CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD)
Version 01

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NOTE:

(i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.

(ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)[1,2] that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

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[1] The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

[2] At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

SECTION A. General description of small scale CDM programme activity (CPA)

A.1. Title of the small-scale CPA:

>> Greenlight Solar PV Lighting India "CPA XX"
Version XX
XX/XX/20XX

A.2. Description of the small-scale CPA:

>>
The proposed CPA – CPA XX - is a part of "Greenlight Solar PV Lighting India" PoA. The purpose of PoA is the dissemination of battery-charged solar-powered lamps to provide basic lighting service to households using fossil fuel based lighting systems in India. It will replace the fossil fuel based lamps systems currently in use in project households thereby reducing Greenhouse Gas (GHG) emissions resulting from combustion of fossil fuels in the baseline lamps. The proposed CPA is expected to result in a reduction of not more than 60ktCO_2 per annum. A typical programme solar lamp shall consist of a solar photovoltaic panel (SPV), electronic circuit, storage battery and luminary. SPV captures solar energy and converts it into direct current (DC) electricity which is then stored in a battery. The luminary draws electricity from the battery and provides light.

CPA Boundary
XXXX

The CPA targets consumers that use kerosene/oil as their primary lighting source either in rural / urban India to replace the fossil fuel based lamps with solar based LED lighting systems. The CPA by replacing fossil fuel (kerosene) based lamps as a preferred source of lighting shall result in GHG emission reductions, improve safety and enhance living standards in the user households over the lifetime of the PoA.

EcoSecurities India Private Limited (EIPL) is the coordinating/managing entity (CME) for this PoA and the host nation participant. Its responsibility is to communicate with CDM Executive Board and coordinate the work relating to validation, verification, registration and issuance of carbon credits generated by the PoA and efforts from CPA Implementers CPAIs.

J.P. Morgan Ventures Energy Corporation (JPMVEC) is the participant from the Annex 1 party in the programme.

XXX is the implementer of this CDM program activity (CPA). XXX is responsible for collecting information necessary for monitoring. <If required, include information regarding CPA implementer>

The proposed CPA will contribute to social, economic and environmental well-being:

a) **Social Benefits**: It has been well documented that the kerosene/oil lamps are a serious fire hazard[3] if fuel is accidentally spilled. In comparison, a solar lamp does not pose any fire risk, besides, the provision of reliable lighting.

[3] Joseph E. Shepherd (Corresponding author) *Kerosene Lamps and Cookstoves - the Hazards of Gasoline Contamination* ,Aeronautical and Mechanical Engineering California Institute of Technology

b) **Economic Benefits**: As kerosene is the main fuel for lighting in rural areas, Government of India supplies kerosene at subsidized prices to rural households through the Public Distribution System (PDS). Solar lamps can improve the economic well-being of individual households through *savings* on recurring kerosene expenditure. Solar lamps can also help the national economy by *reducing subsidy burden* of Government of India and saving foreign exchange[4]. The programme would also lead to employment of large number of people engaged in activities like selling and servicing of solar lamps.

c) **Environmental Benefits:** Kerosene lamps are known to have undesirable effects on indoor air quality[5]. In comparison, solar lamps are smokeless as they do not consume fossil fuel. Further, use of solar PV panels to generate electricity produces no GHG emission by limiting the use of fossil fuel.

d) **Technological Benefits:** Solar lamps are based on a cleaner, environmentally safe and sound technology for lighting than fossil fuel based lamps. With the implementation of this PoA, the users would get access to a renewable improved lighting technology as compared to non renewable - fossil fuel lamps.

All Project Participants including the CPA implementer are voluntarily taking part under this program. There is no mandatory law regulation that mandates the installation of solar lamps by households in India.

A.3. Entity/individual responsible for the small-scale CPA:

>> The CPA implementer of the proposed CPA is XXX.

JPMVEC is Annex 1 Project Participant and EIPL is the CME for the PoA and the host nation participant.

A.4. Technical description of the small-scale CPA:

The proposed CPA will involve distribution of a variety of solar lamps, with different lumen outputs and power ratings, as an alternative to fossil fuel based lamps, within the geographical boundary of India. The CPA/ CPAI will follow the approved monitoring plan and procedures so that real and measureable emission reductions can be claimed.
The proposed CPA uses the approved small-scale methodology *AMS-III.AR: Substituting fossil fuel based lighting with LED/CFL lighting systems (Version 03)* under *Type (III). Sectoral Scope: 01(*Energy industries (renewable/non-renewable sources)

Operating Structure of the CPA
The CPA is implemented by XXX <Insert information relating to the CPAI and its operating structure>.

A warranty registration process would be set up to keep the record of each project lamp (including lamp details) sold in a CPA in the form of a repository of project lamp distribution data. XXX <Insert name of

[4] Rehman I. H., Malhotra P., Pal R. C., Singh P. B., *Availability of kerosene to rural households: a case study from India*, Energy Policy ,33 (2005), pg. 1.4

[5] Evan Mills, *Technical and Economic Performance Analysis of Kerosene Lamps and Alternative Approaches to Illumination in Developing Countries*, 2003, pg. 3.

CPAI> may associate with some intermediaries to facilitate distribution of project lamps in which case the date of delivery of project lamps to an intermediary shall be directly recorded.

In order to avoid double counting in the CPA,<Insert information relating to measures taken to avoid double counting of ERs for lamps in the CPA >

The technology employed by the CPA results in significantly better performance than the other solar commonly available lighting technologies in India. A typical project lamp[6] consists of a solar panel that converts solar energy directly into electricity by the photovoltaic effect. A brief description of the components of a typical solar lamp is given below:

- *Solar Panel:* It uses photovoltaic technology to convert solar energy into electricity. It could be a separate unit or integrated with the lamp;
- *Luminary:* It will be using LED as a light emitting source;
- *Electronics:* Electronic circuitry will be present to control the charging, discharging of the battery, driving the luminary with the right voltage/current;
  Battery: The battery will be charged by the solar panel during the day and this stored energy will be used to drive the luminaries.

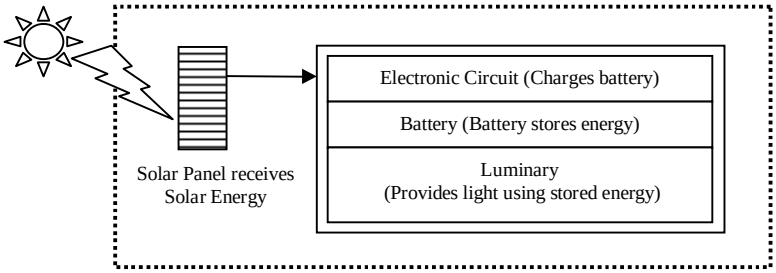


Figure 2: Block diagram of a typical solar lamp

The lamps included in the proposed small-scale CPA meet the eligibility requirements specified in AMS-III.AR, version 03 (refer section E.2 of the PoA-DD). Design specifications of the project lamps (as listed in paragraph 7 of the methodology) included in the small-scale CPA are discussed below:

Design parameter	*Value for Lamp Type "<Insert model name>"*	*Value for Lamp Type "<Insert model name>"*	*Value for Lamp Type "<Insert model name>"*
Lamp wattage			
Illuminance			
Lamp lifetime			
PV type			

[6] During the course of Programme, new models of solar lamps might be developed and marketed. Thus, the description might differ from that mentioned above and alternative concepts/designs will also be applicable to the CPA so long as they fall within the applicability criteria defined in section A.4.2.2 of the PoA-DD. However, the basic operating principle of solar LED lamps shall remain the same as described above

PV capacity	
Battery type	
Battery (Replacable? Chargable?)	
Battery capacity	
Type of charge controller	
Autonomous time	
Daily burn time	
Solar run time	
Grid charging time	
Physical protection against weather impacts	

<Insert confirmation on if the CPA results in transfer of technology>

A.4.1. Identification of the small-scale CPA:

>> Greenlight Solar PV Lighting India "CPA XX"

A.4.1.1. Host Party:

>> India

A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):

>> The geographic boundary of the CPA is limited to the political boundary of XXXXX<insert the name so of the states/regions>, where the project lamps are sold under the CPA.

Figure 1 Geographical boundary for the Greenlight Solar PV Lighting India "CPA XX"<Insert figure>

As per paragraph 10 of AMS-III.AR, the project boundary includes the project lamps as well as the charging systems, ie. In case project lamps are charged by a renewable energy system then the project boundary includes the physical, geographical site of the renewable energy system. Therefore, for the proposed CPA, the project boundary includes all the sites where the project lamps are sold.

Since each lamp in the CPA is uniquely identified with a unique serial number, each small scale CPA can be uniquely identified.
The contact details of the CPAI responsible for Greenlight Solar PV Lighting India "CPA XX" are:

Name of entity/individual	<Insert name of entity/individual>
Address	<Insert address>
Phone number	<Insert phone number>
Mobile number	<Insert mobile number>
Alternative contact	<Insert alternative contact>

A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

>> XX/XX/20XX - Date of sale of the first lamp of the CPA.

A.4.2.2. Expected operational lifetime of the small-scale CPA:

>> 21 years[7]

A.4.3. Choice of the crediting period and related information:

Renewable crediting period

A.4.3.1. Starting date of the crediting period:

>>
XX/XX/20XX - Date of inclusion of the CPA in the PoA[8].

A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:

>>
7 years (Renewable)[9]

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

>>
The estimated sales projection for the project lamps are as follows:

[7] The operational lifetime of a CPA shall not exceed the crediting period of the PoA, i.e. for a CPA starting in 22nd year of PoA, the CPA lifetime shall be limited to only 6 years to not allow it to exceed beyond the lifetime/crediting period of PoA (28 years)

[8] For the first CPA of the PoA, this is the same as the effective date of registration of the PoA.

[9] Please note that the duration of crediting period of any *CPA* shall be limited to the end date of the *PoA* regardless of when the CPA was added.

Years	Number of lamps sold	Number of lamps expired	Number of lamps operational
Year 1			
Year 2			
Year 3			
Year 4			
Year 5			
Year 6			
Year 7			

Thus, the estimated Emission Reductions[10] for the proposed CPA as follows:

Years	Annual estimation of emission reductions in tonnes of CO_2 (tCO_2e)
Year 1	
Year 2	
Year 3	
Year 4	
Year 5	
Year 6	
Year 7	
Total estimated reductions (tonnes of CO_2e)	
Total number of crediting years	7
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	

A.4.5. Public funding of the CPA:

>> No public funding.

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

>>

[10] The actual lamp sales volume might be different than those mentioned above depending upon the demand of lamps and their replacement. ERs shall be calculated at actual lamp sales volume so long as they comply with the relevant methodological requirements.

In accordance with *paragraph 10 of Annex 13 to the EB 54, Guidance for determining the occurrence of de-bundling under a Programme of Activities (PoA)*, if each independent subsystem/ measures included in the CPA of a PoA is *no larger than 1%* of the small scale threshold defined by the methodology applied, then that CPA of PoA is *exempted* from performing de-bundling check, i.e. considered as not being a de-bundled component of a large scale activity.
The threshold defined for all Type III project activities is 60 kt CO_2 equivalent annually. Each project lamp results in emission reduction of 0.092 tCO_2e per year (paragraph 13 &14, AMS.III.AR, version 03) which is less than 1% of 60 kt CO_2e. Hence, *the program is exempted from carrying out a de-bundling check.*

A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:

>> This small-scale CPA is neither registered as an individual CDM project activity nor part of another registered PoA.

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

>>
Greenlight Solar PV Lighting India
Date: 29/11/2012
Version: 04

B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :

>> The SSC-CPA meets all the eligibility criteria for inclusion as outlined in Section A.4.2.2. of the PoA-DD:

- The proposed CPA and all its units must be sold within the geographical boundary of India.
  All lamps under the CPA would be sold within the geographical boundary of CPA as defined in section A.4.1.2. Thus, the CPA and the lamps shall be sold only within the boundary of India.

- The start date of the proposed CPA is not prior to the start date of the PoA. The CPA start date shall be the date of sale of first CDM eligible lamp under the CPA and shall be checked with documentary evidence.
  <Include justification>

- The technology used under the proposed CPA consists of isolated solar LED lighting system.
  The proposed CPA consists of isolated solar LED lighting system.

- The CPA shall apply the small-scale methodology AMS.III.AR, version 03 and the solar lamps included in the proposed CPA comply with applicability criteria of methodology AMS-III.AR version 03.
  <Include justification>

- The CPA shall ensure that the replaced baseline lamps are those that directly consume fossil fuel. This may be demonstrated through documentation of the common practice of fuel usage for lighting

within the CPA boundary (e.g. based on representative sample surveys, official data or peer reviewed literature) that demonstrates that fossil fuel is a commonly used fuel for lighting and for this purpose common practice of fuel usage for lighting is deemed as fossil fuel usage in at-least 50 % of the households at the state(s) level (or districts' level as a secondary alternative) in India;
<Include justification>

- Each of unit[11] in the CPA should achieve less than 600 tCO_2e reduction per year.
  Each lamp installed in the CPA achieves only 0.092tCO_2e reductions per year.

- The total number of all lamps installed under the CPA are limited to those that result in emissions reductions of less than or equal to 60 kt CO_2 equivalent annually throughout the crediting period.
  The maximum number of operational lamps that can be included in the CPA at any given time is 652,173. Therefore, the CPA results in emissions reductions of a maximum of 60 kt CO_2

- End users of the technology or measures are households/communities/SMEs.
  The end-users of the solar lamps are households/communities/SMEs.

- The project lamps shall have provisions to eliminate double counting of emission reductions on account of multiple parties claiming ownership of emission reductions. The project lamps shall bear the logo of CPAI and/or a unique serial number and/or provisions for transfer of ERs arising from the use of the lamp to the CPAI. At a minimum, project lamps shall be marked as CDM project lamps.
  <Include justification>

- The CPA shall be checked and approved by the CME before being included under the PoA.
  The proposed CPA is checked and approved by the CME.

- The CPA shall not result in diversion of ODA.
  The CPA does not result in diversion of ODA.

- Each CPA will be developed and implemented by a CPAI which has signed the standard contractual agreement with the CME/credit buyer to participate in the PoA; such agreement guiding the transfer of the emission reduction rights to the CME.
  The CPA is developed and implemented by XXX which has signed the standard contractual agreement with the CME/credit buyer to participate in the PoA; such agreement guiding the transfer of the emission reduction rights to the CME.

- *If applicable, the CPA sampling plan for verification shall be in accordance with the sampling plan in Appendix 1 of the PoA-DD.*
  <Include justification, if applicable>

B.3. Assessment and demonstration of additionality of the small-scale CPA , as per eligibility criteria listed in the Registered PoA:

[11] A single solar lamp

>> The CPA meets the eligibility criteria for demonstration of additionality as explained below:

i. The CPA comprises of isolated solar lamps only
ii. The lamps users are households/small shopkeepers
iii. The lamp models included currently generate only 0.092 tonnes of CO_2e per annum

B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

>> As per paragraph 10 of AMS-III.AR, the project boundary includes the project lamps as well as the charging systems, ie. In case of project lamps is the physical, geographical site where each project lamp is utilized. In addition, since the lamps are charged by a renewable energy system then the project boundary includes the physical, geographical site of the renewable energy system. Therefore, for the proposed CPA, the project boundary includes all the sites where the project lamps are sold.
The table below gives the GHG emissions sources included in the CPA boundary

Source		Gas	Included?	Justification / Explanation
Baseline	Combustion of fossil fuel for lighting	CO_2	Yes	Major source of emissions.
		CH_4	No	Not produced during combustion of fossil fuel kerosene in lanterns/lamps.
		N_2O	No	Not produced during combustion of fossil fuel in lanterns/lamps.
Project activity	Use of solar lamps for lighting	CO_2	No	No project emissions if the project lamps are charged by a renewable energy system. The project activity involves dissemination of battery-charged lamps whose batteries are charged using renewable solar energy and hence no project emissions are to be considered as per paragraph 16 (a), AMS. III-AR, version 03.

As all the lamps in the CPA would be distributed across the states mentioned in section A.4.1.2, the CPA's geographical boundary has been limited only to the state(s)/ district(s) listed in the above referred section. All these states are within the geographical boundary of India. All lamp units under this CPA, must be sold within the political boundary of PoA.

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

>>

(Data / Parameter:	*DV*
Data unit:	tCO_2e per project lamp
Description:	Default emissions factor per project lamp.
Source of data used:	AMS-III.AR, version 03 "*Substituting fossil fuel based lighting with LED/CFL*

	lighting systems”.
Value applied:	0.092
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default emissions factor value as mentioned in the methodology.
Any comment:	This value is fixed ex-ante for the entire crediting period

Data / Parameter:	GF
Data unit:	- -
Description:	Grid factor in year y
Source of data used:	AMS-III.AR, version 03 “Substituting fossil fuel based lighting with LED/CFL lighting systems”.
Value applied:	1
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value as prescribed by the Methodology for lamps charged by charged by renewable energy system.
Any comment:	This value is fixed ex-ante for the entire crediting period

Data / Parameter:	DBy
Data unit:	-
Description:	Dynamic baseline factor
Source of data used:	AMS-III.AR, version 03 “Substituting fossil fuel based lighting with LED/CFL lighting systems”.
Value applied:	1
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value as prescribed by the methodology in absence of relevant information.
Any comment:	This value is fixed ex-ante for the entire crediting period

B.5.2. Ex-ante calculation of emission reductions:

>>

Project Emissions

Since all lamps in the PoA can only be charged with a renewable energy system, therefore, for all CPAs PE_y is = 0[12].

Baseline Emissions

Baseline emissions (BEy) per project lamp per year for a CPA are calculated as per equation 2 & 3 of AMS-III.AR version 03.

$$DV = FUR \times O \times U \times EF / 1000 \times LF \times n \times NTG$$

And,

$$BEy = DV \times GFy \times DBy$$

where,

Parameter	Description	Value used for ER estimation
DV	Default emissions Factor (tCO_2e) per project lamp calculated using the following 7 values indicated in paragraph 13of AMS-III.AR, version 03)	0.092
FUR	Fuel use rate (liters/hour)	0.03
O	Utilization rate (hours/day)	3.5
U	Annual utilization (days/year)	365
EF	Fuel emissions factor ($kgCO_2$/liter)	2.4
LF	Leakage factor	1
n	Number of fuel-based lamps replaced per project lamp	1
NTG	Net-to-gross adjustment factor	1
GFy	Grid factor in year *y*	1[13]
DBy	Dynamic baseline factor in year y.	1[14]
BEy	*Baseline emissions per project lamp in year y(tCO_2e)*	*0.092*

Leakage

No leakage calculation required as per AMS-III.AR.

[12] All lamps included in a typical CPA are expected to be charged only by a renewable energy system. Hence, PE = 0 as per paragraph 16(a) of AMS-III.AR version 03

[13] Equal to 1.0 when charging option defined in paragraph 2(a) as per AMS-III.AR version 03 is used

[14] Default of 1.0 in the absence of relevant information, AMS-III.AR version 03 Paragraph 14

Emission Reductions

Emission Reductions for a CPA shall be calculated according to the following formula:

$$ER_y = \sum N_{i,j} \times (BE_{y,i} - PE_{y,i,j}) \times OF_{y,i,j})$$

Where:

ER_y	=	Emission reductions in of the CPA in year *y* (tCO_2e)
$N_{i,j}$	=	Number of project lamps distributed to end users of type i with charging method *j* in CPA in year y
$BE_{y,i}$	=	Baseline Emissions by project lamp of type i in year *y* (tCO_2e)
PE_y	=	Average Project Emissions of the CPA in year y (tCO_2e) per lamp
$OF_{y,i}$	=	Percentage of project lamps distributed to end users that are operating and in service in year[15] *y*, for each lamp type *i* and charging method *j*.

The proposed CPA uses (select either option):

1. **Option 1** ***as per paragraph 11 of AMS. III. AR*** ☐

   Thus,

Parameter		Value
$N_{i,j}$	=	652,173
$BE_{y,i}$	=	0.092 (tCO_2e/lamp/year)
PE_y	=	0 (tCO_2e/per lamp/year)
$OF_{y,i}$	=	100% (fixed for the operational years 1 and 2 of the project lamp)
ER_y	=	**59,997tCO_2e per year**

2. **Option 2** ***as per paragraph 12 of AMS. III. AR*** ☐

   Thus,

Parameter		Value
$N_{i,j}$	=	652,173
$BE_{y,i}$	=	0.092 (tCO_2e/lamp/year)
PE_y	=	0 (tCO_2e/per lamp/year)
$OF_{y,i}$	=	100% (fixed for the operational years 1, 2 and 3 of the project lamp; monitored for operational years 4, 5, 6 and 7[16])
ER_y	=	**59,997tCO_2e/per year**

[15] Equal to 100% for operational years 1, 2 and 3 of a project lamp.

[16] See Annex 4

B.5.3. Summary of the ex-ante estimation of emission reductions:

>>

Year	Estimation of project activity emissions (tonnes of CO_2 e)	Estimation of baseline emissions (tonnes of CO_2 e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of overall emission reductions (tonnes of CO_2 e)
Year A	0		0	
Year B	0		0	
Year C	0		0	
Year D	0		0	
Year E	0		0	
Year F	0		0	
Year G	0		0	
Year H	0		0	
Total (tonnes of CO_2 e)	0		0	

B.6. Application of the monitoring methodology and description of the monitoring plan:

B.6.1. Description of the monitoring plan:

>> Description of the monitoring plan for a CPA

All CPAIs will follow the approved monitoring plan and procedures. The parameters to be monitored are:

Data / Parameter:	$N_{i,j}$
Data unit:	Number
Description:	Number of project lamps distributed to end users of type i with charging method *j* in CPA in year y
Source of data to be used:	CME records of lamp distribution
Value of data applied for the purpose of calculating expected emission reductions in section B.5	XX[17]
Description of measurement methods and procedures to be applied:	A database to monitor the sale/distribution of project lamps would be maintained.

[17] The values shall be reported in CPA-DDs as per the applicable scenario

QA/QC procedures to be applied:	All data required for verification and issuance will be backed-up and kept for at least two years after the end of the crediting period or the last issuance of CERs of this project, whichever occurs later.
Any comment:	

Data / Parameter:	$OF_{y,i,j}$ [18]
Data unit:	%
Description:	Percentage of project lamps distributed to end users that are operating and in service in year *y*, for each lamp type *i* and charging method *j*.
Source of data to be used:	For operational years 1, 2 and 3 of a project lamp in a CPA –- Paragraph 19, AMS-III.AR, version 03. For operational years 4, 5, 6 and 7 of a lamp in a CPA[19] - Monitoring survey report
Value of data applied for the purpose of calculating expected emission reductions in section B.5	XX
Description of measurement methods and procedures to be applied:	For operational years 1, 2 and 3 of a project lamp in a CPA – Default value as defined in the methodology. For operational years 4, 5, 6 and 7 of a lamp in a CPA[20] - Monitored value; Equal to value determined per paragraph 22 and 24. In order to determine the percentage of project lamps distributed to end users that are operating and in service in year *y*, a monitoring survey[21] will be conducted by the CPAI (or outsourced to another third party). The survey will consist of locating the system, recording its functionality.
QA/QC procedures to be applied:	The sampling size[22] is determined by minimum 90% confidence interval and ±10% error margin (Refer Annex 4)
Any comment:	This parameter is to be monitored only for CPAs using option 2 to determine effective useful lifetime. Monitoring survey shall be done in the third year of each CPA and the results would be utilised for operational years 4, 5, 6 and 7 of project lamps of that CPA.

Data / Parameter:	Sales information of the lamp
Data unit:	-
Description:	The following details are to be monitored/recorded, as applicable: - lamp wattage

[18] Not to be monitored for CPAs using option 1.

[19] Only for Option 2 as per paragraph 20 of the methodology, not to be monitored for CPAs under option 1

[20] Only for Option 2 as per paragraph 20 of the methodology, not to be monitored for CPAs under option 1

[21] The survey shall follow the survey principles defined in paragraph 22, 23 &24 of AMS-III.AR, version 03.

[22] no less than 100 samples

	- battery type - charging method - the date of sale/distribution[23] - Serial numbers - Number of existing lamps per household - Customer/ recipient details (as applicable depending upon crediting period option)
Source of data to be used:	- Sales and/or distribution records / warranty registration process would provide details of lamp model, date of distribution and where applicable customer identification. - Lamp wattage, battery type, charging method are fixed for a lamp model, which can be referred from its specification sheet. .
Value of data applied for the purpose of calculating expected emission reductions in section B.5	- This parameter is not used for ER calculations
Description of measurement methods and procedures to be applied:	N/A
QA/QC procedures to be applied:	All data required for verification and issuance will be backed-up and kept for at least two years after the end of the crediting period or the last issuance of CERs of this project, whichever occurs later.
Any comment:	Customer/recipient detail in the registration form is mandated only for CPAs using Option 2 as per paragraph 12 of the methodology.

Monitoring Organization

a. Data Flow

Distribution records would be maintained by the CPA implementer. Relevant information would be recorded as and where possible, in line with paragraph 21(a). For Option 2 of paragraph 12 data as per and paragraph 21 (b) shall also be monitored and recorded. The information collected would be maintained in the form of a database. Such database(s) would then be passed on to the next stage in the hierarchy and so on.

b. Data QA/QC

XXX checks the collected data for completeness and correctness of information on sampling basis. XXX maintains a monitoring manual which governs it internal procedures for data collection and QA/QC. The CME (with support from CPAI) would also conduct QA/QC of the data at regular

[23] Or a conservative estimate thereof as per footnote 9, AMS.III.AR, version 03

intervals. Invalid entries are rejected and only those that comply with the eligibility criteria are retained in the CPA database.

c. Monitoring Surveys (if applicable)

If ex-post monitoring survey is required (in case of CPAs using option 2), the CPAI shall follow the guidance given in CPA-DD Annex 4 to carry out the monitoring surveys. The survey report will set out the value for $OF_{y,i,j}$[24],for emission reduction calculation.

To determine the effective useful lifetime of a project lamp, each CPA in the proposed PoA shall chose either Option 1 or Option 2 defined in paragraph 11 and 12 of AMS.III-AR. The monitoring requirements for each CPA shall vary depending upon the choice of effective useful lifetime.

The proposed CPA uses (select either option):

1. Option 1 ***as per paragraph 11 of AMS. III. AR*** ☐

Project lamps are assumed to operate for two years after project lamp distribution to end-users. Therefore, under this option, emission reductions may only be claimed for two years. In this case, monitoring shall include recording of project lamp distribution data[25] only.

2. Option 2 ***as per paragraph 12 of AMS. III. AR*** ☐

Project lamps are assumed to operate for upto seven years after project lamp distribution to end-users, and thus emission reductions can be claimed up to seven years per project lamp. In this case, monitoring shall include recording of project lamp distribution data[43]; and ex post monitoring surveys to determine $OF_{y,i,j}$[26]. If ex-post monitoring is required, sampling procedures (Annex 4) will be implemented to take place in the third year of each CPA and the results utilized for operational years 4, 5, 6 and 7 of project lamps of that CPA. The survey will consist of locating the system and recording its functionality, matching its type, ownership details and unique transaction ID with those mentioned in the warranty registration form.

For CPAs using option 2, data to unambiguously identify each recipient of a project lamp, for all the project lamps distributed will also be maintained by means of a warranty registration process.

d. Responsibilities

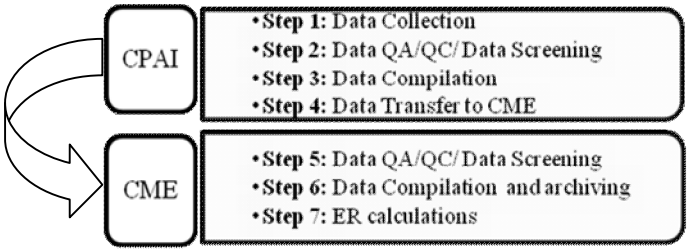
The overall monitoring will be managed by CPAI. The CPAI maintains a database of relevant sales information as per paragraph 21(a) for Option 1 and paragraph 21 (b) (for Option 2). For Option 2, monitoring survey will be conducted by the CPAI or an appointed entity. The CME will perform a final check of the data at regular intervals and prior to any verification.

The flow diagram below describes the monitoring steps and roles for the CPA:

[24] y = operational year 4,5,6 and 7 of a project lamp

[25] including number of project lamps distributed to end users under the project activity, identified by the type of project lamps (lamp wattage, battery type, charging method, the date of supply)

[26] Assumed to be equal to 100% for years 1, 2 and 3 as per paragraph 19, AMS.III-AR (version 03).



C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

☒ Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

>> Not required as per provisions of Section C.1 of the CPA-DD.

C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:

>> Not required as per provisions of Section C.1 of the CPA-DD.

SECTION D. Stakeholders' comments

>>

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

☒ Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

>> Not required as per provisions of Section D.1 of the CPA-DD.

D.3. Summary of the comments received:

>> Not required as per provisions of Section D.1 of the CPA-DD.

D.4. Report on how due account was taken of any comments received:

>> Not required as per provisions of Section D.1 of the CPA-DD

Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

Organization:	EcoSecurities India Private Limited
Street/P.O.Box:	NHCC, Jasola
Building:	Unit no. 302, Plot no. 8, Elegance Tower,
City:	New Delhi
State/Region:	New Delhi
Postfix/ZIP:	110076
Country:	India
Telephone:	+91-11- 30684836
FAX:	+91-11-30684847
E-Mail:	cdm@ecosecurities.com
URL:	
Represented by:	
Title:	Director
Salutation:	Mr.
Last Name:	Browne
Middle Name:	James
First Name:	Patrick
Department:	-
Mobile:	-
Direct FAX:	+44-1865-251438
Direct tel:	+44-1865-202635
Personal E-Mail:	cdm@ecosecurities.com

Organization:	J.P. Morgan Ventures Energy Corporation
Street/P.O.Box:	Canary Wharf
Building:	25 Bank Street
City:	London
State/Region:	London
Postfix/ZIP:	E14 5JP
Country:	United Kingdom of Great Britain and Northern Ireland
Telephone:	+44 207 134 0411
FAX:	+44 861 067 285548
E-Mail:	etienne.amic@jpmorgan.com
URL:	http://www.jpmorgan.com
Represented by:	
Title:	Managing Director
Salutation:	Mr.
Last Name:	Amic
Middle Name:	-
First Name:	Etienne

Department:	-
Mobile:	-
Direct FAX:	+44 861 067 285548
Direct tel:	+44 207 134 0411
Personal E-Mail:	etienne.amic@jpmorgan.com

Organization:	XX
Street/P.O.Box:	XX
Building:	XX
City:	XX
State/Region:	XX
Postfix/ZIP:	XX
Country:	XX
Telephone:	XX
FAX:	XX
E-Mail:	XX
URL:	XX
Represented by:	
Title:	XX
Salutation:	XX
Last Name:	XX
Middle Name:	XX
First Name:	XX
Department:	XX
Mobile:	XX
Direct FAX:	XX
Direct tel:	XX
Personal E-Mail:	XX

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding is made available to finance the PoA.

Annex 3

BASELINE INFORMATION

Please refer section E.4 of the PoA-DD.
Please refer section E.4 of the PoA-DD.
As per the Census of India 2011 report[27], the distribution of households using kerosene as their primary source of lighting within the CPA boundary is as follows<insert information on use of kerosene as source of lighting in the CPA boundary>:

[27] http://www.censusindia.gov.in/2011census/hlo/District_Tables/HLO_District_Tables.html

Annex 4

MONITORING INFORMATION
Description of the sampling plan for a CPA

The proposed CPA uses (select either option):

Option 1 as per paragraph 11 of AMS. III. AR ☐
No sampling plan required for determination of $OF_{y,i,j}$. This section is not applicable.

Option 2 as per paragraph 12 of AMS. III. AR ☐
The following sampling plan is only applicable for CPAs using Option 2 as per paragraph 12 of AMS. III-AR, version 03. Ex-post monitoring surveys shall be conducted in the third crediting year of the relevant CPAs to determine $OF_{y,i,j}$[28] for operational years 4,5,6, and 7 of the project lamps included in that CPA. For operational years 1, 2 and 3 $OF_{y,i,j}$ is 100%. In the following, relevant CPAs include only those CPAs that have chosen Option 2 as per paragraph 12 of the methodology and are in the third year of their crediting period.

(a) Sampling Design:

(i) *Objective and Reliability Requirements*: The objective of sampling is to check continued operation of sampled lamps (Yes/No).
The above parameters shall be monitored using a 90/10 (confidence/precision) (or, 95/10 as the case may be), as per the frequency described above. The size of the sample shall be no less than 100 as required by paragraph 23(a) of AMS III.A.R version 03.

(ii) *Target Population*: The sample survey shall be conducted by CPAI or appointed entity on those CPAs that are into third year of their crediting period. The target population are the users of lamps under the CPAs using Option 2.

(iii) *Sampling Method:* The sampling method chosen is random sampling or multistage sampling method. The sample size shall be determined as mentioned below.

(iv) *Sample Size: The* sample size shall be calculated for 90/10 (confidence/precision) or, 95/10 as the case may be. Sample size shall be determined using the latest version of "Standard for Sampling and Surveys for CDM Project Activities and Programme of Activities".

[28] Assumed to be equal to 100% for operational years 1, 2 and 3 of the project lamps as per paragraph 19, AMS.III-AR (version 03).

In any case, the size of the sample shall be no less than 100 as required by paragraph 23(a) of AMS III.A.R version 03.

(v) *Sampling Frame*: The sampling frame in this case is constituted by the sales of the top 50% retailer/distributors/intermediaries of the relevant CPAs.

(b) Data:

(i) Field Measurements: Field measurements for different parameters are conducted using the following monitoring procedures:

Parameter	**Description of measurement methods and procedures to be applied:**
Number of lamps operational out of all the lamps surveyed	Survey

(ii) Quality Assurance/ Quality Control: In case where survey results indicate that desired precision is not achieved, the lower bound of corresponding confidence interval of the parameter value would be used as an alternative to repeating survey.

(iii) Analysis: The data derived using monitoring shall be used to estimate the actual amount of ERs accrued by the project.

(c) Implementation Plan:

Training shall be provided to ensure that the above mentioned requirements are complied with at the time of sampling.

The survey will be carried out by CPAI or appointed entity.

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