consulting for all CPAs in Karnataka</li> <li>First ex-post monitoring survey reports determining monitoring parameters "<math>Q_{PJ,i}</math>" and "<math>LFR_{i,y}</math>" by Business and Industrial Research Division (BIRD) IMRB International for all CPA 3223-0001</li> <li>First ex-post monitoring survey reports determining monitoring parameters "<math>Q_{PJ,i}</math>" and "<math>LFR_{i,y}</math>" by Neosphere Ambiance Pvt. Ltd. for all CPAs in Delhi, Punjab and Andhra Pradesh</li> </ul>
/P16/	<p>Supportive evidences for T&amp;D Losses:</p> <ul style="list-style-type: none"> <li>Andhra Pradesh: Filing of ARR &amp; Proposed Tariffs for Retail Supply Business for FY 2012-13 by APCPDCL dated 26/12/2011</li> <li>Karnataka: BESCOM 10<sup>th</sup> Annual Report</li> <li>Punjab: Tariff Order by Punjab State Electricity Regulatory Commission dated 09/05/2011</li> <li>Delhi: Tariff Order by Delhi Electricity Regulatory Commission dated 31/07/2013</li> </ul>
/P17/	Sample Copy of the Filled Survey Questionnaire used by surveyor during First ex-post monitoring survey (for each CPA)
/P18/	Photographic evidence of each type of installed CFL lamps showing unique identification (logo)
/P19/	Proof of operational & management structure for BLY PoA as per the diagram mentioned in the web hosted MR.
/P20/	<ul style="list-style-type: none"> <li>Supportive for CFL distribution start date and completion date for all CPAs of Delhi, Punjab and Andhra Pradesh respectively: <ul style="list-style-type: none"> <li>➤ Letter from CQC to BEE – "Application of closure of CPA no. under BLY-</li> </ul> </li> </ul>

	<p>PoA and submission of SSC-CPA database”</p> <ul style="list-style-type: none"> <li>➤ Letter by BEE to CQC – “Acceptance of the End Date of CFL Distribution of CPA no. under BLY PoA”</li> <li>• Consent Letter from Voluntary Participating Household at the start and end of each CPA for all CPAs in Karnataka</li> </ul>
/P21/	Training Record for persons involved in the distribution of CFLs conducted by Investors (CQC and HPL)
/P22/	Back up data for Q <sub>PJ,i</sub> survey and first LFR for each type of lamp
/P23/	First ex-post monitoring survey process flow sheet (extracted from monitoring survey report ) for each CPA
/P24/	Project implementation plan outlining the various procedures like delivery mechanism ,distribution, data to be recorded, ICL collection, storage and disposal etc.
/P25/	Sample copies of the consent deeds signed by the household consumers with CPA Implementer (Investor) forbidding them to re-sell the CFLs.
/P26/	<ul style="list-style-type: none"> <li>• Letter sent by CPA implementer (HPL) to CME (BEE) dated 08/08/2013 (CPA UNFCCC Ref. No. 3223-0034, 3223-0035)</li> <li>• Letters issued by CME (BEE) to CPA implementer (CQC) dated 15/07/2013, 09/04/2013 and 20/09/2013 (CPA UNFCCC Ref. No. 3223-0046, 3223-0047, 3223-0049)</li> <li>• Letter issued by CME (BEE) dated 29/11/2012 for two (2) unimplemented CPAs in Delhi (CPA UNFCCC Ref. No. 3223-0030, 3223-0033)</li> <li>• Letter issued by CPA implementer (CQC) dated 02/05/2013 for two (2) unimplemented CPAs in Punjab (CPA UNFCCC Ref. No. 3223-0040, 3223-0042)</li> </ul>
/P27/	<ul style="list-style-type: none"> <li>• Acceptance by UNFCCC regarding Revised Start date of Crediting period as proposed by implementer on 09/09/2013</li> </ul>

**Background investigation and other referred documents/websites:**

Reference	Document
/B01/	AMS-II.J. “ <u>Demand-side activities for efficient lighting technologies</u> ” (Version 3.0).
/B02/	Kyoto Protocol (1997).
/B03/	Decision 3/CMP.1, Decision 4/CMP.1 and Decision 1/CMP.2
/B04/	Registered POA –DD and included CPA-DDs for CDM project: “CFL lighting scheme – “Bachat Lamp Yojana”, UNFCCC PoA project reference no 3223
/B05/	<ul style="list-style-type: none"> <li>• Validation report for CDM PoA: “CFL lighting scheme – “Bachat Lamp Yojana”,</li> </ul>

	<p>UNFCCC PoA project reference no 3223 dated 25/03/2010</p> <ul style="list-style-type: none"> <li>Validation reports for all CPAs included in the current monitoring period</li> </ul>
/B06/	<p>a) Clean development mechanism validation and verification standard (Version:05.0),</p> <p>b) Clean development mechanism project standard (Version: 05.0),</p> <p>c) Clean development mechanism project cycle procedure (Version: 05.0)</p>
/B07/	<p>E-mail from CDM Secretariat confirming the consolidated monitoring report /P01/ made publically available from 20/09/2013.</p>
/B08/	<p>UNFCCC project page of project reference number (3223): <a href="http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/CZ59J1XMR8K4ELUS6WY3BA0IVTGQ2F/view">http://cdm.unfccc.int/ProgrammeOfActivities/poa_db/CZ59J1XMR8K4ELUS6WY3BA0IVTGQ2F/view</a></p>
/B09/	<p>Websites referred:</p> <p>a. <a href="http://cdm.unfccc.int/index.html">http://cdm.unfccc.int/index.html</a></p> <p>b. <a href="http://www.itouchmap.com">www.itouchmap.com</a></p> <p>c. <a href="http://envfor.nic.in/">http://envfor.nic.in/</a></p>
/B10/	<p>Verification Protocol</p>
/B11/	<p>Guideline on the application of materiality in verifications , Version: 01.0 (EB 69, Annex 06)</p>
/B12/	<ul style="list-style-type: none"> <li>IS 15111:2002 (Part 1 &amp; 2)</li> <li>IS 418:2004</li> </ul>
/B13/	<p>Standard for “Sampling and surveys for CDM project activities and programmes of activities” (version 04.1)</p>
/B14/	<p>Guidelines for sampling and surveys for CDM project activities and programme of activities (version 03.0)</p>
/B15/	<p>BIS Guidelines for Implementation of IS 15111:2002 (Part 1 &amp; 2) – Self-Ballasted Lamps</p>
/B16/	<p>Web links for respective State Electricity Regulatory Commissions –</p> <ul style="list-style-type: none"> <li><a href="http://www.aperc.gov.in/">http://www.aperc.gov.in/</a></li> <li><a href="http://bescom.org/">http://bescom.org/</a></li> <li><a href="http://pserc.nic.in">http://pserc.nic.in</a></li> <li><a href="http://www.cserc.gov.in/">http://www.cserc.gov.in/</a></li> </ul>
/B17/	<p>Back up data of surveyed Households surveyed by verification team during on site visit.</p>

/B18/	Guidelines completing the monitoring report form (Version 03.2)
/B19/	SSC WG clarification number SSC-354 on AMS-II.J. (Version 03)

**Key difference between webhosted MR and final MR (indicative not exhaustive)**

MR Section	Description of the change
MR Template	Version 3.1 to Version 3.2
Title page	Cosolidated MR to Delinked MR as per EB 75 guideline
MR section A.1	No of CPAs due to delinking of MR, ER value due to delinking
MR section A.2	Inconsistency in Geo co-ordinates as mentioned in Annexure 1
MR section A.5	CPA specific Moniroing Period in Annexure 2
MR section B.1	<ul style="list-style-type: none"> <li>MR delinking, CFL specification added,</li> <li>CPA implementation chronology as mentioned in Annexure 3,</li> <li>Details of ICL destruction agencies as mentioned in Annexure 12</li> </ul>
MR section C	<ul style="list-style-type: none"> <li>Monitoring procedure and data flow process</li> <li>CFL identification Logo</li> </ul>
MR section D.1	Description, Source and value applied for parameters
MR section D.2	<ul style="list-style-type: none"> <li>Description, Source and value applied for parameters</li> <li>QA &amp; QC procedure</li> <li>Calculation method</li> </ul>
MR section E	Inconsistency in calculation method using correct formulae and notations
MR section E.4	ER calculation (baseline emission value deleted)
MR section E.5	ER value (Estimated and Actual changed)
MR section E.6	Remarks on difference in ER values has been added in MR as Annexure 9
MR section E.7	ER value due to delinking and associated calculation errors

- o0o -

## 7. FINDINGS DOCUMENT

Summary of findings	CAR	CL	FAR
	11	03	0

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-01	Assessment Team	Table 2 of verification protocol

### Non conformities raised

- The font in section E.5 of MR is inconsistent with the F-CDM-MR as per para 11 of MR completing guidelines.
- The nomenclature and description of the monitoring parameters as mentioned in the ER spreadsheet is inconsistent with the MR and each CPA-DD. Also, the spreadsheet does not contain the formulae of calculation that are shown in the MR in line with the para 9 of MR completing guidelines.

### Project Participant's response

Date: 13/12/2013

- The fonts are made consistent.
- Nomenclatures are made consistent now. Calculation in ER spreadsheet and the formulae shown in MR are made consistent now.

### Documentation Provided as Evidence by Project Participant

Revised MR and Revised ER spreadsheet.

### Information Verified by Team Leader

Date of review: 16/12/2013

Revised MR version 01.4 dated 13/12/2013

Revised ER spreadsheet 01.3 dated 13/12/2013

### Reasoning for ~~not acceptance or~~ close out

- Assessment team verified the revised MR and now font in section E.5 of MR is made consistent according to MR completing guidelines. Hence this CAR is closed.
- Assessment team verified the revised MR and now nomenclatures of monitoring parameters is consistent with ER spreadsheet. ER spreadsheet now contains the same formulae as mentioned in the MR. Hence this CAR is closed.

### Date of ~~acceptance or non-acceptance~~

Date: 16/12/2013

Status: **Closed**

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-02	Assessment Team	Table 3, Project Information of verification protocol

### Non conformities raised

- It is not clear from the title page of MR whether this is a project activity or Programme of Activities.
- Monitoring period of the de-linked MR is not matching with the earlier webhosted consolidated MR.

### Project Participant's response

Date: 13/12/2013

- The same has been corrected
- The monitoring period that was considered in the earlier webhosted consolidated MR was that of the PoA. As the PoA was registered on 29/04/2010, the start date of crediting period was considered from 30/05/2010. However CPA implementers have requested revision of the start date of crediting period for their CPAs which was subsequently granted by UNFCCC. This can be seen from the individual webpage of the CPAs and also can be seen from the revised project database/CER spreadsheet as annexure 11. Thus for implementer thought that it would be reasonable to change the start date of crediting period as per the change. However, this is now changed to the earlier start date as per the initial webhosted MR.

### Documentation Provided as Evidence by Project Participant

Revised MR and Revised ER spreadsheet

### Information Verified by Team Leader

Date of review: 16/12/2013

Revised MR version 01.4 dated 13/12/2013

<b>Reasoning for not acceptance or close out</b>		
<p>a. Assessment team confirms that the title page of MR is now revised to clearly show that MR is a delinked MR of PoA 1<sup>st</sup> MP verification. Hence this CAR is closed.</p> <p>b. The start date of crediting is verified by the verification team from the confirmation email from UNFCCC dated 09/09/2013. The CME has requested the UNFCCC for change in the start of crediting period through mail dated 22/08/2013 and the UNFCCC has confirmed their request on 05/09/2013. The verification team checked the emails and confirmed that the start date of crediting period of CPA 3223-0001 (earliest of all other CPA) as 29 May 2011. The title of the Starting date crediting period is now mentioned as "CPA wise Start date of crediting period" and the reference for the same is included. Assessment team confirms that the monitoring period of the de-linked MR is now matching with the earlier webhosted consolidated MR (i.e. 30/05/2010). Hence this CAR is closed.</p>		
<b>Date of acceptance or non-acceptance</b>	<b>Date:</b> 16/12/2013	<b>Status:</b> Closed

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-03	Assessment Team	Section A.1 of verification protocol
<b>Non conformities raised</b>			
In line with para 17(d) of VVS v5, the information related to the rated lifetime for the high power factor CFL bulbs have not been discussed in the Section A.1 of the monitoring report.			
<b>Project Participant's response</b>		<b>Date:</b> 13/12/2013	
In Section A.1 of revised MR, the purpose and the technical glitz of the program have been discussed including the CFLs rated life time and lumen capacity. The certificates of rated life time have been already provided to DOE.			
<b>Documentation Provided as Evidence by Project Participant</b>			
Revised MR Test reports for each brand of CFLs used in individual CPAs.			
<b>Information Verified by Team Leader</b>		<b>Date of review:</b> 16/12/2013	
<ul style="list-style-type: none"><li>Revised MR version 01.4 dated 13/12/2013</li><li>Life test reports of each type of CFL installed.</li></ul>			
<b>Reasoning for not acceptance or close out</b>			
Assessment team confirms that revised MR contains the information on rated lifetime of high PF CFLs. Life test certificate for all type of CFLs used, has been reviewed and found credible. Hence, this CAR is closed.			
<b>Date of acceptance or non-acceptance</b>		<b>Date:</b> 16/12/2013	<b>Status:</b> Closed

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-04	Assessment Team	Section A.2 of verification protocol
Non conformities raised			
In line with para 17(d) of VVS v5, the geo-coordinates, circle, district, division of CPA number 3223-0023, 0024, 0025, 0026, 0027, 0028 as mentioned in Annexure 1of MR are inconsistent with the corresponding CPA-DD.			
Project Participant’s response		Date:13/12/2013	
These are made consistent in the revised MR.			
Documentation Provided as Evidence by Project Participant			
Revised MR version 1.4			
Information Verified by Team Leader		Date of review: 16/12/2013	
Revised MR version 01.4 dated 13/12/2013			
Reasoning for not acceptance or close out			
The geo-coordinates, circle, district, division of CPAs as mentioned in Annexure 1 of MR are still inconsistent with the corresponding CPA-DD. CAR is open.			
Date of <del>acceptance or non- acceptance</del>		Date:16/12/2013	Status: Open
Project Participant’s response		Date: 23/12/2013	
The geo-coordinates, circle, district, division of CPAs as mentioned in Annexure 1 of MR have been corrected now and is now as per the individual CPA DD.			
Documentation Provided as Evidence by Project Participant			
Revised MR			



<b>Information Verified by Team Leader</b>	<b>Date of review: 23/12/2013</b>	
Revised MR version 01.5 dated 23/12/2013		
<b>Reasoning for <del>not acceptance or close out</del></b>		
The geo-coordinates, circle, district, division of CPAs as mentioned in Annexure 1 of revised MR are now consistent with the corresponding CPA-DD. Hence, this CAR is closed.		
<b><del>Date of acceptance or non-acceptance</del></b>	<b>Date: 23/12/2013</b>	<b>Status: Closed</b>

Date	Type & Number	Raised by	Reference
06/12/2013	CL-05	Assessment Team	Section A.3 of verification protocol

**Non conformities raised**

In accordance with para 17(d) of VVS v5, the section A.3 of MR indicates that both the Parties wish to be considered as project participant, which is inconsistent with the registered PoA-DD and project webpage. Please clarify.

**Project Participant's response**

**Date: 13/12/2013**

The PoA webpage shows both the parties are not project participants. This has been revised in the MR now.

**Documentation Provided as Evidence by Project Participant**

Revised MR

<b>Information Verified by Team Leader</b>	<b>Date of review: 16/12/2013</b>	
Revised MR version 01.4 dated 13/12/2013		
<b>Reasoning for <del>not acceptance or close out</del></b>		
Assessment team confirms from the project webpage and registered CPA-DDs that both parties do not wish to be considered as PP. Same has been corrected in the revised MR. hence, this CAR is closed.		
<b><del>Date of acceptance or non-acceptance</del></b>	<b>Date: 16/12/2013</b>	<b>Status: Closed</b>

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-06	Assessment Team	Section A.5 of verification protocol

**Non conformities raised**

In accordance with para 17(d) of VVS v5:

- The length of crediting period for each CPA has not been provided in Annexure-2 of the MR.
- The start date of crediting period, monitoring interval and the monitoring period length for CPAs 3223-0022 to 3223-0050 as mentioned in Annexure 2 of MR are inconsistent with the project web page.
- The details of CPA no. 3223-0002 to 3223-0021 as mentioned in Annexure 2 of MR is not relevant to the de-linked MR.

**Project Participant's response**

**Date: 13/12/2013**

- This is now revised and can be seen in the Annexure 2 of the revised MR for individual CPAs.
- This is now made consistent as per the individual CPA webpage
- The same has been removed and only data for the relevant CPAs have been included in this monitoring report.

**Documentation Provided as Evidence by Project Participant**

Revised MR

<b>Information Verified by Team Leader</b>		<b>Date of review: 16/12/2013</b>	
Revised MR version 01.4 dated 13/12/2013			
<b>Reasoning for not acceptance or close out</b>			
a. Length of crediting period has not been mentioned in the revised MR. CAR is open.			
b. Assessment team confirms that the start date of crediting period, monitoring interval and the monitoring period length for CPAs 3223-0022 to 3223-0050 as mentioned in Annexure 2 of revised MR is now consistent with the project web page. Hence, this CAR is closed.			
c. Assessment team confirms that the details of CPA no. 3223-0002 to 3223-0021 as mentioned in Annexure 2 of earlier MR is now removed from the de-linked MR. Hence, this CAR is closed.			
<b>Date of <del>acceptance or non- acceptance</del></b>		<b>Date:16/12/2013</b>	<b>Status: Open</b>

**Project Participant's response**

**Date: 23/12/2013**

- The length of the crediting period is now mentioned in the revised MR as well as in the ER spreadsheet.

Documentation Provided as Evidence by Project Participant		
Revised MR and revised ER Spreadsheet		
Information Verified by Team Leader	Date of review: 23/12/2013	
Revised MR version 01.5 dated 23/12/2013		
Revised ER spreadsheet 01.4.dated 23/12/2013		
Reasoning for <del>not acceptance or close out</del>		
The length of the creditingperiod is now mentioned in the revised MR as well as in the revised ER spreadsheet. The value is consistent with the respective registered CPA-DDs. Hence, this CAR is cloed.		
Date of <del>acceptance or non-acceptance</del>	Date: 23/12/2013	Status: Closed.

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-07	Assessment Team	Section B.1 of the verification protocol

#### Non conformities raised

In accordance with para 226(a) of VVS, v5:

- The information related to the specification of installed technology / equipment (CFL) has not been clearly discussed in section B.1 of the monitoring report.
- The ICL collection, storage and destruction details including the destruction agency is not mentioned in the section B.1 of the MR.
- PP to clarify whether date of CFL distribution is equivalent is date of CFL installation in Annexure 3 of MR.
- As mentioned in the registered CPA-DD section A.2, PP has mentioned that "All the ICLs will be recorded during the distribution process in specially designed software package programme (Database)". PP is requested to provide more details regarding the software package programme developed.
- PP to justify the statement mentioned in A.2 of CPA-DD stating "The CPA Implementer will arrange for destruction and inform the DOE well in advance of the date".

#### Project Participant's response

Date: 13/12/2013

- The same is now clearly discussed in the B.1 section of the revised MR.
- For all the CPAs, the collection and destruction methodology have already been described. There is various destruction agencies involved for the destruction of the ICLs. The destruction certificates have been provided to the DOE already. The same now is included in the section B.1 of the MR.
- The date of CFL distribution can be considered as date of CFL installation as the households can only exchange their working and used ICLs to be eligible for project CFLs. Moreover, for each CPA, the end date of distribution has been considered for energy savings calculation. Thus it is highly conservative to consider the date of CFL distribution as equivalent to the date of CFL installation as the distribution of CFLs in each CPA takes from minimum 2 months to 4 months' time. The same can be verified from the start and end date of CFL distribution.
- The quantity and wattage of working ICLs collected during distribution of CFLs was recorded in hard copies (project database as well as in consent deeds) by the CPA implementers. The same hard record was converted to soft using excel spreadsheet. The software package is nothing but those excel database and then uploading the same to a dedicated interface. A dedicated interface with controlled access has been shared with DOE. DOE can verify the link [https://cquestcapital.sharepoint.com/sites/blypoa\\_1st\\_verification/](https://cquestcapital.sharepoint.com/sites/blypoa_1st_verification/) for implementer's claim. The username and password has already been shared with DOE.
- Although it was mentioned that the destruction activity will be carried out in presence of DOE, since the projects were completed much more before the CME/Implementer hired the DOE, due to various logistic inconvenience, implementer felt that the storage of the ICLs may lead to breaking and even misuse of baseline ICLs. Thus to complete the overall implementation (i.e from purchasing the CFLs to destruction of ICLs) of individual project activity, implementer decided to carry out the destruction and thus for all the CPAs, ICL destruction has been carried out. Moreover to be in more conservative side, implementers have considered the collected and destroyed ICL numbers as the final quantity of CFLs distributed. Thus as per BLY program before submitting the final distribution database to BEE (the CME), implementers have destroyed the collected baseline ICLs. The destruction activity carried out is in line with the applied methodology.

#### Documentation Provided as Evidence by Project Participant

Revised MR

Information Verified by Team Leader

Date of review: 16/12/2013

Revised MR version 01.4 dated 13/12/2013

Reasoning for ~~not acceptance or close out~~

<p>a. Assessment team confirms that the information related to the specification of installed technology / equipment (CFL) is now clearly mentioned in section B.1 of the revised MR. Hence this CAR is closed.</p> <p>b. Assessment team confirms that the ICL collection, storage and destruction details including the destruction agency details for each CPA is now mentioned in Annexure 13 of revised MR. Hence this CAR is closed.</p> <p>c. Explanation provided by the PP is acceptable and date of CFL distribution is considered as date of CFL installation for each CPA. Hence, this CAR is closed.</p> <p>d. PP has provided details regarding the software package programme developed. Assessment team has checked the software package and found the documents in support of ICLs collected and destroyed from individual CPAs. This is in line with the CPA-DD section A.2. Hence this CAR is closed.</p> <p>e. PP clarifies that the projects were completed much more before the CME hired the DOE. PP felt that the storage of the ICLs may lead to breaking and even misuse of baseline ICLs. In order to complete the overall implementation (i.e from purchasing the project CFLs to destruction of baseline ICLs) of individual CPAs, PP decided to carry out the destruction just after the completion of CFL distribution for individual CPAs. Explanation provided by the PP is deemed satisfactory. Assessment team checked the photographic and video graphic evidences of ICL destruction and confirms the same. Hence, this CAR is closed.</p>		
<b>Date of acceptance or non-acceptance</b>	<b>Date:</b> 16/12/2013	<b>Status:</b> Closed

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-08	Assessment Team	Section C of verification protocol
<b>Non conformities raised</b>			
In line with the para 229 of VVS v5, the diagram indicating "Monitoring System for Bachat Lamp Yojana" in the section C of monitoring report is inconsistent with the diagrams 2 and 3 of the registered PoA-DD.			
<b>Project Participant's response</b>		<b>Date:</b> 13/12/2013	
The same has been incorporated in the revised monitoring report.			
<b>Documentation Provided as Evidence by Project Participant</b>			
Revised MR			
<b>Information Verified by Team Leader</b>		<b>Date of review: 13/12/2013</b>	
Revised MR version 01.4 dated 13/12/2013			
<b>Reasoning for not acceptance or close out</b>			
PP has kept both the diagram in the revised MR. Figure 2 and 3 of revised MR is inconsistent with figure 4 of revised MR. This CAR is open.			
<b>Date of <del>acceptance or non-</del> acceptance</b>		<b>Date:</b> 16/12/2013	Status: Open
<b>Project Participant's response</b>		<b>Date:</b> 22/12/2013	
Figure 4 has now been removed.			
<b>Documentation Provided as Evidence by Project Participant</b>			
Revised MR			
<b>Information Verified by Team Leader</b>		<b>Date of review: 23/12/2013</b>	
Revised MR version 01.5 dated 23/12/2013			
<b>Reasoning for not acceptance or close out</b>			
PP has now removed the Figure 4 from the revised MR. Figure 2 and 3 of revised MR are consistent with the registered PoA-DD. Hence, this CAR is closed.			
<b>Date of <del>acceptance or non-</del> acceptance</b>		<b>Date:</b> 23/12/2013	<b>Status: Closed.</b>

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-09	Assessment Team	Section D.1 of verification protocol
<b>Non conformities raised</b>			

In accordance with para 17(d) of VVS v5:			
<div>a. The unit, description and source fields of the parameter “EF<sub>CO<sub>2</sub>,ELEC,y</sub>” in section D.1 of MR do not match with the corresponding parameter of CPA-DD.</div> <div>b. The value of CO<sub>2</sub> emission factor “EF<sub>CO<sub>2</sub>,ELEC,y</sub>” mentioned for individual CPAs are inconsistent with the respective CPA-DD for CPA Number 3223-0022 to 3223-0028.</div> <div>c. The “Source of data” field for parameter “O<sub>i</sub>” in section D.1 of MR does not match with the corresponding parameter of CPA-DD.</div> <div>d. The “Description” field for parameter “Li” in section D.1 of MR does not match with the corresponding parameter of CPA-DD.</div> <div>e. Life test report of all types of CFLs from different manufacturers has not been provided to the DOE for review.</div>			
Project Participant’s response		Date:13/12/2013	
<div>a. The same has been made consistent.</div> <div>b. These are made consistent now</div> <div>c. These have been elaborated and have been made consistent.</div> <div>d. The same has been made consistent now.</div> <div>e. The life test reports of the CFLs used for the CPAs have already been provided to the DOE. The same can be verified from the link <a href="https://cquestcapital.sharepoint.com/sites/blypoa_1st_verification/">https://cquestcapital.sharepoint.com/sites/blypoa_1st_verification/</a></div>			
Documentation Provided as Evidence by Project Participant			
<div>• Revised MR</div> <div>• Life test reports of the each type of CFL installed</div>			
Information Verified by Team Leader		Date of review: 16/12/2013	
Revised MR version 01.4 dated 13/12/2013			
Life Test Reports of all types of CFLs from different manufacturers (HPL, Phillips, Halonix, Glowmore, Energetic) <sup>/P11/</sup>			
Reasoning for <del>not acceptance or close out</del>			
<div>a. Assessment team confirms that unit, description and source fields of the parameter “EF<sub>CO<sub>2</sub>,ELEC,y</sub>” in section D.1 of revised MR is now consistent with the corresponding parameter of CPA-DD. Hence this CAR is closed.</div> <div>b. Assessment team confirms that value of CO<sub>2</sub> emission factor “EF<sub>CO<sub>2</sub>,ELEC,y</sub>” mentioned for individual CPAs in revised MR is now consistent with the respective CPA-DD for CPA Number 3223-0022 to 3223-0028. Hence this CAR is closed.</div> <div>c. Assessment team confirms that “Source of data” field for parameter “O<sub>i</sub>” in section D.1 of revised MR is now consistent with the corresponding parameter of CPA-DD. Hence this CAR is closed.</div> <div>d. Assessment team confirms that “Description” field for parameter “Li” in section D.1 of revised MR is now consistent with the corresponding parameter of CPA-DD. Hence this CAR is closed.</div> <div>e. Assessment team has checked the life test report of all types of CFLs from different manufacturers (HPL, Phillips, Halonix, Glowmore, Energetic) . All life test reports have now been submitted to the DOE. Hence, this CAR is closed.</div>			
Date of <del>acceptance or non-acceptance</del>		Date:16/12/2013	Status: Closed
Date	Type & Number	Raised by	Reference
06/12/2013	CAR-10	Assessment Team	Section D.2 of verification protocol
Non conformities raised			

In accordance with para 233 of VVS v5:	
<p>a. The value of parameter “sample size of monitoring survey” for each CPA given in the ER spreadsheet (BLY database worksheet) is not reproducible.</p> <p>b. The “QA/QC procedures” field for parameters “<math>LFR_{i,y}</math>” and “Lamp distribution data” in section D.2 of MR does not match with the corresponding parameter of CPA-DD.</p> <p>c. Explain in detail which standardized format and protocol is followed for each CPA as given in the “QA/QC procedures” field for parameters “<math>Q_{PJ,i}</math>”, “<math>LFR_{i,y}</math>”, “Lamp distribution data”, “<math>P_{i,BL}</math>” and “<math>P_{i,PJ}</math>” in section D.2 of MR.</p> <p>d. The details of destruction record of working ICLs has not been provided in the “QA/QC procedures” field of parameter “<math>N_{destroyed}</math>” in section D.2 of MR.</p> <p>e. The statement “Three types of ICLs have been considered for distribution-100 W, 60 W and 40 W.” mentioned in “Value of monitored parameter” field of parameter “<math>P_{i,BL}</math>” in section D.2 of MR is incorrect.</p> <p>f. The reference of the tariff orders referred by CME for estimation of T&amp;D losses value has not been provided in section D.2 of MR.</p>	
<b>Project Participant's response</b>	<b>Date:13/12/2013</b>
<p>a. The sample size calculation has already been provided in the CPA-DD. The CFL samples have been shown in the spreadsheet. Implementers have used already established sample size in the CPA-DD. The sample size determined during inclusion of CPA was based on the projected CFLs those were to be distributed. During CPA implementation, it was observed that the no. of CFLs distributed was less compared to the projected one. Thus the sample size considered in CPA-DD was high. However the implementer can choose a larger size, whereby the error margin reduces and a more accurate result comes up. It is to be noted that AMS-II.J prescribes only 100 samples, whereas implementers have chosen a much larger sample.</p> <p>b. This has now been made consistent.</p> <p>c. The standardized format or protocol mentioned here is one, which was by agreed upon the CME and the implementers and as per the methodology.</p> <p>d. The same has been elaborated now.</p> <p>e. This is now corrected.</p> <p>f. Updated T&amp;D loss value and source have been shown in the ER spreadsheet and can be seen in Annexure 7. It is not feasible to keep all the sources for each CPAs for two different years and for four different DISCOMs. In CER spreadsheet two subsheets shows all the sources referred for CER calculation. Annexure 7 shows the T&amp;D value which are linked to those T&amp;D subsheets.</p>	
<b>Documentation Provided as Evidence by Project Participant</b>	
Revised MR	
<b>Information Verified by Team Leader</b>	<b>Date of review: 16/12/2013</b>
Revised MR version 01.4 dated 13/12/2013	
<b>Reasoning for not acceptance or close out</b>	

a. Assessment team confirms that the value of parameter “sample size of monitoring survey” for each CPA given in the ER spreadsheet (BLY database worksheet) is considered as higher than the estimated value in registered CPA-DD in order to reduce the error margin and achieve more accurate survey results. The assumption taken by PP is on the conservative side and hence acceptable. Hence, this CAR is closed.
b. Assessment team confirms that “QA/QC procedures” field for parameters “LFR <sub>i,y</sub> ” and “Lamp distribution data” in section D.2 of revised MR is now consistent with the corresponding parameter of CPA-DD. Hence, this CAR is closed.
c. PP has now provided the standardized format and protocol, which is followed for each CPA as given in the “QA/QC procedures” field for parameters “Q <sub>PJ,i</sub> ”, “LFR <sub>i,y</sub> ”, “Lamp distribution data”, “P <sub>i,BL</sub> ” and “P <sub>i,PJ</sub> ” in section D.2 of MR. Assessment team confirms the same is in line with the methodology. Hence, this CAR is closed.
d. PP has now described the details of destruction record of working ICLs in the “QA/QC procedures” field of parameter “N <sub>destroyed</sub> ” in section D.2 of revised MR. Assessment team verified the ICL destruction certificates for individual CPAs. Hence, this CAR is closed.
e. The statement “Three types of ICLs have been considered for distribution-100 W, 60 W and 40 W.” is now corrected in the “Value of monitored parameter” field of parameter “P <sub>i,BL</sub> ” in section D.2 of revised MR. Assessment team has checked and found the revised MR in line with the actual project implementation. Hence, this CAR is closed.
f. The reference of the tariff orders referred by CME for estimation of T&D losses value has been provided in ER spreadsheet. Hence, this CAR is closed.
<b>Date of acceptance or non-acceptance</b>
<b>Date:</b> 16/12/2013
<b>Status:</b> Closed

Date	Type & Number	Raised by	Reference
06/12/2013	CL-11	Assessment Team	Section D.2 of the verification protocol
<b>Non conformities raised</b>			
In accordance with para 233 of VVS v5:			
a. The QA/QC procedure for the parameter “sample size of monitoring survey” states two options of choosing the actual number of households to be surveyed – either calculated as per sample size or higher than the calculated value. Please clarify in the MR which of the two options has been chosen for the current monitoring period.			
b. It is not clear from the “Measuring / Reading / Recording frequency” field of parameter “LFR <sub>i,y</sub> ” in section D.2 of MR as to which of the two given options has been chosen for the current monitoring period. Please clarify.			
c. It is not clear from the “Additional comment” field of parameter “LFR <sub>i,y</sub> ” in section D.2 of MR as to which of the two given options has been chosen for the current monitoring period. Please clarify.			
d. PP has applied ex ante estimated value for “LFR <sub>i,y</sub> ” estimation in ER calculation based on the SSC-354. PP to clarify how, SSC-354 is applicable to the project, since the SSC-354 is only applicable in the absence of the mortality curve for CFLs.			
e. The calculation method given for parameter “LFR <sub>i,y</sub> ” in section D.2 of MR is not clear and transparent.			
f. It is not clear from the “Source of data” field of parameter “TD <sub>y</sub> ” in section D.2 of MR as to which of the two given options has been chosen for the current monitoring period. Please clarify.			
g. Please clarify how the values of T&D losses considered for the FY 2011-12 and FY 2012-13 of operation are same.			
<b>Project Participant’s response</b>		<b>Date:</b> 13/12/2013	



- a. The same has been corrected now
- b. The same has been corrected now
- c. The same has been corrected now
- d. The project CFLs test reports as per the national standard IS15111. SSC-354 states "With respect to referencing standards other than IEC 60969 for mortality curves or modifying the language of paragraph 15, the SSC WG has not found any available standards and thus clarifies that the straight line mortality curve should be used as indicated in II.J to determine lamp failure rate (LFR)." The BIS Guideline used was IS15111 (part 1&2), which does not call for mortality curve to be used for life test. Thus in the absence of mortality curve, the monitoring results are used to confirm the ex-ante estimated value of LFR as per AMS-II.J. Version 03 which is also clarified in SSC-354.
- e. The same is corrected now.
- f. The same has been corrected now
- g. The T&D losses for 2012-13 (2<sup>nd</sup>Year) are considered same as T&D losses of 2011-12 (1<sup>st</sup>year) value since the approved data from electricity regulatory commission is not publicly available for the year 2012-13.

**Documentation Provided as Evidence by Project Participant**

Revised MR

**Information Verified by Team Leader**

**Date of review: 16/12/2013**

Revised MR version 01.4 dated 13/12/2013

**Reasoning for not acceptance or close out**

- a. Assessment team confirms that revised MR now clearly mentions that PP has chosen higher than the calculated value of households to be surveyed. The option chosen is conservative and will lead to more accurate results. Hence, this CL is closed.
- b. Assessment team confirms that revised MR now clearly mentions that PP has chosen option 1 "ex post monitoring surveys conducted at least once in every 3 years" for "Measuring / Reading / Recording frequency" field of parameter "LFR<sub>i,y</sub>". The option chosen is in line with the applied methodology. Hence, this CL is closed.
- c. Assessment team confirms that revised MR now clearly mentions that PP has chosen option 1 "ex post monitoring surveys conducted at least once in every 3 years" in the "Additional comment" field of parameter "LFR<sub>i,y</sub>". The option chosen is in line with the applied methodology. Hence, this CL is closed.
- d. The PP has confirmed the mortality curves for all types of CFLs are absent PP and therefore PP has applied ex ante estimated value for "LFR<sub>i,y</sub>" estimation in ER calculation based on the SSC-354. The clarification provided by the PP is acceptable. Hence, the SSC-354 is rightly applied and this CL is closed.
- e. PP has now correctly mentioned the calculation method for parameter "LFR<sub>i,y</sub>" in section D.2 of revised MR. This is in line with the applied methodology. Hence, this CL is closed.
- f. Assessment team confirms that revised MR now clearly mentions that PP has chosen option 1 "published DISCOM data by an official governmental body" as "Source of data" of parameter "TD<sub>y</sub>". The option chosen is in line with the applied methodology. Hence, this CL is closed.
- g. PP as response had clarified that the T&D losses for the year 2012-13(2<sup>nd</sup>Year) are not approved by the electricity regulatory commission. The verification team has cross checked the T&D losses for the 2<sup>nd</sup> year from the electricity regulatory commission website and confirms that the T&D losses are not approved. Hence, this CL is closed.

**Date of acceptance or non-acceptance**

**Date:**16/12/2013

**Status:** Closed

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-12	Assessment Team	Section E.4 of verification protocol

**Non conformities raised**



In accordance with para 244 of VVS v5:		
a. The formulae used for the calculation of emission reductions and the notation used for various parameters in MR and ER spreadsheet are not matching with the included CPA-DDs and methodology. Example: In Annexure 9, the notation of monitoring parameter $P_{i,BL}$ , $P_{i,PJ}$ is not correct.		
b. The emission reduction values are not calculated correctly in MR and ER spreadsheet. Example: Same value of parameter $LFR_{i,y}$ is used after 365 days from the end date of distribution for the CPAs 3223-0001, 0022 to 0029, 0031, 0037.		
c. The values of calculated parameters are inconsistent between MR and corresponding ER spreadsheet.		
d. Considering the fact that only emission reduction formula is given as per methodology, the value of baseline emissions in section E.4 of MR is incorrect.		
Project Participant's response		Date:13/12/2013
a. The notations used were corrected now.		
b. The same has been corrected now.		
c. The same has been corrected now.		
d. The same has been corrected now.		
Documentation Provided as Evidence by Project Participant		
Revised MR and revised ER spreadsheet.		
Information Verified by Team Leader		Date of review: 17/12/2013
Revised MR version 01.4 dated 13/12/2013		
Revised ER spreadsheet 01.3.dated 13/12/2013		
Reasoning for not acceptance or close out		
a. The notations used for various parameters in MR and ER spreadsheet are not matching with the included CPA-DDs and methodology. CAR is open.		
b. PP has now used separate ex ante values the $LFR_{i,y}$ values for year 1 and Year 2 and values applied are ex ante values as mentioned in the registered CPA-DD. Hence, this CAR is closed.		
c. The values of calculated parameters are not consistent between revised MR and corresponding revised ER spreadsheet. CAR is open.		
d. Assessment team confirms that the value of baseline emissions is now removed from section E.4. of MR. Hence, this CAR is closed.		
Date of acceptance or non- acceptance		Date:18/12/2013
		Status: Open
Project Participant's response		Date:
a. The notations are now being corrected and made consistent with MR and ER spread sheet.		
c. Now the calculated parameters are consistent both in revised MR and ER spread sheet.		
Documentation Provided as Evidence by Project Participant		
Revised MR and ER Spreadsheet.		
Information Verified by Team Leader		Date of review: 23/12/2013
Revised MR version 01.5 dated 23/12/2013		
Revised ER spreadsheet 01.4.dated 23/12/2013		
Reasoning for not acceptance or close out		
a. The notations used for various parameters in MR and ER spreadsheet are now consistent with the included CPA-DDs and methodology. Hence this CAR is closed.		
c. The values of calculated parameters are now consistent between revised MR and corresponding revised ER spreadsheet. Hence, this CAR is closed.		
Date of acceptance or non- acceptance		Date: 23/12/2013
		Status: Closed.

Date	Type & Number	Raised by	Reference
06/12/2013	CAR-13	Assessment Team	Section E.5 of verification protocol
<b>Non conformities raised</b>			

In accordance with para 220(c) of VVS, v5:		
a. Value estimated in ex-ante calculation of registered CPA-DD as mentioned in section E.5 of MR is incorrect. Also, the value is inconsistent between MR and corresponding ER spreadsheet.		
b. Actual values achieved during this monitoring period as mentioned in section E.5 of MR is incorrect. Also, the value is inconsistent between MR and corresponding ER spreadsheet.		
<b>Project Participant's response</b>	<b>Date:</b> 13/12/2013	
a. These are now corrected and the calculation has been shown transparently		
b. The same has been corrected now.		
<b>Documentation Provided as Evidence by Project Participant</b>		
Revised MR and revised ER spreadsheet.		
<b>Information Verified by Team Leader</b>	<b>Date of review:</b> 18/12/2013	
Revised MR version 01.4 dated 13/12/2013		
Revised ER spreadsheet 01.3.dated 13/12/2013		
<b>Reasoning for not acceptance or close out</b>		
a. The value is inconsistent between revised MR and corresponding revised ER spreadsheet. CAR is open.		
b. Actual values achieved during this monitoring period as mentioned in section E.5 of MR is incorrect. Also, the value is inconsistent between MR and corresponding ER spreadsheet. CAR is open.		
<b>Date of <del>acceptance or non- acceptance</del></b>	<b>Date:</b> 19/12/2013	Status: Open
<b>Project Participant's response</b>	<b>Date:</b> 23/12/2013	
a. The values are now made consistent.		
b. Actual values are corrected and made consistent.		
<b>Documentation Provided as Evidence by Project Participant</b>		
Revised MR and revised ER spreadsheet		
<b>Information Verified by Team Leader</b>	<b>Date of review:</b> 23/12/2013	
Revised MR version 01.5 dated 23/12/2013		
Revised ER spreadsheet 01.4.dated 23/12/2013		
<b>Reasoning for not <del>acceptance or close out</del></b>		
a. Value estimated in ex-ante calculation of registered CPA-DD as mentioned in section E.5 of revised MR is now correct. Also, the value is now consistent between revised MR and corresponding revised ER spreadsheet. Hence, this CAR is closed.		
b. Actual values achieved during this monitoring period as mentioned in section E.5 of revised MR is now correct. Also, the value is now consistent between revised MR and corresponding revised ER spreadsheet. Hence, this CAR is closed		
<b>Date of <del>acceptance or non- acceptance</del></b>	<b>Date:</b> 23/12/2013	<b>Status:</b> Closed.

Date	Type & Number	Raised by	Reference
09/01/2014	CL-14	Assessment Team	Section D.2 of verification protocol
<b>Non conformities raised</b>			
Sample size of monitoring survey 'N' for CPA UNFCCC Ref. No. 3223-0029 and 3223-0037 is identical to the one indicated in the respective CPA DD. However, average CFL distributed per household is lower than indicated in the CPA DD. Therefore, as per QA/QC procedure for 'N' this should have recalculated using average CFL distributed. PP is requested to clarify how the approach applied is in accordance with CPA-DD.			
<b>Project Participant's response</b>		<b>Date: 10/01/2014</b>	
The sample sizes for both the CPAs were wrongly mentioned in the database. Same has been corrected now. The third party monitoring survey reports which were referred for the sample size for both the CPAs have been provided to the DOE for verification. The MR and ER sheet have been correspondingly revised.			
<b>Documentation Provided as Evidence by Project Participant</b>			
Monitoring survey report for CPA 3223-0029			
Monitoring survey report for CPA 3223-0037			
MR, version 1.6			
ER sheet, version 1.5			
<b>Information Verified by Team Leader</b>		<b>Date of review: 10/01/2014</b>	

Monitoring survey report for CPA 3223-0029 Monitoring survey report for CPA 3223-0037 MR, version 1.6 ER sheet, version 1.5		
<b>Reasoning for <del>not acceptance or close out</del></b>		
Verification team confirmed that the sample size of monitoring survey 'N' for CPA UNFCCC Ref. No. 3223-0029 and 3223-0037 given earlier was a typographical error. The verification team has checked the monitoring survey reports of both the CPAs, revised MR and ER sheet submitted by PP and found to be okay. Hence, this CL is closed.		
<b>Date of <del>acceptance or non-acceptance</del></b>	<b>Date:</b> 10/01/2014	<b>Status:</b> Closed

## 8. CERTIFICATE OF COMPETENCE

<b>Personnel Name:</b>		<b>Kaushik Pal</b>	
<b>Qualified to work as:</b>			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>		<b>Technical Area</b>	
Energy Industries (renewable/non-renewable)		TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
Energy Demand		TA 3.1 Energy Demand	
Approved by (Manager C & T)		Mayank Kumar Jain	
Approval date:		04/04/2013	

<b>Personnel Name:</b>		<b>B. Rampradap</b>	
<b>Qualified to work as:</b>			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>		<b>Technical Area</b>	
Energy industries (renewable/non-renewable sources)		TA 1.2: Energy generation from renewable energy sources	
Energy Demand		TA 3.1 Energy Demand	
Waste handling and disposal		TA 13.1: Waste handling and disposal	
Approved by (Manager C & T)		Mayank Jain	
Approval date:		09/05/2013	

<b>Personnel Name:</b>		<b>Akhilesh Joshi</b>	
<b>Qualified to work as:</b>			
Team Leader	<input type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>		<b>Technical Area</b>	
Energy industries (renewable/non-renewable sources)		TA 1.2: Energy generation from renewable energy sources	
Energy Demand		TA 3.1: Energy Demand	

Approved by (Manager C & T)	Mayank Kumar Jain		
Approval date:	26/03/2013		
Personnel Name:	Sayali Kumar		
<b>Qualified to work as:</b>			
Team Leader	<input type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>	<b>Technical Area</b>		
Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources		
Approved by (Manager C & T)	Mayank Kumar Jain		
Approval date:	25/06/2012		

Personnel Name:	Sameer Zope		
<b>Qualified to work as:</b>			
Team Leader	<input type="checkbox"/>	Technical Expert	<input type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>	<b>Technical Area</b>		
N/A	N/A		
Approved by (Manager C & T)	Mayank Kumar Jain		
Approval date:	24/05/2012		

Personnel Name:	Megha Lotankar		
<b>Qualified to work as:</b>			
Team Leader	<input type="checkbox"/>	Technical Expert	<input type="checkbox"/>
Validator/Verifier (Trainee)	<input checked="" type="checkbox"/>	Financial Expert	<input checked="" type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>	<b>Technical Area</b>		
Not applicable	Not applicable		
Approved by (Manager C & T)	Mayank Kumar Jain		
Approval date:	25/06/2012		

Personnel Name:	Sanjay Kandari		
<b>Qualified to work as:</b>			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input checked="" type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
<b>Area(s) of Technical Expertise</b>			
<b>Sectoral Scope</b>	<b>Technical Area</b>		

Energy industries (renewable/non-renewable sources)	TA 1.2: Energy generation from renewable energy sources
Approved by (Manager C & T)	Mayank Kumar Jain
Approval date:	09/08/2012

Personnel Name:		Gagandeep Kakkar	
Qualified to work as:			
Team Leader	<input checked="" type="checkbox"/>	Technical Expert	<input checked="" type="checkbox"/>
Validator/Verifier	<input checked="" type="checkbox"/>	Financial Expert	<input type="checkbox"/>
Technical Reviewer	<input type="checkbox"/>	Local Expert (India)	<input checked="" type="checkbox"/>
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	
Waste Handling and Disposal		TA 13.1 Waste Handling and Disposal	
Approved by (Manager C & T)		Sanjay Kandari	
Approval date:		04/03/2014	

### Annexure -1

#### Sample survey form used by DoE during verification

## Field Survey Form PoA- 3223 (BLY PoA DOE verification)

SSC-CPA Unique Identification No: -

(UN Ref No.) 3223 - \_\_\_\_\_

KBS Reference Number: CDM.13.VER.004

Name of DISCOM:

CIRCLE, DIVISION:

Name(s) of the verification team members who collected the following information:	Place:
	Date:

Name of the household consumer of the utility	
Address of the surveyed household	
Household unique utility consumer number	
Name of the dweller/ interviewee	
Age of the interviewee	
Status of the dweller (Owner/Tenant/Other)	

SL.	Information Required	Feedback				
1	Whether the same household was surveyed in ex-post monitoring survey by CPA implementer	YES/ NO				
2	Number of CFL installed	1	2	3	4	>4
	Wattages(W) of CFL installed					
3	Number of ICL replaced by the CFL(s)	1	2	3	4	>4
	Wattages(W) of ICL replaced					
4	The project CFLs are having BLY logo & CPA implementer logo	YES/ NO				
5	Type of distribution	Direct		Indirect		
	Mention the method of distribution of CFL(s) & awareness promotion	NA				
	It had been told to install in high usage area of the house			YES/ NO		
6	The household has paid INR 15 for exchanging 1 ICL(in operation) with 1 CFL (new)	YES/ NO				
7	The electricity bill of the household has also been stamped during CFLs distribution by the authority	YES/ NO				



**Field Survey Form PoA- 3223 (BLY PoA DOE verification)**

8	Project CFL(s) flickers	YES/ NO					
9	Project CFL(s) found in operation during this site visit(11W/14W/18W/20W)	Number					
		Wattage (W)					
10	All of the installed project CFLs were operating	YES	NO (Number:                      W:-                      )				
	Reason of failure	NA	Defective	Poor performance	In reserve	Sold/ given away	Others
	Defective CFL(s) was replaced by the household		NO	YES			
	Replacement lamp type installed by household in place of fused CFL(s)	NA	ICL	TFL	CFL	LED	OTHERS
	Replacement Lamp Wattage (W)						
	(If the replaced lamp was CFL) The replaced lamp was installed at the time of survey by CPA implementer		YES/NO				
	(If the replaced lamp was not CFL) Mention the reason of not using CFL						
11	Who has collected the fused CFL?						
12	When was the fused CFL collected?						
13	What is the disposal mechanism of fused CFL lamps?						
14	Compliance of leakage	YES/NO					
15	Additional information (if any)						

Signature of the dweller/ interviewee:	Signature of the auditor:

### Field Survey Form PoA- 3223 (BLY PoA DOE verification)

SSC-CPA Unique Identification No: - 023-HPL-KR (UN Ref No.) 3223 - 0023.

KBS Reference Number: CDM.13.VER.004

Name of DISCOM: Bangalore Electricity Supply Company (BESCOM)

CIRCLE, DIVISION: Bangalore Rural, Nelamangala



Name(s) of the verification team members who collected the following information: Kaushik Pal Megha Lotantale	Place: Magadi, Nelamangala Date: 24/10/2013
---	--

Name of the household consumer of the utility	R. Rangabhanumatah
Address of the surveyed household	21 Yelachaguppe, Towerkese, Magadi,
Household unique utility consumer number	TLG 24802
Name of the dweller/ interviewee	Ramesh (Son)
Age of the interviewee	42
Status of the dweller (Owner/Tenant/Other)	Owner

SL.	Information Required	Feedback				
1	Whether the same household was surveyed in ex-post monitoring survey by CPA implementer	✓ YES/ NO				
2	Number of CFL installed	1	2	3	4	>4
	Wattages(W) of CFL installed	18	18	18	18	
3	Number of ICL replaced by the CFL(s)	1	2	3	4	>4
	Wattages(W) of ICL replaced	100	100	100	100	
4	The project CFLs are having BLY logo & CPA implementer logo	✓ YES/ NO				
5	Type of distribution	✓ Direct		Indirect		
	Mention the method of distribution of CFL(s) & awareness promotion	NA				
	It had been told to install in high usage area of the house			✓ YES/ NO		
6	The household has paid INR 15 for exchanging 1 ICL(in operation) with 1 CFL (new)	✓ YES/ NO				
7	The electricity bill of the household has also been stamped during CFLs distribution by the authority	✓ YES/ NO				

### Field Survey Form PoA- 3223 (BLY PoA DOE verification)

8	Project CFL(s) flickers	YES/ NO					
9	Project CFL(s) found in operation during this site visit(11W/14W/18W/20W)	Number	1	2	3	4	
		Wattage (W)	18	18	18	18	
10	All of the installed project CFLs were operating	YES	NO (Number: W:- )				
	Reason of failure	NA	Defective	Poor performance	In reserve	Sold/ given away	Others
	Defective CFL(s) was replaced by the household	NO	YES				
	Replacement lamp type installed by household in place of fused CFL(s)	NA	ICL	TFL	CFL	LED	OTHERS
	Replacement Lamp Wattage (W)						
	(If the replaced lamp was CFL) The replaced lamp was installed at the time of survey by CPA implementer		YES/NO				
	(If the replaced lamp was not CFL) Mention the reason of not using CFL						
11	Who has collected the fused CFL?	NA					
12	When was the fused CFL collected?	NA					
13	What is the disposal mechanism of fused CFL lamps?	NA					
14	Compliance of leakage	YES/NO	NA				
15	Additional information (if any)	-					

Signature of the dweller/ interviewee: 	Signature of the auditor: 
---	---

#### History of the document

Version	Date	Nature of revision	Reviewed by	Approved by
4.0	14/12/2013	Guidance included/improved	Manager CDM Quality 23/12/2013	Managing Director 23/12/2013
3.1	29/10/2012	Updated for EB69 Annex6	Manager CDM Quality 29/10/2012	Managing Director 29/10/2012
3.0	31/08/2012	Revised for VVS Track	Manager CDM Quality 08/09/2012	Managing Director 10/09/2012
2.0	21/12/2011	Comprehensively revised	Manager CDM Quality 21/12/2011	Managing Director 21/12/2011