



**Monitoring report form for CDM programme of activities**  
(version 01.0)

**MONITORING REPORT**

<b>Title of the programme of activities (PoA)</b>	CFL lighting scheme – “Bachat Lamp Yojana”	
<b>UNFCCC reference number of the PoA</b>	PoA 3223	
<b>Version number(s) of the PoA-DD(s) applicable to this monitoring report</b>	09	
<b>Coordinating/managing entity (CME)</b>	Bureau of Energy Efficiency	
<b>Version number of this monitoring report</b>	03	
<b>Completion date of this monitoring report</b>	25/05/2017	
<b>Monitoring period number and dates covered by this monitoring report</b>	Third Monitoring Period Duration: 01/11/2013 to 31/12/2014 (both days inclusive);	
<b>Monitoring report number for this monitoring period</b>	Batch 2	
<b>Host Party(ies)</b>	Host Party(ies) of the PoA	Is this a host Party to a specific-case CPA covered in this monitoring report?(yes/no)
	India	Yes
<b>Sectoral scope(s)</b>	Sectoral Scope 3 : Energy demand	
<b>Selected methodology(ies)</b>	Applied Methodology: AMS-II.J. , Version 03	
<b>Selected standardized baseline(s)</b>	Not Applicable	
<b>Total amount of GHG emission reductions or net GHG removals by sinks for all specific-case CPAs in the PoA covered in this monitoring report</b>	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	N/A	312,427 tCO <sub>2</sub> e

## PART I - Programme of activities

### SECTION A. Description of PoA

#### A.1. Brief description of the PoA

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The purpose of the Bachat Lamp Yojana (BLY) project activity is to replace the conventional incandescent lamps (ICLs) by compact fluorescent lamps (CFLs) in the residential grid connected households. Under the BLY scheme, up to four, long-life quality CFLs<sup>1</sup> were distributed to grid-connected residential households in exchange of one ICL and INR 15 for one CFL. The reduction in total power demand through the energy saving achieved has resulted a reduction of greenhouse gases (GHG) emissions that would otherwise being emitted during production of the equivalent amount of power in grid connected mostly fossil fuel based power plants.

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. CFLs are much more energy efficient than baseline ICLs. The efficiency of ballast-integrated CFL typically ranges from 51 to 56 lumen/ Watt, which is 4 to 5 times higher than an equivalent ICL. Consequently, CFLs consume only 1/4<sup>th</sup> to 1/5<sup>th</sup> of the energy used by baseline ICLs to provide the same level of light output.

The 11W, 14W, 18W and 20W CFLs were distributed to households in exchange of equal number of normal luminous flux 60W and 100W ICLs, respectively. These CFLs have the equivalent or higher lumen to the replaced ICL (620lm and 1240lm, respectively) and a rated lifetime of 10,000 hours. These are also high power factor CFLs and they can withstand wide voltage fluctuations. Table 3 below provides the rated normal lumen output for the ICL as per IS 418:2004, as used in this project.

**Table 3: Technical Specifications of CFLs used in Project**

Baseline ICL Replaced (Watt)	Rated Normal Lumen Output (IS418:2004)	CFL range (Watt)
60	620 or more	11/14
100	1240 or more	18/20

The distribution of CFLs and replacement of previously used ICLs in households in the CPA area was using one or more of the following methods:

- direct installation at each household; and/or
- ICL collection and CFL distribution through dedicated distribution points as advertised by the CPA owner in the local media e.g. local DISCOM offices, retail outlets, resident association offices, schools etc.

The implementation chronology is presented in section B.1 of this monitoring report.

The implementation of the CPAs (under this PoA) covering this monitoring period has resulted in achieving 312,427 tonnes of CO<sub>2</sub> equivalent of greenhouse gas emission reductions.

<sup>1</sup> In India IS 15111 standard specifies a minimum 6000 hours rated life time. Long life quality CFLs in BLY context thus meet IS 15111 requirements and have an average rated life of 6000 hours and above.

**A.1.1. Generic CPA(s)**

<b>Title, identification/reference number and/or version number of the generic CPA(s) of the PoA</b>	<b>Sectoral scope(s)</b>	<b>Applied methodology(ies) or combination of methodologies and/or standardized baseline(s)</b>
CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	Sectoral Scope 3 : Energy demand	AMS-II.J. “Demand-side activities for efficient lighting technologies” (Version 3.0) “Tool to calculate the emission factor for an electricity system” (Version 1.1)

**A.1.2. Specific-case CPA(s) covered in this monitoring report**

<b>Reference number of the specific-case CPA included in the PoA as of the end of this monitoring period</b>	<b>Title, identification/ reference number and version number of the generic CPA to which the specific-case CPA applies</b>	<b>Crediting period dates of the specific-case CPA</b>	<b>Is this specific-case CPA covered in this monitoring report? (yes/no)</b>
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; 3223-0001, version 9	29/05/2011 – 27/03/2019 (both days inclusive)	not covered in the monitoring report
3223-0002	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	01/05/2011 – 10/03/2015 (both days inclusive)	not covered in the monitoring report
3223-0003	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 10/03/2015 (both days inclusive)	not covered in the monitoring report
3223-0004	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 25/03/2015 (both days inclusive)	not covered in the monitoring report
3223-0005	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 25/03/2015 (both days inclusive)	not covered in the monitoring report
3223-0006	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited,	09/05/2011 – 10/03/2015 (both days inclusive)	not covered in the monitoring report

	Andhra Pradesh, India; 3223-0001, version 9		
3223-0007	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 10/03/2015 (both days inclusive)	not covered in the monitoring report
3223-0008	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report
3223-0009	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report
3223-0010	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report
3223-0011	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report
3223-0012	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report
3223-0013	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report
3223-0014	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report
3223-0015	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution	09/05/2011 – 18/11/2015 (both days inclusive)	not covered in the monitoring report

	Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9		
3223-0016	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 12/04/2015 (both days inclusive)	not covered in the monitoring report
3223-0017	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 12/04/2015 (both days inclusive)	not covered in the monitoring report
3223-0018	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 12/04/2015 (both days inclusive)	not covered in the monitoring report
3223-0019	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 12/04/2015 (both days inclusive)	not covered in the monitoring report
3223-0020	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 12/04/2015 (both days inclusive)	not covered in the monitoring report
3223-0021	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/05/2011 – 12/04/2015 (both days inclusive)	not covered in the monitoring report
3223-0022	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	01/07/2011 – 29/04/2019 (both days inclusive)	not covered in the monitoring report
3223-0023	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	31/08/2011 – 29/06/2019 (both days inclusive)	not covered in the monitoring report
3223-0024	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda	31/08/2011 – 29/06/2019 (both days inclusive)	not covered in the monitoring report

	Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9		
3223-0025	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	31/08/2011 – 29/06/2019 (both days inclusive)	not covered in the monitoring report
3223-0026	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	19/08/2011 – 17/06/2019 (both days inclusive)	not covered in the monitoring report
3223-0027	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	31/08/2011 – 29/06/2019 (both days inclusive)	not covered in the monitoring report
3223-0028	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	01/07/2011 – 29/04/2019 (both days inclusive)	not covered in the monitoring report
3223-0029	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	10/04/2012 – 09/04/2022 (both days inclusive)	not covered in the monitoring report
3223-0030	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	15/03/2012 – 14/03/2022 (both days inclusive)	not covered in the monitoring report
3223-0031	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	07/07/2012 – 06/07/2022 (both days inclusive)	yes
3223-0032	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	06/01/2012 – 05/01/2022 (both days inclusive)	not covered in the monitoring report

3223-0033	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	15/11/2011 – 14/11/2021 (both days inclusive)	not covered in the monitoring report
3223-0034	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	30/10/2011 – 28/08/2019 (both days inclusive)	not covered in the monitoring report
3223-0035	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	30/10/2011 – 28/08/2019 (both days inclusive)	not covered in the monitoring report
3223-0036	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	03/03/2012 – 30/12/2019 (both days inclusive)	not covered in the monitoring report
3223-0037	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	04/05/2012 – 01/03/2020 (both days inclusive)	not covered in the monitoring report
3223-0038	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	27/10/2012 – 24/08/2020 (both days inclusive)	yes
3223-0039	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	22/11/2012 – 19/09/2020 (both days inclusive)	yes
3223-0040	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	31/03/2012 – 27/01/2020 (both days inclusive)	not covered in the monitoring report
3223-0041	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited,	14/08/2012 – 11/06/2020 (both days inclusive)	yes

	Andhra Pradesh, India; 3223-0001, version 9		
3223-0042	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	31/03/2012 – 27/01/2020 (both days inclusive)	not covered in the monitoring report
3223-0043	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	25/07/2012 – 22/05/2020 (both days inclusive)	yes
3223-0044	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	20/04/2012 – 16/02/2020 (both days inclusive)	yes
3223-0045	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	09/10/2012 – 06/08/2020 (both days inclusive)	yes
3223-0046	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	29/03/2012 – 28/03/2019 (both days inclusive)	yes
3223-0047	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	29/03/2012 – 28/03/2019 (both days inclusive)	yes
3223-0048	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	23/12/2012 – 22/12/2022 (both days inclusive)	yes
3223-0049	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9	29/03/2012 – 28/03/2019 (both days inclusive)	yes
3223-0050	CFL lighting scheme – “Bachat Lamp Yojana” in Ranga Reddy District, Ranga Reddy North Circle, Habsiguda Division, Central Power Distribution	08/08/2012 – 07/08/2022 (both days inclusive)	yes



	Company of Andhra Pradesh Limited, Andhra Pradesh, India; 3223-0001, version 9		
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## A.2. Contact information of the coordinating/managing entity (CME) and/or responsible persons(s)/entity(ies)

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Name: Mr. Tridip Goswami  
Designation: Head of Compliance, CQC  
Email: [TGoswami@cquestcapital.com](mailto:TGoswami@cquestcapital.com)  
Phone: +91 9818 031981

Name: Mr. Vineet Kumar Garg  
Designation: Compliance Specialist, CQC  
Email: [VGarg@cquestcapital.com](mailto:VGarg@cquestcapital.com)

Contact persons belong to the entity "C-Quest Capital Malaysia Limited", which is Project participant.

## SECTION B. Implementation of PoA

### B.1. Implementation of the management system of the PoA

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The Bureau of Energy Efficiency, India is the BLY PoA managing entity. Under this PoA, three different entities viz. C- Quest Capital Malaysia Limited (CQC), Energy Management Centre, Department of Power, Government of Kerala (EMC), and HPL Electric & Power Pvt. Limited (HPL) have included fifty (50) CPAs as of end date of the present monitoring period. This monitoring report comprises only the 12 CPAs those are included and implemented by C- Quest Capital Malaysia Limited (CQC). C- Quest Capital Malaysia Limited (CQC) has distributed the CFLs to the households under CPAs, prepared the monitoring reports and hired the third party for ex-post monitoring surveys.

### B.2. Implementation of single sampling plan(s)

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Sampling plan is implemented separately for each specific-case CPA

## SECTION C. Post-registration changes to the PoA (including the generic CPA(s))

### C.1. Corrections

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### C.2. Inclusion of a monitoring plan to the registered PoA-DD (including its generic CPA-DD(s)), if a monitoring plan was not included at the time of registration

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### C.3. Permanent changes to the monitoring plan as described in the registered PoA-DD, applied methodology, or applied standardized baseline

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**C.4. Changes to the programme design of the registered PoA-DD (including corresponding changes to project design of the generic CPA-DD(s)) and updates to the eligibility criteria for inclusion of specific-case CPAs in the PoA**

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**C.5. Types of changes specific to afforestation and reforestation activities**

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## **PART II - Specific-case component project activity(ies)**

### **SECTION D. Description of specific-case CPA(s)**

#### **D.1. Brief description of implemented specific-case CPA(s)**

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Under this PoA, three different entities viz. C- Quest Capital Malaysia Limited (CQC), Energy Management Centre, Department of Power, Government of Kerala (EMC), and HPL Electric & Power Pvt. Limited (HPL) have included fifty (50) CPAs as of end date of the present monitoring period. Out of fifty CPAs, twenty nine (29) CPAs implemented by the implementer Energy Management Centre, Kerala & HPL Electric & Power Pvt. Limited and nine (9) CPAs implemented by C- Quest Capital Malaysia Limited (CQC), are not part of this monitoring report. This monitoring report comprises only the 12 CPAs those are included and implemented by C- Quest Capital Malaysia Limited (CQC). The monitoring report is prepared and submitted as per the “version 09.0 of CDM project standard”; EB 82 guideline, which allows parties under a PoA to submit ten separate monitoring reports for the same monitoring period. Any CPA included in this monitoring report will not be part of another monitoring report comprising other thirty eight CPAs implemented by Energy Management Centre, Kerala, HPL Electric & Power Pvt. Limited and C- Quest Capital Malaysia Limited (CQC). All the 12 CPAs have been implemented by the implementer till the end of this monitoring period.

The information of 12 CPAs distributed in different states of India is mentioned below in the table:

<b>CPAs</b>	<b>State</b>	<b>CME</b>	<b>DISCOM</b>	<b>Implementer</b>
3223-0043 3223-0044 3223-0045 3223-0046 3223-0047 3223-0048 3223-0049 3223-0050	Andhra Pradesh	Bureau of Energy Efficiency (BEE)	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	C- Quest Capital Malaysia Limited (CQC)
3223-0031	Delhi		NDPL (North Delhi Power Limited)	C- Quest Capital Malaysia Limited (CQC)
3223-0038 3223-0039 3223-0041	Punjab		PSPCL (Punjab State Power Corporation Limited)	C- Quest Capital Malaysia Limited (CQC)

Individual project activity involved installation of self-ballasted CFLs to replace existing ICLs used in the household. The electronic ballast integrated in the CFL is a non-removable part. The table below shows the lumen output and rated lifetime of the CFLs installed in the individual project activity against the replaced ICLs. The project CFLs meet or exceed the rated normal lumen output of the replaced ICL.

	ICL (baseline)	CFL (project)	ICL (baseline)	CFL (project)
Wattage (W)	60	11/14	100	18/20
Lumen output (lm)	620*	620**	1240*	1240**
Rated Lifetime (hours)	1000	10000	1000	10000

\*Rated normal Lumen output for 60 W and 100 W of ICLs as per IS 418:2004.

\*\* Rated normal Lumen output for 14 W and 20 W CFLs as per IS 15111:2002 (Part 2)

The project CFLs are in compliance with Indian Standard IS 15111:2002, which is the national standard for self-ballasted compact CFLs. The specifications of the project CFLs are as below:

- Self-ballasted type
- Rated lifetime of 10.000 hours
- Embossed or laser printed with project logo for clear unique identification
- BC/B22 base
- Power factor of greater than 0.85
- Lumen output of 620 or more for 11 and 14 W CFL and Lumen output of 1240 or more for 18 and 20 W CFL

The implementation of the project activity involves the distribution of up to four (4) long life quality CFLs per household to the grid connected residential households of the CPA area. One CFL is distributed in exchange of one ICL and INR 15. Each SSC-CPA which approaches registration under BLY PoA is assigned a unique code by the PoA managing entity viz. BEE (please refer [Annexure2](#)). The CPA specific implementation chronology is presented in [Annexure2](#).

The DISCOM (Distribution Company) maintains a database of domestic users identifiable on the basis of a unique connection number and/or address used for billing purposes. The distribution activities were carried out by first accessing this consumer database of the grid connected residential consumers from the CPA area.

The potential recipient households were educated to install the CFL in high-usage areas, such as outdoors, common areas, living room area and kitchen to maximize the energy savings. The distribution of CFLs and replacement of previously used ICLs in households in the CPA area was done using one or more of the following methods:

- Direct installation at each household; and/or
- Dedicated distribution points as advertised by the CPA investor in the local media e.g. local DISCOM offices, retail outlets, resident association offices, schools etc.

However, for the 12 CPAs included in this monitoring report, the distribution of CFLs was done through dedicated distribution points as advertised by CPA implementer and respective DISCOMs.

After the completion of CFL installation stage, the collected ICLs were stored in separate boxes according to the wattage and clearly labelled as per their contents. These ICL boxes were transferred to centrally designated ICL storage facilities. Further arrangement was made with ICL destruction agency to collect ICLs from these centrally designated storage facilities (collection points) for the destruction of ICLs in safe manner.

CPA implementers have hired various destruction agencies like Indian Pollution Control Association (IPCA), Eco Birdd Recycling and Global E-waste Management & Services (GEMS) for destruction of ICLs collected. The copies of the agreements are shared with the verifying DOE for verification. The various dates of ICL destruction activities and the quantity of ICLs destroyed can be referred from [Annexure 5](#) of this monitoring report. The "Certificate of Destruction" released by these agencies mentioning the quantities of ICLs collected and destroyed on various dates are also shared with the verifying DOE.

Double counting can occur if a registered CDM project activity or a CPA of another PoA is sought to be registered under the BLY PoA. To prevent such instances, the BEE had adopted a two-stage check:

- At time of implementer(s) empanelment, SSC-CPA implementer credentials are verified
- At time of CPA eligibility check, BEE seeks confirmation in SSC-CPA and also checks any-double counting using DISCOM, UNFCCC data.

To prevent double counting the CFLs utilized under the BLY scheme, in addition to the standard lamp specifications, was marked for clear unique identification logo for the BLY project.

The total GHG emission reductions achieved in this monitoring period for Batch 2 is 312,427 tCO<sub>2</sub> equivalents. Net energy savings and total GHG emission reductions achieved in this monitoring period for the specific-case CPA(s) are listed in [Annexure 6](#).

**D.2. Geographical references or other means of identification of the location of the specific-case CPA(s)**

>>

The political/geographical boundary of India is the PoA boundary.

The country latitude of 22° 00' N and longitude of 77° 00' E. (referred from [http://www.mapsofworld.com/lat\\_long/india-lat-long.html](http://www.mapsofworld.com/lat_long/india-lat-long.html)).

The geographical location of the individual CPAs included under this PoA is listed in [Annexure 1](#).

The unique geographic location of the applied measure (CFLs) in household is determined using the household consumer number provided by utility and/or the household physical address.

**SECTION E. Post-registration changes to specific-case CPA(s)****E.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

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**E.2. Corrections**

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**E.3. Changes to the start date of the crediting period of the specific-case CPA(s)**

&gt;&gt;

Start dates of crediting period were changed for the included 12 CPAs as follows:

Reference number of the specific-case CPA	Start date of crediting period at the time of CPA inclusion	Revised start date of crediting period	Date of approval from CDM EB
3223-0031	15/11/2011	07/07/2012	09/09/2013
3223-0038	01/02/2012	27/10/2012	09/09/2013
3223-0039	01/07/2012	22/11/2012	09/09/2013
3223-0041	30/04/2012	14/08/2012	09/09/2013
3223-0043	31/07/2012	25/07/2012	09/09/2013
3223-0044	30/06/2012	20/04/2012	09/09/2013
3223-0045	30/08/2012	09/10/2012	09/09/2013
3223-0046	29/03/2012	29/03/2012	09/09/2013
3223-0047	29/03/2012	29/03/2012	09/09/2013
3223-0048	29/03/2012	23/12/2012	09/09/2013
3223-0049	29/03/2012	29/03/2012	09/09/2013
3223-0050	29/03/2012	08/08/2012	09/09/2013

**E.4. Inclusion of a monitoring plan into the specific-case CPA(s) that was not included at registration**

&gt;&gt;

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**E.5. Permanent changes to the monitoring plan as described in the registered specific-case CPA-DD(s), applied methodology or standardized baseline**

&gt;&gt;

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**E.6. Changes to project design of the specific-case CPA(s)**

&gt;&gt;

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**E.7. Types of changes specific to afforestation and reforestation specific-case CPA(s)**

&gt;&gt;

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## SECTION F. Description of the monitoring system of specific-case CPA(s)

>>

The overall monitoring system under all the SSC-CPAs can be summarised in the figure 2 & 3. These two figures outline the key elements of the hierarchy and data monitoring plan for a SSC-CPA, highlighting responsible entities and their tasks, interaction channels among them, and key monitoring parameters.

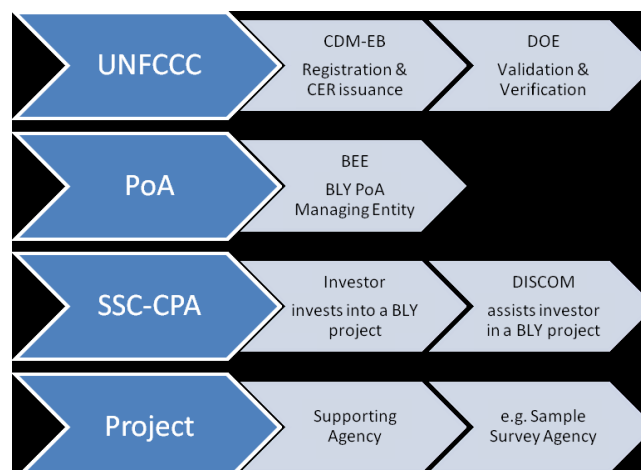


Figure 2: Institutional layers in developing and implementing the BLY scheme

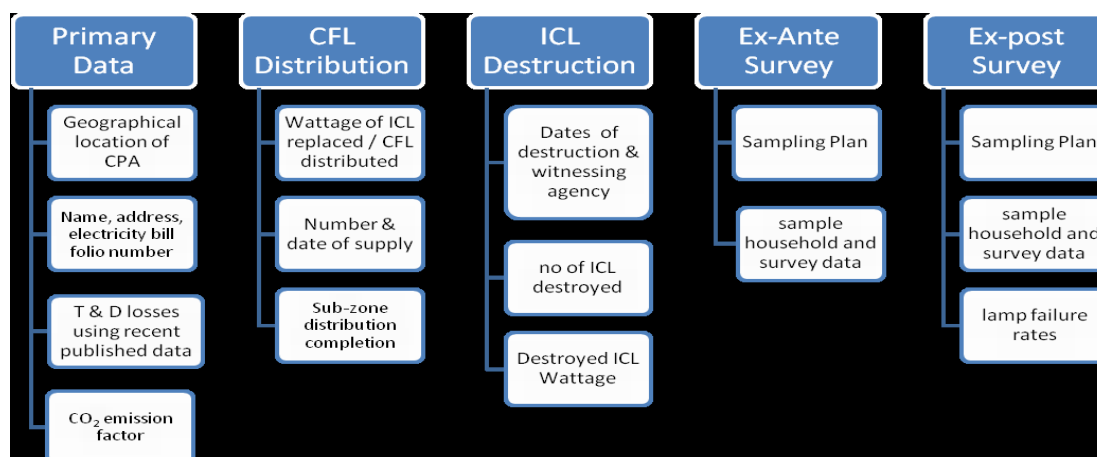


Figure 3: SSC-CPA Database components as per BLY scheme

As per applied methodology AMS-II.J., the monitoring for the SSC-CPAs have been carried out at the following levels:

1. CFL distribution
2. Ex-post Monitoring Survey
3. Baseline ICL destruction
4. CFL Destruction

### 1. CFL Distribution

The CFLs were distributed by the SSC-CPA owner with support from DISCOM, using one or more of the following methods:

- Direct installation at each household; and/or
- Distribution through dedicated distribution points as advertised by the SSC-CPA owner in the local media e.g. local DISCOM offices, retail outlets, resident association offices, schools etc.

### 2. Ex-post Monitoring Survey

Random Selection of households

For any proposed SSC-CPA area, the database listing all residential households eligible under the SSC-CPA were randomly selected under the monitoring survey. The sampling is as per following criteria:

#### Sampling Criteria

1. The survey covered the SSC-CPA area, covering the residential sector only,
2. Random sample group were determined using statistical tools as representing the households falling under the SSC-CPA area. Survey sample size determined to have at-least 90% confidence level with 10 % maximum margin of error<sup>2</sup>.

#### Ex-post Monitoring Survey

In addition to the survey requirements as stated in [Annexure 3](#) of the individual SSC-CPA DD, the following steps were carried out by the third party monitoring survey agency

1. Visited identified households and assess the following for each household:
  - a. whether the installed CFLs carry BLY logo or not
  - b. whether the installed CFLs are operating or not

The data was collected and collated in the form of a monitoring survey report for each SSC CPA.

### **3. ICL Destruction**

After the completion of CFL installation stage, the collected ICLs were stored in separate boxes according to the wattage and clearly labelled as per their contents. These ICL boxes were transferred to centrally designated ICL storage facilities. Further arrangement was made with ICL destruction agency to collect ICLs from these centrally designated storage facilities (collection points) for the destruction of ICLs in safe manner.

At the beginning of each monitoring interval y, each SSC-CPA verified whether the number of distributed CFLs was less than or equal to the number of returned and destroyed ICLs in the SSC-CPA area.

Following the Random ICL Inspection, all ICLs collected were transported from the collection point to a disposal facility which is qualified and authorized to destroy ICLs (ICL Destruction Facility). Upon arrival at the ICL Destruction Facility, the destruction agency has ensured that there has been no change in the total number of ICLs from that recorded at the Collection Point. After the completion of ICL destruction, waste management company issued a "Certificate of Destruction".

### **4. CFL Destruction**

Fused CFL was replaced as part of a warranty program for the project, and these replacement CFLs installed in households prior to the monitoring survey was counted as operating. There was no replacement as part of the survey process. The replaced and fused CFLs were recorded in the project database.

During the course of this program, CQC has collected defective CFLs from time to time from consumers. These defective CFLs were stored in warehouse till these are transferred for safe disposal. As part of the contracts with CFL manufacturers, some of the defective CFLs which CQC collected were handed over to the respective manufacturer. One manufacturer has destroyed those CFLs safely and recovered the mercury in a safe manner and provided a declaration on the same. CQC has in the past contacted various registered waste disposal agencies for disposal of its stored defective CFLs. However, in absence of any existing guideline from CPCB on mercury disposal as well as the lack of proper mercury recovery technologies, the CFLs are kept in store and have not been disposed yet. As a continuous effort, CQC is in contact with some disposal agencies which have now agreed to destroy the CFLs with mercury recovery asserting that they have now the required technology at hand.

The overall supervision is maintained by the BEE as PoA Coordinating and Managing Entity (CME), whereas on-ground implementation takes place by the CPA implementer(s) in association with DISCOM. This is as per the tri-partite agreement in-between BEE, CPA-implementer(s) and the DISCOM operating in the CPA area. The broad overview of monitoring responsibilities envisaged under the CPA is tabulated below.

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<sup>2</sup> As per AMS-II.J.ver03 methodology

Step	Description	Responsibility		
		BEE*	DISCOM	SSC-CPA Implementer
1	Determination of the SSC-CPA area		√	√
2	Establishment of the SSC-CPA implementation plan		√	√
3	Selection of households to be included in the monitoring survey		√	√
4	CFL distribution to the households		√	√
5	Establishment of the SSC-CPA database	√		√
6	Monitoring surveys		√	√
6	Verification of the number of 'destroyed ICLs' and 'distributed CFLs'	√	√	√
7	Reports for estimation of emission reductions	√		√

Supervisory responsibility.

#### **Household data/CFL distribution data base :**

- Project database: A list of households participating in each CPA including name, address, electricity bill folio number, number and wattage of ICL exchanged and CFL distributed, date of distribution and completion of distribution.
- Double counting prevention: Double counting can occur if a registered CDM project activity or a CPA of another PoA is sought to be registered under the BLY PoA. To prevent such instances, the BEE had adopted a two-stage check:

- At time of implementer(s) empanelment, SSC-CPA implementer credentials are verified  
 - At time of CPA eligibility check, BEE seeks confirmation in SSC-CPA and also checks any-double counting using DISCOM, UNFCCC data.

To prevent double counting the CFLs utilized under the BLY scheme shall, in addition to the standard lamp specifications, was marked for clear unique identification for the BLY project. The logo used was



#### **ICL Destruction data base**

The baseline ICLs collected at the time of the CFLs distribution in the CPA area were stored safely in appropriate boxes. The ICL is considered destroyed if it is rendered non-functional. The destruction method(s) followed were:

- Crushing
- Separating ICL shell and cap

The ICLs collected from the households were stored in separate boxes according to the bulb's wattage and labelled clearly of their content. The ICL boxes were then transferred to the waste management company for further destruction. Certificate of destruction was issued upon the destruction of ICLs. The records of the ICL



destruction duly verified by the responsible witness are submitted to the CME. These records are maintained by CME under the BLY database.

## SECTION G. Data and parameters

### G.1. Data and parameters fixed ex ante, at registration, inclusion or renewal of crediting period

<b>Data/Parameter:</b>	EF <sub>CO<sub>2</sub>,ELEC,y</sub>																	
<b>Unit:</b>	tCO <sub>2</sub> /MWh																	
<b>Description:</b>	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)																	
<b>Source of data:</b>	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 included CPA-DD.																	
<b>Value(s) applied:</b>	<table border="1"> <thead> <tr> <th>SSC-CPA UNFCCC Ref No</th><th>Value applied</th></tr> </thead> <tbody> <tr> <td>3223-0031</td><td rowspan="4">0.903</td></tr> <tr> <td>3223-0038</td></tr> <tr> <td>3223-0039</td></tr> <tr> <td>3223-0041</td></tr> <tr> <td>3223-0043</td><td rowspan="8">0.865</td></tr> <tr> <td>3223-0044</td></tr> <tr> <td>3223-0045</td></tr> <tr> <td>3223-0046</td></tr> <tr> <td>3223-0047</td></tr> <tr> <td>3223-0048</td></tr> <tr> <td>3223-0049</td></tr> <tr> <td>3223-0050</td></tr> </tbody> </table> <p>Please refer <a href="#">Annexure 9</a> for different ex-ante values used for individual CPAs.</p>		SSC-CPA UNFCCC Ref No	Value applied	3223-0031	0.903	3223-0038	3223-0039	3223-0041	3223-0043	0.865	3223-0044	3223-0045	3223-0046	3223-0047	3223-0048	3223-0049	3223-0050
SSC-CPA UNFCCC Ref No	Value applied																	
3223-0031	0.903																	
3223-0038																		
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3223-0044																		
3223-0045																		
3223-0046																		
3223-0047																		
3223-0048																		
3223-0049																		
3223-0050																		
<b>Choice of data or measurement methods and procedures</b>	The SSC-CPA owner has applied the latest grid emission factor database available on the CEA website at the time of validation and fix the value ex-ante.																	
<b>Purpose of data:</b>	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)																	
<b>Additional comment:</b>	--																	

<b>Data/Parameter:</b>	O <sub>i</sub>
<b>Unit:</b>	Hours / day
<b>Description:</b>	Average daily operating hours of the baseline ICLs of the group of "I",
<b>Source of data:</b>	AMS II-J default value
<b>Value(s) applied:</b>	3.5 hours per 24 hours period
<b>Choice of data or measurement methods and procedures</b>	The SSC-CPAs have fixed 3.5 hours per 24 hrs period. The value applied has been entered into the SSC-CPA database. AMS II.J version 03
<b>Purpose of data:</b>	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)
<b>Additional comment:</b>	The SSC-CPA has used fixed 3.5 hours per 24 hrs period.

<b>Data/Parameter:</b>	$X_i$
Unit:	Hours / year
Description:	Operating hours per year for CFL type <i>i</i>
Source of data:	Calculated value
Value(s) applied:	1,277.5 hours per 365 day year; 1,281 hours for leap year
Choice of data or measurement methods and procedures	The SSC-CPAs have fixed 3.5 hours per 24 hrs period. Hence for the yearly value the estimate is fixed. AMS II.J version 03
Purpose of data:	Emission reduction calculation
Additional comment:	The SSC-CPA has used fixed 3.5 hours per 24 hrs period. Hence for the yearly value, the estimate is fixed.

<b>Data/Parameter:</b>	NTG
Unit:	--
Description:	Net-to-gross adjustment factor
Source of data:	Default AMS-II.J. value
Value(s) applied:	0.95
Choice of data or measurement methods and procedures	AMS II.J version 03
Purpose of data:	Emission reduction calculation
Additional comment:	--

Data/Parameter:	L <sub>i</sub>																			
Unit:	Hours																			
Description:	rated average operating hours for CFL type <i>i</i>																			
Source of data:	Life test reports of CFLs																			
Value(s) applied:	<table><tr><th colspan="2">SSC-CPA UNFCCC Ref No</th><th>Value applied (hours)</th></tr><tr><td rowspan="12">CQC</td><td>3223-0031</td><td rowspan="12">10000</td></tr><tr><td>3223-0038</td></tr><tr><td>3223-0039</td></tr><tr><td>3223-0041</td></tr><tr><td>3223-0043</td></tr><tr><td>3223-0044</td></tr><tr><td>3223-0045</td></tr><tr><td>3223-0046</td></tr><tr><td>3223-0047</td></tr><tr><td>3223-0048</td></tr><tr><td>3223-0049</td></tr><tr><td>3223-0050</td></tr></table>			SSC-CPA UNFCCC Ref No		Value applied (hours)	CQC	3223-0031	10000	3223-0038	3223-0039	3223-0041	3223-0043	3223-0044	3223-0045	3223-0046	3223-0047	3223-0048	3223-0049	3223-0050
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	3223-0047																			
	3223-0048																			
	3223-0049																			
	3223-0050																			
Choice of data or measurement methods and procedures	Determined as per the independent life-tests of the CFLs as per national / international standard (refer Annex 4 of PoA-DD).																			
Purpose of data:	Emission reduction calculation																			
Additional comment:	Determined as per the independent life-tests of the CFLs as per national standard																			

<b>Data/Parameter:</b>	High PF CFL life test report and test curves																		
Unit:	--																		
Description:	Life test reports of CFLs																		
Source of data:	Obtained from accredited manufacturer or laboratory																		
Value(s) applied:	<table border="1"> <thead> <tr> <th>SSC-CPA UNFCCC Ref No</th><th>High PF CFL life test reports</th></tr> </thead> <tbody> <tr> <td rowspan="10">CQC</td><td>3223-0031</td></tr> <tr> <td>3223-0038</td></tr> <tr> <td>3223-0039</td></tr> <tr> <td>3223-0041</td></tr> <tr> <td>3223-0043</td></tr> <tr> <td>3223-0044</td></tr> <tr> <td>3223-0045</td></tr> <tr> <td>3223-0046</td></tr> <tr> <td>3223-0047</td></tr> <tr> <td>3223-0048</td></tr> <tr> <td>3223-0049</td></tr> <tr> <td>3223-0050</td></tr> <tr> <td>Yes</td></tr> </tbody> </table>			SSC-CPA UNFCCC Ref No	High PF CFL life test reports	CQC	3223-0031	3223-0038	3223-0039	3223-0041	3223-0043	3223-0044	3223-0045	3223-0046	3223-0047	3223-0048	3223-0049	3223-0050	Yes
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	3223-0046																		
	3223-0047																		
	3223-0048																		
3223-0049																			
3223-0050																			
Yes																			
Choice of data or measurement methods and procedures	High PF CFL life test reports have been provided to verifying DOE.																		
Purpose of data:	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)																		
Additional comment:	-																		

## G.2. Data and parameters monitored

Data/Parameter:	$Q_{PJ,i}$							
Unit:	Number							
Description:	Number of CFLs of the group of “i” CFLs (11W, 14W, 18W & 20W CFLs) in operation during the first 12 months of distribution							
Measured/ Calculated/ Default:	Calculated from survey data							
Source of data:	SSC-CPA database							
Value(s) of monitored parameter:	<table><tr><td>No of grid connected household consumers numbers in project area</td><td><a href="#">Annexure 3</a></td></tr><tr><td>Actual number of CFLs distributed per household consumer number (max is four)</td><td><a href="#">Annexure 3</a></td></tr><tr><td><math>Q_{PJ,i}</math></td><td><a href="#">Annexure 3</a></td></tr></table>		No of grid connected household consumers numbers in project area	<a href="#">Annexure 3</a>	Actual number of CFLs distributed per household consumer number (max is four)	<a href="#">Annexure 3</a>	$Q_{PJ,i}$	<a href="#">Annexure 3</a>
No of grid connected household consumers numbers in project area	<a href="#">Annexure 3</a>							
Actual number of CFLs distributed per household consumer number (max is four)	<a href="#">Annexure 3</a>							
$Q_{PJ,i}$	<a href="#">Annexure 3</a>							
Monitoring equipment:	-							
Measuring/Reading/ Recording frequency:	Once in the crediting period (within 1 year from end date of distribution of CFLs)							
Calculation method (if applicable):	<p>The <math>Q_{pj}</math> value for each type of CFL is calculated from the results of <math>Q_{pj}</math> survey, as follows:</p> <ul style="list-style-type: none"><li>Obtain the ratio of the number lamps of type i with BLY logo found installed &amp; operating in the sample households and the number of lamps of type i claimed to be distributed in the sample households</li><li>Multiply the ratio obtained by the total number of lamps of type i claimed to be distributed in the CPA area</li><li>The claimed number of lamps is capped by the number of ICLs destroyed.</li></ul>							
QA/QC procedures:	<ul style="list-style-type: none"><li>Monitoring survey was conducted by qualified and experience third party agency</li><li>Monitoring survey conducted in accordance with the requirement of methodology so that the estimate of <math>Q_{PJ,i}</math> obtained is unbiased and reliable.</li></ul>							
Purpose of data:	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)							
Additional comment:	-							

<b>Data/Parameter:</b>	$LFR_{i,y}$
Unit:	%
Description:	Lamp Failure Rate for CFL type $i$ in year $y$ (fraction)
Measured/ Calculated/ Default:	Calculated based on survey results
Source of data:	Ex-post monitoring survey
Value(s) of monitored parameter:	<p><math>LFR_{i,y}</math> = Refer <a href="#">Annexure 4</a></p> <p>LFR applied in the ER calculation is the <i>ex ante</i> LFR which is calculated using the formula provided in methodology.<sup>3</sup></p> <p>The <i>ex post</i> LFR observed from the monitoring survey is lower than calculated <i>ex ante</i> LFR. Therefore it is concluded that the project CFLs are operating in accordance with the <i>ex ante</i> linear failure rate. To obtain a conservative estimate of emission reductions achieved, <i>ex-ante</i> LFR is applied in the calculation.</p>
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	<i>ex post</i> monitoring surveys conducted at least once in every 3 years
Calculation method (if applicable):	Ex post $LFR_{i,y}$ is determined by dividing the number of fused CFLs found from the <i>ex post</i> monitoring survey by the number of CFLs distributed, which is the CFL sample size of the survey. The survey is done on random sampling approach. The detailed calculation is shown in CER spreadsheet and also the monitoring survey report prepared by third party for individual CPA. Copy of the same is submitted to verifying DOE.
QA/QC procedures:	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. The SSC-CPA implementer(s) has chosen a sample size higher than the one calculated in individual CPA-DD.
Purpose of data:	Emission reduction calculation
Additional comment:	CPA implementers have chosen the option 1, i.e. once in every 3 years to conduct the monitoring survey to calculate the LFR. The data of the survey was reported to the CME (BEE).

<sup>3</sup> According to the clarification number SSC 670, after the first *ex post* monitoring survey and for the period before the subsequent *ex post* monitoring surveys undertaken the LFR value estimated *ex ante* shall be used without having to consider any *ex post* adjustment for the monitoring period.

<b>Data/Parameter:</b>	<i>Lamp distribution data</i>					
Unit:	--					
Description:	The start and completion date of CFL distribution, Utility consumer number of CFL recipient households under the SSC-CPA entered into the SSC-CPA database.					
Measured/ Calculated/ Default:	Measured (and recorded in CPA database)					
Source of data:	SSC-CPA Database					
Value(s) of monitored parameter:	<table border="1"> <tr> <td>Distribution of CFLs-Start date</td><td>Refer <a href="#">Annexure 2</a></td></tr> <tr> <td>Distribution of CFLs- Completion date</td><td>Refer <a href="#">Annexure 2</a></td></tr> </table>		Distribution of CFLs-Start date	Refer <a href="#">Annexure 2</a>	Distribution of CFLs- Completion date	Refer <a href="#">Annexure 2</a>
Distribution of CFLs-Start date	Refer <a href="#">Annexure 2</a>					
Distribution of CFLs- Completion date	Refer <a href="#">Annexure 2</a>					
Monitoring equipment:	-					
Measuring/ Reading/ Recording frequency:	Once in the crediting period					
Calculation method (if applicable):	-					
QA/QC procedures:	Standardized database form was used to maintain these data. Upon submission of the documented data, the same was verified independently by the CME (BEE) and has given approval to individual SSC – CPA. The approval letters for each CPAs are submitted to DOE.					
Purpose of data:	Emission reduction calculation					
Additional comment:	-					

<b>Data/Parameter:</b>	N
Unit:	--
Description:	Sample size of Monitoring Survey
Measured/ Calculated/ Default:	Calculated
Source of data:	Calculated value as per statistical analysis provided in PoA-DD and CPA-DD
Value(s) of monitored parameter:	Number of households: Refer <a href="#">Annexure 3</a>
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Once at the time of each survey.
Calculation method (if applicable):	Calculated as mentioned in the <a href="#">Annexure 3</a> of respective CPA-DDs.
QA/QC procedures:	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. The SSC-CPA implementer(s) has chosen a sample size higher than the one calculated in individual CPA-DD.
Purpose of data:	Emission reduction calculation (Only the emission reduction formula is provided in the methodology)
Additional comment:	Also refer “N” parameter table under section B.6.1 of respective CPA –DDs.

<b>Data/Parameter:</b>	$P_{i, BL}$
Unit:	W
Description	Rated power of the baseline ICLs of the group of "I"
Measured/ Calculated/ Default:	Calculated
Source of data:	Weighted average calculated using rated power of the baseline ICLs as recorded in SSC-CPA database
Value(s) of monitored parameter:	The SSC-CPA specific applicable values may be referred at <a href="#">Annexure 8</a>
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Once in the crediting period
Calculation method (if applicable):	Weighted average
QA/QC procedures:	Number and type of ICLs collected in boxes is used to verify the numbers recorded in the ledger and database. This was also cross referred to the CFLs distributed as per project database
Purpose of data:	Emission reduction calculation
Additional comment:	Data was reported to BEE for record. The baseline ICL's rated power was also verified during ICL destruction.

<b>Data/Parameter:</b>	$P_{i, PJ}$
Unit:	W
Description:	Rated power of the CFLs of the group of "I" lighting devices (Watts)
Measured/Calculated /Default:	Calculated
Source of data:	Weighted average calculated using rated power of the CFLs as recorded in SSC-CPA database
Value(s) of monitored parameter:	Values may be referred at <a href="#">Annexure 8</a>
Monitoring equipment:	--
Measuring/Reading/ Recording frequency:	Once in the crediting period
Calculation method (if applicable):	Weighted average
QA/QC procedures:	The record of CFLs purchased and delivered in respective CPAs were used to verify the number recorded in the ledger and database. This was also cross referred to the ICLs collected.
Purpose of data:	Emission reduction calculation
Additional comment:	-

<b>Data/Parameter:</b>	<b>N<sub>Destroyed</sub></b>
Unit:	Number
Description:	Number of ICLs collected and destroyed
Measured/ Calculated /Default:	Measured (recorded)
Source of data:	SSC-CPA database
Value(s) of monitored parameter:	Refer <a href="#">Annexure 5</a> for the CPAs in which destruction of ICLs have been carried out.
Monitoring equipment:	--
Measuring/Reading/ Recording frequency:	Once in the crediting period
Calculation method (if applicable):	--
QA/QC procedures:	<p>During CFL distribution activity:</p> <ul style="list-style-type: none"> <li>Only 60 W and 100 W of working ICLs were accepted for bulb exchange during the CFL distribution activity.</li> <li>The marking of the wattage of ICLs were checked before data recording in the ledger book.</li> </ul> <p>After completion of CFL distribution activity:</p> <ul style="list-style-type: none"> <li>ICLs collected were stored in separate boxes according to the wattage and clearly labeled of their contents.</li> <li>Destruction of ICLs was organized by qualified independent service provider (ISP) and total number of ICLs destroyed to be verified by the ISP.</li> <li>All the ICLs were destroyed after the handing over to ISP. This has effectively limited the undesired secondary market effects and free riders activity.</li> </ul> <p>The ISP has provided destruction certificates for the same which are submitted to verifying DOE.</p>
Purpose of data:	Emission reduction calculation.
Additional comment:	--



Data/Parameter:	$TD_y$
Unit:	%
Description:	Average annual technical grid losses
Measured/Calculated /Default:	--
Source of data:	AMS II-J default value
Value(s) of monitored parameter:	10%
Monitoring equipment:	-
Measuring/Reading/ Recording frequency:	Yearly
Calculation method (if applicable):	-
QA/QC procedures:	Project participant checked technical T&D loss values specific to individual electricity distribution companies within the project 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. In the published tariff orders the technical and non-technical losses were not defined separately, therefore PP has considered 10% value as per the applied methodology AMS II-J version 3.
Purpose of data:	Emission reduction calculation
Additional comment:	-

### G.3. Implementation of specific-case CPA level sampling plan

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Under this PoA sampling is required for determining the number of CFLs placed in service and operating (*ex-post*  $Q_{PJ,i}$  survey) and CFL failure rate (*ex-post monitoring surveys for*  $LFR_{i,y}$ ).

All the 12 CPAs under this monitoring period carried out first ex post monitoring survey integrating “ $Q_{PJ,i}$ ” survey and the “ $LFR_{i,y}$ ” survey.

#### Sampling Criteria adopted

1. Participating households under the CPA area
2. Random sample group determined using statistical tools as representing the households falling under the CPA area. Survey sample size was determined to have at-least 90% confidence interval and 10 % maximum margin of error<sup>4</sup>.

The distributed CFLs in the CPA project area surveyed as per the applied methodology AMS-II.J. for the following two(2) monitoring parameters:

- 1) “ $Q_{PJ,i}$ ” (number of CFLs with BLY logo, installed and operating), where the  $Q_{PJ}$  number is fixed for the entire crediting period;

#### *Sampling Design –*

The sampling is carried out as per the sampling plan design described in the Annexure 4 of the included SSC-CPA-DD. The survey records are maintained under the BLY database. The monitoring surveys were carried out by third parties. The survey procedures were established and implemented to ensure that the field data collection is performed properly and any potential intentional errors or unintentional errors are minimized and documented.

Considering that from a BLY scheme point of view, each of the households holds an equal probability of being identified from a DISCOMs active residential household customer base, hence simple random sampling was used.

<sup>4</sup> As per AMS II.J ver. 03 methodology

To ensure random selection, random number generators were applied. Each household was allotted a unique CPA serial number starting at 1 and up to the total number of households in CPA area. Using random number generators, the serial number were randomly chosen. The random number thus obtained is correlated with the utility provided residential customer code.

#### *Data Collection –*

The following activities were done before collecting the data from households as per the section E.7.2 of registered PoA –DD

- Detailed instructions were given to the survey agency/surveyor(s) on data collection procedures and determination of household sample size.
- Standardized data forms were developed and were used for the data collection during Survey(s).

Accordingly, an appropriate statistically robust sample size for conducting the monitoring survey has been used (Refer [Annexure 3](#) for summary of data collected during survey).

#### *Data Analysis -*

The data collected through the standard forms through the surveys was compiled and collated. CPA Baseline, Survey Baseline and Survey findings were determined after conducting survey as follows:

CPA Baseline: From the CPA household database for all the CPA households, the total number of CFLs distributed with BLY logo was taken for each wattage type 'i'.

Survey Baseline: From the CPA household database for the selected sample of households, the total number of CFLs distributed with BLY logo was taken for each wattage type 'i'.

Survey Findings: From the survey findings for the selected sample of households, the total number of BLY logo CFLs installed and operating was found for each wattage type 'i'.

The  $Q_{PJ}$  value for each type of CFL type 'i' is calculated as presented in  $Q_{PJ,i}$  table of section D.2

= Ratio of (Survey Findings/Survey Baseline) x CPA Baseline, for each wattage type.

To be conservative, the calculated  $Q_{PJ,i}$  is compared with the number of ICLs destroyed and minimum of the two is taken as the final  $Q_{PJ,i}$  value. The claimed number of lamps is capped by the number of ICLs destroyed.

The calculated  $Q_{PJ}$  values are presented in [Annexure 3](#).

#### *Confidence/ Precision -*

The applied methodology AMS-II.J ver. 03 requires a minimum 90% confidence interval and the 10% maximum error margin. Annexure 4 of respective CPA-DDs has been followed to achieve this level of precision.

2) " $LFR_{i,y}$ " (lamp failure rate of type i) in the CPA area.

#### *Sampling Design –*

The CPA follows the sampling approach described in the [Annexure 3](#) of the respective CPA -DDs.

The surveyor appointed by the CPA implementer has

- Randomly selected a sample of households from CPA household database. The number of households included in the sample was equal to or more than the calculated values mentioned in [Annexure 4](#) of the included CPA-DDs.
- For the identified households the survey identified the number of CFLs for each type of wattage 'i' with BLY logo which are installed and not operating
- CFLs replaced as a part of regular maintenance or warranty program was counted as operating.

However during the survey no CFLs were replaced to count those as operating.

#### *Data Collection –*

The following activities were done before collecting the data from households as per the section E.7.2 of registered PoA -DD

- Detailed instructions were given to the survey agency/surveyor(s) on data collection procedures and determination of household sample size.
- Standardized data forms were developed and were used for the data collection during Survey(s).

Accordingly, an appropriate statistically robust sample size for conducting the monitoring survey has been used (Refer [Annexure 3](#) for summary of data collected during survey).

#### *Data Analysis –*

The data collected through the standard forms through the surveys was compiled and collated centrally.

Survey Baseline and Survey findings were determined after conducting survey as follows:

Survey Baseline: From the CPA household database for the selected sample of households, the total number of CFLs distributed with BLY logo was taken for each wattage type.

Survey Findings: From the survey findings for the selected sample of households, the total number of BLY logo CFLs installed and operating was found for each wattage type.

The Lamp Failure Rate is calculated as

$$= 1 - (\text{Survey Findings} / \text{Survey Baseline}), \text{ for each wattage type } i.$$

The value of the  $LFR_{i,y}$  considered for the calculation of the emission reductions is higher of the value obtained from:

- The life test curve submitted by CFL manufacturer/ accredited laboratory for the CFLs distributed in the CPA area
- The ex-post monitoring survey results.

The calculated LFR values are presented in [Annexure 4](#).

The subsequent linear failure rate curve reconstructed for the remaining crediting period based on the slope determined from step (a) and (b) above. This reconstructed curve shall be valid for credit issuance for either 3 years or 30% of the elapsed rated life of the lamp, selected as the minimum frequency of the ex-post monitoring survey in the section B.5.2 of the included CPA-DDs.

#### *Confidence / Precision -*

The applied methodology AMS-II.J ver. 03 requires a minimum 90% confidence interval and the 10% maximum error margin. Annexure 4 of respective CPA-DDs has been followed to achieve this level of precision.

## **SECTION H. Calculation of GHG emission reductions or net GHG removals by sinks**

All the CPA-DDs make use of equations listed under section E.6.2 of PoA-DD, where the emission reductions due to the project activity are calculated as under.

### **Emissions Reduction ( $ER_y$ )**

Emission reduction ( $ER_y$ ) is net electricity savings ( $NES_y$ ) times an emission factor ( $EF_{CO_2,ELEC,y}$ )

$$ER_y = NES_y \times EF_{CO_2,ELEC,y} \text{ (1)}$$

Where:

$ER_y$	Emission reductions in year y (tCO <sub>2</sub> e)
$NES_y$	Net electricity saved in year y (kWh)
$EF_{CO_2,ELEC,y}$	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:

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

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, $Q_{PJ,i}$ 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 determined 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 is applied in all SSC-CPAs.

To calculate the emission reductions from a CPA area, the equations under the CPA-DD section B.5.2 are applied as per project values. This is illustrated below for the data values of the **SSC-CPA UNFCCC ref no 3223-0031**. For emission reduction values of individual CPAs, refer [Annexure 6](#)

### **$Q_{PJ,i}$ Calculation**

The  $Q_{PJ,i}$  value is obtained from the findings of the  $Q_{PJ,i}$  survey as follows:

Parameter Description	60W	100 W
Number of ICLs collected and destroyed; $N_{Destroyed}$	22,751	89,256

Parameter Description	11W	18 W
Number of CFLs distributed or installed as per database	22,743	89,278
Percentage of CFLs found in service and operating under 1st ex-post monitoring survey (%)	96.55%	96.19%
Number of CFLs in service and operating under 1st monitoring survey; $Q_{PJ,i}$	21,959	85,875

The values for all CPAs are presented in [Annexure 3](#).

### **Lamp Failure Rate Calculation**

The LFR value is calculated from the findings of the ex-post monitoring survey as follows:

Counter for year	2	3
Rated average life for CFLs; $L_i$	10000	
% of CFLs operating at the rated lifetime; $R_i$	50	
Number of operating hours of CFL; $X_i$	1277.5	1277.5

Now

For Y=2

$$2 * 1277.5 < 10000$$

And

For Y=3

$$3 * 1277.5 < 10000$$

Thus

$$LFR_{i,2} = (2 * 1277.5) * (100 - 50) / (100 * 10000) \\ = 12.78\%$$

And

$$LFR_{i,3} = (3 * 1277.5) * (100 - 50) / (100 * 10000) \\ = 19.16\%$$

The values for all CPAs are presented in [Annexure 4](#).

### **Estimated Annual Energy Savings**

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

Weighted average of rated power of the baseline lighting devices (ICLs); $P_{i,BL}$	<b>91.88 W</b>
Weighted average of rated power of the project lighting devices (CFLs); $P_{i,PJ}$	<b>16.57 W</b>
Average daily operating hours of ICLs replaced by CFLs; $O_i$	<b>3.5</b>

Thus estimated electricity savings,

for first 244 days in this monitoring period, i.e. y=2 (01/11/2013 to 02/07/2014)

$$ES_2 = (91.88 - 16.57) * 3.5 * 244 / 1000$$

$$= 64.31 \text{ kWh}$$

for next 182 days in this monitoring period, i.e. y=3 (03/07/2014 to 31/12/2014)

$$ES_3 = (91.88 - 16.57) * 3.5 * 182 / 1000$$

$$= 47.97 \text{ kWh}$$

The values for all CPAs are presented in [Annexure 6](#).

### Net Energy Savings

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

Counter for year	2	3
Number of CFLs in service and operating under 1 <sup>st</sup> ex-post monitoring survey; $Q_{PJ,i}$	21,959	85,875
Average annual technical grid losses during year y; $TD_y$ (%)	10%	10%
Net-to-gross adjustment factor; NTG	0.95	0.95
$LFR_i$	12.78%	19.16%

Thus net energy savings

$$NES_2 = 107,834 * (1 - 12.78\%) * 64.31 * (1 / (1 - 0.10)) * 0.95 = 6,384.61 \text{ MWh}$$

$$NES_3 = 107,834 * (1 - 19.16\%) * 47.97 * (1 / (1 - 0.10)) * 0.95 = 4,413.55 \text{ MWh}$$

$$NES = 6,384.61 + 4,413.55 = 10,798 \text{ MWh (rounded value)}$$

The values for all CPAs are presented in [Annexure 6](#).

### Emission Reductions

$$ER_y = NES_y * EF_{CO_2,ELEC,y}$$

$$EF_{CO_2,ELEC,y} = 0.903 \text{ tCO}_2/\text{MWh}$$

$$ER_y = 10,798 * 0.903$$

$$= 9,750 \text{ tCO}_{2e} \text{ (Rounddown value)}$$

The values for all CPAs are presented in [Annexure 6](#).

The implementation of this PoA resulted in greenhouse gas emission reduction of 312,427 tonnes of CO<sub>2</sub> equivalent during the current monitoring interval.

## **H.1. Calculation of baseline emissions or baseline net GHG removals by sinks**

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**H.2. Calculation of project emissions or actual net GHG removals by sinks**

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**H.3. Calculation of leakage**

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**H.4. Summary of calculation of GHG emission reductions or net GHG removals by sinks**

Specific-case CPA reference number	Baseline emissions or baseline net GHG removals by sinks (tCO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (tCO <sub>2</sub> e)	Leakage (tCO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (tCO <sub>2</sub> e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
3223-0031	-	-	-	-	9,750	9,750
3223-0038	-	-	-	-	31,357	31,357
3223-0039	-	-	-	-	35,146	35,146
3223-0041	-	-	-	-	29,290	29,290
3223-0043	-	-	-	-	15,264	15,264
3223-0044	-	-	-	-	17,769	17,769
3223-0045	-	-	-	-	25,974	25,974
3223-0046	-	-	-	-	36,467	36,467
3223-0047	-	-	-	-	25,079	25,079
3223-0048	-	-	-	-	28,170	28,170
3223-0049	-	-	-	-	35,810	35,810
3223-0050	-	-	-	-	22,351	22,351
<b>Total</b>	-	-	-	-	312,427	312,427

**H.5. Comparison of GHG emission reductions or net GHG removals by sinks with estimates in the included CPA-DD(s)**

Specific-case CPA reference number	Value estimated in ex ante calculation in the included CPA-DD(s)	Actual values achieved by the specific-case CPA(s) during this monitoring period
3223-0031	42,055	9,750
3223-0038	53,710	31,357
3223-0039	44,600	35,146
3223-0041	46,414	29,290
3223-0043	36,877	15,264
3223-0044	42,405	17,769
3223-0045	53,969	25,974
3223-0046	49,901	36,467
3223-0047	44,126	25,079
3223-0048	51,481	28,170
3223-0049	57,692	35,810
3223-0050	43,739	22,351

<b>Total</b>	566,969	312,427
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**H.6. Remarks on difference from the estimated value in the included CPA-DD(s)**

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Actual Value is less than the estimated value. In [Annexure 7](#) the same has been explained.



**Appendix 1. Contact information of coordinating/managing entity and/or responsible persons/entities**

<b>Coordinating/managing entity and/or responsible person/entity</b>	<input type="checkbox"/> Coordinating/managing entity <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	C-Quest Capital Malaysia Limited
<b>Street/P.O. Box</b>	Brighton Place, Lot U0215, Jalan Bahasa,
<b>Building</b>	Equity Trust Business Centre
<b>City</b>	
<b>State/Region</b>	Labuan F.T.
<b>Postcode</b>	87011
<b>Country</b>	Malaysia
<b>Telephone</b>	+6 087 428328
<b>Fax</b>	+6 087 417242
<b>E-mail</b>	<a href="mailto:cqc-operations@cquestcapital.com">cqc-operations@cquestcapital.com</a>
<b>Website</b>	<a href="http://www.cquestcapital.com">www.cquestcapital.com</a>
<b>Contact person</b>	Mr. Kenneth Newcombe
<b>Title</b>	Director
<b>Salutation</b>	Mr.
<b>Last name</b>	Newcombe
<b>Middle name</b>	
<b>First name</b>	Kenneth
<b>Department</b>	
<b>Mobile</b>	
<b>Direct fax</b>	
<b>Direct tel.</b>	
<b>Personal e-mail</b>	

**Annexure 1:** Geographical location of the SSC-CPAs included under the BLY-PoA (refer MR Section D.2)

(Note: Abbreviations used under State column PB- Punjab; AP-Andhra Pradesh; DL-Delhi;)

UNFCCC Ref. No.	DISCOM	District	Division	latitude	Longitude
				in decimal degree	in decimal degree
3223-0031	NDPL (North Delhi Power Limited)	Pitampura, Rohini	-	28.6896	77.1312
3223-0038	PSPCL (Punjab State Power Corporation Limited)	Tarn Taran , Amritsar	Rayya, City Tarn Taran, Sub Urban, Jindal Guru,Ajnala	31.45	74.9253
3223-0039	PSPCL (Punjab State Power Corporation Limited)	Tarn Taran and Kapurthala	Sub Tarn Taran, Patti, Bhikiwind, City Kapurthala, Sub Urban Kapurthala	31.2817	74.8574
3223-0041	PSPCL (Punjab State Power Corporation Limited)	Mohali & Ropar	Mohali, Zirakpur, Lalru, Kharar	30.7488	76.6413
3223-0043	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Ranga Reddy	Gachibowli	17.4359	78.3417
3223-0044	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Ranga Reddy	Kukatpally	17.4833	78.4166
3223-0045	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Ranga Reddy	Medchal	17.6283	78.5746
3223-0046	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Hyderabad	Asmangadh and Charminar	17.3614	78.4744
3223-0047	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Hyderabad	Azamabad and Green Lands	17.4342	78.4546
3223-0048	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Hyderabad	Bowenpally and Paradise	17.4654	78.478

3223-0049	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Ranga Reddy	Champapet and Saroonagar	17.3447	78.5183
3223-0050	APCPDCL (Central Power Distribution Company of Andhra Pradesh Limited)	Ranga Reddy	Vikarabad and Rajendra nagar	17.3325	77.9047

**Annexure 2:** Chronology of SSC CPA implementation (refer MR section D.1 & G.2)

(Note: Abbreviations used under State column PB- Punjab; AP-Andhra Pradesh; DL-Delhi)

UNFCCC Ref No	CME -Unique Identification No.	Dates of CFL distribution	Date of destruction of ICLs	Dates of 1 <sup>st</sup> ex-post Monitoring survey	Dates of 1 <sup>st</sup> MP	Date of issuance of 1 <sup>st</sup> MP	Dates of 2 <sup>nd</sup> MP	Date of issuance of 2 <sup>nd</sup> MP
		dd/mm/yyyy	dd/mm/yyyy	dd/mm/yyyy	dd/mm/yyyy	dd/mm/yyyy	dd/mm/yyyy	dd/mm/yyyy
3223-0031	041-CQC-DL	21/05/2012 - 03/07/2012	13/07/2012	20/11/2012 - 25/11/2012	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0038	038-CQC-PB	25/08/2012 - 27/10/2012	27/11/2012	14/02/2013 - 23/02/2013	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0039	039-CQC-PB	08/09/2012 - 22/11/2012	27/11/2012	25/02/2013 - 06/03/2013	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0041	044-CQC-PB	25/06/2012 - 14/08/2012	22/10/2012	26/10/2012 - 30/10/2012	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0043	031-CQC-AP	26/05/2012 - 25/07/2012	31/07/2012	08/12/2012 - 13/12/2012	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0044	032-CQC-AP	26/02/2012 - 20/04/2012	25/04/2012	21/09/2012 - 26/09/2012	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0045	033-CQC-AP	11/08/2012 - 09/10/2012	17/10/2012	24/12/2012 - 29/12/2012	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0046	049-CQC-AP	17/02/2013 - 17/05/2013	21/05/2013	21/10/2013 - 26/10/2013	-	-	01/01/2013 - 31/10/2013	11/05/2015
3223-0047	050-CQC-AP	21/01/2013 - 09/03/2013	12/03/2013	29/10/2013 - 04/11/2013	-	-	01/01/2013 - 31/10/2013	11/05/2015
3223-0048	051-CQC-AP	09/11/2012 - 23/12/2012	27/12/2012	13/06/2013 - 19/06/2013	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015
3223-0049	052-CQC-AP	17/02/2013 - 18/05/2013	21/05/2013	28/10/2013 - 02/11/2013	-	-	01/01/2013 - 31/10/2013	11/05/2015
3223-0050	053-CQC-AP	04/06/2012 - 07/08/2012	24/08/2012	16/12/2012 - 22/12/2012	30/05/2010 - 31/12/2012	25/07/2014	01/01/2013 - 31/10/2013	11/05/2015

**Annexure 3:** Q<sub>pj,i</sub> Survey Sample size and calculations (refer MR section F, G.2, G.3 & H)

UNFCCC Ref. No.	Number of grid connected Households participating under the CPA	Average number of CFLs distributed per household	Sample size of monitoring survey (N)	No. of CFLs of type "i" claimed to be distributed in sample households		No. of CFLs with BLY logo of type "i" found installed and operating in the sample households		Number of CFLs in service and operating under 1st monitoring survey (Q <sub>PJ,i</sub> )		
				11W	18W	11W	18W	11W	18W	Total
3223-0031	28,791	3.89	1,246	870	3,909	840	3,760	21,959	85,875	107,834
3223-0038	105,254	3.28	1,404	817	4,102	783	4,022	60,091	276,678	336,769
3223-0039	113,754	3.37	1,404	1,215	3,224	1,194	3,190	78,980	299,926	378,906
3223-0041	90,231	3.72	1,404	1,852	3,502	1,821	3,465	89,526	241,968	331,494
3223-0043	55,571	3.39	1,741	1,803	4,064	1,757	3,908	51,506	130,191	181,697
3223-0044	76,883	2.84	1,741	1,250	3,526	1,241	3,508	64,186	152,594	216,780
3223-0045	101,305	3.05	1,741	1,631	3,648	1,599	3,572	78,654	223,634	302,288
3223-0046	109,322	3.50	1,741	833	5,033	819	4,982	40,325	338,289	378,614
3223-0047	81,088	3.47	1,741	1,644	4,170	1,626	4,137	67,669	211,661	279,330
3223-0048	103,499	3.12	1,741	1,325	3,924	1,309	3,876	79,635	239,604	319,239
3223-0049	118,031	3.45	1,741	2,780	3,658	2,753	3,604	113,872	287,422	401,294
3223-0050	79,505	3.35	1,741	1,460	4,692	1,401	4,536	54,260	203,131	257,391

**Annexure 4:** 1<sup>st</sup> Ex-post Monitoring Survey and Lamp Failure Rate (LFR) calculations (refer MR section G.2, G.3 & H)

UNFCCC Ref. No.	Sample size of monitoring survey (N)	No. of CFLs of type "i" claimed to be distributed in sample households		No. of CFLs with BLY logo of type "i" found installed and operating in the sample households		Ex-Post Lamp Failure Rate for CFL of type "i" in year 1 calculated from 1st survey findings (LFR <sub>i,1</sub> )		Ex-ante Lamp Failure Rate for CFL of type "i" in year 1 calculated from AMSIJ (LFR <sub>i,1</sub> )		Maximum of Ex-ante or Ex- post Lamp Failure Rate for CFL of type "i" (LFR <sub>i</sub> )		
		11W	18W	11W	18W	LFR <sub>11/14,1</sub>	LFR <sub>18/20,1</sub>	LFR <sub>11/14,1</sub>	LFR <sub>18/20,1</sub>	LFR <sub>i,1</sub>	LFR <sub>i,2</sub>	LFR <sub>i,3</sub>
3223-0031	1,246	870	3,909	840	3,760	3.45%	3.81%	6.39%	6.39%	-	12.78%	19.16%
3223-0038	1,404	817	4,102	783	4,022	4.16%	1.95%	6.39%	6.39%	-	12.78%	19.16%
3223-0039	1,404	1,215	3,224	1,194	3,190	1.73%	1.05%	6.39%	6.39%	6.39%	12.78%	19.16%
3223-0041	1,404	1,852	3,502	1,821	3,465	1.67%	1.06%	6.39%	6.39%	-	12.78%	19.16%

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3223-0043	1,741	1,803	4,064	1,757	3,908	2.55%	3.84%	6.39%	6.39%	-	12.78%	19.16%
3223-0044	1,741	1,250	3,526	1,241	3,508	0.72%	0.51%	6.39%	6.39%	-	12.78%	19.16%
3223-0045	1,741	1,631	3,648	1,599	3,572	1.96%	2.08%	6.39%	6.39%	-	12.78%	19.16%
3223-0046	1,741	833	5,033	819	4,982	1.68%	1.01%	6.39%	6.39%	6.39%	12.78%	-
3223-0047	1,741	1,644	4,170	1,626	4,137	1.09%	0.79%	6.39%	6.39%	6.39%	12.78%	-
3223-0048	1,741	1,325	3,924	1,309	3,876	1.21%	1.22%	6.39%	6.39%	6.39%	12.78%	19.16%
3223-0049	1,741	2,780	3,658	2,753	3,604	0.97%	1.48%	6.39%	6.39%	6.39%	12.78%	-
3223-0050	1,741	1,460	4,692	1,401	4,536	4.04%	3.32%	6.39%	6.39%	-	12.78%	19.16%

**Annexure 5: ICL Destruction data (refer MR section D.1 & G.2)**

UNFCCC Ref. No.	Date of destruction of ICLs	ICL Destruction Agency	No of ICLs collected & destroyed of each wattage type "i" (N <sub>Destroyed</sub> )		Actual CFL distributed for each wattage type "i" (11W, 14W, 18W & 20W)		Percentage of CFLs found in service and operating under 1st ex post monitoring survey (%)		Number of CFLs in service and operating under 1st monitoring survey (Q <sub>PJ,i</sub> )		
			N <sub>Destroyed,60</sub>	N <sub>Destroyed,100</sub>	11 W	18 W	11 W	18 W	11 W	18 W	Total
3223-0031	13/07/2012	IPCA	22,751	89,256	22,743	89,278	96.55%	96.19%	21,959	85,875	107,834
3223-0038	27/11/2012	IPCA	62,700	282,181	62,700	282,181	95.84%	98.05%	60,091	276,678	336,769
3223-0039	27/11/2012	IPCA	80,369	303,123	80,369	303,123	98.27%	98.95%	78,980	299,926	378,906
3223-0041	22/10/2012	IPCA	91,055	244,558	91,050	244,552	98.33%	98.94%	89,526	241,968	331,494
3223-0043	31/07/2012	GEMS	52,854	135,388	52,854	135,388	97.45%	96.16%	51,506	130,191	181,697
3223-0044	25/04/2012	GEMS	64,651	153,377	64,651	153,377	99.28%	99.49%	64,186	152,594	216,780
3223-0045	17/10/2012	GEMS	80,228	228,392	80,228	228,392	98.04%	97.92%	78,654	223,634	302,288
3223-0046	21/05/2013	GEMS	41,014	341,752	41,014	341,752	98.32%	98.99%	40,325	338,289	378,614
3223-0047	12/03/2013	GEMS	68,418	213,349	68,418	213,349	98.91%	99.21%	67,669	211,661	279,330
3223-0048	27/12/2012	GEMS	80,608	242,571	80,608	242,571	98.79%	98.78%	79,635	239,604	319,239
3223-0049	21/05/2013	GEMS	114,989	291,729	114,989	291,729	99.03%	98.52%	113,872	287,422	401,294
3223-0050	24/08/2012	GEMS	56,759	212,064	56,545	210,117	95.96%	96.68%	54,260	203,131	257,391

**Annexure 6: Net Energy Savings Calculations (refer MR section D.1 & G.2)**

UNFCCC Ref. No.	Monitoring Period start date	Monitoring period end date	Transmission & Distribution losses (in %)		Energy Saving by project CFL in each year (in KWh)			Net Energy Saved by Project CFL <sub>i</sub> (in MWh)				Emission Reduction (tCO <sub>2</sub> e)
			For 2013-14	For 2014-15	ES <sub>1</sub>	ES <sub>2</sub>	ES <sub>3</sub>	NES <sub>1</sub>	NES <sub>2</sub>	NES <sub>3</sub>	NES (Rounded value)	
3223-0031	01/11/2013	31/12/2014	10%	10%	-	64.31	47.97	-	6,384.61	4,413.55	10,798	9,750
3223-0038	01/11/2013	31/12/2014	10%	10%	-	95.73	17.55	-	29,682.92	5,043.36	34,726	31,357
3223-0039	01/11/2013	31/12/2014	10%	10%	5.52	95.91	10.51	2,066.03	33,459.31	3,398.26	38,924	35,146
3223-0041	01/11/2013	31/12/2014	10%	10%	-	73.11	35.79	-	22,314.20	10,123.14	32,437	29,290
3223-0043	01/11/2013	31/12/2014	10%	10%	-	67.73	40.74	-	11,331.09	6,316.58	17,648	15,264
3223-0044	01/11/2013	31/12/2014	10%	10%	-	42.97	64.70	-	8,575.61	11,968.18	20,544	17,769
3223-0045	01/11/2013	31/12/2014	10%	10%	-	87.89	21.59	-	24,460.75	5,567.94	30,029	25,974
3223-0046	01/11/2013	31/12/2014	10%	10%	54.10	62.89	-	20,239.11	21,921.37	-	42,160	36,467
3223-0047	01/11/2013	31/12/2014	10%	10%	33.14	77.16	-	9,148.35	19,845.24	-	28,994	25,079
3223-0048	01/11/2013	31/12/2014	10%	10%	13.43	94.24	2.32	4,235.24	27,699.66	632.99	32,568	28,170
3223-0049	01/11/2013	31/12/2014	10%	10%	50.37	58.00	-	19,971.47	21,428.26	-	41,401	35,810
3223-0050	01/11/2013	31/12/2014	10%	10%	-	73.27	38.60	-	17,362.94	8,478.29	25,841	22,351

**Annexure 7: Comparison Actual Emission reductions and estimated value in included SSC-CPA (refer MR section H.6)**

UNFCCC Ref. No.	Actual Emission Reduction (tCO <sub>2</sub> e)	Projected Emission Reduction as per CPA-DD	Remarks on difference between estimated and actual emission reductions
	ER <sub>y</sub>	ER <sub>CPA</sub>	
3223-0031	9,750	42,055	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0038	31,357	53,710	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0039	35,146	44,600	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0041	29,290	46,414	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion

3223-0043	15,264	36,877	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0044	17,769	42,405	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0045	25,974	53,969	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0046	36,467	49,901	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0047	25,079	44,126	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0048	28,170	51,481	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0049	35,810	57,692	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion
3223-0050	22,351	43,739	The difference is due to the less number of CFLs distributed as compared to what was assumed during CPA inclusion

**Annexure 8:** Rated power of the baseline ICLs of the group of “I” and Rated power of the CFLs of the group of “I” lighting devices

UNFCCC Ref. No.	Equivalent wattage of CFLs distributed against each type "I" (60W, 100W) of baseline ICLs				Actual CFL distributed for each wattage type "I" (11W, 14W, 18W & 20W)		Weighted average of rated power of the baseline lighting devices (ICLs); $P_{i,BL}$	Weighted average of rated power of the project lighting devices (CFLs); $P_{i,PJ}$
	ICL	CFL	ICL	CFL	11W	18/20W		
3223-0031	60	11	100	18	22,743	89,278	91.88	16.57
3223-0038	60	11	100	18	62,700	282,181	92.73	16.75
3223-0039	60	11	100	18	80,369	303,123	91.62	16.54
3223-0041	60	11	100	18	91,050	244,552	89.15	16.11
3223-0043	60	11	100	18	52,854	135,388	88.77	16.02
3223-0044	60	11	100	18	64,651	153,377	88.14	15.93
3223-0045	60	11	100	18	80,228	228,392	89.60	16.18
3223-0046	60	11	100	18	41,014	341,752	95.71	17.25
3223-0047	60	11	100	18	68,418	213,349	90.29	16.30
3223-0048	60	11	100	18	80,608	242,571	90.02	16.25
3223-0049	60	11	100	18	114,989	291,729	88.69	16.01
3223-0050	60	11	100	18	56,545	210,117	91.55	16.52

**Annexure 9:** EF<sub>CO<sub>2</sub>,ELEC,y</sub> Values used for individual CPAs: Source CDM baseline CO<sub>2</sub> emission database by Central Electricity Authority (CEA)

UNFCCC Ref. No.	State	Applicable version Methodology AMS I.D	Applicable version of "Tool to calculate the emission factor for an electricity system"	Regional Grid applicable to CPA area (NEWNE / Southern)	Version of CO <sub>2</sub> baseline database of CEA	Emission Factor (tCO <sub>2</sub> /MWH) EF <sub>CO<sub>2</sub>,ELEC,y</sub>
3223-0031	DL	16	2.1	NEWNE	Version 6	0.903
3223-0038	PB	16	2.1	NEWNE	Version 6	0.903
3223-0039	PB	16	2.1	NEWNE	Version 6	0.903
3223-0041	PB	16	2.1	NEWNE	Version 6	0.903
3223-0043	AP	16	2.2.1	Southern	Version 6	0.865
3223-0044	AP	16	2.2.1	Southern	Version 6	0.865
3223-0045	AP	16	2.2.1	Southern	Version 6	0.865
3223-0046	AP	17	2.2.1	Southern	Version 6	0.865
3223-0047	AP	17	2.2.1	Southern	Version 6	0.865
3223-0048	AP	17	2.2.1	Southern	Version 6	0.865
3223-0049	AP	17	2.2.1	Southern	Version 6	0.865
3223-0050	AP	17	2.2.1	Southern	Version 6	0.865

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