

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA:
Mexico Water, Energy, & Emissions Efficiency Residential Program



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**CLEAN DEVELOPMENT MECHANISM
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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.

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).

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

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

>>

Title: Mexico Water, Energy, & Emissions Efficiency Residential Program – CPA.[Insert state name abbreviation].[Insert CPA number in that state]

Version number: [Insert CPA-DD version]

Date: [Insert CPA-DD completion date]

Template version: 2.4

Template date: 29 January 2013

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

>>

This SSC-CPA is developed under the Small-Scale Programme of Activities titled “Mexico Water, Energy, & Emissions Efficiency Residential Program” (Cambio Azul PoA) which supports local communities by improving the efficiency of hot water utilization through free distribution and installation of water saving devices.

Households across Mexico have an average daily water consumption of 220 litres per capita, of which the use of showers represents the single largest component of a residential water footprint. As in many countries the most common energy sources for heating water in Mexico rely directly or indirectly on fossil fuels: liquefied petroleum gas (LPG), natural gas, and to a lesser degree, electricity. Thus, hot water utilization in personal and/or household cleaning and washing has become an important source of greenhouse gases, mainly due to continued use of old and inefficient domestic water heaters which use either natural gas or LPG as fuel.

Project water saving devices include low-flow showerheads and faucet regulators, which effectively reduce hot water dispensed from targeted water fixtures (shower, bathroom and kitchen sinks)

The technology or measures to be employed by a typical SSC-CPA comprises the direct installation of water saving devices that reduce the amount of water dispensed in baseline water fixtures in residential applications without reducing the level of service to the users. The project devices, which contain integral non-removable flow restrictions, include one efficient showerhead and several faucet regulators per household. Faucet regulators will be installed in two points of use: (1) a bathroom faucet and (2) a kitchen faucet. These devices qualify as water saving devices through reference to applicable standards as well as the other requirements listed in AMS II.M “Demand-side energy efficiency activities for installation of low-flow hot water savings devices”(Version 1.0) which is the methodology applied for the entire PoA.

This CPA involves the distribution and installation of water saving devices at zero cost in [insert number] households located within:

[Insert physical address of the CPA area, delimited with geographic coordinates]

Contribution to sustainable development:



Environmental Benefits

This CPA will provide numerous environmental benefits at multiple levels.

At household level

- Significant savings in water consumption
- Reduced fossil fuel and electricity consumption
- Indoor air quality improvement (reduced CO, particulate matter and hydrocarbons emissions)
- Increased awareness on the value of sustainability practices.

At city level:

- Significant energy savings in water purification and supply network
- Reduced water losses inherent to the water supply network (less overall leakage)
- Significant reductions in wastewater volume discharged into sewage systems and treatment plants.

At regional level:

- Reduced stress on watersheds and aquifers
- Less electricity losses in transmission and distribution
- Improvement of regional air quality due to reduced emissions from water heaters
- Contribution to better water resources management and, potentially, avoidance of water scarcity.

Socio-economic benefits

Implementation of this CPA will bring several positive impacts to the livelihood of [insert project area]. For example, the reduced energy consumption translates into immediate cost savings for the household residents, who in the long term will also benefit from potential reduction in water shortages. Also, as regional demand for drinking water is reduced, costs related to the water supply network (including subsidies) also decrease, allowing water agencies to focus resources on improving supply service quality. A reduced regional demand also benefits agricultural land and ecosystems as more water becomes available and less wastewater volume is generated³.

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

>>

The small-scale CPA is implemented and operated by [Insert name/contact details of the entity/individual responsible for the CPA]

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

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

>>

³ ['Mexico 2006-2012: Creating the Foundations for Equitable Growth / Chapter 9: Water Resources - averting a water crisis in Mexico'](#).
Source: World Bank



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Mexico Water, Energy, & Emissions Efficiency Residential Program – CPA. [Insert state name abbreviation]. [Insert CPA number in that state]

A.4.1.1. Host Party:

>>

The host party for the Cambio Azul PoA is Mexico.

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

>>

The SSC-CPA is implemented and operated by [Insert name/contact details of the entity/individual responsible for the CPA]

This CPA includes households where water saving devices are distributed and installed under the Cambio Azul PoA within the following areas:

Municipality / Delegation	State	Latitude	Longitude
[...]	[...]	[dd mm ss.sss]	[dd mm ss.sss]
[...]	[...]	[dd mm ss.sss]	[dd mm ss.sss]

Note: The physical address of each individual household included in the CPA will be submitted to the DOE at the time of validation.

Table 1 – CPA Locations

[Insert map of the CPA locations]

Figure 1 – CPA Location

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

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

>>

The starting date of this SSC CPA is the date when the first water saving device of the proposed CPA is installed.

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

>>

Project water saving devices have a manufacturer’s warranty of ten years against design defects. Thus, it is expected that their operational lifetime will exceed 10 ten years.

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

Fixed Crediting period of ten (10) years.

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A.4.3.1. Starting date of the crediting period:

>>

The starting date of the crediting period is whenever the CPA is added to the registered SSC PoA or when the first water saving devices of the proposed CPA is installed, whichever is later.

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

>>

Not applicable (the CPA will have a fixed crediting period of 10 years).

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

>>

Year	Annual estimation of emission reductions in tonnes of CO ₂ e
1	XX,XXX
2	XX,XXX
3	XX,XXX
4	XX,XXX
5	XX,XXX
6	XX,XXX
7	XX,XXX
8	XX,XXX
9	XX,XXX
10	XX,XXX
Total emission reductions (tonnes of CO₂e)	XXX,XXX
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO₂e)	XX,XXX

Table 2– Estimated Amount of Emission Reductions (tCO₂e)

A.4.5. Public funding of the CPA:

>>

The proposed CPA will not receive any public funding from Parties included in Annex I of the UNFCCC.

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

>>

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1. For the purposes of registration of a Programme of Activities (PoA)⁴ a proposed small-scale CPA of a PoA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity⁵, which:
 - (a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same sectoral scope, and;
 - (b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.
2. If a proposed small-scale CPA of a PoA is deemed to be a debundled component in accordance with paragraph 2 above, but the total size of such a CPA combined with a registered small-scale CPA of a PoA or a registered CDM project activity does not exceed the limits for small-scale CDM and small-scale A/R project activities as set out in Annex II of the decision 4/CMP.1 and 5/CMP.1 respectively, the CPA of a PoA can qualify to use simplified modalities and procedures for small-scale CDM and small-scale A/R CDM project activities.

As per EB guidance (EB 54, Annex 3), if each of the independent subsystems/measures included in the CPA of a PoA is no greater than 1% of the small-scale thresholds defined by the methodology applied, then that CPA of a PoA is exempted from performing de-bundling check. Since the cumulative thermal energy savings achieved through water saving devices installed at a single household represent less than 1% of the threshold set in the approved CDM methodology, a typical Cambio Azul SSC CPA is exempted from performing de-bundling check, i.e. the SSC-CPA is considered as being not a de-bundled component of a large scale activity.

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

>>

The SSC CPA is neither registered as an individual CDM project activity within the host country nor is it part of another registered PoA. This PoA is a first of its kind in Mexico. As such, there are not other CDM projects covering the same type of project for the households covered in this SSC CPA.

Information on each household included in the SSC CPA will be compiled, ensuring that each household is uniquely identified. Furthermore, the CME will conduct cross-checks with the CDM project registry to prevent the inclusion of any CPA that has the same physical location as other CDM project activity with the same scope.

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:

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⁴ Only those PoAs need to be considered in determining de-bundling that are: (i) in the same geographical area; and (ii) use the same methodology; as the PoA to which proposed CPA is being added.

⁵ Which may be a (i) registered small-scale CPA of a PoA, (ii) an application to register another small-scale CPA of a PoA or (iii) another registered CDM project activity.

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

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This SSC-CPA to be included in the proposed SSC-PoA meets all eligibility criteria. As per section A.4.2.2. of the SSC-PoA-DD a SSC-CPA shall submit the following checklist as to how it has or will verify eligibility criteria:

Eligibility criteria	Compliance (Yes/No)	Means of Verification
Eligibility conditions to ensure compliance with the applied methodology AMS-II.M version 1.0		
i. Consist of a group of existing residential buildings located in the host country of Mexico where low-flow devices are directly installed permanently replacing or retrofitting baseline faucets.	[Yes / No]	Map of the CPA area
ii. Not exceed aggregate energy savings equivalent to 60 GWh per year for electrical end use energy efficiency technologies. For fossil fuel end use energy efficient technologies, the limit shall be 180 GWh thermal per year in fuel input, as per selected methodology	[Yes / No]	Ex-ante calculation of thermal energy savings from reduced fossil fuel consumption in water heaters within the CPA area.
iii. Ensure that project low-flow devices have a warranty of one year at a minimum for free replacement or repair of any failed low-flow devices with equivalent devices, and a warranty of ten years against any design defects.	[Yes / No]	Manufacturer's warranty
iv. Ensure that the project low-flow devices:		
a. Contain integral non-removable flow restrictors	[Yes / No]	Visual inspection of devices and manufacturer's specifications
b. Qualify as a water saving device through reference to applicable standards	[Yes / No]	Review of applicable standards
c. Provide a level of service equivalent to baseline devices. For low-flow showerheads equivalent level of service is defined as same functional comfort and cleaning performance;	[Yes / No]	Review of applicable standards
d. Are used to control the flow of heated water;	[Yes / No]	Visual inspection of devices
e. Are directly installed and tested to be functional at the time of installation; and	[Yes / No]	Visual inspection of devices at the time of installation, review of installation records
v. Demonstrate that it is in compliance with the CPA additionality demonstration in section E.5.2 of the SSC-PoA-DD by demonstrating that the individual savings per low-flow device do not exceed 5% of the applicable SSC thresholds.	[Yes / No]	Ex-ante calculation of energy savings at the household level.
vi. Have a project start date after validation start date (which is defined as the date in which the PoA-DD, generic	[Yes / No]	Date on installation records

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	SSC-CPA-DD, and specific SSC-CPA-DD is submitted to the UNFCCC for public comments).		
vii.	Provide adequate disposal and scrapping of removed water fixtures. The scrapping of the replaced equipment must be monitored and documented by an independent Party.	[Yes / No]	Installation and warehousing records. Recyclers shall provide a report or certificate of destruction/disposal of the baseline fixtures
viii.	Only include locations where water is heated exclusively by electricity or fossil fuels prior to the project start and for the duration of the crediting period. Locations where renewable energy sources (e.g. biomass, solar, geothermal) or non-renewable biomass are used for water heating purposes are not eligible. If during the crediting period, a location is found to switch to renewable energy sources or non-renewable biomass for water heating purposes, such location will be excluded from the CPA.	[Yes / No]	Installation records. Visual inspections of the targeted households.
Eligibility conditions to avoid double counting			
ix.	Be located at least one kilometre away from other registered CDM project activities that target the same type of activity (i.e. “Demand-side energy efficiency activities for installation of low-flow hot water savings devices”) and that are not part of this SSC-CDM-PoA.	[Yes / No]	CDM Project Database from UNFCCC website and project location from the SSC-CPA-DD
x.	Consist of households that are not part of other registered CDM project activities and that have been uniquely identified (1) physically through a program logo sticker to be placed in a visible location outside of the house and (2) electronically through a unique identification serial number assigned automatically through the electronic database created and managed by the CME for this purpose.	[Yes / No]	PoA Database. List of households included in the specific CPA. Physical verification of the households at the time of installation and/or verification.
xi.	Only install low-flow devices that are distinctly marked with the program logo through a high adherence sticker.	[Yes / No]	Project design. Visual inspection of the installed devices.
Other eligibility conditions			
xii.	The CPA proponent will affirm in the corresponding SSC-CPA-DD that funding from Annex I parties, if any, does not result in a diversion of official development assistance.	[Yes / No]	SSC-CPA-DD

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

>>

As per section A.4.3 of the SSC-PoA-DD, in order to assess and demonstrate additionality, the SSC CPA must demonstrate that the CPA exclusively targets households and that expected savings low-flow device do not exceed 5% of the applicable small-scale threshold as per EB 68 Annex 27 (“Guidelines on the demonstration of additionality of small-scale project activities”)

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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.

>>

The following table describes the sources of emissions from the project:

	Source	Gas	Included	Comment/Justification
Baseline	CO ₂ emissions from direct combustion of fossil fuels / electricity generation in fossil-fuel fired power plants used for heating water in the baseline scenario	CO ₂	Yes	Main source of emissions
		CH ₄	No	Assumed negligible
		N ₂ O	Yes	Assumed negligible
Project Activity	CO ₂ emissions from direct combustion of fossil fuels / electricity generation in fossil-fuel fired power plants used for heating water in the project activity	CO ₂	Yes	Main source of emissions
		CH ₄	No	Assumed negligible
		N ₂ O	No	Assumed negligible

As per selected methodology, the project boundary is the location of each installed low-flow device and the associated water heating system.

B.5. Emission reductions:

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

>>

Data / Parameter:	<i>EFF_{Default}</i>
Data unit:	%
Description:	Efficiency of the fossil fuel-based water heater
Source of data used:	AMS-II.M version 1
Value applied:	75%
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value as specified in AMS-II.M version 1
Any comment:	---

Data / Parameter:	<i>l_y</i>
Data unit:	%
Description:	<i>Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction.</i>

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Source of data used:	AMS-II.M version 1
Value applied:	10%
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value as specified in AMS-II.M version 1
Any comment:	---

Data / Parameter:	<i>EF_{CO₂,LPG}</i>
Data unit:	tCO ₂ /kJ
Description:	Emission factor for liquefied petroleum gas (LPG)
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2 Energy. Chapter 2, Table 2.2 Default emission factors for stationary combustion in the energy industries
Value applied:	0.000000063
Justification of the choice of data or description of measurement methods and procedures actually applied :	2006 IPCC default
Any comment:	In case reliable local or national data, or more recent IPCC values, are available by the inclusion of a CPA, those emission factors will be used for that CPA.

Data / Parameter:	<i>EF_{CO₂,ng}</i>
Data unit:	tCO ₂ /kJ
Description:	Emission factor for natural gas
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2 Energy. Chapter 2, Table 2.2 Default emission factors for stationary combustion in the energy industries
Value applied:	0.000000056
Justification of the choice of data or description of measurement methods and procedures actually applied :	2006 IPCC default
Any comment:	In case reliable local or national data, or more recent IPCC values, are available by the inclusion of a CPA, those emission factors will be used for that CPA.

Data / Parameter:	<i>C_p</i>
Data unit:	kJ / L ° C
Description:	Specific heat of water
Source of data used:	AMS-II.M version 1

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Value applied:	4.186
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value established in the applied methodology
Any comment:	---

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

Energy savings and emission reductions shall be calculated as follows:

(a) Calculation of energy savings

The following equations are used to determine energy savings per water saving device. These equations are used for each type of device (e.g., showerhead or faucet regulator):

$$ES_y = \Delta W_y * \Delta T * Cp \quad (1)$$

$$\Delta T = T_{out,measured} - T_{in,measured} \quad (2)$$

$$\Delta W_y = \frac{W_{BL,calculated} - W_{P,measured}}{Days_{monitoring}} * 365 \quad (3)$$

$$W_{BL,calculated} = FR_{BL,measured} * \frac{W_{p,measured}}{FR_{p,measured}} \quad (4)$$

Where:

y	Each year of the crediting period
ES_y	Energy savings in year y (MWh)
ΔW_y	Difference between annual heated water flow through project low-flow device and baseline device (litres per year)
ΔT	Annual average difference in water temperature between water entering the water heating unit used to heat water and the water exiting the low-flow device (°C)
$T_{out,measured}$	Annual average temperature of water exiting project low-flow device (per paragraph 15) (°C)
$T_{in,measured}$	Annual average temperature of water entering water heating device (per paragraph 15) (°C)

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C_p	Specific heat of water (4.186 kJ/litre)
$Days_{monitoring}$	Number of days during which the value of $W_{P,measured}$ is determined (per paragraph 15) (days)
$W_{BL,calculated}$	Calculated amount of heated water that would flow through the baseline faucet during the number of days equal to $Days_{monitoring}$ (litres)
$W_{P,measured}$	Measured amount of heated water that flows through the project low-flow device (per paragraph 15) during the number of days equal to $Days_{monitoring}$ (litres)
$FR_{BL,measured}$	Measured flow rate of baseline device (per paragraph 15) (litres/minute)
$FR_{P,measured}$	Measured flow rate of low-flow device (per paragraph 15) (litres/minute)

(b) Emission reductions for electric or fossil fuel water heater scenarios

Emission reductions are calculated with equation (5) or (6) below for water heated with electricity or for water heated with fossil fuel, respectively.

$$ER(e)_y = N_y * ES_y * EF_{CO_2,ELEC,y} / (1 - l_y) \quad (5)$$

$$ER(ff)_y = N_y * ES_y * 3,600,000 \frac{kJ}{MWh} * EF_{CO_2,FF} / EFF_{Default} \quad (6)$$

Where:

$ER(e)$ and $ER(ff)_y$	Emission reductions in year y in tCO ₂ . $ER(e)$ is for electric water heating and $ER(ff)$ is for fossil fuel water heating
N_y	Number of low-flow devices installed and operating in year y
$EF_{CO_2,ELEC,y}$	Emission factor in year y calculated in accordance with the provisions in AMS-I.D or AMS-I.F (tCO ₂ /MWh)
$EF_{CO_2,FF}$	Emission factor for fossil fuels (tCO ₂ /kJ)
l_y	Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable
$EFF_{Default}$	Efficiency of the fossil fuel-based water heater and equal to a fixed value of 0.75

Concerning $EF_{CO_2,ELEC,y}$ within equation (5): The emission factor will be calculated in a transparent and conservative manner for each SSC-CPA-DD that includes electric water heaters on an ex-post basis at SSC-CPA-DD inclusion. Doing so at SSC-CPA-DD inclusion benefits accuracy, as the timing and locations for SSC-CPAs will be determined in the future, and resource mix may change and CPAs may be located in different grids. Calculations will be based on determinations consistent with provisions of AMS-I.D (version 17) or AMS-I.F (version 2), such as in AMS-I.D paragraph 12(a), that include the use of the “Tool to calculate the Emission Factor for an electricity system.” At the time of inclusion of a

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SSC-CPA-DD that includes electric water heaters, the SSC-CPA-DD shall execute the stepwise approach with the then-valid applicable information related to the calculation of the grid emission factor.

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	XX,XXX	0	XX,XXX
Year B	0	XX,XXX	0	XX,XXX
Year C	0	XX,XXX	0	XX,XXX
Year ...	0	XX,XXX	0	XX,XXX

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

B.6.1. Description of the monitoring plan:

>>

The following parameters will be monitored:

Data / Parameter:	<i>FR_{BL} measured</i>
Data unit:	litres/minute
Description:	Measured flow rate of baseline device
Source of data to be used:	Direct flow measurements
Value of data applied for the purpose of calculating expected emission reductions in section B.5	To be determined by a complete census of the baseline water fixtures that will be replaced.
Description of measurement methods and procedures to be applied:	Measurement, using calibrated instrumentation, of flow rate of existing (baseline) device to be replaced by project low-flow device. Measurements will be taken with water control valves in full open positions. Measurements will be taken at the time of project installation. Parameter shall be determined once and remain fixed during the crediting period.
QA/QC procedures to be applied:	At least three measurements taken and average of three measurements will be used. Only calibrated instrumentation will be used.
Any comment:	---

Data / Parameter:	<i>FR_P measured</i>
Data unit:	litres/minute
Description:	Measured flow rate of project device
Source of data to be used:	Direct flow measurements
Value of data applied	To be determined by a complete census of the project water saving devices that

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for the purpose of calculating expected emission reductions in section B.5	will be installed.
Description of measurement methods and procedures to be applied:	Measurement, using calibrated instrumentation, of flow rate of existing (baseline) device to be replaced by project low-flow device. Measurements will be taken with water control valves in full open positions. Measurements will be taken at the time of project installation. Parameter shall be determined once and remain fixed during the crediting period.
QA/QC procedures to be applied:	At least three measurements taken and average of three measurements will be used. Only calibrated instrumentation will be used.
Any comment:	---

Data / Parameter:	$W_{P\ measured}$
Data unit:	Litres
Description:	Measured amount of water used by project device during the number of days equal to $Days_{\ monitoring}$
Source of data to be used:	Direct flow measurements over a statistically valid sample of the project water saving devices that will be installed.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Based on program data, university-level statistical academic advisory, and third-party reports.
Description of measurement methods and procedures to be applied:	For a statistically representative sample, measurement of water flowing through project low-flow device over a period of time equal to at least 60 days. Measurements will be taken for at least 30 days during summer season and 30 days during winter season and totalled for determining $W_{P\ measured}$. Measurements will be taken with calibrated totalizing flow meter installed inline to the water saving device supply line. Parameter shall be determined once and remain fixed during the crediting period.
QA/QC procedures to be applied:	Installation dates as well as the measured values will be signed off by the monitoring team as well as by the home resident.
Any comment:	---

Data / Parameter:	$T_{out\ measured}$
Data unit:	°C
Description:	Temperature of hot water
Source of data to be used:	Direct measurements
Value of data applied for the purpose of calculating expected emission reductions in section B.5	To be determined by a complete census of the project water saving devices that will be installed.
Description of	Measurement will be taking using calibrated instrumentation of the temperature

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measurement methods and procedures to be applied:	of the water exiting the project low-flow device. Measurements taken with water control valves in full open positions. Measurements will be taken at time of project installation. As per AMS-II.M version 1, the maximum temperature allowable is 40° C. Parameter shall be determined once and remain fixed during the crediting period.
QA/QC procedures to be applied:	At least three measurements will be taken and average of three measurements will be used. Only calibrated instrumentation will be used.
Any comment:	---

Data / Parameter:	$T_{in\ measured}$
Data unit:	°C
Description:	Temperature of cold water
Source of data to be used:	Direct measurements over a statistically valid sample of the project water saving devices that will be installed.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	Based on program data, university-level statistical academic advisory, and third-party reports.
Description of measurement methods and procedures to be applied:	<p>For a statistically representative sample, measurement will be done according to one of the three methods described in the methodology. The three methods are:</p> <ol style="list-style-type: none"> a) Measurement of temperature of cold water during different time periods during the year of project installation to ensure that seasonal and weather factors are included in the temperature data points obtained. Average value for year shall be calculated; b) Measurement of temperature of cold water during a time period when the water temperature is expected to be at an annual high temperature, such as during a hot season. This data point will be used as the annual value; c) Use of a scientifically validated study for the temperature of incoming cold water in residential systems in the project activity location. <p>Once the parameter has been determined, it will remain fixed during the crediting period. The method to be followed for the determination of the parameter will be defined and specified at the CPA level.</p>
QA/QC procedures to be applied:	Measurements will be cross-checked with reported weather temperature for the specific CPA location to make sure that the measured values are reasonable.
Any comment:	---

Data / Parameter:	$Days_{monitoring}$
Data unit:	Days
Description:	Number of days during which the value of $W_{p\ measured}$ is determined
Source of data to be used:	Sampling
Value of data applied for the purpose of	To be determined in each SSC-CPA-DD

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calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	Records will be kept of the installation date for each flow meter installed as well as for each measurement made.
QA/QC procedures to be applied:	Installation dates as well as the measured values will be signed off by the monitoring team as well as by the home resident.
Any comment:	---

Data / Parameter:	N_y
Data unit:	---
Description:	Number of low-flow devices installed and operating in year y
Source of data to be used:	Installation records
Value of data applied for the purpose of calculating expected emission reductions in section B.5	[To be determined in each SSC-CPA-DD]
Description of measurement methods and procedures to be applied:	The number of water saving devices installed and operating at each household will be registered in individual installation records. During monitoring phase a statistically valid sample of the households will be surveyed to verify installation and operation.
QA/QC procedures to be applied:	---
Any comment:	---

Data / Parameter:	$EF_{CO_2 ELEC y}$
Data unit:	tCO ₂ /MWh
Description:	Emission factor in year y for the grid serving the locations where the devices are installed
Source of data to be used:	Official data published by the Federal Electricity Commission (Comision Federal de Electricidad, CFE) and/or Secretariat of Energy (Secretaria de Energia, SENER)
Value of data applied for the purpose of calculating expected emission reductions in section B.5	To be calculated in a transparent and conservative manner for each SSC-CPA-DD ex-post at the time of inclusion based on determinations consistent with provisions of AMS-I.D (version 17) or AMS-I.F (version 2), such as in AMS-I.D paragraph 12(a), which include the use of the “Tool to calculate the Emission Factor for an electricity system.”
Description of measurement methods and procedures to be applied:	AMS-II.M version 1 specifies that the emissions factor is to be calculated in accordance with the provisions in AMS-I.D or AMS-I.F, both of which provide for use of the “Tool to calculate the Emission Factor for an electricity system”. Calculations will be based on determinations consistent these provisions. At the time of inclusion of a SSC-CPA-DD that includes electric water heaters, the

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	SSC-CPA-DD shall execute the stepwise approach with the then-valid applicable information related to the calculation of the grid emission factor.
QA/QC procedures to be applied:	---
Any comment:	The emission factor will be calculated on an ex-post basis at SSC-CPA-DD inclusion. Doing so at SSC-CPA-DD inclusion benefits accuracy, as the timing and locations for CPAs will be determined in the future, and resource mix may change and SSC-CPAs may be located in different grids. Therefore, while the stepwise approach is established, the calculations are performed ex-post at SSC-CPA-DD inclusion.

Data / Parameter:	PDQ _y
Data unit:	-
Description:	In year y, proportion of low-flow water-saving devices of each type (showerheads and faucet regulators) with the original project marking (logo) that remain operational in households where fossil fuels or electricity continue to be used as the only energy source for water-heating.
Source of data to be used:	Direct inspection of a sample of the low-flow devices installed and the related water-heaters.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	100%
Description of measurement methods and procedures to be applied:	For a statistically representative sample, a site visit will be conducted in order to determine whether the low-flow water-saving devices remain operational during the monitoring period y. Only those devices that keep the original project marking and which are located in households that heat water using exclusively fossil fuels or electricity will be counted.
QA/QC procedures to be applied:	---
Any comment:	---

Data / Parameter:	Regulatory requirements relating to domestic water efficiency
Data unit:	-
Description:	National regulatory requirements relating to domestic water efficiency in the country of Mexico
Source of data to be used:	Publicly available information of Mexico's regulatory requirements relating to domestic water efficiency
Value of data applied for the purpose of calculating expected emission reductions in section B.5	---
Description of measurement methods	Baseline: As of the time of project validation no new regulatory requirements relating to domestic water efficiency projects have entered into force. Changes in

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and procedures to be applied:	the current status for regulatory requirements relating to use of water saving devices in existing households will be monitored every year and used for adjustments in the project at CPA Inclusion.
QA/QC procedures to be applied:	---
Any comment:	---

Sampling Plan

The objective of the sampling plan is to determine all baseline parameters required by the methodology as well as to perform annual inspections during the crediting period on the following:

- a. Use of fossil fuels or electricity: Confirmation that only fossil fuel or electricity continues to be used to heat the domestic water used for showers in the project households.
- b. Proportion of systems operating: Emission reductions will only be claimed for project low-flow devices that are demonstrated to be in place and operational. This demonstration will be performed through inspection of a statistically valid sample of the project households on an annual basis.

Target Population and Sampling Frame

The overall target population consists of the low-flow water-saving devices distributed and installed as a result of this CPA. The low-flow water-saving devices to be sampled will be drawn from the list of household unique numbers (contained in the PoA Database and in the form completed during the installation phase). Each low-flow water-saving device is assigned to a household and each household is assigned to a unique identification number in the PoA Database. Therefore, under this CPA, the target population and the sampling frame are identical and as per the sampling procedure described below, each and every household (and the devices installed in such household) will have the same probability of being selected during the sampling process.

Sample Method

A simple random sample approach will be followed making sure that a 95% confidence interval and a 5% margin error requirements are met as per the “Standard for sampling and surveys for CDM project activities and programme of activities” Version 2.0. The simple random sample approach is considered appropriate given the fact that the homogeneity of the population within the sampling frame of a given CPA is expected to be sufficiently high. In cases where more than one CPA gets implemented within the same bioclimatic region, the CME may use a cross-CPA sampling approach for a group of CPAs that cover households located in the same bioclimatic region.

To ensure a random selection, random number generators will be used. Each household in the target population is uniquely identifiable by its given ID number. Each household can thus be allocated a Sample Selection Number in each monitoring period, starting at 1 and increasing up to the total number of households in the Database for that pre-defined sampling frame. Applying the random number generators, the households can then be randomly chosen from the defined population up to the required sample size as calculated by the CME.

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Sample Size

As per paragraph 11 of the “Standard for sampling and surveys for CDM project activities and programme of activities”, the sample size will be estimated using appropriate online software (such as <http://www.surveysystem.com/sscalc.htm>) for a 95% confidence level and 5% margin of error. More households will be selected for sampling than is required by the sample size, to ensure that if there are any households that are unable to be reached the required accuracy is still achieved. The size of the buffer will be driven by the required sample size but is expected to range between 10 and 20% above the estimated sample size.

This specific CPA covers a population of [xxxxxx] households and therefore the sample size is equal to [xxxxxx] households. Each household based on program data under taken by the CME, university-level statistical academic advisory, and third-party reports is assumed to have the following water devices: 1 showerhead, 1 faucet and 1 kitchen sink, hence the sample size of each water device will be [xxxxxx]. Since only the parameters $W_{P,measured}$ and $T_{in,measured}$ (both represent mean values used directly in the emission reduction calculation) will be determined on a statistically valid sampling basis, the CME has calculated the sample size based number of each water devices included in $W_{P,measured}$ given that this parameter has a larger variance than $T_{in,measured}$, and therefore it leads to a larger number for the sample size.⁶ The target value for $W_{P,measured}$ for a showerhead is [xxxxxx] litres per day, $W_{P,measured}$ for a faucet is [xxxxxx] litres per day, and $W_{P,measured}$ for a kitchen sink is [xxxxxx] litres per day, assuming [xxxxxx] persons per household and average water fixture utilization times. The CME will stop monitoring a particular parameter once the required level of confidence/precision and expected variance has been reached, as long as the calculated minimum number of samples for each water device has been achieved.

In order to adjust for potential no-responses, the sample size estimated will be increased by 20%. Therefore, the number of households that will be randomly selected to undertake baseline and periodic inspections is equal to [xxxxxx].

Procedures for Administering Data Collection and Minimizing Non-Sampling Errors

The Cambio Azul PoA will utilize specialized document processing services that will help streamline project monitoring processes so as to collect and capture data on almost “real time” basis.

The installation teams will complete data sheets that will be digitally received, reviewed, and captured into a data base system updated daily.

The process for data capturing will be performed via specialized Imaging Services (or equivalent services by a reputable third party specialized in data managing) which consist of data mining from a census structured format (Cambio Azul’s Field Data Sheet), using recognition technologies of characters and marks:

- (a) Optical Mark Recognition (OMR) – interpreting structured marks and;
- (b) Intelligent Character Recognition (ICR) – interpreting handwriting

⁶ As per paragraph 9 of EB65 Annex 2: “either the largest number for the sample size is chosen for the sampling effort with one common survey or the sampling effort and survey is repeated for each of the parameters.”

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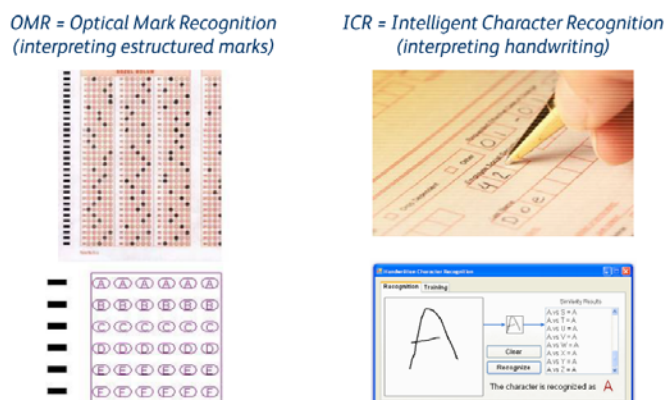
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The process involves scanning, recognition (OMR + ICR), indexation, transformation into compatible data file, quality control and release.



For ICR, the capturing procedure involves a second processing step through which the non-coincidences of data can be detected.

Moreover, given that OMR and ICR have different confidence levels, the data services provider will undertake a manual quality assurance / quality control process in order to assess the accuracy of the “non-mark” parameters. This manual review will increase the confidence level of ICR up to 95% (similar to the confidence level achieved through the use of OCR technologies). Therefore, the entirety of data captured from the field data sheet will be captured with a confidence level of at least 95% with a 5% margin of error.

Parameters that require data capture in handwriting by the installers will be minimized. To a practical extent, parameters related to the physical address of each household will be pre-defined by Cambio Azul by having Field Data Sheets pre-printed with the individual information for households in those areas that qualify as a CPA. Manual capture of addresses will be used only in cases where pre-definition of the individual addresses (after checking with the records of neighbourhood committees) are not deemed complete/reliable enough to identify households.

It should be noted that the quality assurance / quality control for the data mining process undertaken by the Imaging Services provider will be implemented according to the Military Standard 105E which is homologous to the international standards ANSI/ASQC Z1.4, BS 6001, ISO 2859, and UNE 66020.

Installation activities will be accompanied by a thorough quality control and monitoring program to ensure that baseline parameters are adequately recorded and to verify correct performance of the project devices.

During the pilot program Cambio Azul created a data base management system based on the expected algorithms applicable under the Gold Standard and CDM applicable methodologies. By integrating smart data capture with an automatic database and methodology calculations the overall quality control of data

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monitoring and emission reduction calculation is improved, non-sampling errors are reduced and the data is kept secured, well organized and thoroughly verifiable. The physical documents will also be available for inspection, if required, by the DOE.

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:

>>

In accordance with the CDM-SSC-CPA-DD form, this section is not completed since this information is provided at the PoA level.

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:

>>

In accordance with the CDM-SSC-CPA-DD form, this section is not completed since this information is provided at the PoA level.

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:

>>

In accordance with the CDM-SSC-CPA-DD form, this section is not completed since this information is provided at the PoA level.

D.3. Summary of the comments received:

>>

In accordance with the CDM-SSC-CPA-DD form, this section is not completed since this information is provided at the PoA level.

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

>>

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In accordance with the CDM-SSC-CPA-DD form, this section is not completed since this information is provided at the PoA level.

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Annex 1

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

Organization:	[To be completed in each SSC-CPA-DD]
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION
