CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAMME OF ACTIVITIES DESIGN DOCUMENT FORM
(CDM-SSC-PoA-DD) Version 01

CONTENTS

Annexes

NOTE:

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

(ii) At the time of requesting registration this form must be accompanied by a CDM-SSC-CPA-DD form that has been specified for the proposed PoA, as well as by one completed CDM-SSC-CPA-DD (using a real case).

SECTION A. General description of small-scale programme of activities (PoA)

A.1 Title of the small-scale programme of activities (PoA):

>>
Title: Mexico Water, Energy, & Emissions Efficiency Residential Program
Version: 2.4
Date: January 29, 2013

A.2. Description of the small-scale programme of activities (PoA):

>> The following information shall be included here:

1. General operating and implementing framework of PoA

Although in recent years Mexico's population growth rate has slowed down, the country still faces a marked increase in urban concentration. Estimates by the Mexican National Water Commission (Comision Nacional del Agua, CONAGUA) show that by 2030 approximately 81% of the total population will live in urban centers. It is expected that 70% of the total population growth will occur within administrative watershed regions (VIII Lerma-Santiago-Pacífico, XIII Aguas del Valle de México, VI Río Bravo y I Península de Baja California) with high to very high stress levels (runoff less than 1,700 m^3/capita/year).

Administrative watershed regions	Allocated water resources (millions of m^3)	Renewable water resources (millions of m^3)	Stress Level (%)	Stress Level Classification
I Península de Baja California	3 420	4 667	73.3	High
II Noroeste	7 703	8 499	90.6	High
III Pacífico Norte	10 411	25 630	40.6	High
IV Balsas	10 704	21 680	49.4	High
V Pacífico Sur	1 363 32	824	4.2	Low
VI Río Bravo	9 243	12 163	76.0	High
VII Cuencas Centrales del Norte	3 846	7 898	48.7	High
VIII Lerma-Santiago-Pacífico	14 479	34 533	41.9	High
IX Golfo Norte	4 854	25 564	19.0	Moderate
X Golfo Centro	4 973	95 866	5.2	Low
XI Frontera Sur	2 203	157 754	1.4	Low
XII Península de Yucatán	2 731	29 645	9.2	Low
XIII Aguas del Valle de México	4 658	3 513	132.6	Very high
Total nacional	**80 587**	**460 237**	**17.5**	**Moderate**

Table 1 – Stress levels in administrative watershed regions of Mexico[1]

Water resources are mostly overexploited in the northern and central parts of the country. In some of these regions water supplies will drop below 1,000 m^3/capita/year by 2030, which is defined as "water scarcity", meaning there will not be enough water to meet all demands, including that needed for ecosystems to function effectively. The unsustainable use of water in these water scarce areas is a constraint to economic growth and competitiveness.

[1] *'Mexico's Water Statistics 2011'.* Source: CONAGUA

Figure 1 – Stress levels in administrative watershed regions of Mexico[2]

For historical and political reasons, Mexico is a very centralized country in spite of efforts made by the government in recent years to move towards decentralization. Consequently, government services and industrial development have concentrated in the Mexico City metropolitan region. Forty-five per cent of the country's industrial activity and 38 per cent of its gross national product are located here[3]. Groundwater overexploitation threatens the sustainability of Mexico's economic and social development.

In recent years the Mexico City metropolitan region has faced a continued rise in energy prices along with severe water scarcity problems. Due to its high population density (5,960 inhabitants/km^2), the city has depleted its local aquifers and it is largely dependent on external sources of water, facing a number of challenges on water and sewage management such as depleting aquifers, flooding, poor water quality, inefficient water use and a low share of wastewater treatment[4,5].

Households across Mexico have an average daily water consumption of 220 litres per capita[6], 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

[2] *National information system on quantity, quality, utilization and conservation of water (Sistema nacional de información sobre cantidad, calidad, usos y conservación del agua, SINA)*

[3] *'Mexico City's water supply - Improving the Outlook for Sustainability'*. Source: The Joint Academies Committee on the Mexico City Water Supply, Commission on Geosciences, Environment, and Resources, National Research Council, Academia Nacional de la Investigacion Cientifica, A.C., Academia Nacional de Ingenieria, A.C.

[4] *'Mexico, Mexico City: water scarcity could cause "spiral of violence", human rights commission warns'*. Source: IRC International Water and Sanitation Centre.

[5] *'Millions without water in Mexico City'*. Source: BBC News

[6] *'Manual de Incremento de Eficiencia Física, Hidráulica y Energética en Sistemas de Agua Potable'*. Source: CONAGUA, 2010

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.

The Cambio Azul Mexico Water, Energy, & Emissions Efficiency Residential Program of Activities (Cambio Azul PoA) will support local communities by improving the efficiency of hot water utilization through free distribution and installation of water saving devices. The Cambio Azul PoA will thus achieve significant carbon emissions reductions from avoided fossil fuel combustion in water heaters and related to electric water heaters, and reduce domestic water footprint in urban areas vulnerable to water shortages.

2. *Policy/measure or stated goal of the PoA*

The Cambio Azul PoA consists of distribution and direct installation of water saving devices in a group of existing households (in general, eligible households include any residential building such as individual homes, apartment complexes, etc) where water is heated via fossil fuel-fired and/or electric water heaters. Therefore, by increasing efficiency in domestic utilization of hot water substantial energy savings can be achieved.

Project water saving devices will include low-flow showerheads and faucet regulators, which effectively reduce hot water dispensed from targeted water fixtures (shower, bathroom and kitchen sinks) without reducing the level of service to the users. The Cambio Azul PoA will utilize CDM revenue to distribute and install these devices at zero cost to household residents, thus attaining significant environmental benefits and promoting sustainable development.

Environmental Benefits
The Cambio Azul PoA provides 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 the Cambio Azul PoA will bring several positive impacts to the livelihood of the target population. 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 generated[7].

Gender equality

The Cambio Azul PoA will support gender equality and firmly aims to provide work opportunities for women. As such, when feasible Cambio Azul plans to assign installation, measuring and monitoring activities primarily to women enrolled in the Mujeres Plomeras program[8].

"Mujeres Plomeras" (Spanish for "lady plumbers") – is a program initiated by government agencies that provides training to women so that they learn plumbing skills and access more job opportunities. Cambio Azul will favor contracting lady plumbers, who will improve their plumbing skills by participating in specialized monitoring and, to enhance their safety, will work in 2-person teams. As many as 500 lady plumbers could be employed during deployment phase.

3. *Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity.*

The Coordinating and Managing Entity (CME), Camino Sabio Azul S. de R.L. de C.V. (Cambio Azul). As a private company incorporated under Mexican laws, Cambio Azul is developing this PoA on a voluntary basis. There are currently no laws or regulations that mandate the installation of water saving devices by the CME, government agencies or individual households in Mexico.

The stated goal of distributing and directly installing water saving devices at no cost to household residents does not mean that the projects under this PoA must be exclusively developed and owned by the CME. Any project activity in line with the eligibility conditions could be included in the proposed PoA.

A.3. Coordinating/managing entity and participants of SSC-POA:

>> The following information shall be included here:

1. *Coordinating or managing entity of the PoA as the entity which communicates with the Board*

The Coordinating and Managing Entity (CME) is Camino Sabio Azul S. de R.L. de C.V. (Cambio Azul). As such, Cambio Azul is responsible for the development of this project operationally and administratively, with wide range of decision-making functions and responsibilities, to assure the optimal implementation and monitoring of the programme. Moreover, the CME will be responsible for identification and inclusion of additional CPAs throughout the CDM project cycle from the early stages until the end of the crediting period.

2. *Project participants being registered in relation to the PoA. Project participants may or may not be involved in one of the CPAs related to the PoA.*

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

[8] Overview of the Mujeres Plomeras Program (In Spanish)

Name of Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
Mexico (host and Coordinating Entity)	Camino Sabio Azul S. de R.L. de C.V. (Cambio Azul)	No

A.4. Technical description of the small-scale programme of activities:

A.4.1. Location of the programme of activities:

A.4.1.1. Host Party(ies):

>>
The host party for the Cambio Azul PoA is Mexico.

A.4.1.2. Physical/ Geographical boundary:

>> Definition of the boundary for the PoA in terms of a geographical area (e.g., municipality, region within a country, country or several countries) within which all small-scale CDM programme activities (SSC-CPAs) included in the PoA will be implemented, taking into consideration the requirement that all applicable national and/or sectoral policies and regulations of each host country within that chosen boundary;

The boundary for the Cambio Azul PoA is the country of Mexico, a federal constitutional republic located in North America. It borders to the North with the United States; to the South and West by the Pacific Ocean; to the Southeast by Guatemala, Belize, and the Caribbean Sea; and to the East by the Gulf of Mexico. It covers almost 2 million square kilometres, with an estimated population of over 112 million. The country is delimited by the following coordinates:

- South: 14° 32′ 27′′ N at the estuary of the Suchiate river, boarder with Guatemala.
- North: 32° 43′ 06′′ N at the Monument 206, in the border with the United States of America.
- East: 86° 42′ 36′′ W, at the southeast boarder of Mujeres Island.
- West: 118° 22′ 00′′ W, at the Elephant Rock of Guadalupe Island in the Pacific Ocean.

Mexico is a federation comprised of thirty-one states and a Federal District, its capital city, commonly known as Mexico City. It is expected that the Cambio Azul PoA will largely take place in densely populated urban centers, such as the Mexico City metropolitan region.

Figure 2 – Map of Mexico

The Mexico City metropolitan region is one of the most populated urban areas in the world. It is located in the Valley of Mexico, within the south-central region of Mexico, and has a minimum altitude of 2,200 meters above sea level. The city is surrounded by mountains and volcanoes that reach elevations of over 5,000 meters; these geographical conditions cause the Mexico City region to be enclosed within a basin with no natural outflow to the sea or rivers. Mexico City itself consists of sixteen boroughs ("*delegaciones*", in Spanish) that constitute second-level administrative divisions, on par with municipalities.

Figure 3 – Administrative divisions of Mexico City (*delegaciones*)

A.4.2. Description of a typical small-scale CDM programme activity (CPA):

>>

All SSC-CPAs under the Cambio Azul PoA will consist of a group of existing households (in general, eligible households include any residential building such as individual homes, apartment complexes, etc) located within the host country of Mexico. The PoA will particularly target older, high-density housing apartment complexes (locally known as "unidades habitacionales") which share the following characteristics:

- Targeted population lives in social housing[9] complexes located in urban areas.
- The higher population density of housing complexes favours installation and monitoring economies of scale. In addition, older apartment buildings commonly use less efficient water fixtures, which translate to a bigger impact on the baseline emissions.
- Each housing complex has its own committee which facilitates promotion activities and access to important dwelling data and overall program facilitation.

All households within a CPA must heat water through the use of fossil fuels or electricity. Households where hot water is obtained partially or in full through the use of solar water heaters (or other renewable energy sources) will not be included in the CPA.

Classification of individual water consumption by household income and climate regions

CONAGUA has determined average individual water consumption values classified by income category and local ambient temperature. Since the temperature of water in the supply network can be influenced by ambient temperature, generally CPAs will be defined as groups of households that are within the same climate region.

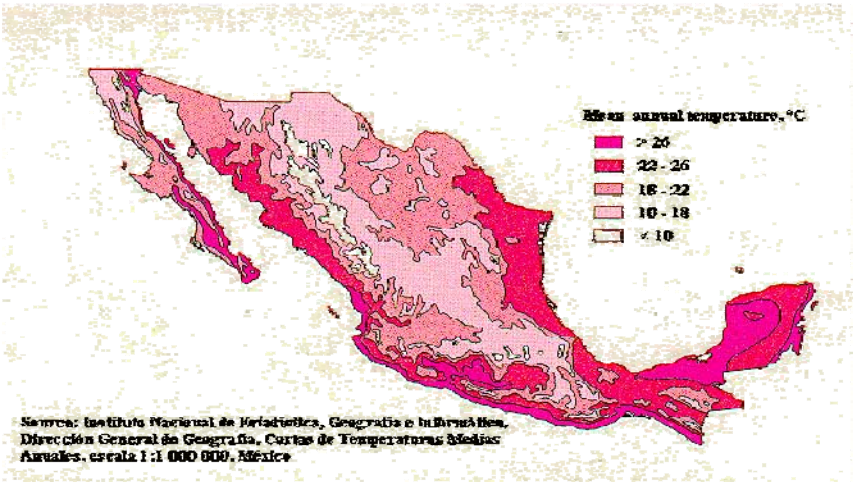


Figure 4 – Mean annual temperature of Mexico[10]

[9] (In Spanish: vivienda de interes social). In this context, social housing encompasses any type of (existing) residential building which has been developed or purchased with funding from government housing institutions such as INFONAVIT, FOVI, FOVISSTE etc. Typically, social housing in Mexico lacks basic energy saving features as it faces significant cost-restraints during development to meet federal budget and mortgage limit requirements.

[10] *National Institute of Statistic and Geography (Instituto Nacional de Estadística y Geografía, INEGI) (accessed via http://www.fao.org/ag/AGP/AGPC/doc/Counprof/Mexico/Mexico.htm). Further information is provided in Annex II.*

According to the local mean temperature, CONAGUA defined the following climate regions:

Mean annual temperature (°Celsius)	Climate region
> 22	Hot
18 – 22	Semi-hot
< 18	Temperate

Table 2 – Climate regions [11]

Climate region	Individual water consumption per household income level (litres/capita/day)		
	High	Medium	Low
Hot	400	230	185
Semi – hot	300	205	130
Temperate (includes semi-temperate and cold)	250	195	100

Table 3 - Individual water consumption per household income level

The initial CPAs are expected to be implemented in groups of existing households across several social housing residential neighbourhoods in the Mexico City metropolitan region, which is located within a single temperate region.

A.4.2.1. Technology or measures to be employed by the SSC-CPA:

>>

The PoA described in this document uses the approved methodology AMS II.M version 01 "Demand-side energy efficiency activities for installation of low-flow hot water savings devices" (as clarified), which falls in the type II Energy Efficiency, sectoral scope 3 Energy Demand.

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. The project devices, which contain integral non-removable flow restrictions, include one efficient showerheads 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 must comply with applicable standards for water efficiency as well as the other requirements listed in AMS II.M.

[11] *'Manual de Incremento de Eficiencia Física, Hidráulica y Energética en Sistemas de Agua Potable'*. Source: CONAGUA, 2010

A.4.2.2. Eligibility criteria for inclusion of a SSC-CPA in the PoA:

>> Here only a description of criteria for enrolling the CPA shall be described, the criteria for demonstrating additionality of CPA shall be described in section E.5

As the CME, Cambio Azul will verify eligibility conditions before allowing a SSC-CPA to be included under the SSC-PoA. Any individual project shall comply with the following criteria in order to be included in the proposed PoA. A CPA shall:

	Eligibility criteria	Means of Verification
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.	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.	Ex-ante calculation of 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.	Manufacturer's warranty
iv.	Ensure that the project low-flow devices:	
a.	Contain integral non-removable flow restrictors	Visual inspection of devices and manufacturer's specifications
b.	Qualify as a water saving device through reference to applicable standards	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;	Review of applicable standards
d.	Are used to control the flow of heated water;	Visual inspection of devices
e.	Are directly installed and tested to be functional at the time of installation; and	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 energy savings per low-flow device do not exceed 5% of the applicable SSC thresholds.	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 SSC-CPA-DD, and specific SSC-CPA-DD is submitted to the UNFCCC for public comments).	Date on installation records
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.	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.	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	CDM Project Database from UNFCCC website and project

	efficiency activities for installation of low-flow hot water savings devices") and that are not part of this SSC-CDM-PoA.	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.	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.	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.	SSC-CPA-DD

A.4.3. Description of how the anthropogenic emissions of GHG by sources are reduced by a SSC-CPA below those that would have occurred in the absence of the registered PoA (assessment and demonstration of additionality):

>> The following shall be demonstrated here:

(i) The proposed PoA is a voluntary coordinated action;

The idea started in 2009 and the project team has since pursued access to carbon finance in order to start implementation. Cambio Azul is a private company incorporated with the sole purpose of coordinating this PoA. In Mexico there are no obligations for private entities to execute these type of projects, therefore this is an entirely voluntary action.

(ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA;

The distribution and installation of water saving devices in households at zero cost to household residents is an entirely voluntary action which would not have been implemented in the absence of the PoA, as demonstrated by the following timeline of events in table below:

Date	Event	Comments
October, 2009	First Report on Baseline, Energy Savings and CO_2 emissions per household by Repowering & Retrofitting Solutions Group S.A. de C.V. (Contracted by ITR).	Analysis of the variables and calculations utilized in estimating carbon emission reductions, including water consumption, water heater efficiency, fuel type and water fixtures. This study served as basis for the monitoring performed during the pilot program.
October, 2009	Second Report on Comparison between methodologies developed by Gold Standard and Batelle by Repowering & Retrofitting Solutions Group S.A. de C.V. (Contracted by ITR).	Review and comparison of emission reduction methodologies by Batelle Laboratories and the Gold Standard.

Date	Event	Comments
October - December 2009	Pilot program in Mexico City.	This pilot program focused on monitoring key baseline parameters such as water flow, water utilization time, water temperatures, type of water heaters and volumetric emissions from water heaters.
November, 2009	Third Report on Comfort Temperature, Tank Type Water Heaters and Water flow by Repowering & Retrofitting Solutions Group S.A. de C.V. (Contracted by ITR).	Performance analysis of tank type water heaters.
2009 - 2010	Agreements ("Convenios") with government agencies of Mexico City, and CONAGUA and INFONAVIT.	These agreement state the intention of government agencies to collaborate with private efforts to install water saving devices with the objective of saving energy and carbon emissions. Initial efforts were conceived as a program to be developed under the voluntary carbon market.
October 2009 - January 2010	First discussions with carbon consultants to develop a project under the voluntary carbon market.	Negotiations for developing a project under the voluntary carbon markets.
January, 2010	Final Report on Losses Factors in Domestic Water Heaters Repowering & Retrofitting Solutions Group S.A. de C.V. (Contracted by ITR).	Analysis of losses in thermal and combustion efficiency of domestic water heaters due to different factors.
March 22, 2010	Submission date for a request for revision of the *"Indicative Program, Baseline and Monitoring Methodology for Large Scale Supply and Distribution of Efficient Light Bulbs, Showerheads and Other Water Saving Products to Households"* to the Gold Standard TAC team.	
June 30, 2010	Invitations to local stakeholder consultation.	Date invitations were sent to relevant stakeholders.
July 15, 2010	Stakeholder consultation held in Chapultepec from 9:30 to 11:30.	Stakeholders were also able to send comments in writing to Mexico City's Secretary of Environment and via email.
August 26, 2010	Approval of methodology revision by the Gold Standard TAC team.	Approval of the requested methodology revision to expand eligibility for domestic water heaters that use fossil fuels.
August – September, 2010	Cambio Azul started considering a new program under the CDM instead of the voluntary Gold Standard.	Analysis of the voluntary carbon markets (GS Registry) showed that the VER market would not accommodate the expected VER issuance of planned VER project.

Date	Event	Comments
September 22, 2010	Clarification request on AMS II.C *"Demand-side energy efficiency activities for specific technologies"* is sent to the CDM Small Scale Working Group.	A clarification on the eligibility of water saving devices under AMS II.C was sent. This was followed by numerous oral and written communications with members of the SSC WG, and two addition clarification requests.
December 4, 2011	Letter to UNFCCC Secretariat Ms. Christiana Figueres.	A letter was sent to Ms. Christiana Figueres requesting her assistance in expediting the meth revision process at the CDM EB.
April, 2011	Agreement with National Water Commission (CONAGUA) to develop the project on a countrywide basis.	This agreement states the intention of CONAGUA to collaborate with Cambio Azul in order to install water saving devices with the objective of saving energy and reducing greenhouse gas emissions.
January - June 2011	CDM methodology development.	Discussions between Cambio Azul and the SSC WG eventually led to the development of a new baseline and monitoring methodology which was developed in joint effort.
July, 2011	Approval of AMS-II.M: "*Demand-side energy efficiency activities for installation of low-flow hot water savings devices (version 1.0)*".	CDM methodology for water saving devices was approved by the CDM EB during EB meeting #62.
July, 2011	Decision to implement a program under the CDM PoA procedures.	Decision to implement a program under the CDM PoA procedures using the AMS-II.M.

Additionality demonstration of the PoA

As per EB 68 Annex 27 ("Guidelines on the demonstration of additionality of small-scale project activities"), project activities that are solely composed of isolated units where the users of the technology/measure are households and where the size of each unit is no larger than 5% of the small-scale thresholds are deemed automatically additional and do not need to document any barrier. Given that the proposed PoA targets energy savings at individual households, and that the aggregate energy savings at the household level are expected in the range of 3.15 MWh thermal (well below 5% of the applicable SSC threshold equivalent to 3,000 MWh or 9,000 MWh thermal per year), the program is deemed automatically additional. Each individual CPA is expected to demonstrate additionality through:

- Demonstrating that the CPA targets individual households only
- Demonstrating (through the ex-ante estimation of emission reductions) that a typical low-flow device will reduce no more than 9,000 MWh thermal per year or 3,000 MWh electrical.

In addition to this, the additionality of the program is supported by the existence of an investment barrier. The investment barrier arises from the fact that water-saving devices are to be installed at zero cost. Therefore, the implementation of the program does not generate any revenue to the project proponent (except for the carbon-related revenue) while involving numerous costs (material, logistics, monitoring, installation, etc.). A detailed demonstration of an investment barrier is provided below ***for illustrative purposes only***.

Investment barrier[12]

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Step 1a: Define alternatives to the project activity:

The probable scenarios include:

a. Continuation of the current practice: use of inefficient water fixtures that lead to GHG emissions from water heaters (baseline scenario).
b. Installation of water saving devices by household residents at their expense.
c. Project activity carried out by the Mexican government.
d. The proposed project activity undertaken without being registered as a CDM project activity.

Outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity

- **Scenario (b)** (i.e. purchase and installation of water saving devices by household residents) is not considered realistic under the current socio-economic context of Mexico and in light of the highly subsided costs of water and energy, which do not encourage the adoption of more efficient technologies. As an illustration, in Mexico City, water gets subsidies[13] of up to 91% of the real cost in low-income neighbourhoods and up to 60% in high-income areas. Similarly LPG, the most common fuel used in Mexico to heat water, is heavily subsidized[14] by the state-owned oil company PEMEX[15] and retailed at a price capped by the ministry of energy[16]. A study conducted by the World Bank found that the use of LPG represents only 1% of the total household expenditure, due partly to the applied subsidies and low prices, and explaining the high penetration of LPG in Mexican households (estimated in 80%)[17]. In addition to the distortions caused by the aforementioned subsidies, there are also cultural barriers that difficult the adoption of energy efficient technologies at the household level. An example of this is the "Luz Sustentable" program that intends to replace incandescent light bulbs with compact fluorescent lamps (CFLs) in Mexican households. As extensively documented by local newspapers[18,19], despite the fact that CFLs are distributed for free, there is low interest in the locations where these programs are being implemented to adopt more efficient technologies. Therefore, the combination of price distortions, subsidies and

[12] EB 35 Annex 34 'Non-binding best practice examples to demonstrate additionality for SSC project activities' states that: "Best practice examples include but are not limited to, the application of investment comparison analysis using a relevant financial indicator, application of a benchmark analysis or a simple cost analysis (where CDM is the only revenue stream such as end-use energy efficiency)".

[13] http://www.finanzas.df.gob.mx/codigo/LIBRO_PRIMERO_2012.pdf

[14] http://www.oecd.org/economy/economicsurveysandcountrysurveillance/47875549.pdf

[15] http://www.gas.pemex.com/PGPB/Productos+y+servicios/Gas+licuado/Mercado+gas+LP/

[16] http://www.sener.gob.mx/webSener/portal/Default.aspx?id=1530

[17] http://siteresources.worldbank.org/INTOGMC/Resources/Unedited_LPG_report_Dec_2011.pdf

[18] http://ciudadanosenred.com.mx/delegacion/desdena-milpa-alta-lamparas-gratuitas

[19] http://rumbodemexico.mx/index.php/diariodf/falla-milpa-alta-en-su-meta-de-repartir-lamparas-ahorradoras-21810.html

cultural barriers, make it unlikely that the target households would purchase and install water-saving devices at their own expense[20].

- **Scenario (c)** i.e. distribution of water saving devices on a national level by the government is also unrealistic due mainly to (1) the lack of funds and (2) the institutional complexity involved in undertaking a countrywide water-saving programme considering the high level of fragmentation of water management in the country which causes misalignment of incentives. The National Water Commission (CONAGUA) is the only institution with a countrywide scope and is also the institution responsible for designing and implementing policies at the federal level that promote the sustainable use of water[21]. However, the retail distribution of water at the household level, the collection of water fees, and the design and implementation of subsidies is in charge of local and municipal water utilities and not in charge of CONAGUA. Therefore, the benefits of avoiding subsidies (which would represent the main reason to implement a countrywide water saving program) would not be realized directly by CONAGUA increasing the difficulty in harvesting the economic benefits of implementing a nationwide program.
- **Scenario (d)** i.e. the implementation of the project activity (distribution and installation of water saving devices at zero cost) could not be implemented in the absence of CDM since carbon credits are the only revenue stream available to the project proponent.

Thus, the only plausible alternative scenario for the proposed project activity consists of the continuation of the baseline situation (scenario a).

Step 1b: Consistency with mandatory laws and regulations

There are no mandatory laws enforcing the use of water saving devices in households.

Outcome of Step 1b: List of plausible alternative scenarios to the project activity.
Scenario (a) continuation of the current practice: use of inefficient water fixtures that lead to GHG emissions from water heaters (baseline scenario). Furthermore, the proposed emissions reduction project is not mandated by any enforced law, statute, or other regulatory framework applicable in the host country of Mexico.

Step 2: Investment Analysis

Sub-step 2b: Option I. Apply simple cost analysis
Document the costs associated with the CDM project activity and the alternatives identified in Step 1 and demonstrate that there is at least one alternative which is less costly than the project activity.

i) Costs associated with the CDM project activity
Water saving devices distributed through the Cambio Azul PoA will be provided and installed free of charge[22] to household residents. Therefore, there are no financial or economic benefits to the project

[20] Regardless of the prior resident deployment rate, deployments under the Cambio Azul PoA will not double count water savings, because every installation will be measured for before and after water flows and carbon savings calculated only for the incremental benefits

[21] http://www.diputados.gob.mx/LeyesBiblio/pdf/16.pdf

[22] For clarification, 'free of charge' means that household residents will not bear any cost or fees related to the technology or installation and will not incur in any financial disbursement related to the project activity, neither at

proponent derived from the distribution and installation of the water-saving devices. However, the implementation of the proposed project activity entails numerous costs including, among others:

a) The cost of the water-saving devices to be installed in the target households
b) The logistic costs involved in the distribution of the water saving devices
c) The costs of installation of the water saving devices
d) The cots involved in the scrapping of the replaced devices
e) The costs involved in the monitoring of the water and energy savings.
f) Administrative and overhead costs

Each CPA is expected to face different costs depending on the specific location and size of that specific CPA. For illustrative purposes only, the following unitary costs are provided[23]:

Item	Value	Source
Water-saving kit	80 MXN / kit	Quotation from technology provider
Flow totalizers	730 MXN / kit	Quotation from technology provider
Installation Costs	1420 MXN / installer / week	Quotation from staff management company in charge of installation
Data management	0.80 USD / form	Quotation from data management company

Table 4. Input values for simple cost analysis

ii) Costs associated with the alternatives identified in Step 1

As discussed in Step 1, the only alternative scenario identified is the continuation of the current scenario (i.e. the continued use of inefficient water devices). The identified alternative scenario does not involve any additional cost for the project proponent as no water-saving devices would be installed under this scenario.

Outcome of Sub-step 2b:

Given that the proposed CDM project activity involves a series of costs (material, logistic, installation, monitoring, administrative, overhead, etc.) and the alternative scenario does not involve any additional cost, it can be concluded that the proposed CDM project activity is more costly than the remaining alternative scenario (scenario a), therefore demonstrating the existence of an investment barrier.

Cambio Azul will check that each SSC CPA included in the Cambio Azul PoA provides and installs water saving devices at zero cost as the key eligibility criteria for inclusion.

(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;

The Cambio Azul PoA is a private initiative and it is not implementing a mandatory policy/regulation.

---

the time of installation or during the monitoring phase. Cambio Azul will not pay bear any costs or fees related to water, fuel, or energy consumption.

[23] It must be noted that each CPA is expected to face different costs depending on the number of households included in that particular CPA, the specific location, and the specific technology being distributed. However, given the fact that a key eligibility criterion is the fact that the low-flow devices are distributed for free, all CPAs will be additional as per the demonstration included in this section.

(iv) If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.

The Cambio Azul PoA is a private initiative and it is not implementing a mandatory policy/regulation.

A.4.4. Operational, management and monitoring plan for the programme of activities (PoA):

A.4.4.1. Operational and management plan:

>> Description of the operational and management arrangements established by the coordinating/managing entity for the implementation of the PoA, including:

(i) A record keeping system for each CPA under the PoA.

Records for each CPA will include:

- Geographic coordinates for each CPA
- Complete address information for each household within the CPA
- Name and signature by the head of each household
- Number of inhabitants per household
- Type of water heater and fossil fuel (if applicable) for each household
- Date and time of installation of water saving devices
- Measurements conducted at the time of installation (flow rate of baseline and project devices, cold water temperature, hot water temperature)

Cambio Azul will be responsible for recording baseline and monitoring data as per requirements in the selected methodology. These data will be captured and stored in an electronic database created by Cambio Azul. The documents will also be available for physical inspection if required by the DOE.

(ii) A system/procedure to avoid double accounting, e.g., to avoid the case of including a new CPA that has been already registered either as a CDM project activity or as a CPA of another PoA.

The CME will ensure that each CPA is clearly identified through the use of geographic coordinates and mapping tools. Any risk of double counting is avoided by collecting individual address information of each household within a CPA, which will be assessed against other registered SSC-PoAs or CDM project activities. Only households that are not listed in other CDM or voluntary water saving project activities will be included within a CPA under the Cambio Azul PoA.

(iii) The SSC-CPA included in the PoA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity.

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 CPA is considered as being not a de-bundled component of a large- scale activity.

(iv) The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA;

Cambio Azul will take the following provisions to ensure households within each CPA are aware and agree to the activity implemented by the PoA:

- An awareness campaign will be made within the targeted CPA area prior to the installation of the water saving devices. This campaign will inform the household residents about the program and the impacts on water, energy and emissions either through ads, leaflets or presentations. Local area associations and committees will be contacted to facilitate communications with the household residents.
- During the installation phase the head of the household will receive a follow up explanation about the program's objectives, will sign a form confirming installation of the water saving devices and their consent for the household to participate in the program of activities.

A.4.4.2. Monitoring plan:

Due to the large number of water-saving devices envisaged to be distributed as part of the SSC CPAs to be included in the PoA, it is not economically feasible to monitor each individual water-saving device distributed. Therefore, representative sampling will be undertaken as part of a Sampling Plan that is designed in line with the requirements of AMS II.M Version 1.0 and the "Standard for sampling and surveys for CDM project activities and programme of activities" Version 2.0 (the Sampling Standard). The Sampling Standard (paragraph 19 and footnote 13) allows for sampling separately and independently for each CPA, or across a group of CPAs provided 95/10 confidence/precision is applied and the homogeneity of population can be demonstrated or differences are taken into account in the sample size calculation. The methodology requires 90/10 confidence/precision if annual sampling is followed. In order to improve the accuracy in the estimation of emission reductions, the CME has decided to follow a sampling plan such that 95/5 confidence/precision is achieved. Therefore, the sampling plan to be implemented exceeds both, the requirements of the Sampling Standard and the requirements established in the applicable methodology.

SAMPLING PLAN

Objective

The objective of the sampling plan is to determine all baseline parameters required by the methodology as well as to perform required inspections for crediting periods 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.

Baseline information to be collected for a sample of the population

As per paragraph 15 of the applied methodology AMS-II.M Ver. 1.0, the following parameters shall be determined once and remain fixed during the crediting period. All but three of the parameters shall be determined by a complete census of the households where baseline devices are replaced with project low-flow devices. The parameter $EF_{CO2,FF}$ shall be determined at CPA inclusion by reliable local or national data if available, or IPCC default values[24]. Only the parameters $W_{P,measured}$ and $T_{in,measured}$ shall be determined on a sampling basis. Although the methodology requires a 90% confidence interval and 10% margin of error, the sample shall be selected so that a 95% confidence interval and 5% margin of error is achieved for determining the average value of each parameter.

Parameter name	Parameter definition	Measurement method
$FR_{BL,measured}$	Measured flow rate of baseline device (*litres/minute*)	Measurement, using calibrated instrumentation, of flow rate of existing (baseline) device to be replaced by project low-flow device. Measurements taken with water control valve(s) in full open position(s). At least three measurements taken and average of three measurements is used. Measurements taken at the time of project installation.
$FR_{P,measured}$	Measured flow rate of project device (litres/minute)	Measurement, using calibrated instrumentation, of flow rate of installed low-flow device. Measurements taken with water control valve(s) in full open position(s). At least three measurements taken and average of three measurements is used. Measurements taken at time of project installation.
$W_{P,measured}$	Measured amount of water used by project device during the number of days equal to $Days_{monitoring}$ (litres)	Measurement of water flowing through project low-flow device over a period of time equal to at least 60 days. Measurements are taken for at least 30 days during summer season and 30 days during winter season and totalled for determining WP measured. Measurements are taken with calibrated totalizing flow meter installed in-line to the appropriate water supply line (shower, bathroom faucet, kitchen faucet).
$T_{out,measured}$	Temperature of hot water	Measurement using calibrated instrumentation of the temperature of the water exiting the project low-flow device. Measurements taken with water control valve(s) in full open position(s). At least three measurements taken and average of three measurements is used. Measurements taken at time of project installation. The maximum temperature allowable is 40° C.
$T_{in,measured}$	Temperature of cold water	Measurement will be done according to one of the three methods described in the methodology. The three methods are:

[24] At present, there is no reliable local or national data, so most recent IPCC default values would apply (IPCC 2006).

		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 The method to be followed for the determination of the parameter will be defined and specified at the CPA level.
$EF_{CO2,FF}$	Emission factor for fossil fuels (tCO_2/kJ)	Reliable local or national data for the emission factor shall be used; IPCC default values should be used only when country or project specific data are not available or difficult to obtain

Ongoing monitoring to be conducted for a sample of the population

As per paragraph 16 of the applicable methodology AMS-II.M Version 1.0, in any given year, emission reductions can only be claimed for project low-flow devices that are demonstrated to be in place and operational during the crediting period via an inspection of a sample of the low-flow devices that were installed during the installation period. The methodology establishes that only project low-flow devices with an original project marking shall be counted as installed and that only fossil fuel or electricity continues to be used to heat the domestic water used for showers in the project residences. Also, the methodology allows for project low-flow devices that are replaced as part of a regular maintenance or warranty program to be counted as operating. However, project low-flow devices cannot be replaced as part of the survey process and be counted as operating. The methodology requires that when annual inspection is chosen a 90% confidence interval and 10% margin of error is to be achieved for the sampling parameter(s). In this case, the CME has decided to follow a sampling and monitoring framework in order to achieve a 95% confidence interval and 5% margin for determining the proportion of devices for which emission reductions can be claimed as per the requirements of the methodology. Therefore, the following parameters are to be determined:

Parameter name	Parameter definition	Measurement method
PDQ_y	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 either fossil fuels	Direct inspection of a sample of the low-flow devices installed and the related water-heaters.

	or electricity continue to be used as the only energy source for water-heating.	

Target Population and Sampling Frame

The overall target population consists of the low-flow water-saving devices distributed and installed as a result of the CPAs implemented under the PoA. 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 PoA, 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.

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 an 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 any households 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. The CME will stop monitoring a particular parameter once the required level of confidence/precision has been reached, as long as the calculated minimum number of samples has been achieved.

Data management

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. 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 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.

Quality assurance / Quality Control (QA/QC)

The potential for non-responses, refusals and related issues will be considered by the CME during sample selection. If the sampling results are insufficient to achieve the target reliability levels, the CME has a number of options to address this. By selecting a larger than necessary sample size before commencing monitoring, the CME can help ensure that an adequate number of responses are obtained during sampling. If it is necessary to engage third parties for carrying out field measurements, the CME will ensure that any such third parties are credible, experienced adequately trained for the tasks they are contracted for. Training will also be provided to the parties carrying out the actual field measurements (e.g., Lady Plumbers) on how to deal with non-responses etc.

Cambio Azul has integrated a number of controls in the data management process as part of the QA/QC procedures, which include:

- Data will be captured using a census-type structured document (Cambio Azul's Field Data Sheet). The document will include as much pre-printed information as possible (e.g., household address) in order to minimize human errors.
- The document will be completed, reviewed and signed off by two lady plumbers, a field supervisor and the resident.
- The data capture process will be performed via specialized Imaging Services (or equivalent services by a reputable third party specialized in data management) which performs data-mining following the Military Standard 105E (homologous to the international standards ANSI/ASQC Z1.4, BS 6001, ISO 2859, and UNE 66020) in order to guarantee a 95% confidence level and a 5% error margin.

A.4.5. Public funding of the programme of activities (PoA):

>>
The Cambio Azul PoA is not a recipient of any public funding or Official Development Assistance (ODA).

SECTION B. Duration of the programme of activities (PoA)

B.1. Starting date of the programme of activities (PoA):

>>
30/11/2012

The starting date of the PoA corresponds to the expected date of registration by the CDM Executive Board.

B.2. Length of the programme of activities (PoA):

>>

28 years, 0 months (fixed)

SECTION C. Environmental Analysis

>>

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:

1. Environmental Analysis is done at PoA level ☒
2. Environmental Analysis is done at SSC-CPA level ☐

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

>>

An environmental impact assessment is not required by the Secretary of Environment and Natural Resources (SEMARNAT) for the installation of water saving devices. Since the project technology is installed inside individual households, Cambio Azul must obtain written consent of each household resident, thus guaranteeing that access for installation and monitoring is allowed and that project devices are accepted voluntarily.

There are no expected negative environmental impacts during distribution and installation of the project devices. During the operation phase, the project will generate multiple environmental and social benefits are household and regional levels.

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

>>

No environmental impact assessment is required for typical CPAs.

SECTION D. Stakeholders' comments

>>

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

1. Local stakeholder consultation is done at PoA level ☒
2. Local stakeholder consultation is done at SSC-CPA level ☐

Given that the program is highly homogeneous, and the division across CPA is only made for CDM purposes, comments have been invited at the PoA level. A description of the local stakeholder consultation process is included in Section D.2 of this document.

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

>>

Two local stakeholder meetings were conducted in 2010. The meetings took place in Mexico City given that the Mexico City metropolitan region is home to the majority of the population expected to be covered under the PoA and to all of the relevant government institutions.

The first stakeholder meeting, co-organized by the government of Mexico City, took place on July 15, 2010. Invitations were sent by the CME and Mexico City's government officials. During the meeting, in which 44 attendees including NGO and government officials participated, the general concept of the program was presented along with a demonstration of the technology originally selected for the programme. Also, an exercise was conducted in order to identify the potential negative impacts and positive contributions of the program from the sustainability standpoint. Comments were invited during the stakeholder meeting in oral and written form (through a survey) and after the meeting via email. All 28 inputs received from the participants were assessed and taken into account.

A second stakeholder meeting took place on October 29, 2010 having a participation of over 160 attendees, most of them home residents and committee members from several housing complexes. The consultation followed the same procedure described in the previous paragraph. 161 inputs were received, analysed and taken into account.

Electronic and hard copies of the invitations, list of participants and each of the inputs received are available for inspection by the DOE.

D.3. Summary of the comments received:

>>

A vast majority of the comments received were highly positive. A summary of the positive and negative input received is included below:

Summary of Main Positive Comments:

- The LSC meeting is good.
- Good for water savings & the environment.
- Project saves water.
- Project helps the environment.
- Project helps save money & family economics.
- Free to the household residents.
- Helps low income household residents.
- Project provides jobs for "Lady Plumbers".
- Project is in areas of large populations.
- The warranty on the water saving products is good.

List of Negative Comments:
(Including unrelated and politicized comments from some participants)

- The project needs more publicity.
- Solar water heaters are not being given to the household residents.
- There is no collection of rainwater.
- There is no recycling of the plastic.
- The project may not get done.
- The company is not a Mexican company.
- The water provided to the homes is not clean.
- The water does not have chlorine.
- The showerheads are made outside of Mexico.
- Foreign products are of lesser quality.
- The project is not offered to all citizens in the city.

- Only one showerhead & bathroom per house will be adapted.
- The SACM (Water Systems of Mexico City) is bad.
- The projects implementation is slow.
- The project needs more publicity.
- The water saving devices cannot be purchased cheaply by the general public.
- There are problems with the SACM and their billing.
- It has taken too long to have this project.
- Water is very expensive.
- Need maintenance information on the water saving devices.
- The toilet is not included.
- People use potable water for the plants in the common areas in the complexes.
- Is my complex included in the project?
- More information on the project needed in order to promote it.
- Need a list of the locations for these installations.
- There is negativity from some of the people attending this meeting.
- Need more services from the government.
- The location of this meeting is too small.

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

>>

Given that a program was originally designed for Mexico City, some of the participants expressed their concern regarding the geographical limitations of the program. Based on this input, a program has been designed that applies to a countrywide level.

Solar water heaters are not being given to the household residents.
Response: We do not have the financial resources to be able to do this. The local and federal government has programs where solar water heaters are being included in new homes.

There is no collection of rainwater.
Response: We do not have the financial resources to be able to do this. There may be some local programs where the city assists the apartment complexes in implementing this.

There is no recycling of the plastic.
Response: All plastics which are able to be recycled will be processed and separated and passed on for recycling. Those plastics which are not recyclable will be properly disposed of in regulated landfills as per all applicable laws.

A project may not get done.
Response: A project will commence in the near future when the required financing is obtained by the projects developers (all private sector companies).

The company is not a Mexican company.
Response: The project management and implementation company and its local sub-contractors and service providers in Mexico will all be Mexican companies. We are in contact with a Mexican manufacturer of the water saving devices and will most likely use their very efficient and high quality products for these projects.

The water provided to the homes is not clean. / The water does not have chlorine.

Response: These are issues that should be taken up with the Mexico City Water Systems Department, (SACM).

The showerheads are made outside of Mexico. / Foreign products are of lesser quality.
Response: We are considering Mexican manufacturers of "Ecological Grade" showerheads & flow regulators for the bathroom & kitchen sinks, and these are of high quality and with good warrantees.
Note: Based on these concerns, the CME decided to change the devices to a technology designed and manufactured locally.

The project is not offered to all citizens in the city.
Response: The project originally developed was to be implemented in Mexico City and targeted lower income public housing complexes where it is very difficult for these residents to purchase water-saving devices on their own. These water savings devices and others are available at local hardware stores and on the internet for the general public.

Only one showerhead & bathroom per house will be adapted.
Response: If a household has additional bathrooms, they also will be upgraded with water saving devices.

The SACM (Water Systems of Mexico City) is bad. / We have problems with the SACM and their billing. / Water is very expensive.
Response: These are issues that should be taken up with the Mexico City Water Systems Department, (SACM).

The projects implementation is slow. / It has taken too long to have this project.
Response: The project will commence when the required financing is obtained.

The project needs more publicity. / More information on the project needed in order to promote it.
Response: The Mexico City Secretariat of the Environment, The Water Systems Department of Mexico City (SACM) and the Mexico City Social Services department (PROSOC) will design flyers and information sheets for distribution to the participating household residents. The project will be promoted on the Mexico City government's internet web sites & call-in shows, by the governments of the 15 participating "Delegaciones" (boroughs) and by the neighbourhood committees in the participating complexes. Additionally, the project will be promoted and advertised via the Lady Plumbers and supervisor company prior to the dates of the installations in the participating complexes.

The water saving devices cannot be purchased cheaply by the general public.
Response: The water savings devices are available at local hardware stores and on the internet at retail prices. Due to the volume of the items to be purchased for this project, the project will obtain discounted pricing.

Need maintenance information on the water saving devices.
Response: The manufacturer will include written detailed maintenance instructions with each water saving device and these will be given to the household residents at the time of installation in the home.

The toilet is not included.
Response: The methodology does not cover water saving devices for the toilets. There are numerous brochures offered by the Water Systems Department of Mexico City (SACM) which provide information on how to use water more efficiently in the home. We will give the household residents literature on saving water at the time of installation.

People use potable water for the plants in the common areas in the complexes.
Response: This should be brought to the attention of the neighbourhood committees in the housing complex. There are numerous brochures offered by the Water Systems Department of Mexico City (SACM) and the Social Services Department (PROSOC) which provide information on how to use water more efficiently in the homes and in the housing complexes.

Is my complex included in the project homes? / Need a list of the locations for these installations.
Response: The initial homes are from lists provided by the Mexico City Government (PROSOC & SMA). The ultimate goal for the project is much larger, and as the project expands additional lists of homes will be prepared.

There is negativity from some of the people attending this meeting.
Response: This LSC meeting is for all concerned citizens to come and participate, learn about the project and offer any constructive suggestions regarding the project.

Need more services from the government.
Response: These requests should be taken to the Mexico City Government's departments. For housing issues, the proper department would be PROSOC.

The location of this meeting is too small.
Response: This location was arranged & provided by the Mexico City Government and is centrally located in this city to allow people from the 16 Delegaciones to attend this LSC meeting. We have an additional 100+ seats available if more people would have shown up.

SECTION E. Application of a baseline and monitoring methodology

This section shall demonstrate the application of the baseline and monitoring methodology to a typical SSC-CPA. The information defines the PoA specific elements that shall be included in preparing the PoA specific form used to define and include a SSC-CPA in this PoA (PoA specific CDM-SSC-CPA-DD).

E.1. Title and reference of the approved SSC baseline and monitoring methodology applied to a SSC-CPA included in the PoA:

>>
NOTE: The approved SSC baseline and monitoring methodology should be approved for use in a PoA by the Board.

The Cambio Azul PoA applies the following approved CDM methodology:

AMS-II.M. *"Demand-side energy efficiency activities for installation of low-flow hot water savings devices, version 1.0"*

E.2. Justification of the choice of the methodology and why it is applicable to a SSC-CPA:

>>
NOTE: In the case of CPAs which individually do not exceed the SSC threshold, SSC methodologies may be used once they have first been reviewed and, as needed, revised to account for leakage in the context of a SSC-CPA.

The Cambio Azul Poa conforms to the applicability condition of the selected CDM methodology as demonstrated in table below:

Applicability Condition	Project Compliance	Reference
This methodology comprises activities for direct installation of low-flow hot water savings devices that are used in residential buildings. These devices may include low-flow devices used for personal bathing (i.e. low-flow showerheads), kitchen faucets, and/or bathroom faucets and are collectively referred to in this methodology as low-flow devices. Such low-flow devices are to permanently replace baseline faucets.	The Cambio Azul PoA will install low-flow hot water saving devices in existing residential buildings within the country of Mexico. Water saving devices include low-flow showerheads and faucet regulators for the kitchen and bathroom faucets.	See sample technical specifications of water saving devices.
The low-flow devices must contain integral, non-removable flow restrictions. Removable, flow restriction inserts are not included as an allowable technology under this methodology.	None of the technologies distributed under this PoA will contain removable flow restrictions. Water saving devices installed by Cambio Azul are designed to prevent tampering and remain integral through the crediting period.[25]	See sample technical specifications of water saving devices.
Only retrofit projects are allowable, new construction (Greenfield) projects are not included under this methodology. The baseline is the continued use of existing showerheads and faucets.	The Cambio Azul PoA will only take place in existing, inhabited housing where inefficient fixtures are installed and operating. Project devices will directly replace these existing fixtures. No water saving devices will be installed in new housing.	Records of the geographic coordinates of each CPA as well as detailed address information of project households will be kept by the CME.
The aggregate energy savings by a single project may not exceed the equivalent of 60 GWh per year for electrical end use energy efficiency technologies. For fossil fuel end use energy efficient technologies, the limit is 180 GWh thermal per year in fuel input.	CPA size will be determined to not exceed the SSC threshold.	See sample calculation spreadsheet.
Project low-flow devices shall have a minimum of a one-year warranty.	Project devices will have a minimum one year-warranty that shall cover free replacement or repair of any failed low-flow devices with equivalent devices	See sample technical specifications of water saving devices.
The project proponent shall ensure that the project low-flow devices: a. Qualify as a water saving device through reference to applicable standards	Project devices must have documentation demonstrating qualification through reference to applicable standards.	See sample technical specifications of water saving devices. See example applicable standard.

[25] On February 21st 2012, the project participant Cambio Azul submitted a Request for Clarification to the CDM Small Scale Working group. The purpose of this submission was to clarify the range of technology categories eligible under selected methodology AMS-II.M version 01. As per the response in the 36th Meeting Report, the SSC WG agreed to clarify that the methodology covers the installation of faucet regulators that contain integral, non-removal flow restrictions. The 36th Meeting Report from the SSC WG can be accessed here: http://cdm.unfccc.int/Panels/ssc_wg/meetings/036/ssc_036_report.pdf

Applicability Condition	Project Compliance	Reference
b. Provide an equivalent level of service to baseline devices. For low-flow showerheads equivalent level of service is defined as same functional comfort and cleaning performance;	Project devices have comfort and performance ratings that are equivalent and/or superior to baseline devices.	See sample technical specifications of water saving devices.
c. Are used to control the flow of heated water;	Project devices will allow users to control the flow of hot water.	See sample technical specifications of water saving devices.
d. Are directly installed and tested to be functional at the time of installation; and	Cambio Azul will deploy trained teams to directly install project devices. Team members are required to fill out field data sheets with QA/QC remarks on the functioning parameters of the device. Field supervisors will also conduct QA/QC checks to ensure devices are being correctly installed.	Field data sheets.
e. Are marked for clear unique identification for the project activity	Project devices will have a clear mark for identification.	Pictures of the project devices.
At all locations where low-flow devices are installed, water shall be 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.	Trained team members will record the type of water heaters at each household in the field data sheets during installation. Households where water is heated via renewable energy sources will not be included in the CPA.	Field data sheets.

E.3. Description of the sources and gases included in the SSC-CPA boundary

>>

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_2O	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_2O	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. For the project activity, the boundary includes water saving devices installed within the country of Mexico.

E.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

>>
As per the selected CDM methodology, the baseline is the continued use of existing showerheads and faucets.

E.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the SSC-CPA being included as registered PoA (assessment and demonstration of additionality of SSC-CPA): >>

E.5.1. Assessment and demonstration of additionality for a typical SSC-CPA:

>> Here the PPs shall demonstrate, using the procedure provided in the baseline and monitoring methodology applied, additionality of a typical CPA.

As per section A.4.3, in order to assess and demonstrate additionality, SSC CPAs will follow the "Guidelines on the demonstration of additionality of Small-Scale Project Activities" (EB 68, Annex 27). A SSC CPA will be deemed automatically additional provided that:

a) The CPA exclusively involves the installation of water-saving devices in individual households.
b) The energy savings expected per low-flow device remains below 5% of the applicable SSC threshold (i.e. below 9,000 MWh thermal per year or 3,000 MWh electrical).

E.5.2. Key criteria and data for assessing additionality of a SSC-CPA:

>> Here the PPs shall provide the key criteria for assessing additionality of a CPA when proposed to be included in the registered PoA. The criteria shall be based on additionality assessment undertaken in E.5.1 above. The project participants shall justify the choice of criteria based on analysis in above section. It shall be demonstrated how these criteria would be applied to assess the additionality of a typical CPA at the time of inclusion.

NOTE: Information provided here shall be incorporated into the PoA specific CDM-SSC-CPA-DD that shall be included in documentation submitted by project participants at registration of PoA.

As per the "Guidelines on the demonstration of additionality of Small-Scale Project Activities" (EB 68, Annex 27), a SSC CPA will be deemed automatically additional provided that:

a) The CPA exclusively involves the installation of water-saving devices in individual households.
b) The energy savings expected per low-flow device remains below 5% of the applicable SSC threshold (i.e. below 9,000 MWh per year or 3,000 MWh electrical).

E.6. Estimation of Emission reductions of a CPA:

E.6.1. Explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical SSC-CPA:

>>

Each SSC CPA under the Cambio Azul PoA will use the approved CDM methodology AMS-II.M "Demand-side energy efficiency activities for installation of low-flow hot water savings devices" (version 01). This methodology is entirely applicable to the proposed project activity and target fixtures and includes baseline scenarios for both fossil fuel-fired and electric water heaters.

Emission reductions are calculated as the energy savings associated with a reduction in the amount of water that requires heating, which result from the project implementation, multiplied by an emission factor for the electricity or fossil fuel displaced.[26]

This methodology requires measurements of a statistically valid sample of baseline device and project water saving devices to calculate annual energy savings per device. This value for energy savings per device is multiplied by the emissions factor of the displaced electricity or fossil fuel and by the number of efficient devices installed as part of the project activity and demonstrated to be operating in each crediting period year.

E.6.2. Equations, including fixed parametric values, to be used for calculation of emission reductions of a SSC-CPA:

>>

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, bathroom faucet, and kitchen faucets)

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

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

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

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

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)

[26] As detailed later herein, to be eligible a SSC-CPA that includes electric water heaters must execute the prescribed stepwise approach related to the calculation of the grid emission factor.

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)
Cp	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.

$$ER(e)_y = N_y * ES_y * EF_{CO2,ELEC,y} / (1 - l_Y) \quad \textbf{(5)}$$

$$ER(ff)_y = N_y * ES_y * 3{,}600{,}000 \frac{kJ}{MWh} * EF_{CO2,FF} / EFF_{Default} \quad \textbf{(6)}$$

Where:

$ER(e)$ and $y\ ER(ff)$	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
$EF_{CO2\ ELEC\ y}$	Emission factor in year y calculated in accordance with the provisions in AMS-I.D or AMS-I.F (tCO_2/MWh)
$EF_{CO2\ FF}$	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 $EF_{CO2\ ELEC\ y}$ within equation (5): The emission factor will be calculated in a transparent and conservative manner for each SSC-CPA that includes electric water heaters on an ex-post basis at SSC-CPA inclusion. Doing so at SSC-CPA 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 SSC-CPA that includes electric water heaters, the SSC-CPA shall execute the stepwise approach with the then-valid applicable information related to the calculation of the grid emission factor.

E.6.3. Data and parameters that are to be reported in CDM-SSC-CPA-DD form:

Data / Parameter:	$EFF_{Default}$
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:	l_Y
Data unit:	%
Description:	*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.*
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:	$EF_{CO2,LPG}$
Data unit:	tCO_2/kJ
Description:	Emission factor for liquefied petroleum gas (LGP)
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	2006 IPCC default

applied :	
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:	$EF_{CO2,ng}$
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:	*Cp*
Data unit:	kJ / L º C
Description:	Specific heat of water
Source of data used:	AMS-II.M version 1
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:	---

E.7. Application of the monitoring methodology and description of the monitoring plan:

E.7.1. Data and parameters to be monitored by each CPA:

Data / Parameter:	$FR_{BL\ measured}$
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	---
Description of	Measurement, using calibrated instrumentation, of flow rate of existing (baseline)

measurement methods and procedures to be applied:	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:	$FR_{P\ measured}$
Data unit:	litres/minute
Description:	Measured flow rate of project 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	---
Description of measurement methods and procedures to be applied:	Measurement, using calibrated instrumentation, of flow rate of installed low-flow device. Measurements will be taken with water control valves in full open positions. Measurements will be taken at 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
Value of data applied for the purpose of calculating expected emission reductions in section B.5	---
Description of measurement methods and procedures to be applied:	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. Once determined parameter will 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	---
Description of measurement methods and procedures to be applied:	Measurement will be taking using calibrated instrumentation of the temperature of the water exiting the project low-flow device. Measurements taken with water control valves in full open positions. At least three measurements will be taken and average of three measurements will be used. Measurements will be taken at time of project installation. As per AMS-II.M version 1, the maximum temperature allowable is 40° C. Once determined parameter will 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 or reference from a scientifically validated source.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	---
Description of measurement methods and procedures to be applied:	Measurement will be done according to one of the three methods described in the methodology. The three methods are: 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. 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.
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 and conservative.
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 calculating expected emission reductions in section B.5	---
Description of measurement methods and procedures to be applied:	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 "General guidelines for sampling and surveys for SSC project activities".
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	---
Description of measurement methods and procedures to be applied:	The number of water saving devices installed 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.
QA/QC procedures to be applied:	---
Any comment:	---

Data / Parameter:	$EF_{CO2\ ELEC\ y}$
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 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	AMS-II.M version 1 specifies that the emissions factor is to be calculated in

measurement methods and procedures to be applied:	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 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.
QA/QC procedures to be applied:	---
Any comment:	The emission factor will be calculated on an ex-post basis at SSC-CPA inclusion. Doing so at SSC-CPA 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 CPA 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 and procedures to be	Baseline: As of the time of project validation no new regulatory requirements relating to domestic water efficiency projects have entered into force. Changes in the current status for regulatory requirements relating to use of water saving

applied:	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:	---

E.7.2. Description of the monitoring plan for a SSC-CPA:

>>

The purpose of the monitoring plan will be to determine all parameters required by the methodology as well as perform annual inspections during the crediting period in order to verify that the project devices remain installed and operational, and that the project household water-heaters continue to use only fossil fuel or electricity. A detailed management and operational plan containing details on the monitoring of the PoA will be made available during validation. The plan contains the following elements:

1. Management structure and responsibilities

As mentioned in section A.4.3, the CME, Cambio Azul will perform the following tasks related to monitoring and sampling:

- Determine the SSC CPA boundary to ensure that emission reductions are less than SSC thresholds.
- Confirm that household details are correctly entered into the database with their unique identification number.
- Select random, statistically valid sample of households.
- Execute the sampling plan.

2. Data Management

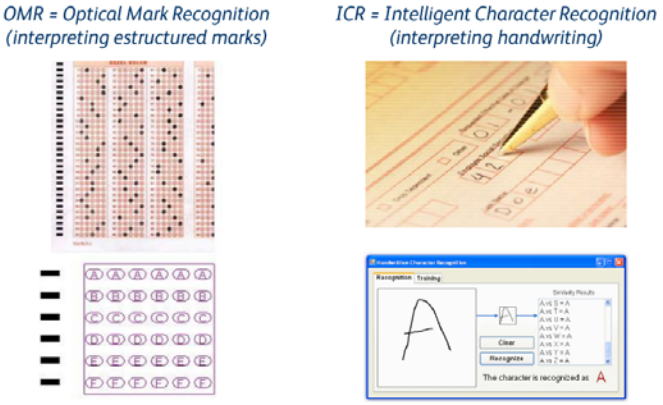
The Cambio Azul PoA will utilize specialized document processing services that will help streamline project monitoring processes so as to collect and capture data on almost "real time" basis.

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

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 methodology. This has been modified for CDM approved methodology AMS-II.M version 01 to calculate carbon credits under each SSC CPA included in the national PoA. By integrating smart data capture, as outlined above, with an automatic data base and methodology calculations the overall quality control of data monitoring and emission reduction calculation is improved, non-sampling errors are reduced and the data is kept well organized and thoroughly verifiable. The physical documents will also be available for inspection, if required, by the DOE.

3. Data Quality Assurance and Control

Qualified personnel will be assigned for overall project management, operation, monitoring and reporting as required by the project activity. Personnel will report to a competent supervisor experienced in GHG emissions reporting who will define protocols and procedures for data management including data collection, data entry and data backup.

As per the methodology, when annual household inspections are used, a 95% confidence interval and 5% margin of error shall be achieved for the sampling parameters.

3. Training and monitoring personnel

Cambio Azul will ensure that information and training material is available to personnel involved in the monitoring process as required by the PoA, including eventual SSC CPA developers other than the CME if required.

4. Calculation of Emission Reductions

Cambio Azul will be responsible for calculation GHG emission reductions from each SSC CPA under this national PoA through the use of a database management system which utilizes the equation from approved methodology AMS-II.M. The monitoring supervisor will conduct crosschecks to ensure accuracy and completeness of data captured by periodically comparing field sampling sheets with information entered into the database.

5. Verification and Monitoring Results

The monitoring report for each SSC CPA under the Cambio Azul Poa will be prepared by the CME. The CME will keep track of each SSC CPA status (included, pending or rejected) as well as the verification status.

E.8 Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)

>>

Application of the baseline and monitoring methodology was conducted by:
Carbonding Climate Community S. de R. L. de C.V.

Contact:

Mr. Alberto Carrillo
a.carrillo@carbonding.com

Mr. Fernando Villasana
f.villasana@carbonding.com

Annex 1

CONTACT INFORMATION ON COORDINATING/MANAGING ENTITY and PARTICIPANTS IN THE PROGRAMME of ACTIVITIES

Organization:	Camino Sabio Azul S. de R.L. de C.V. (Cambio Azul)
Street/P.O.Box:	Nuevo León 202, Piso 8 Col. Hipódromo Condesa
Building:	
City:	México D.F.
State/Region:	
Postfix/ZIP:	06100
Country:	Mexico
Telephone:	001 281 830 8144
FAX:	001 832 201 7496
E-Mail:	gmaher@cambioazul.net
URL:	
Represented by:	
Title:	
Salutation:	Mr.
Last Name:	Maher
Middle Name:	T.
First Name:	George
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The PoA does not involve any public funding from Annex I Parties. This will be cross verified for individual CPAs in respective CPA-PDDs.

Annex 3

BASELINE INFORMATION

This section is left blank intentionally

Annex 4

MONITORING INFORMATION

Monitoring information is included under chapter E.7.2. Each CPA will provide details on their monitoring plan according to the guidelines provided by the PoA.

- - - - -