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

Title of the small-scale CPA:

CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – SSC-CPA Form
Version 03
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Coordinating/Managing Entity:

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B.5. Emission reductions:

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

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Data / Parameter:	L_k
Data unit:	-
Description:	Estimated number of CFLs to be distributed by the SSC-CPA implementer
Source of data used:	Determined by project participants
Value applied:	To be filled by the implementer in the SSC-CPA.
Justification of the choice of data or description of measurement methods and procedures actually applied :	Actual numbers of devices distributed within the SSC-CPA may vary depending on success of distribution and uptake by households.
Any comment:	

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Data / Parameter:	n_{PSG}
Data unit:	Households
Description:	Total sample size used for monitoring utilisation hours/electricity consumption of CFLs.
Source of data used:	Determined by project participants at the PoA level
Value applied:	220
Justification of the choice of data or description of measurement methods and procedures actually applied :	The samples for PSG will be randomly selected and selected across all combined CPAs under the PoA by applying 95/10 confidence /precision for sample size calculation in accordance with the footnote 13 of paragraph 19 of EB 65, Annex 2. Within Project Sample Group households enough light fittings will be monitored to enable data to be captured from 220 households initially (with up to 4 bulbs per household totalling up to 880 bulbs) in order to determine an average hours of utilisation and/or electricity consumption at the PoA level. This sample size will enable a robust assessment of key parameters for the determination of emission reductions. The total sample size of 220 households (and up to 880 bulbs) will be monitored at the PoA level in order to be statistically representative with a 95/10 confidence/precision level. The CME may choose to increase or decrease the sample size for subsequent monitoring periods to meet the required confidence/precision level. Annex 7 (‘CUIDEMOS Mexico PoA - Sampling Plan) provides a detailed description of the statistical methods used to determine the sample size and to

	select households for the PSG.
Any comment:	

Data / Parameter:	n_{PCCG}
Data unit:	Households
Description:	Total sample size (i.e. households) used for checking to ensure ongoing operation of project devices.
Source of data used:	Determined by project participants as per the procedure outlined in Annex 7
Value applied:	97
Justification of the choice of data or description of measurement methods and procedures actually applied :	Within each household up to four light bulbs will be checked. Data to be captured from at least 97 sample households in order to determine the number of CFLs still operational. This sample size will enable a robust assessment of a key parameter for the determination of emission reductions. In order to constitute the sample size for PCCG group, CPAs will be grouped according to distribution date. Each block of CPA/s may consist of one or more CPAs. A minimum of 97 households will be surveyed for each block of CPA/s whether the block contains a single CPA or more. A separate sample will be taken for each of these blocks. Specifically, all CPAs where distribution occurred within a three-month period will be combined for the purposes of this estimation and a sample will be taken randomly from the set of all non-metered households in that block of CPA/s. If no group of CPA could be formed or a single CPA distribution occur in three months time then a separate PCCG survey will be carried out for that CPA. The total sample size of 97 households will be surveyed initially in order to be statistically representative with a 95/10 confidence/precision level. The CME may choose to increase or decrease the sample size for subsequent monitoring periods to meet the required confidence/precision level.
Any comment:	Annex 7 ('CUIDEMOS Mexico PoA - Sampling Plan) provides a detailed description of the statistical methods used to determine the sample size and to select households for the PCCG.

Data / Parameter:	**EF**
Data unit:	$kgCO_2/kWh$
Description:	Emissions factor for electricity displaced from the grid relevant to the project boundary.
Source of data used:	Official government data – SENER "Prospectiva del sector electrico 2005-2014", "Prospectiva del sector electrico 2006-2015", "Prospectiva del sector electrico 2007-2016"
Value applied:	0.514
Justification of the choice of data or description of	Project coordinator has obtained latest data from government sources and applied calculation methodology specified in "Tool to calculate the emission factor for an electricity system" version 1 (EB Report 35, Annex 12). Details of

measurement methods and procedures actually applied :	calculations are provided in Annex 12.
Any comment:	

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

B.6.1. Description of the monitoring plan:

>> The monitoring requirements of AMS-II.C. stipulate that if the devices installed replace existing devices, the number and "power" of the replaced devices shall be recorded and monitored.

Monitoring shall consist of monitoring either the "power" and "operating hours" or the "energy use" of the devices installed using an appropriate methodology. Possible methodologies include:

(a) Recording the "power" of the device installed (e.g., lamp or refrigerator) using nameplate data or bench tests of a sample of the units installed and metering a sample of the units installed for their operating hours using run time meters.
OR
(b) Metering the "energy use" of an appropriate sample of the devices installed.

In either case, monitoring shall include annual checks of a sample of non-metered systems to ensure that they are still operating.

Based on this methodology, SSC-CPAs will use the following data sources and monitoring procedures to determine emission reductions:

Collection of Incandescent Nameplate Data
The number and power rating of all incandescent lamps collected will be recorded. This information will be used to determine the weighted average power of baseline devices (p_i). Collection of nameplate data from all replaced equipment does not require a sampling procedure, as data on the entire baseline population will be collected. This data will be collected at the time of the exchange of incandescent bulbs for CFLs at distribution points, and stored in the project data management system.

Collection of CFL Nameplate Data
The coordinating entity will keep a record of the power rating of the CFLs distributed during the project activity and use this to determine the weighted average power rating for the project devices (p_k).

Check that numbers of CFLs and incandescent bulbs correspond
As is required by PoAs applying AMS II.C, the number of CFLs distributed under this CPA must correspond to the number of incandescent bulbs collected and scrapped. As is described in greater detail below, for each customer transaction, field teams will collect information on the number and wattage of incandescent bulbs exchanged for CFLs and enter it into the data management system (DMS). Every incandescent bulb received, and every CFL provided will be recorded in the DMS. At the conclusion of the distribution process, the DMS will provide an accurate record of the total numbers of bulbs exchanged. In the unlikely event that there is a discrepancy between the numbers of CFLs and incandescent bulbs recorded in the DMS, the coordinating entity will use the lower of the two numbers so that a smaller total number of bulbs distributed is used for emission reduction calculations for this CPA.

Independent check of scrapped incandescent bulbs

As is required by the methodology, the coordinating entity will engage the services of an environmental audit firm to conduct independent verification of the scrapping of incandescent light bulbs collected during the distribution process. Incandescent bulbs collected during the distribution will be transported to the waste management company where scrapping will be conducted. All storage and destruction processes will be independently verified and the result of such process will be presented to the verifying DOE.

The process for undertaking this check will include:

- At least one physical spot check at a randomly selected retail store during the CFL distribution process to ensure that exchange procedures are being followed.
- On completion of the distribution process the independent verifier will conduct an inspection of the project database to ensure that electronic records have been correctly entered and that the number of CFLs distributed corresponds with the number of incandescent bulbs collected.
- A physical spot check will be conducted of incandescent bulbs prior to their destruction in order to satisfy the independent verifier that collection has been undertaken correctly. This check will not include counting of incandescent bulbs, as this is not realistic given the large number of incandescent bulbs being scrapped.
- The independent verifier will conduct at least one physical spot check of the scrapping of incandescent bulbs is undertaken to ensure that no leakage occurs.

The above process will be followed for each CPA, and a written report will be provided to the verifying DOE to demonstrate compliance with this aspect of the monitoring requirements.

Monitoring Use of Project Devices

Monitoring a sample of distributed CFLs to determine average hours of utilisation (o_k) and total energy consumption will be undertaken by installing metering equipment in households belonging to the Project Sample Group (PSG). The annual operating hours of monitored devices will be used to determine the energy baseline as per equations listed above. In addition, the metering devices used by the project coordinator can simultaneously measure total electricity consumption of the CFLs. This measure will be used to determine the project energy consumption for each monitoring period.

The mean hours of use, or total energy use of light bulbs monitored in the PSG households will be directly extrapolated to all households involved in the PoA. The purpose of establishing the PSG is to create a *representative sample* of all other households participating in the efficient lighting initiative. It is not possible to monitor *all* households involved in the CPA or PoA, and it is a fundamentally agreed scientific and statistical procedure to apply mean values obtained through sampling to the broader population. Therefore, for each monitoring period a mean value will be obtained for energy used and baseline light bulb which will be extrapolated across the total number of bulbs operating during that monitoring period. This will be used in the calculations of project and baseline emissions as stipulated in the equations provided in sections above.

Establishment of Project Sample Group (PSG)

The procedure to determine the sample of monitored CFLs will ensure that they adequately represent the broader population, minimising sampling error. Given that participation in the SSC-CPA is voluntary, determination of the exact population of participating households prior to establishment of the PSG is not possible. In addition, because the coordinating entity cannot force households to participate in sample groups, the devices monitored in the resulting sample will be to a degree, self-selected rather than purely

random. Despite these limitations, the coordinating entity will work with the DOE to ensure that CFLs sampled are representative of the broader population of lights in participating households.

A detailed description of the statistical methods used to select households for inclusion in the PSG is provided in Annex 7 ('CUIDEMOS Mexico PoA- Sampling Plan'). This Annex also details strategies to manage sample group households over time to ensure their continued participation.

Establishment of Project Cross-Check Sample Group (PCCG)

A non-metered sample of CFLs installed in participating households will be surveyed at least annually to ensure continuing operation. As with the PSG, the Project Cross-Check Sample Group (PCCG) is likely to be self-selected rather than entirely random, however, the coordinating entity will work to ensure that, as much is feasible, checks cover a representative sample of households that installed CFLs. The households included in the PCCG will be randomly selected from the database of participating households as described in Annex 7 "CUIDEMOS Mexico PoA - Sampling Plan. The result of this sampling will determine the proportion of the total number of devices still operating at the end of each monitoring period (n_k) which will be applied to the calculation of emissions reductions for that period. CFLs distributed under the PoA will be marked with a logo, or serial number to ensure that they can be unambiguously differentiated from other light bulbs installed in the PCCG households.

As discussed above, the results obtained from the sampling process will be directly extrapolated across the entire population of households participating in the CPA as described in Annex 7 "CUIDEMOS Mexico PoA - Sampling Plan. Therefore, the proportion of CFLs installed and continuing to function as determined through the household cross-check will be taken to be representative of the pattern occurring in all households.

A detailed description of the statistical methods used to select households for inclusion in the PCCG is provided in Annex 7 ('CUIDEMOS Mexico PoA– Sampling Plan').

Determination of EF

As stipulated above, the emissions factor for electricity displaced from the grid relevant to the project boundary will be calculated in accordance with AMS-I.D. Data will be sourced from Mexican government agencies to ensure accuracy. A detailed description of the calculation of the emissions factor for the SSC-CPA is provided in Annex 12 ('CUIDEMOS Mexico – Emission Factor Calculation').

Data Management System

The coordinating entity will develop and manage a data management system (DMS) that will record all information relevant to monitoring each SSC-CPA, including:

- A list of households participating in the project, including information to identify households by name and address.
- A record of the incandescent bulbs collected (number and power) surrendered by, and replacement CFLs (number and power) provided to, each participating household.
- A list of households included in the PSG, including information to identify households by name, address and date added to the sample group.
- The following data relating to monitored CFLs:
    - Identification number for each CFL
    - Type of monitoring equipment and date of installation
    - Confirmation at each spot check that monitoring equipment is functioning

- Confirmation at each spot check that the CFL is functioning
- Utilization data for each CFL (hours of use and electricity consumption)

- A list of households participating in PCCG and the results of periodic checks of non-metered CFLs. The proportion of CFLs still operating at the end of each monitoring period will be calculated from these cross-checks and entered into the DMS.

Monitoring Periods

Data will be collected for each monitoring period, and used to calculate emission reductions for that portion of the crediting period. The surveys of cross-check households to occur at least annually.

It is expected that the CFL distribution process for each CPA will take approximately 30 days. Given that households are requested to bring incandescent light bulbs from their home to exchange for CFLs, it is assumed that installation will occur on the same day as the exchange. However, the coordinating entity will take a conservative approach and will not count energy savings created by households exchanging and installing CFLs during the first 30 days of the CFL exchange period. This means that the first monitoring period will effectively commence 30 days after the start of the CFL distribution process. If the CFL distribution process takes longer than 30 days, bulb exchange data from the project DMS will be applied to determine pro-rata energy savings attributable to the period between day 30 of the campaign, and the conclusion of the distribution period. The coordinating entity is able to accurately determine the number of bulbs exchanged on a daily basis as each transaction is logged with a time and date. This data will be used to determine the cumulative number of bulbs installed and the energy savings attributable to any extended distribution phase (post day 30) of the first monitoring period. At the conclusion of the distribution process, the total number of CFLs exchanged will be known, and this number will be cross-checked through the household survey that occurs at the end of each monitoring period.

CFL Collection & Recycling Scheme

The coordinating entity is committed to the safe collection, scrapping and recycling of CFLs and will work with key institutions and stakeholders in Mexico to establish such a scheme. The coordinating entity will report to the verifying DOE on the establishment of CFL collection and recycling programs in the area relevant to the SSC-CPA.

Annex 4

MONITORING INFORMATION

Details of monitoring equipment, data management system and customer database are described in section B.6.1. and in the following Annexes:

Annex 7 – CUIDEMOS Mexico PoA - Sampling Plan

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