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

CONTENTS

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):

>>CUIDEMOS Mexico (Campana De Uso Intelegente De Energia Mexico) – Smart Use of Energy Mexico

Version 6
17th February, 2009

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

The programme of activities, CUIDEMOS Mexico, involves the distribution of energy efficient light bulbs to households across Mexico. Each small-scale CDM programme activity (SSC-CPA) will be implemented in geographically distinct areas across Mexico. The PoA and each CPA will be implemented and managed by Cool nrg Carbon Investments Pty Ltd ("Cool nrg Carbon Investments") and Cool nrg Mexico SRL de CV ("Cool nrg Mexico"), in collaboration with key operational partner organisations.

2. Policy/measure or stated goal of the PoA

The goal of the PoA is to transform the energy efficiency of Mexico's residential lighting stock by distributing up to 30 million compact fluorescent lamps (CFLs) to households. By doing so, the program will abate greenhouse gas emissions through avoided electricity usage, significantly reduce national electricity demand and stress on energy infrastructure, and save individual households money on their electricity bills.

Each CPA within the PoA will also include a significant public education component. Raising awareness through information provided with products, as well as targeted media campaigns will further promote the importance of energy efficiency for Mexico. Such environmental messaging will promote behavioral change, encouraging further energy savings and supporting existing and future government programs.

The contribution of the PoA to sustainable development is significant.

Environmental Sustainability
(i) The program supports the objectives of the Mexican National Strategy for Climate Change (May 2007) and several local and federal programs for energy efficiency which call for:

a) Identification of opportunities for emissions reductions and mitigation projects
b) Recognition of the vulnerability of different sectors and the need for projects to assist with adaptation.

In addition, the program will reinforce the promotion of energy efficiency campaigns of key institutions such as FIDE (Trust Fund for Electrical Energy) and Conae (National Energy Savings Commission) supporting the link between efficient energy use and greenhouse gas emission reductions.

Demand-side energy efficiency has been identified by the Mexican government as one of the key areas to address in order to reduce greenhouse gas emissions and energy consumption[1]. This program clearly contributes to the achievement of these goals and will produce measurable environmental benefits.

(ii) The program produces real and measurable reductions in GHG emissions:

The program will utilize an approved methodology (AMS II.C. "*Demand-side energy efficiency programmes for specific technologies*", version 9) to ensure that all measurements of greenhouse gas emission reductions are robust, conservative and verifiable. The program will maintain high standards of monitoring to ensure that any emission reductions claimed are measurable and real.

Economic Sustainability
(i) The program utilizes more efficient technology (e.g. energy efficient, resource efficient) than common practice:

The PoA will contribute significantly to Mexico's economic sustainability through the more efficient use of electricity. Energy savings at both individual household and national levels make important contributions to Mexico's economic efficiency and sustainability.

In order to meet rising demand, current government forecasts indicate the need to spend approximately US$69 billion on new electricity generation infrastructure over the next decade, at a cost of approximately US$800,000 per megawatt capacity[2]. Demand-side energy efficiency improvements represent a highly cost effective approach to providing this required capacity. Households use 25% of all electricity generated in Mexico[3], with lighting comprising 40% of this consumption[4]. Installing 1,000,000 CFLs will directly reduce pressure on energy infrastructure during peak loads, with capacity savings representing approximately US$19.5 million in deferred generation infrastructure investment.

Further, current government subsidies of electricity costs for low-income households are approximately 54%[5]; energy efficiency improvements will contribute significant savings to the Mexican government's spend on such subsidies. Installing 1,000,000 CFLs would save approximately US$12.2 million a year in electricity consumption costs, benefiting both consumers in reduced utility bills (US$5.6 million pa), and government in avoided electricity subsidies (US$6.6 million pa).

(ii) The program results in technology transfer and/or capacity building in greenhouse gas emission reduction technologies.

The program results in a significant transfer of more efficient lighting appliances into Mexico. Whilst these technologies may not be new, uptake by residential consumers of efficient lighting remains relatively low due to the general socio-economic conditions and low disposable income of the

[1] National Energy Savings Commission (www.conae.gob.mx), Trust Fund for Electrical Energy (www.fide.org.mx) & National Strategy for Climate Change, Semarnat 2007

[2] Prospectiva del Sector Electricos, SENER 2007-2016

[3] http://www.fide.org.mx/medidas_ahorro/hv2.html

[4] http://www.conae.gob.mx/wb/CONAE/espacio_aparatos

[5] Average Price of $1.16 pesos/kWh during 2007, and price/cost ratio for residential consumers of 0.46. Reported in President's Annual Report, 2007 http://www.informe.gob.mx/2.14_ENERGIA_HIDROCARBUROS_Y_ELECTRICIDAD/?contenido=225

Mexican population. The PoA will address these consumer barriers by providing CFLs for free, resulting in mass consumer uptake and shifting residential efficiency and electricity demand.

Social Sustainability
(ii) The program helps to improve quality of life by creating opportunities for jobs, job enhancement, etc.

In order to deliver this program, Cool nrg Mexico will engage (directly and through partnerships) a large workforce over the short to medium term, and will maintain a core team involved in customer relations, project management and monitoring over the longer term. This team of employees will be trained in CDM project requirements, energy efficiency and consumer engagement. As such, Cool nrg Mexico will create a team of experts able to act as a centre of knowledge and experience within the country, and the region.

As well as the direct financial benefit to households in terms of savings on their electricity bills each year, the PoA will also generate a range of less tangible social outcomes in education, awareness and collateral energy saving measures. This energy efficiency campaign will create an opportunity for collective action on climate change, enhancing a sense of community, and empowering individual households.

(iii) Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity.

The coordinating entity will voluntarily provide CFLs to each household. There are no mandatory requirements in Mexico stipulating the use of such devices, and the PoA requires individual households to take voluntary action to participate in project activities.

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

Cool nrg Carbon Investments Pty Ltd

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.

Cool nrg Mexico SRL de CV
Cool nrg Carbon Investments Pty Ltd

Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Party involved wishes to be considered as project participant (Yes/No)
Mexico (host)	Cool nrg Mexico SRL de CV (Private entity)	No
United Kingdom of Great Britain and Northern Ireland	Cool nrg Carbon Investments Pty Ltd (Private entity)	No
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		

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

A.4.1. Location of the programme of activities:

>> Mexico

A.4.1.1. Host Party(ies):

>> Government of 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;

All CPAs associated with the CUIDEMOS Mexico PoA will be implemented within the geographical boundary of Mexico.

Figure 1: Geographic boundary of PoA - Mexico

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

>> Each SSC-CPA will involve the distribution and installation of CFLs for use by Mexican households. CFLs will be made available at a large number of distribution points within the area covered by the SSC-CPA. These distribution points will typically be those provided by Cool nrg's retail partners, who have a network of approximately 3550 outlets across Mexico available to participate in the PoA. Residents will come to these distribution points with their old incandescent bulbs and exchange them for CFLs with equivalent or greater lumen output. Incandescent bulbs collected during the exchange will be destroyed to prevent leakage. This process will be independently verified.

The distribution process will be supported by an education campaign to ensure households are aware of the project activity, and that distribution occurs relatively quickly. The method of distribution and associated awareness-raising campaigns will focus on providing the majority of efficient appliances to low income households.

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

>>The project will provide energy efficient light bulbs, in the form of compact fluorescent lamps (CFLs), to replace incandescent light bulbs in residential properties. Up to four CFLs will be provided to each household free of charge.

CFLs require up to 80% less energy than incandescent bulbs to produce an equivalent lumen output and last up to 10 times longer than standard incandescent bulbs. Replacing incandescent bulbs with CFLs results in significant reductions in electricity use for lighting, thereby reducing energy demand, cutting greenhouse gas emissions associated with the production of electricity and saving households money on their electricity bills.

CFLs for the PoA may be supplied to the project coordinator by a number of manufacturers. All bulbs utilised in the project will meet international manufacturing and labelling standards.

It is anticipated that the CFLs provided to households will have rated power outputs of 15W and 20W (equivalent in lumen output to incandescent bulbs of at least 60W and 75W respectively), and have a lifetime of 10,000 hours of use. As per AMS II.C. (v.09), incandescent bulbs will not be exchanged for CFLs with a significantly lower (>10%) lumen output. However, in cases where the lumen output of the CFL is more than 10% above the incandescent, the exchange will proceed as the CFL has greater utility value to the household, and results in a conservative outcome in terms of energy savings and emission reductions.

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

Eligibility Criteria:

- Each SSC-CPA will involve the distribution of energy efficient light bulbs to households within the geographical boundary of Mexico.
- Each SSC-CPA must implement the baseline and monitoring methodology AMS II.C. *'Demand-side energy efficiency programmes for specific technologies' v.9.*
- No other CPA or CDM project involving the distribution and/or installation of energy efficient light bulbs is already registered and operating in the same, specific physical geographical area.
- The coordinating entity will ensure that all CPAs under its PoA are neither registered as an individual CDM project activity nor included in another registered PoA, and that the CPA is subscribed to the PoA.
- Each SSC-CPA shall be uniquely identified and defined in an unambiguous manner by providing geographic information, and the exact start date and end date of the crediting period
- Each SSC-CPA must ensure that leakage, additionality, establishment of the baseline scenario, baseline emissions, eligibility and double counting are unambiguously defined.
- Each SSC-CPA must be approved by the coordinating entity and DOE prior to its incorporation into the PoA.
- Each SSC-CPA must satisfy de-bundling rules for PoA.

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;
(ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA;
(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced;
(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 information presented here shall constitute the demonstration of additionality of the PoA as a whole.

As the proposed PoA is a voluntary and coordinated action, the assessment and demonstration of additionality for the PoA as a whole will address points (i) and (ii) above. In addition to a standard assessment of additionality, in order to comply with the requirements of the Gold Standard, further information is presented regarding previous announcements, use of Overseas Development Assistance, and proof of technology transfer/knowledge innovation.

Voluntary Coordinated Action
The proposed PoA is a voluntary and coordinated action. There are no mandatory requirements in Mexico stipulating the use of energy efficient lighting. In addition, the PoA requires individual households to take voluntary action to participate in project activities.

Previous Announcement Check/Consideration of CDM
The proposed PoA was developed as a CDM activity. At no stage were public or private announcements made regarding the project proceeding without use of the CDM. The project is unable to attract any sources of revenue other than through the sale of CERs, and as such the PoA has always held CDM as central to its development.

After the EB adopted procedures and guidelines for PoA in June 2007, the coordinating entity conducted a project scoping and feasibility assessment of a CFL CDM program in Mexico between July and September 2007. During this time meetings were held with Mexican government agencies, including the DNA, to discuss the PoA. In addition, initial engagement with project partners was undertaken and technology development was initiated to meet CDM monitoring requirements.

In December 2007 and January 2008 distribution and monitoring partners were formally engaged, and the decision was made by the coordinating entity to proceed with the PoA. During this time the coordinating entity also contacted prospective DOEs. From early 2008 preparation of the PDD commenced. In April 2008 Cool nrg Mexico conducted the first stakeholder consultation, and in May 2008 began discussions with prospective buyers of CERs. Validation commenced in June 2008.

Additionality Tool
Additionality of the PoA is demonstrated using the criteria outlined in Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities. As per Gold Standard requirements the UNFCCC's "Tool for the demonstration and assessment of additionality", is used as the basis for the determination of additionality.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulation

Sub-Step 1a. Define alternatives to the project activity

Three alternatives to the proposed PoA have been identified:

I. The activity could occur without being registered as a PoA through government or private sector support. In such a scenario the Mexican government or private sector sponsor would purchase all CFLs and pay for their distribution at no cost to households. There are significant barriers to this alternative scenario. Most importantly, there is currently no budget within the Mexican energy or environment ministries for such an undertaking. In addition, there are no documented projects of the same scale in government project planning. Whilst in 2008 the Minister of Energy announced the distribution of 130,000 CFLs to indigenous communities in the states of Quintana Roo, Sinaloa and Sonora[6], there are clearly financial and planning barriers to the Mexican Government, or other sponsor, from undertaking a free CFL distribution of the same scale as that proposed under the PoA. The Mexican Government's own climate change planning documents provide the evidence of the planning and financial barriers exist to the Federal government undertaking the free distribution of CFLs on a comparable scale to that proposed by the SSC-PoA. The coordinating entity believes that the clear absence of a stated intention in the most recent National Climate Change Strategy to undertake a free distribution of CFLs strongly indicates that such barriers exist.

   The National Climate Change Strategy makes reference to a desire to run efficient lighting programs in the future, however, these programs will take the same form as the Ilumex program conducted between 1995 and 1997. As discussed in the proceeding sections, these programs do not involve free distribution of CFLs, but rather consumers purchasing CFLs through staged payments made in conjunction with their electricity bills. There are no specific targets, locations or timelines set for future programs of this nature.

II. Individual or collaborative efforts by Mexican retailers to promote rapid uptake of energy efficient lighting technology by households in Mexico. This scenario would entail consumers to responding to increased marketing or promotion of efficient lighting alternatives and purchasing CFLs. The capacity of Mexican consumers to purchase CFLs at retail prices is a significant barrier to this alternative. Based on national income data, for 50% of the working population, purchasing 4 CFLs (at a cost of US$5 per bulb) would require spending between 30% and 99% of their weekly earnings[7]. As is discussed below in the barrier analysis, the relatively high upfront cost of CFLs compared to incandescent bulbs is a major barrier to consumer uptake.

III. Continuation of the current situation is also a possible alternative scenario. The baseline alternatives include either continued use of existing household lighting, or autonomous replacement of current lights with new technologies or measures of either the same or greater efficiency. Achieving the same outcome as typical SSC-CPAs would entail large-

[6] http://www.sener.gob.mx/webSener/portal/index.jsp?id=459

[7] Encuesta Nacional de Ingresos y Gastos de los Hogares: http://www.inegi.gob.mx/est/contenidos/espanol/sistemas/sisnav/default.aspx?

scale autonomous uptake of CFLs by households. As discussed above, autonomous uptake of CFLs is hampered by their cost, and as such the most likely outcome of a continuation of the current situation would be the provision of light for households mainly through the use of cheaper incandescent lamps.

Sub-step 1b Consistency with mandatory laws and regulations

Each of the potential alternatives to the project discussed above:
- the project occurring without being registered as a PoA through government or private sector support;
- individual or collaborative efforts by Mexican retailers to promote rapid uptake of energy efficient lighting technology by households in Mexico;
- large-scale autonomous uptake of CFLs by households;

are consistent with Mexico's laws and regulations. The proposed PoA is therefore not the only alternative amongst those considered that complies with mandatory regulations.

Step 2. Investment Analysis

Sub-step 2a Determine appropriate analysis method
The PoA will involve consumers being provided CFLs free of charge. From the project proponent's perspective there are no financial or economic benefits other than CDM related income, as such a simple cost analysis will be undertaken for each SSC-CPA (Option I).

Step 3 – Barrier Analysis
In accordance with Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities, a barrier analysis will be undertaken. This analysis will discuss credible barriers that would prevent the implementation of the proposed project activity from being carried out if the project activity was not registered as a CDM activity.

Barriers to the uptake of energy efficient products, including CFLs, are well documented. Such barriers include inadequate access to capital, isolation from price signals, information asymmetry and split-incentives[8]. That such barriers exist is clear given that CFLs only account for 6% of the global lighting market despite their financial benefits and having been available for several decades[9]. In the context of residential energy efficient lighting, these barriers are particularly apparent.

Access to capital
Particularly relevant for low-income households in developing countries is the fact that CFLs may be up to ten times more expensive than incandescent light bulbs. In the process of prioritising household expenditure towards basic requirements such as food, healthcare and education, there may be very little opportunity for spare capital to be targeted towards investments in energy efficiency. As discussed above, for 50% of the working population earning the lowest wages in Mexico, purchasing four CFLs, at approximately US$5 each, would require spending between 30% and 99% of their weekly earnings. Despite the financial savings delivered by energy efficiency improvements, the

[8] International Energy Agency (2007), *Mind the Gap: Quantifying Principle-Agent Problems in Energy Efficiency*. Paris, France.

[9] OECD/IEA (2006), "Barriers to Technology Diffusion: The Case of Compact Fluorescent Lamps". Information paper for the Annex 1 Expert Group on the UNFCCC. Paris, France.

upfront capital requirement acts as a significant barrier to their uptake by low-income households in particular.

Discount rates

In addition to the inability of households to access capital, studies of consumer behaviour towards investments in energy efficient technologies also draw attention to the high discount rates applied, with consumers placing more emphasis on the upfront purchase cost than whole-of-life costs. A range of studies have estimated implicit discount rates applied by consumers to energy efficiency investments range from 25% to 300% across a range of technologies[10]. Particularly relevant in the context of low income households in Mexico, is the observation that low income households apply higher discount rates than more affluent households[11].

Information failures

In Mexico, as in many developed country settings, householders' understanding of the benefits of energy efficiency remains rudimentary. The Mexican government continues to provide information regarding the economic and environmental benefits of investing in energy efficient technologies[12], however, as demonstrated by the case of CFLs, uptake remains low. Barriers to obtaining and applying information relating to energy efficiency are significant, including:

- Time lag between energy consumption and payment of energy bills. Energy price information is divorced from the time at which it is consumed. This time lag can impact the efficacy of price information in influencing consumer awareness and behaviour with regard to household energy use. In this regard many "consumers act as if they have no control over their electricity bill, and the limited feedback they receive is often too late for them to respond."[13]
- Aggregated energy prices may limit householders' understanding of the individual appliance use and its impact on energy bills. Consumers are not aware of which particular appliance or equipment is contributing to the total price they ultimately pay for electricity for a given period, militating against behaviour change, demand response and investment in energy efficient technologies.

Transaction/search costs

Even where a consumer is able to obtain information that is accurate, current and complimentary, they must still spend time to identify and assimilate it. There is an opportunity cost associated with the use of one's time to undertake these tasks. A Californian study estimated that if consumers were aware that CFLs could save them money, they would need to take 45 minutes to accurately assess potential savings and locate a shop that sold these lamps. If individuals valued their time a $20/hour, this would more than double the price of the first purchase of this lamp type[14].

---

[10] Stansad, A, Hanemann, W, and Auffhammer, M (2006), *End-use Energy Efficiency in a "Post-Carbon" California Economy*, 2006. See also, Ruderman, H. et al, (1987) "The Behaviour of the Market for Energy Efficiency in Residential Appliances including Heating and Cooling Equipment", Energy Journal 8(1):101-124.

[11] Hausman, J, Individual Discount Rates and the Purchase and Utilisation of Energy-Using Durables, Bell Journal of Economics: p.10, 1979.

[12] For example see www.fide.org.mx

[13] Productivity Commission, *The Private Cost Effectiveness of Improving Energy Efficiency,* 2005, p.105.

[14] Sathaye, J et al, 2004. *Market Failures, Consumer Preferences and Transaction Costs in Energy Efficiency Purchase Decisions,* California Energy Commission, Berkley.

Each of the barriers discussed above can be overcome by registering the proposed programme as a CDM activity. Financial barriers such as access to capital and discount rates, are overcome due to the fact that the carbon finance delivered by the PoA enables CFLs to be provided free of charge to consumers. Similarly, information barriers and high transaction costs will be ameliorated through the media and promotional activities which will direct consumers to distribution centres with clear instructions and information regarding the light bulb exchange and its benefits.

Step 4. Common Practice Analysis

Sub-step 4a. Analyse other activities similar to the proposed activity
Energy efficiency in the household sector is a stated strategy of the Mexican Government to address both energy demand issues and greenhouse gas emissions; domestic lighting, appliances, heating and cooling and insulation have been identified as areas where efficiency gains can be made. A brief discussion of activities targeting the take-up of CFLs is provided below.

Efficient Lighting – Bulk Purchase and Financing of CFLs
Since 1990, Mexican government agencies, in collaboration with a range of multilateral institutions (The World Bank, GEF etc), have undertaken trials and promotions of CFL technology[15]. These programs have focused on bulk purchasing by government institutions, and then on-selling to consumers at low margins, thereby reducing CFL prices to below standard retail levels. In addition, some programs have complemented bulk purchasing with consumer finance options such that households are able to pay for CFLs through a levy imposed on energy utility bills.

Despite the occurrence of these CFL programs, penetration of energy efficient lighting remains relatively low. Discussions with local CFL suppliers, as well as analysis of past government programs, indicate that penetration of CFLs into domestic lighting in Mexico is approximately 10-20%[16].

Sub-step 4b. Discuss any similar options that are occurring.

Efficient Lighting – Essential distinctions to the proposed PoA
As discussed above, bulk CFL purchasing programs are currently conducted by Mexican Government institutions such as FIDE. However, there are some essential distinctions between these activities and those proposed under the PoA that support the coordinating entity's claim that the proposed activity is additional. These distinctions primarily relate to the financial structure of the projects:

- The similar activities all involve consumers purchasing CFLs utilizing government-backed financing mechanisms.
- Products distributed under these programs are still more expensive than the baseline technology (incandescent bulbs).
- In the case of CFLs, because the up-front costs remain high relative to incandescent bulbs, low-income households have generally participated in these programs at lower rates than middle and upper income households.[17] A program assessment undertaken by GEF noted: "The original focus on low-income/low electricity consumers was set aside due to slow sales

[15] World Bank GEF Post-Implementation Impact Assessment, Mexico-Ilumex Project, 2006.

[16] This estimate is based on analysis by the coordinating entity of past and present government programs, as well as estimates of standard retail sales. Further details are provided in Annex 3.

[17] World Bank, Report No. 22074, PERFORMANCE AUDIT REPORT MEXICO, page 4, April 12, 2001

in that market segment. Overall, 9.6 percent of CFL sales went to low electricity consumers, 31.3 percent to intermediate, and 59.2 percent to high electricity consumer households."[18]. The proposed PoA specifically targets low-income households: CFLs will be distributed free of charge.

- The Mexican Government currently effectively subsidises household purchases of energy efficient products such as CFLs by allowing repayments over time without interest or penalties[19]. The proposed PoA cannot access such government financing.

Overseas Development Assistance (ODA) Check
The proposed PoA does not use any ODA funds.

A financing plan for the purposes of demonstrating compliance with this component of the Gold Standard additionality screen is provided in Annex 5.

Proof of technology transfer/knowledge innovation
The project involves the transfer of efficient lighting technology into Mexico. This transfer largely occurs "South-South" (between developing countries), as the products to be used in the PoA are manufactured in China. In addition, there will be a transfer of knowledge and capacity from "North-South" (from developed to developing countries). In this instance Cool nrg will train local employees in the development, implementation and management of energy efficiency projects and in the requirements of CDM. Significant intellectual property will be transferred from staff in the international Cool nrg group (based in Australia, the United States and Europe) to the local Mexican team. This will establish a local business of highly trained energy efficiency professionals.

Further transfer of knowledge is also made possible through the education and awareness-raising aspects of each CPA. Individual households will receive information regarding the benefits (financial and environmental) of energy efficiency. This information will empower these households who will better understand how their consumption behaviour and purchasing decisions relating to energy impact on their financial position.

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

[18] GEF, 2001 "PERFORMANCE AUDIT REPORT MEXICO - MEXICO HIGH-EFFICIENCY LIGHTING PILOT TRUST FUND PROJECT".

[19] Odon de Buen Rodriguez, Instituto Nacional de Ecologia, 2005: Ilumex: Desarrollo y lecciones del primer proyecto mayor de ahorro de energia en Mexico; http://www.ine.gob.mx/publicaciones/libros/437/odon.html

(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.

The proposed PoA involves a range of operational activities in order to effectively implement and manage each SSC-CPA. The coordinating entity has divided these operations into five broad categories and has defined the management responsibilities for each as detailed in the table below:

Operational Category	Management Responsibilities & Arrangements
Product Supply	- Maintain existing relationships with suppliers - Ensure timely production and supply of CFLs for each SSC-CPA
Transport & Storage Logistics	- Arrange transport of CFLs from supply partner - Arrange storage prior to distribution - Delivery of CFLs to distribution hubs
Distribution to Households	- Management of distribution points; stock; customer transactions and staff - Household data collection
Baseline Technology	- Collection of baseline technology from distribution hubs - Undertake independently verified destruction of incandescent bulbs
Monitoring Emission Reductions	- Selection & recruitment of sample group households - Periodic collection of monitoring data - Preparation of monitoring reports for emission reduction verification

Table 1: Operational Categories and Management Responsibilities for CUIDEMOS Mexico PoA

Further information regarding these operational categories and project implementation can be found in Annex 6 ('CUIDEMOS Mexico – Process Flow Charts'), Annex 7 ('CUIDEMOS Mexico – Monitoring Equipment) and Annex 8 ('CUIDEMOS Mexico – Selection of Sample Groups').

In addition to the above management tasks, the coordinating entity will implement the following operational elements to ensure proper management and oversight of the proposed PoA.

SSC-CPA Record Keeping
Each SSC-CPA will follow the record keeping and monitoring requirements stipulated in ASM II.C. and detailed in Section E below. In summary, the coordinating entity will ensure that each SSC-CPA will maintain appropriate records documenting the following variables:

- The geographical location of each CPA.
- The name, address and record of specifications of incandescent bulbs and CFLs exchanged for each household participating in the CPA.
- The names, addresses and monitoring/spot check data of each household involved in sample and cross check groups.

The coordinating entity will be responsible for the management of records and data associated with each SSC-CPA.

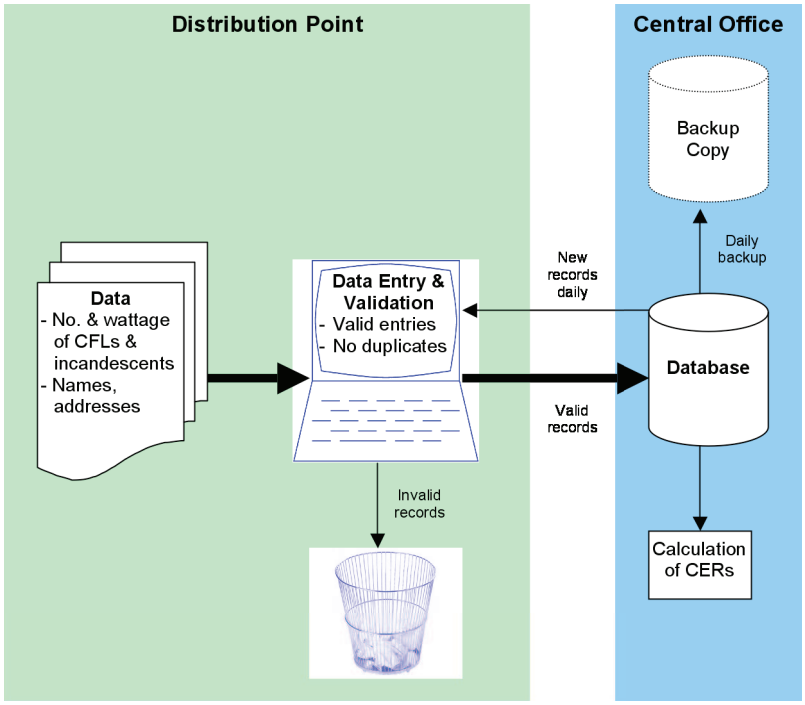

Figure 2: Data collection and record keeping procedure

Procedure to Avoid Double Counting

Ensuring that SSC-CPAs within the proposed PoA do not overlap geographically will prevent double counting of emission reductions. Prior to registering a new SSC-CPA within the proposed PoA, the coordinating entity will check the CDM project database to establish whether a CDM project activity or CPA of another PoA utilising energy efficient lighting technologies has already been registered in the same geographic area. This search will cover registered project activities, project activities requesting registration, project activities under review and project activities for which either a review or corrections have been requested. The process of checking will be duplicated by the DOE responsible for registering new SSC-CPAs under the proposed PoA.

Given that each SSC-CPA included in the PoA will be identified by geographical location, it is possible to unambiguously identify CPAs or CDM project activities potentially operating in the same area. The geographical boundary of each SSC-CPA is determined by the location of households where CFLs are installed. Each SSC-CPA will limit participation to households belonging to a certain geographical region (e.g. the State of Puebla). Participating households must provide their electricity bill at the time of the exchange of CFLs, thereby enabling the CPA activity implementer to determine whether they are eligible to participate. The collection of both utility bill folio numbers (a unique identification code provided to each household connected to the electricity grid by national utility CFE) and addresses will ensure that the project boundary can be unambiguously defined.

In an instance where a CPA of another PoA or CDM project activity is already registered in the same geographic area as a proposed SSC-CPA, the coordinating entity will not proceed with the registration of the SSC-CPA. In the instance where a CPA of another PoA or CDM project activity is requesting registration, is under review or for which review or corrections have been requested, is in the same geographic area as a proposed SSC-CPA, the coordinating entity will wait for these processes to be resolved before proceeding with registration of the new SSC-CPA.

De-bundling
In order to avoid registering a SSC-CPA that is in fact a de-bundled component of another CPA or CDM project, the coordinating entity will follow the guidance provided by the Executive Board in Annex 27 of EB 36 Report. The coordinating entity intends to implement multiple CPAs within Mexico, of the same sectoral scope – 3 Energy Demand. In order to prevent an occurrence of de-bundling, the coordinating entity will implement two approaches:

1. Ensure that where the same activity implementer is involved in two adjacent SSC-CPAs, their boundaries are not within 1km of each other at the closest point, as defined by the Executive Board in the aforementioned guidance. In instances where a household is a geographic 'outlier' (eg. a household from one SSC-CPA that is within 1km of a state boundary which may be the location of an existing SSC-CPA managed by the same activity implementer) the coordinating entity will exclude such a household from the calculation of emission reductions of that SSC-CPA. By carefully planning the location and roll-out of SSC-CPAs, and monitoring the customer database for any 'outlier' households, the coordinating entity will maintain a 1km "buffer zone" between CPAs, thereby complying with the Executive Board's rules regarding de-bundling.

2. Where different activity implementers are involved in the development of geographically adjacent SSC-CPAs, by definition de-bundling will not occur. However, the coordinating entity will ensure that there is no duplication or double counting (single households receiving CFLs from different activity implementers) between SSC-CPAs. This will be done by cross-checking the data management system of the PoA to check for duplicates, and removing those households participating in multiple SSC-CPAs within the PoA. This cross-check will occur in real time during the CFL distribution process.

All CPAs Are Subscribed to the PoA
The coordinating entity is responsible for identifying, developing, registering and managing all SSC-CPAs to be included in the proposed PoA. This will mean that those operating the SSC-CPA will be aware and will have agreed that their activity is subscribed to the proposed PoA. Legal agreements have been put in place with PoA distribution partners clearly stipulating that their activities are subscribed to the SSC-PoA. Households will be made aware that they are participating in a climate change action program aiming to reduce greenhouse gas emissions. It is reasonable that having been made aware of the nature of the program, and by accepting the free CFLs there is implied agreement by the household that their activity is subscribed to the relevant SSC-CPA.

A.4.4.2. Monitoring plan:

>> The following information shall be provided here:

(i) Description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA.

(ii) In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA (whether in groups or not, with different or identical verification periods), a transparent system is to be defined and described that ensures that no double accounting occurs and that the status of verification can be determined at any time for each CPA;

The coordinating entity has opted to implement a verification system for the DOE that will individually verify each CPA in order to determine the abatement created by the PoA. The project database managed by the coordinating entity includes the following data-set that can be directly attributable to each CPA within the PoA, thereby allowing unambiguous determination of the emission reductions attributable to each CPA:

- A list of households participating in each CPA including name, address, electricity bill folio number, number and wattage of light bulbs exchanged, date and location of the exchange transaction;
- Metering data collected from the Project Sample Group households of each CPA relating to the ongoing usage of project CFLs during each monitoring period;
- Data obtained from project cross-check group households of each CPA indicating the proportion of project CFLs operating during each monitoring period.

The coordinating entity will produce a monitoring report for the DOE to verify corresponding to the preceding monitoring period of each CPA. This report will unambiguously set-out the data relating to the emission reductions generated by that specific CPA during the monitoring period.

PoA record keeping procedures will prevent double counting across CPAs. The data-set corresponding to each CPA will be mutually exclusive of the data-set of another CPA under the PoA. Project sample group and project cross-check households for each CPA will be unambiguously identified and assigned to a CPA, and their data will be used for the calculation of emission reductions for that CPA only. Similarly, the list of households that participate in the exchange of light bulbs for each CPA cannot contain any duplicate entries. This duplication rule applies *within* each CPA (ie a household cannot participate more than once during each CPA), and *between* CPAs (ie households cannot participate in more than one CPA).

Verification of each CPA will occur at the end of each monitoring period. The project database will record the start and end dates of each monitoring period, and record the emission reductions attributable to each monitoring period. Appropriate record keeping procedures will be implemented to ensure that each monitoring period data set can be transparently attributed to its corresponding CPA, preventing any occurrences of double counting. An audit of the project data base will be able to determine the current status of each CPA – the duration of previous monitoring periods, the households and sample groups delivering monitoring data, and current verification activities.

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

>> No public funding will be used for this activity

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

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

>> June, 2009

In line with guidance provided in EB 41, this start date has been chosen as it is estimated that at this time registration by the CDM Executive Board will be completed. It is only after registration that implementation of CPAs will occur constituting "real action" as defined by the Executive Board guidance. Hence the date of registration is considered an appropriate start date for the PoA.

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

>> 28 years

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 x☐
2. Environmental Analysis is done at SSC-CPA level ☐

The PoA involves the distribution and installation of residential lighting appliances. These appliances have been approved for use in households by the Government of Mexico, and do not entail significant negative environmental impacts. For this reason, it is reasonable to undertake a single environmental analysis at the level of the PoA rather than individual assessments for each SSC-CPA.

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

>> In order to comply with the requirements of the Gold Standard, a full environmental analysis is provided in Annex 9 ('CUIDEMOS Mexico – EIA). This appraisal was undertaken in collaboration with Mexican and international stakeholders and includes a completed Sustainable Development Assessment Matrix detailing the impacts and benefits of the PoA.

In summary, the primary environmental impacts of the PoA relate to the physical waste created by the collection of old, inefficient light bulbs. The methodology requires that these items be collected and destroyed in order to prevent leakage. Considerable effort will be made by the coordinating entity to deal with the waste created by this equipment. In many instances, base materials of old appliances (e.g. glass and metals from light bulbs) can be recycled. Where possible, the coordinating entity will work with local businesses to implement a recycling strategy to deal with the waste accumulated through the collection of incandescent bulbs.

CFLs contain a very small amount of mercury sealed within the glass tubing – 5 milligrams on average (roughly equivalent to the tip of a ball-point pen). Mercury is an essential, irreplaceable element of CFLs as it allows the bulb to be an efficient light source. By comparison, older home thermometers contain 500 milligrams of mercury and manual thermostats up to 3000 milligrams.

There is no current substitute for mercury in CFLs; however, manufacturers have taken significant steps to reduce mercury levels in fluorescent lighting products over the past decade, with some beginning research into the production of mercury-free CFLs.

Cool nrg will continue to encourage governments and companies to provide adequate recycling facilities to safely dispose CFLs in Mexico. Currently the Mexican Ministry of Environment has a pilot project to recover old thermometers in several hospitals across Mexico City. Cool nrg is exploring the possibility of extending such program to include the collection and recycling of the mercury contained in CFLs. Such an activity will require ongoing communication with households and consumers as the CFLs distributed under the PoA will have an effective lifetime of up to 10 years. It is hoped that by working with the Mexican Government, effective centralized collection facilities for waste CFLs can be established, and mercury can be collected and recycled, thereby preventing it entering the waste stream and broader environment. Implementation of a mercury recycling scheme is included as an environmental indicator in the monitoring plan of the PoA, such that the verifying DOE can make an assessment of the coordinating entity's progress in this area.

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),:

>> As stated above, the typical SSC-CPA will involve the distribution of energy efficient light bulbs already available to consumers. These items have passed relevant quality standards and their use does not entail significant environmental impacts. The Mexican Government does not require that environmental impact assessments be undertaken for SSC-CPAs included in the PoA.

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 x☐

Note: If local stakeholder comments are invited at the PoA level, include information on how comments by local stakeholders were invited, a summary of the comments received and how due account was taken of any comments received, as applicable.

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

>>In order to comply with the stakeholder engagement requirements set out in the Gold Standard, the coordinating entity has conducted two distinct consultations, and has compiled formal reports on both. The Initial and Main Stakeholder Report are provided in Annexes 10 ('CUIDEMOS Mexico – Initial Stakeholder Report') and 11 ('CUIDEMOS Mexico – Main Stakeholder Report'). In summary, the following steps were taken to engage stakeholders:

- An initial stakeholder consultation was conducted at a public meeting in Mexico City on 10th April, 2008.
- The meeting was advertised in national newspapers, as well as invitations being extended directly to government agencies, NGOs and academic institutions.
- All participants were provided with local language versions of project documents in advance of the meeting, and were invited to comment on the social and environmental impacts of the PoA.
- A report summarising all comments received during the meeting, and how these have been incorporated into the project design, was provided to stakeholders two weeks after the meeting.
- All project documents (CDM-SSC-PoA-DD, CDM-SSC-CPA-DD etc.) were then made available for sixty days to stakeholders for their comment.
- Comments received during this main stakeholder consultation period were compiled and incorporated where relevant into the final project design.
- For the purpose of complying with Gold Standard accreditation procedures, a further public consultation session was held to provide a final opportunity for input into the PoA. This meeting was conducted on 28th August, in Puebla, the location of the first CPA.

D.3. Summary of the comments received:

>> A summary of comments received by stakeholders is provided in the Gold Standard stakeholder report provided in Annexes 10 ('CUIDEMOS Mexico – Initial Stakeholder Report') and 11 ('CUIDEMOS Mexico – Main Stakeholder Report').

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

>> A summary of how due account was taken of comments received by stakeholders is provided in the Gold Standard stakeholder report provided in Annexes 10 ('CUIDEMOS Mexico – Initial Stakeholder Report') and 11 ('CUIDEMOS Mexico – Main Stakeholder Report').

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:

>>The approved small-scale baseline and monitoring methodology used is: AMS-II.C. *Demand-side energy efficiency programmes for specific technologies (version 9).*

The project will also utilise the "Tool for the demonstration and assessment of additionality" and AMS-I.D.

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

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

>>AMS II.C. states: This methodology comprises activities that encourage the adoption of energy-efficient equipment, lamps, ballasts, refrigerators, motors, fans, air conditioners, appliances, etc. at many sites. These technologies replace existing equipment. 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.

The methodology is applicable to SSC-CPAs because these projects concern the distribution and installation of energy efficient light bulbs in households, creating demand-side energy savings and reductions in greenhouse gas emissions. The technology to be deployed by SSC-CPAs is listed in the methodology.

Leakage associated with SSC-CPAs will be accounted for, as required by the methodology, through the independent verification of the destruction of incandescent bulbs.

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.

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

>> The spatial extent of the project boundary is defined by the geographical location of each energy efficient light installed by households participating in the SSC-CPA, and the electricity grid to which these households are connected.

Summary of gases and sources included in the project boundary and justification/explanation where gases and sources are not included.

	Source	Gas	Included?	Justification
Baseline	Power plants servicing the electricity grid	CO_2	Yes	
		CH_4	No	Minor Source
		N_2O	No	Minor Source
Project Activity	Power plants servicing the electricity grid	CO_2	Yes	
		CH_4	No	Minor Source
		N_2O	No	Minor Source

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

>> The baseline scenario is the lighting otherwise provided by light bulbs in Mexican households prior to replacement by CFLs supplied by the PoA. This scenario would be either:

1. Utilisation of current light bulbs, or
2. Autonomous replacement of current lights with new appliances of the same or greater efficiency.

As discussed in sections of this document relating to additionality, above and below, the use of energy efficient appliances in Mexico, particularly in the low-income households targeted by this PoA, is low. Incandescent bulbs represent the overwhelming majority of lighting used by households covered by the PoA. Annex 3 compiles data from a number of sources in order to make an estimation of the current penetration of CFLs in Mexico across all households. This information is taken from known CFL sales and distributions under government schemes as well as estimated retail sales based on discussions with CFL suppliers in Mexico. The vast majority of CFLs currently used have originated from retail sales. For example, in 2007 it is estimated that of the new CFLs installed, 98% originated through retail channels, with government programs playing only a minor role.

The baseline scenario identified for the PoA is the ongoing use of incandescent light bulbs by participating low-income households with some minor autonomous replacement of incandescent bulbs with CFLs. The justification of this baseline scenario is provided below and argues that CFLs are not prevalent in households of the lower socio-economic group, and that this PoA targets, and will be accessed by those same households.

CFL penetration in low-income households
The stratification of use of CFLs across different socio-economic has been documented in previous government and World Bank/GEF programs. The results of these programs suggest that lower socio-economic households do not purchase CFLs in great numbers even when they are sold at low cost through bulk procurement, and when the cost can paid over time, interest free through a monthly charge on electricity bills. An assessment undertaken by GEF of the GEF/World Bank/FIDE programs noted: "The original focus on low-income/low electricity consumers was set aside due to slow sales in that market segment. Overall, 9.6 percent of CFL sales went to low electricity consumers, 31.3 percent to intermediate, and 59.2 percent to high electricity consumer households."[20].

[20] GEF, 2001 "PERFORMANCE AUDIT REPORT MEXICO - MEXICO HIGH-EFFICIENCY LIGHTING PILOT TRUST FUND PROJECT", p.4.

If applied to the CFL penetration estimate provided in Annex 3, this rate of uptake amongst low-income households would equate to 1.9% penetration in the households of this socio-economic group. This level of CFL penetration is likely to be an overestimation of uptake by low-income households given that this rate of participation relates to a program where CFLs were offered at below standard retail prices and where payments were made, interest free over time. Under standard retail conditions that make up the majority of new CFL sales, it is reasonably expected that low-income households would constitute an even smaller proportion of retail sales. Further, according to economic data for 50% of the working population, purchasing 4 CFLs (at a cost of US$5 per bulb) would require spending between 30% and 99% of their weekly earnings[21]. This leads the project proponents to conclude that amongst households targeted by the PoA, CFL use is less than 2% with little growth expected over the duration of the crediting period.

To account for such autonomous replacement amongst low-income households, as well as the possibility that some medium income households may participate in the PoA, the coordinating entity will reduce the emission reductions claimed under the PoA by a factor of 5% (the Baseline Penetration Factor - BP). This approach is very conservative, as discussed above, 5% has been shown to be higher than the proportion of low-income households' purchases of CFLs under standard retail conditions (ie without government subsidies), which is the source of the majority of CFLs bought in Mexico today. Further discussion of the application of BP is provided in Annex 3.

The PoA targets low-income households
The intention of the PoA is to target low-income households to take up the offer of free CFLs. The design of the PoA, whereby distribution occurs through retail stores, means that there is a possibility that households from other socio-economic groups will also take up the offer. The project proponent presents the following arguments to demonstrate that the level of participation by these other groups will not require revision of the baseline scenario described above:

1. 65% of the Mexican population is classified as low-income[22]. Clearly the probability of low-income households participating in the PoA is therefore heightened simply by their statistical prevalence.

2. Low-income households have the most to benefit in terms of the relative value of the CFL offer. Based on the retail value of CFLs in Mexico, and using national income data statistics[23], four free CFLs are equivalent to approximately one week's wages for a low-income worker. In addition, the dollar value of energy savings generated by four installed CFLs is USD$20 - equivalent to another week's wages saved each year that the bulbs remain installed. The financial incentive for low-income households to participate in the PoA is exceptional. As discussed in the barrier analysis above, providing CFLs for free and coupling it with an extensive media awareness raising campaign will overcome access to capital and information barriers faced by low-income families. This, coupled with the fact that the economic value of the offer is proportionally greater for low-income households will mean that they will be the overwhelming majority of participants in the PoA.

[21] Encuesta Nacional de Ingresos y Gastos de los Hogares:
http://www.inegi.gob.mx/est/contenidos/espanol/sistemas/sisnav/default.aspx?

[22] INEGI (National Institute of Geography and Statistics),
http://www.inegi.gob.mx/est/contenidos/espanol/proyectos/encuestas/hogares/enigh/enigh_2006/Propuesta/default.asp?s=est&c=11427

[23] Income and salary data available at:
http://www.sat.gob.mx/sitio_internet/asistencia_contribuyente/informacion_frecuente/salarios_minimos/default.asp

3. Finally, the existing customer characteristics of distribution partners, in particular Coppel, mean that low-income households will have ready access to the light bulb exchange. As discussed in the PoA-DD, Comex and Coppel are major Mexican retailers offering hardware and paint, as well as household white goods and appliances. Because of the nature of its products Comex has a customer base representative of the broader Mexican population (65% low income as discussed above). However, Coppel has a business model focussed on the low-income, working class segment. As detailed previously, Coppel has in-store banking and credit facilities available to customers who are excluded from the mainstream financial system. The availability of credit and payment plans attracts low-income customers to their stores. Coppel's existing customer base provides further support for the argument that low income households will dominate participants in the PoA.

   Coppel's management has provided the following summary, giving an overview of their customer base:

   > "Our market is divided into female 55-60%, and male 40-45%, primarily housewives, the majority of our clients conform an active working class. Approximately 85% of our transactions are through credit given that for our target its the only way to access products and services. We have issued more than 10 million Coppel Credit Cards and more than 60% of them are active."[24]

Based on these three arguments – general population characteristics, disproportionate economic value of CFLs for low-income households and the PoA distribution partners, the project proponents believe that assertions regarding the high rate of program participation by low-income customers are justified. The baseline scenario is therefore appropriate and conservative.

The baseline emissions of each SSC-CPA are measured during the distribution of CFLs by recording the power rating of each device replaced during the SSC-CPA. In addition, the baseline emissions are measured by the monitoring ex-post the utilization hours of the distributed CFLs in a representative sample of households participating in the SSC-CPA.

Because the energy displaced is electricity, the emission baseline is determined as the product of the baseline energy consumption of equipment/appliances and the emission factor for the electricity displaced:

$$BE_y = E_{BL,y} * EF_{CO2,\,ELEC,y} \quad (1)$$

$$E_{BL,y} = \Sigma_i (n_i \,.\, p_i \,.\, o_i)/(1-l_y) \quad (2)$$

Where:

BE_y	Baseline emissions in monitoring period *y* (tCO_2e)
$E_{BL,y}$	Energy consumption in the baseline in monitoring period *y* (kWh)
$EF_{CO2,ELEC,y}$	Emission factor in monitoring period *y* calculated in accordance with the provisions in AMS I.D (tCO_2/MWh)
Σ_i	the sum over the group of "i" devices (e.g. 40W incandescent bulb, 5hp motor) replaced, for which the substituted energy efficient equipment operating during the monitoring period, implemented as part of the project.

[24] Email correspondence – Coppel, January 27, 2009. Heidi Sanchez Assistant to the Executive Office

n_i the number of devices of the group of "i" devices (e.g. 40W incandescent bulb, 5hp motor) replaced for which the substituted energy efficient equipment is operating during the monitoring period.

p_i the power of the devices of the group of "i" devices (e.g. 40W incandescent bulb, 5hp motor) replaced. In the case of a retrofit activity, "power" is the weighted average of the devices replaced.

o_i the average operating hours during the monitoring period of the devices of the group of "i" devices replaced.

l_y Average technical grid losses (transmission and distribution) during monitoring period y for the grid serving the locations where the devices are installed, expressed as a fraction. The grid losses should not contain non-technical losses such as commercial losses (e.g. theft/pilferage). The grid losses should be estimated using recent, accurate and reliable data available within the host country. It can either be estimated by a (national) utility or an official governmental body or by project participants. Reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 10% may be used for technical grid losses, if no recent data is available or the data cannot be regarded accurate and reliable.

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.

In addition to a standard assessment of additionality, in order to comply with the requirements of the Gold Standard, a typical SSC-CPA will provide further information regarding previous announcements, use of Overseas Development Assistance, and proof of technology transfer/knowledge innovation. A typical SSC-CPA will provide the following assessment of additionality:

Previous Announcement Check
The proposed SSC-CPA was developed as a CDM activity. At no stage were public or private announcements made regarding the project proceeding without use of the CDM.

Additionality Tool
Additionality of the SSC-CPA will be demonstrated using the criteria outlined in Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities. As per Gold Standard requirements the latest version of UNFCCC's "Tool for the demonstration and assessment of additionality" is used as the basis for the determination of additionality.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulation

Sub-Step 1a. Define alternatives to the project activity

Three alternatives to a typical SSC-CPA have been identified:

I. The project could occur without being registered as a SSC-CPA through government or private sector support. In such a scenario the Mexican government or private sector sponsor would purchase all CFLs and pay for their distribution at no cost to households. There are significant barriers to this alternative scenario. Most importantly, there is currently no budget within the Mexican energy or environment ministries for such an undertaking. In addition, there are no documented projects of the same scale in government project planning. Whilst in 2008 the Minister of Energy announced the distribution of 130,000 CFLs to indigenous communities in the states of Quintana Roo, Sinaloa and Sonora[25], there are clearly financial and planning barriers to the Mexican Government, or other sponsor, from undertaking a free CFL distribution of the same scale as that proposed under the SSC-CPA. The Mexican Government's own climate change planning documents provide the evidence of the planning and financial barriers exist to the Federal government undertaking the free distribution of CFLs on a comparable scale to that proposed by the SSC-PoA. The coordinating entity believes that the clear absence of a stated intention in the most recent National Climate Change Strategy to undertake a free distribution of CFLs strongly indicates that such barriers exist.

   The National Climate Change Strategy makes reference to a desire to run efficient lighting programs in the future, however, these programs will take the same form as the Ilumex program conducted between 1995 and 1997. As discussed in the proceeding sections, these programs do not involve free distribution of CFLs, but rather consumers purchasing CFLs through staged payments made in conjunction with their electricity bills. There are no specific targets, locations or timelines set for future programs of this nature.

II. Individual or collaborative efforts by Mexican retailers to promote rapid uptake of energy efficient lighting technology by households in Mexico. This scenario would entail consumers to responding to increased marketing or promotion of efficient lighting alternatives and purchasing CFLs. The capacity of Mexican consumers to purchase CFLs at retail prices is a significant barrier to this alternative. Based on national income data, for 50% of the working population, purchasing 4 CFLs (at a cost of US$5 per bulb) would require spending between 30% and 99% of their weekly earnings[26]. As is discussed below in the barrier analysis, the relatively high upfront cost of CFLs compared to incandescent bulbs is a major barrier to consumer uptake.

III. Continuation of the current situation is also a possible alternative scenario. This would entail large-scale autonomous uptake of CFLs by households. As discussed above, autonomous uptake of CFLs is hampered by their cost, and as such the most likely outcome of a continuation of the current situation would be the provision of light for households mainly through the use of cheaper incandescent lamps.

Sub-step 1b Consistency with mandatory laws and regulations

Each of the potential alternatives to the project discussed above:

- the project occurring without being registered as a SSC-CPA through government or private sector support;

[25] http://www.sener.gob.mx/webSener/portal/index.jsp?id=459

[26] Encuesta Nacional de Ingresos y Gastos de los Hogares: http://www.inegi.gob.mx/est/contenidos/espanol/sistemas/sisnav/default.aspx?

- individual or collaborative efforts by Mexican retailers to promote rapid uptake of energy efficient lighting technology by households in Mexico;
- large-scale autonomous uptake of CFLs by households;

are consistent with Mexico's laws and regulations. A typical SSC-CPA is therefore not the only alternative amongst those considered that is in compliance with mandatory regulations.

Step 2. Investment Analysis

Sub-step 2a Determine appropriate analysis method
SSC-CPAs included in this PoA will involve consumers being provided CFLs free of charge. In this case there are no financial or economic benefits other than CDM related income, as such a simple cost analysis will be undertaken (Option I).

Step 3 – Barrier Analysis
In accordance with Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities, a barrier analysis will be undertaken. This analysis will discuss credible barriers that would prevent the implementation of the proposed project activity from being carried out if the project activity was not registered as a CDM activity.

Barriers to the uptake of energy efficient products, including CFLs, are well documented. Such barriers include inadequate access to capital, isolation from price signals, information asymmetry and split-incentives[27]. That such barriers exist is clear given that CFLs only account for 6% of the global lighting market despite their financial benefits and having been available for several decades[28]. In the context of residential energy efficient lighting, these barriers are particularly apparent.

Access to capital
Particularly relevant for low-income households in developing countries is the fact that CFLs may be up to ten times more expensive than incandescent light bulbs. In the process of prioritising household expenditure towards basic requirements such as food, healthcare and education, there may be very little opportunity for spare capital to be targeted towards investments in energy efficiency. As discussed above, for 50% of the working population earning the lowest wages in Mexico, purchasing four CFLs at approximately US$5 each would require spending between 30% and 99% of their weekly earnings. Despite the financial savings delivered by energy efficiency improvements, the upfront capital requirement acts as a significant barrier to their uptake by low-income households in particular.

Discount rates
In addition to the inability of households to access capital, studies of consumer behaviour towards investments in energy efficient technologies also draw attention to the high discount rates applied, with consumers placing more emphasis on the upfront purchase cost than whole-of-life costs. A range of studies have estimated implicit discount rates applied by consumers to energy efficiency investments range from 25% to 300% across a range of technologies[29]. Particularly relevant in the context of low-

[27] International Energy Agency (2007), *Mind the Gap: Quantifying Principle-Agent Problems in Energy Efficiency*. Paris, France.

[28] OECD/IEA (2006), "Barriers to Technology Diffusion: The Case of Compact Fluorescent Lamps". Information paper for the Annex 1 Expert Group on the UNFCCC. Paris, France.

[29] Stansad, A, Hanemann, W, and Auffhammer, M (2006), *End-use Energy Efficiency in a "Post-Carbon" California Economy*, 2006. See also, Ruderman, H. et al, (1987) "The Behaviour of the Market for Energy Efficiency in Residential Appliances including Heating and Cooling Equipment", Energy Journal 8(1):101-124.

income households in Mexico, is the observation that low-income households apply higher discount rates than more affluent households[30].

Information failures
In Mexico, as in many developed country settings, householders' understanding of the benefits of energy efficiency remains rudimentary. The Mexican government continues to provide information regarding the economic and environmental benefits of investing in energy efficient technologies[31], however, as demonstrated by the case of CFLs, uptake remains low. Barriers to obtaining and applying information relating to energy efficiency are significant, including:

- Time lag between energy consumption and payment of energy bills. Energy price information is divorced from the time at which it is consumed. This time lag can impact the efficacy of price information in influencing consumer awareness and behaviour with regard to household energy use. In this regard many "consumers act as if they have no control over their electricity bill, and the limited feedback they receive is often too late for them to respond."[32]
- Aggregated energy prices may limit householders' understanding of the individual appliance use and its impact on energy bills. Consumers are not aware of which particular appliance or equipment is contributing to the total price they ultimately pay for electricity for a given period, militating against behaviour change, demand response and investment in energy efficient technologies.

Transaction/search costs
Even where a consumer is able to obtain information that is accurate, current and complimentary, they must still spend time to identify and assimilate it. There is an opportunity cost associated with the use of one's time to undertake these tasks. A Californian study estimated that if consumers were aware that CFLs could save them money, they would need to take 45 minutes to accurately assess potential savings and locate a shop that sold these lamps. If individuals valued their time a $20/hour, this would more than double the price of the first purchase of this lamp type[33].

Each of the barriers discussed above can be overcome by registering the proposed programme as a CDM activity. Financial barriers such as access to capital and discount rates, are overcome due to the fact that under the carbon finance delivered by the PoA enables CFLs to be provided free of charge to consumers. Similarly, information barriers and high transaction costs will be ameliorated through the media and promotional activities which will direct consumers to distribution centres with clear instructions and information regarding the exchange and its benefits.

Step 4. Common Practice Analysis

Sub-step 4a. Analyse other activities similar to the proposed activity
Energy efficiency in the household sector is a stated strategy of the Mexican Government to address both energy demand issues and greenhouse gas emissions; domestic lighting, appliances, heating and cooling

[30] Hausman, J, Individual Discount Rates and the Purchase and Utilisation of Energy-Using Durables, Bell Journal of Economics: p.10, 1979.

[31] For example see www.fide.org.mx

[32] Productivity Commission, *The Private Cost Effectiveness of Improving Energy Efficiency,* 2005, p.105.

[33] Sathaye, J et al, 2004. *Market Failures, Consumer Preferences and Transaction Costs in Energy Efficiency Purchase Decisions,* California Energy Commision, Berkley.

and insulation have been identified as areas where efficiency gains can be made. A brief discussion of activities targeting the take-up of energy efficient lighting technologies is provided below.

Efficient Lighting – Bulk Purchase and Financing of CFLs
Since 1990 Mexican government agencies, in collaboration with a range of multilateral institutions (The World Bank, GEF etc), have undertaken trials and promotions of CFL technology. These programs have focused on bulk purchasing by government institutions, and then on-selling to consumers at low margins, thereby reducing CFL prices to below standard retail levels. In addition, some programs have complemented bulk purchasing with consumer finance options such that households are able to pay for CFLs through a levy imposed on energy utility bills.

Despite the occurrence of these CFL programs, penetration of energy efficient lighting remains relatively low. Discussions with local CFL suppliers, as well as analysis of past government programs, indicate that penetration of CFLs into domestic lighting is approximately 10-20%[34].

Sub-step 4b. Discuss any similar options that are occurring.

Efficient Lighting – Essential distinctions to the proposed SSC-CPA
As discussed above, bulk CFL purchasing programs are currently conducted by government institutions such as FIDE. However, there are some essential distinctions between these activities and those proposed under SSC-CPAs distributing CFLs that support the coordinating entity's claim that the proposed activity is additional. These distinctions primarily relate to the financial structure of these projects:

- The similar activities involve consumers purchasing CFLs, utilizing government backed financing mechanisms.
- Products distributed under these programs are still more expensive than the baseline technology.
- In the case of CFLs, because the up-front costs remain high relative to incandescent bulbs, low-income households have generally participated in these programs at lower rates than middle and upper income households[35]. A program assessment undertaken by GEF noted: "The original focus on low-income/low electricity consumers was set aside due to slow sales in that market segment. Overall, 9.6 percent of CFL sales went to low electricity consumers, 31.3 percent to intermediate, and 59.2 percent to high electricity consumer households."[36]. The proposed PoA specifically targets low-income households: CPAs addressing lighting efficiency will distribute CFLs free of charge.
- Government effectively subsidises household purchases of energy efficient products by allowing repayments over time without interest or penalties. SSC-CPAs cannot access such government financing.

Overseas Development Assistance (ODA) Check
SSC-CPAs will not use any ODA funds.

[34] This estimate is based on analysis by the coordinating entity of past and present government programs, as well as estimates of standard retail sales. Further details are provided in Annex 3.

[35] World Bank, Report No. 22074, PERFORMANCE AUDIT REPORT MEXICO, page 4, April 12, 2001

[36] GEF, 2001 "PERFORMANCE AUDIT REPORT MEXICO - MEXICO HIGH-EFFICIENCY LIGHTING PILOT TRUST FUND PROJECT", p.4.

A financing plan for the purposes of demonstrating compliance with this component of the Gold Standard additionality screen will be provided as an Annex to SSC-CPAs submitted to the DOE for inclusion in the PoA.

Proof of technology transfer/knowledge innovation
The project involves the transfer of CFLs into Mexico. This transfer largely occurs "South to South", in that the products to be used in the SSC-CPAs are manufactured in China.

In addition, there will be a transfer of knowledge and capacity from the "North to South". In this instance, Cool nrg will train local employees in the development, implementation and management of energy efficiency projects and in the requirements of CDM. Significant intellectual property will be transferred from the Cool nrg group's international staff (based in Australia, the United States and Europe) to the local Mexican team. This will establish a local business of highly trained energy efficiency professionals.

Further transfer of knowledge will be made through the education and awareness raising aspects of each SSC-CPA. Individual households will receive information regarding the benefits (financial and environmental) of energy efficiency. This information will empower these households who will better understand how their consumption behaviour and purchasing decisions relating to energy impact on their financial position and the environment.

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.

Key additionality criteria:

- Confirm that at no stage were public or private announcements made regarding the SSC-CPA proceeding without use of the CDM (Gold Standard requirement).
- Define credible possible alternative scenarios relating to the distribution of the energy efficient light bulbs relevant to the SSC-CPA.
- Ensure that the proposed SSC-CPA is not the only alternative amongst those considered that is in compliance with mandatory regulations.
- Complete a simple cost analysis to demonstrate that without CDM revenue the SSC-CPA is not a financially attractive option.
- Conduct a barrier analysis to demonstrate that the project activity faces significant barriers that are overcome through the CDM.
- Describe essential differences between the SSC-CPA and similar activities that are occurring.
- Demonstrate that ODA is not directly used to finance the SSC-CPA (Gold Standard requirement).
- Describe the technology transfer or knowledge innovation involved in the SSC-CPA (Gold Standard requirement).

Each SSC-CPA-DD will include a discussion of additionality addressing each of these key criteria.

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.

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:

>> The project activity reduces electricity consumption by households. AMS II.C. requires that baseline emissions be calculated by multiplying the energy baseline (rated power of baseline devices (Watts) multiplied by the average usage of those devices (hours)) by the emissions factor for electricity of the grid applicable to the project boundary.

Equations for determining emission reductions are stipulated in section E.6.2 below.

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

>>

1. Determination of Grid Emissions Factor:

The "Tool to calculate the emission factor for an electricity system" (version 1) has been used to determine the CO_2 emission factor for the displacement of electricity generated by power plants in the relevant electricity system, by calculating the "operating margin" (OM) and "build margin" (BM) as well as the "combined margin" (CM). This tool has been used as the project activity results in savings of electricity that would have been provided by the grid.

Step 1 – Identify the relevant electric power system

For the CUIDEMOS Mexico PoA, the relevant project electricity system is the national grid of Mexico, which consists of the power plants, transmission and distribution lines that supply electricity to the households where electricity will be saved. Whilst there are no imports from other systems inside Mexico, there are some international interconnections with the Mexican power system. These include connections with Texas and California in the north (imports), and Belize in the south (exports). These connections have been accounted for through quantification of imports and exports in the calculation of the operating margin (OM) in *Step 3*.

Step 2 – Select an operating margin (OM) method

The tool to calculate the emission factor for an electricity system provides four options to calculate the operating margin. For CUIDEMOS Mexico option (a) Simple OM, has been selected because low-cost/must-run resources have over the last five years constituted less than 50% of total grid generation. The table below provides the proportion of electricity generated by nuclear, geothermal, wind and hydro between 2002 and 2006. The average generation from these sources is well below the 50% benchmark for application of a *Simple OM* calculation method.

	2002	2003	2004	2005	2006
Combined Cycle	22.3%	27.0%	34.7%	33.5%	40.5%
Turbogas	3.2%	3.4%	1.3%	0.6%	0.7%
Diesel	0.3%	0.4%	0.3%	0.4%	0.4%
Dual	6.9%	6.8%	3.8%	6.5%	0.0%
Coal	8.0%	8.2%	8.6%	8.5%	14.1%
Fuel-oil (thermal)	39.4%	36.2%	31.8%	29.7%	23.1%
Geothermal + wind	2.7%	3.1%	3.1%	3.3%	3.0%
Nuclear	4.8%	5.2%	4.4%	4.9%	4.8%
Hydro	12.4%	9.7%	12.0%	12.6%	13.5%

Low-cost/must-run	*19.9%*	*18.0%*	*19.5%*	*20.8%*	*21.3%*
Total Generation (GWh)	201,059	203,555	208,634	218,971	225,079

Table 2: Share of low-cost/must-run resources from 2002-2006. Source: SENER "Prospectiva del sector electrico 2007-2016", CFE "Programa de Inversiones (POISE) 2004-2013", "POISE 2008-2017"

The ex-ante option using a 3-year generation weighted average will be used to calculate the simple OM.

Step 3 – Calculate the operating margin emission factor according to the selected method
The simple OM emission factor is calculated as the generation weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the power system (identified above in step 1). Based on data availability, option C is used to calculate the simple OM. This calculation is based on data of total net electricity supplied to the grid by all power plants serving the system and the fuel types and total fuel consumption of the project electricity system, excluding all low-cost/must-run power plants, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_y}$$

Where:

$EF_{grid,OMsimple,y}$	=	Simple operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
$FC_{i,y}$	=	Amount of fossil fuel type *i* consumed in the project electricity system in year *y* (mass or volume unit)
$NCV_{i,y}$	=	Net calorific value (energy content) of fossil fuel type *i* in year *y* (GJ / mass or volume unit)
$EF_{CO2,i,y}$	=	CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2/GJ)
EG_y	=	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year *y* (MWh)
i	=	All fossil fuel types combusted in power sources in the project electricity system in year *y*
y	=	Either the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex ante option) or the applicable year during monitoring (ex post option), following the guidance on data vintage in step 2

A summary calculation of the simple OM using option C is provided below. Annex 12 contains detailed information on electricity generation and emissions used to calculate OM .

OPERATING MARGIN	**2004**	**2005**	**2006**
Total Electricity Generatin (GWh)	208,630	218,971	225,079
% Low Cost/Must Run resources	19.5%	20.8%	21.3%
Total Electricty Generation (ex LC/MR)	167,947	173,425	177,137
Import (GWh)	47	87	523
Tones of CO2e	109,064,257	115,888,509	113,879,260
Emission Factor (tCO2/MWh)	0.649	0.668	0.641

Operating Margin (tCO2/MWh)	**0.653**

Table 3: Summary Mexico Operating Margin 2004-2006. Source: SENER, Prospectiva del sector electrico 2005-2014, 2006-2015 and 2007-2016.

Step 4 – Identify the cohort of power units to be included in the build margin

The Build Margin (BM) emission factor is calculated ex-ante (option 1) using data from the set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. Those power plants included in the calculation BM are listed below.

Power Plants	Start of Operations	Technology	Installed Capacity (MW)	Net Generation (GWh)	Carbon Content (tC/Tj)	EG * EF (tCO2e)
Altamira III y IV	2003	CC	1036	6465	15.3	2,488,266
Chicoasen (Manuel Moreno Torres)	2004	HID	2400	6629	0	-
Tuxpan (Adolfo Lopez Mateos)	2004	TG	2263	10987	15.3	6,241,479
Rio Bravo III	2004	CC	495	2477	15.3	956,743
El Sauz (CFE)	2004	CC	601	2857	15.3	1,103,559
Baja California Sur I	2005	IC	42.9	210	20.2	124,052
Rio Bravo IV	2005	CC	500	3000	15.3	1,158,756
La Laguna II	2005	CC	498	3716	15.3	1,435,491
Hermosillo	2005	CC	227	1343	15.3	518,924
Valladolid III	2006	CC	525	1817	15.3	701,787
Tuxpan V	2006	CC	495	1627	15.3	628,567
Altamira V	2006	CC	619	1987	15.3	767,497
Chihuahua II (El Encino)	2006	CC	3226	3136	15.3	1,211,324
Totals			12,928	46,248		17,336,446

Table 4: Power plants included in the calculation of Build Margin emissions factor. Source: SENER, Prospectiva del sector electrico 2005-2014, 2006-2015 and 2007-2016.

Step 5 - Calculate the build margin emission factor

The BM emissions factor is the generation weighted average emission factor (tCO_2/Mwh) of the power capacity additions identified above, during the most recent year for which power generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (tCO_2/MWh)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y (tCO_2/MWh)

m = Power units included in the build margin

y = Most recent historical year for which power generation data is available

The CO_2 emission factor ($EF_{EL,m,y}$) of each power unit has been determined using option B2 set out in the guidance for calculation of the simple OM. This option has been selected as only data on electricity generation and fuel type are available, and is calculated as follows:

$$EF_{EL,m,y} = \frac{EF_{CO2,m.i.y} \times 3.6}{\eta_{m,y}}$$

Where:

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *m* in year *y* (tCO_2/MWh)

$EF_{CO2,m.i.y}$ = Average CO_2 emission factor of fuel type *I* used in power unit *m* in year *y* (tCO_2/GJ)

$\eta_{m,y}$ = Average net energy conversion efficiency of power unit *m* in year *y* (%)

y = The mst recent year for which data is available at the time of submission of the PoA-DD to the DOE.

Annex 12 provides details of all fuel types, plant efficiency, and assumptions used in the determination of fuel emission factors. In summary, BM has been calculated as follows:

BUILD MARGIN	**2006**
Total Generation in 2005 GWh	225,079
BM Electricity Generation GWh	46,248
BM Tonnes of CO2e	17,336,446
% BM of Total Generation	20.5%

Build Margin (tCO2/MWh)	**0.375**

Table 5: Summary Calculation Build Margin Emissions Factor. Source: SENER, Prospectiva del sector electrico 2005-2014, 2006-2015 and 2007-2016.

Step 6 – Calculate the combined margin emissions factor

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (tCO_2/MWh)

$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year *y* (tCO_2/MWh)

w_{OM} = Weighting of operating margin emissions factor (%)

w_{BM} = Weighting of build margin emissions factor (%)

Based on the value obtained for the operating margin (0.653 tCO_2/MWh) and build margin (0.375 tCO_2/MWh) emissions factors, a **combined margin emissions factor of 0.514 tCO_2/MWh** will be used for the CUIDEMOS Mexico PoA, until the renewal of the PoA crediting period is undertaken at which point the Emission Factor will be revised.

2. Baseline Emissions

Because the energy displaced is electricity, the emission baseline is determined as the product of the baseline energy consumption of equipment/appliances and the emission factor for the electricity displaced:

$$BE_y = E_{BL,y} * EF_{CO2,\,ELEC,y} \quad (1)$$

$$E_{BL,y} = \Sigma_i (n_i \,.\, p_i \,.\, o_i)/(1-l_y) \quad (2)$$

Where:

BE_y	Baseline emissions in monitoring period *y* (tCO_2e)
$E_{BL,y}$	Energy consumption in the baseline in monitoring period *y* (kWh)
$EF_{CO2,ELEC,y}$	Emission factor in monitoring period *y* calculated in accordance with the provisions in AMS I.D (tCO_2e/MWh)
Σ_i	the sum over the group of "i" devices (e.g. 40W incandescent bulb, 5hp motor) replaced, for which the substituted energy efficient equipment operating during the monitoring period, implemented as part of the project.
n_i	the number of devices of the group of "i" devices (e.g. 40W incandescent bulb, 5hp motor) replaced for which the substituted energy efficient equipment is operating during the monitoring period.
p_i	the power of the devices of the group of "i" devices (e.g. 40W incandescent bulb, 5hp motor) replaced. In the case of a retrofit activity, "power" is the weighted average of the devices replaced.
o_i	the average operating hours during the monitoring period of the devices of the group of "i" devices replaced.
l_y	Average technical grid losses (transmission and distribution) during monitoring period y for the grid serving the locations where the devices are installed, expressed as a fraction. The grid losses should not contain non-technical losses such as commercial losses (e.g. theft/pilferage). The grid losses should be estimated using recent, accurate and reliable data available within the host country. It can either be estimated by a (national) utility or an official governmental body or by project participants. Reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 10% may be used for technical grid losses, if no recent data is available or the data cannot be regarded accurate and reliable.

3. Project Activity Emissions

Project emissions consist of electricity and/or fossil fuel used in the project equipment, determined as follows:

$$PE_y = E_{PJ,y} * EF_{CO2,y} \quad (3)$$

Where:

PE_y	Project emissions in monitoring period *y* (tCO_2e)
$E_{PJ,y}$	Energy consumption in project activity in monitoring period *y*. This shall be determined *ex post* based on monitored values
$EF_{CO2,y}$	Emission factor for electricity or thermal energy displaced. The emissions associated with grid electricity consumption should be calculated in accordance with the procedures of AMS I.D. For fossil fuel displaced 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.

Project energy consumption in case of project activities that displace grid electricity is determined
as follows using the data of the project equipment:

$$E_{PJ,y} = \Sigma_k (n_k \cdot p_k \cdot o_k)/(1-l_y) \quad (4)$$

Where:

Σ_k	the sum over the group of "k" replacement devices operating during the monitoring period, implemented as part of the project.
n_k	the number of devices of the group of "k" replacement devices operating during the monitoring period.
p_k	the power of the devices of the group of "k" devices distributed to households.
o_k	the average operating hours during the monitoring period of the devices of the group of "k" devices distributed to households.

4. Emission Reductions

$$ER_y = [(BE_y - PE_y)*(1-BP)] - LE_y \quad (5)$$

Where:

ER_y	Emission reductions in year *y* (tCO_2e)
BP	Baseline Penetration Factor (%), proportion of lighting sockets in households participating in the PoA with CFLs already installed (BP has been set at 5% for CUIDEMOS Mexico PoA)
LE_y	Leakage emissions in year *y* (tCO_2e)

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

(Copy this table for each data and parameter)

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

Data / Parameter:	n_{PSG}
Data unit:	-
Description:	Total sample size used for monitoring utilisation hours/electricity consumption of CFLs.
Source of data used:	Determined by project participants
Value applied:	240
Justification of the choice of data or description of measurement methods and procedures actually applied :	Within Project Sample Group households enough light fittings will be monitoredto enable data to be captured from 240 lights in order to determine an average hours of utilisation and/or electricity consumption. This sample size will enable a robust assessment of key parameters for the determination of emission reductions. For each CPA of 1 million CFLs distributed, a total sample size of 240 CFLs will be monitored in order to be statistically representative with an error margin of +/- 6.5% at 95% confidence level. Annex 8 ('CUIDEMOS Mexico – Selection of sample groups') provides a detailed description of the statistical methods used to select households for the PSG.
Any comment:	

Data / Parameter:	n_{PCCG}
Data unit:	-
Description:	Total sample size of CFLs used for checking to ensure ongoing operation of project devices.
Source of data used:	Determined by project participants
Value applied:	240
Justification of the choice of data or description of measurement methods and procedures actually applied :	Within each household up to four light bulbs will be checked. Data to be captured from up to 240 lights in order to determine the number of CFLs still operational. This sample size will enable a robust assessment of a key parameter for the determination of emission reductions. For each CPA of 1 million CFLs distributed, a total sample size of 240 CFLs will be monitored in order to be statistically representative with an error margin of +/- 6.5% at 95% confidence level. Annex 8 ('CUIDEMOS Mexico – Selection of sample groups') provides a detailed description of the statistical methods used to select households for the PCCG.
Any comment:	

Data / Parameter:	EF
Data unit:	$kgCO_2/kWh$
Description:	Emissions factor for electricity displaced from the grid relevant to the project boundary.
Source of data used:	Official government data – SENER "Prospectiva del sector electrico 2005-2014", "Prospectiva del sector electrico 2006-2015", "Prospectiva del sector electrico 2007-2016"

Value applied:	0.514
Justification of the choice of data or description of measurement methods and procedures actually applied :	Project coordinator has obtained latest data from government sources and applied calculation methodology specified in "Tool to calculate the emission factor for an electricity system" version 1 (EB Report 35, Annex 12). Details of calculations are provided in Annex 12.
Any comment:	EF will be revised at the point of renewal of the crediting period of the PoA.

Data / Parameter:	**TD**
Data unit:	%
Description:	Transmission and distribution losses for electricity displaced from the grid relevant to the project boundary.
Source of data used:	Official data from CFE Programa de Inversiones (POISE) 2008-2017
Value applied:	13.55%
Justification of the choice of data or description of measurement methods and procedures actually applied :	Project proponent has used the most up to date official government data for the national electricity grid. Where more specific data is available for regional grids or areas, this may be used if it can be demonstrated that the data is accurate, robust and up to date.
Any comment:	

Data / Parameter:	**BP**
Data unit:	%
Description:	Baseline Penetration Factor, proportion of lighting sockets in low-income households targeted by the PoA with CFLs already installed.
Source of data used:	World Bank GEF Post-Implementation Impact Assessment, Mexico-Ilumex Project, 2006 "Mexico's Energy Efficiency Financing: Assessment Report", May 2007, APEC Efficiency Valuation Organisation in collaboration with Mexico's National Commission for Energy Conservation (CONAE). World Bank, Report No. 22074, PERFORMANCE AUDIT REPORT MEXICO, April 12, 2001. www.fide.org.mx/english08/09-is.html www.fide.org.mx/el_fide/avances-dic-07/23-pr.html
Value applied:	5%
Justification of the choice of data or description of measurement methods and procedures actually applied :	To account for autonomous replacement amongst low-income households, the coordinating entity will reduce the emission reductions claimed under the PoA by a factor of 5% (the Baseline Penetration Factor - BP). This figure is based on estimates of current CFL penetration across all Mexican households provided in Annex 3, and the results of World Bank and GEF assessments of CFL purchases by low-income households. The combination of these two data sources – estimates of total CFL penetration, and low income household's take-up of CFLs yields an uptake rate of 2%. However, to account for the possibility of some medium income households (with higher implied rates of autonomous uptake of CFLs) participating in the PoA, the BP value to be fixed for the PoA has been raised to 5% to ensure a conservative approach.
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 SSC-CPA:	
(Copy this table for each data and parameter)	
Data / Parameter:	**n_k**
Data unit:	
Description:	Number of operational CFLs
Source of data to be used:	Record keeping during CFL exchange process and monitoring of cross check households during crediting period.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	1,000,000 CFLs
Description of measurement methods and procedures to be applied:	The coordinating entity will keep records of each household participating in the project activity, including the number of project devices distributed. The ongoing operation of these CFLs will be checked at least annually in a sample of non-metered households.
QA/QC procedures to be applied:	The initial value of n_k will be determined through record keeping during the exchange of CFLs for incandescent lamps. At the time of the exchange with each household a record will be kept of the number and power of CFLs provided to them. This information will be stored in the project data management system (DMS). Each employee involved in the distribution of CFLs will be trained in the use of the DMS to ensure accurate record keeping. The DMS is able to track the number of CFLs distributed each day at each distribution point. In addition, supply and logistics record keeping procedures will ensure that data is kept on the number of CFLs provided to each distribution point. These two sources of information data will be used to cross check the number of CFLs distributed at each outlet. The DMS uses industry standard software, databases, infrastructure and back-up procedures to allow full auditability with the aim of ensuring long-term data integrity and security so that data is not misrecorded, overwritten or lost. Data entry occurs at point of CFL distribution to householders, with the full database stored at a central location. Data is verified in a timely manner at point of data entry to ensure valid and non-duplicate names and addresses, and a valid and accurate number and wattage of both incandescent bulbs replaced, as well as number and wattage of CFLs distributed, for each household. All data will be stored in the project DMS for at least two years after the crediting period or the last issuance of CERs, for this programme, whichever occurs later.
Any comment:	

Data / Parameter:	**n_i**

Data unit:	
Description:	Number of incandescent bulbs collected
Source of data to be used:	SSC-CPA implementer
Value of data applied for the purpose of calculating expected emission reductions in section B.5	1,000,000 incandescent bulbs
Description of measurement methods and procedures to be applied:	The coordinating entity will keep records of each household participating in the project activity, including the number of incandescent bulbs collected and subsequently destroyed.
QA/QC procedures to be applied:	At the time of the exchange with each household a record will be kept of the number of incandescent bulbs replaced. This information will be stored in the project data management system (DMS). Each employee involved in the project will be trained in the use of the DMS to ensure accurate record keeping. The DMS uses industry standard software, databases, infrastructure and back-up procedures to allow full auditability with the aim of ensuring long-term data integrity and security so that data is not misrecorded, overwritten or lost. Data entry occurs at point of incandescent exchange with householders, with the full database stored at a central location. Data is verified in a timely manner at point of data entry to ensure valid and non-duplicate names and addresses, and a valid and accurate number and wattage of both incandescent bulbs replaced, as well as number and wattage of CFLs distributed, for each household. As per AMS.II.C. an independent auditor will be required to verify the collection and subsequent destruction of the incandescent bulbs. This will involve an independent verification of the total number of incandescent bulbs collected. All data will be stored in the project DMS for at least two years after the crediting period or the last issuance of CERs, for this programme, whichever occurs later.
Any comment:	

Data / Parameter:	**p_i**
Data unit:	Watts
Description:	The power of the incandescent bulbs "i" replaced. In the case of a retrofit programme, p_i is the weighted average of the devices replaced.
Source of data to be used:	Nameplate data
Value of data applied for the purpose of calculating expected emission reductions in section B.5	66.6 Watts for incandescent bulbs
Description of	The coordinating entity will keep records of each household participating in the

measurement methods and procedures to be applied:	project activity, including the wattage of incandescent bulbs collected and subsequently destroyed.
QA/QC procedures to be applied:	At the time of the exchange with each household a record will be kept of the power of incandescent bulbs replaced. This information will be stored in the project data management system (DMS). Each employee involved in the project will be trained in the use of the DMS to ensure accurate record keeping. Each employee involved in the project will be trained in the use of the DMS to ensure accurate record keeping. The DMS uses industry standard software, databases, infrastructure and back-up procedures to allow full auditability with the aim of ensuring long-term data integrity and security so that data is not misrecorded, overwritten or lost. Data entry occurs at point of incandescent exchange with householders, with the full database stored at a central location. Data is verified in a timely manner at point of data entry to ensure a valid and accurate number and wattage of incandescent bulbs replaced. All data will be stored in the project DMS for at least two years after the crediting period or the last issuance of CERs, for this programme, whichever occurs later.
Any comment:	

Data / Parameter:	$\mathbf{p_k}$
Data unit:	Watts
Description:	The weighted average power of the CFLs “k” distributed.
Source of data to be used:	Nameplate data
Value of data applied for the purpose of calculating expected emission reductions in section B.5	17 Watts for CFLs
Description of measurement methods and procedures to be applied:	The coordinating entity will keep records of each household participating in the project activity, including the wattage of CFLs distributed.
QA/QC procedures to be applied:	At the time of the exchange with each household, a record will be kept of the power rating of CFLs distributed. This information will be stored in the project data management system (DMS). Each employee involved in the project will be trained in the use of the DMS to ensure accurate record keeping. This information will also be cross-checked with supply data indicating the wattage of CFLs provided to each distribution point. The DMS uses industry standard software, databases, infrastructure and back-up procedures to allow full auditability with the aim of ensuring long-term data integrity and security so that data is not misrecorded, overwritten or lost. Data entry occurs at point of incandescent exchange with householders, with the full

	database stored at a central location. Data is verified in a timely manner at point of data entry to ensure a valid and accurate number and wattage of CFLs distributed for each household is recorded. All data will be stored in the project DMS for at least two years after the crediting period or the last issuance of CERs, for this programme, whichever occurs later.
Any comment:	

Data / Parameter:	o_k
Data unit:	Hours
Description:	The average annual operating hours of CFLs "k" distributed.
Source of data to be used:	Periodic readings of monitoring equipment
Value of data applied for the purpose of calculating expected emission reductions in section B.5	3 hours
Description of measurement methods and procedures to be applied:	Electronic metering equipment installed in project sample group (PSG) households. This equipment will feed monitoring information back to a centralised database over the internet in real-time.
QA/QC procedures to be applied:	Monitoring equipment will be spot checked to ensure ongoing functionality and accurate calibration. The metering equipment is web-enabled allowing real-time collation of data. If irregularities are recorded with equipment or data, this will be registered immediately and corrective actions implemented to repair or re-calibrate metering equipment. If the internet connection fails during monitoring, data can be retrieved manually from meters. All data will be stored in the project DMS for at least two years after the crediting period or the last issuance of CERs, for this programme, whichever occurs later.
Any comment:	

Data / Parameter:	**CFL collection and recycling scheme**
Data unit:	N/A
Description:	The coordinating entity will work with government and non-government stakeholders to assist in the establishment of a national CFL collection and recycling scheme.
Source of data to be used:	Report from coordinating entity to the verifying DOE
Value of data applied for the purpose of calculating expected emission reductions in section B.5	N/A

Description of measurement methods and procedures to be applied:	The coordinating entity shall report to the verifying DOE on the establishment of a CFL collection and recycling scheme in the city or state that is the location of the SSC-CPA.
QA/QC procedures to be applied:	
Any comment:	

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

>> AMS-II.C. stipulates that if the devices installed have a constant current (ampere) characteristics, monitoring shall consist of monitoring either the "power" and "operating hours" or the "energy use" of the devices installed using an appropriate method methodology. Appropriate methods include:

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

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

Based on this methodology, each SSC-CPA within the proposed PoA will use the following data sources and monitoring procedures to determine emission reductions:

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

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

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

Independent check of scrapped incandescent bulbs

As is required by the methodology, the coordinating entity has engaged the services of a local environmental audit firm to conduct independent verification of the scrapping of incandescent light bulbs collected during the distribution process. Envirosense S.A. de C.V is a private consultant specialized in environmental auditing, consulting and certifications. Incandescent bulbs collected during the distribution will be sent back to the central warehouses of the distribution partners. They will then be transported to the waste management company Servicios Integrales de Residuos SA de CV where scrapping will be conducted. All storage and destruction processes will be independently verified and the result of such process will be presented to the verifying DOE.

The process for undertaking this check will include:

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

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

Monitoring Use of Project Devices

Monitoring a sample of distributed CFLs to determine average hours of utilisation (o_k) or total energy consumption will be undertaken by installing metering equipment in households belonging to the Project Sample Group (PSG). The annual operating hours of monitored devices will be used to determine the energy baseline as per equations listed in E.6.2. above. In addition, the metering devices used by the project coordinator can simultaneously measure total electricity consumption of the CFLs. Where possible this measure will be used to determine the project energy consumption for each monitoring period.

The mean hours of use, or total energy use of light bulbs found in the PSG households will be directly extrapolated to all households involved in the CPA. The purpose of establishing the PSG is to create a *representative sample* of all other households participating in the efficient lighting initiative. It is not possible to monitor *all* households involved in a CPA, and it is a fundamentally agreed scientific and statistical procedure to apply mean values obtained through sampling to the broader population. Therefore, for each monitoring period a mean value will be obtained for energy used per project and baseline light bulb which will be extrapolated across the total number of bulbs operating during that monitoring period. This will be used in the calculations of project and baseline emissions as stipulated in the equations provided in section E.6.2. above.

Establishment of Project Sample Group

The procedure to determine the sample of CFLs will ensure that they adequately represent the broader population, minimising sampling error. Given that participation in each SSC-CPA is voluntary, determination of the exact population of participating households prior to establishment of the PSG is not possible. In addition, because the coordinating entity cannot force households to participate in sample

groups, the devices monitored in the resulting sample will be to a degree, self-selected rather than purely random. Despite these limitations the coordinating entity will work to ensure that devices sampled are representative of the broader population of measures in participating households.

A detailed description of the statistical methods used to select households for inclusion in the PSG is provided in Annex 8 ('CUIDEMOS Mexico – Selection of sample groups'). This Annex also details strategies to manage sample group households over time to ensure their continued participation.

Establishment of Project Cross-Check Sample Group

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

As discussed above, the results obtained from the sampling process will be directly extrapolated across the entire population of households participating in the CPA. Therefore, the proportion of CFLs installed and continuing to function as determined through the household cross-check will be taken to be representative of the pattern occurring in all households. For example, if the cross-check survey at the end of a monitoring period reveals that 85% of the bulbs originally distributed to the sample households are still functioning, it will be extrapolated that 85% of *all* CFLs distributed under the CPA are still functioning.

Determination of EF

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

Determination of TD

Transmission and distribution losses have been calculated for the grid relevant to the project boundary. Data has been sourced from Mexican government agencies to ensure accuracy. The national electricity utility CFE estimated that in 2007, the transmission and distribution losses for the national grid were 13.55%[37]. Where more specific data is available for regional grids or areas, this may be used if it can be demonstrated that the data is accurate, robust and up to date.

Data Management System

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

- A list of households participating in the project, including information to identify households by name and address.

[37] CFE, Programa de Inversiones 2007-2016.

- A record of the incandescent bulbs (number and power) surrendered and replacement CFLs (number and power) provided to each participating household.
- A list of households included in the PSG, including information to identify households by name, address and date added to the sample group.
- The following data relating to monitored CFLs and equipment:
    - Identification number for each CFL
    - Type of monitoring equipment and date of installation
    - Confirmation at each spot check that monitoring equipment is functioning
    - Confirmation at each spot check that the monitored device is functioning
    - Utilization data (hours of use and/or electricity consumption)
- A list of households participating in PCCG and the results of periodic checks of non-metered CFLs. The proportion of devices still operating at the end of each monitoring period will be calculated from these cross-checks and entered into the DMS.

Monitoring Periods

Data will be collected for each monitoring period, and used to calculate emission reductions for that portion of the crediting period. The length of each monitoring period will not exceed one year, with surveys of cross-check households to occur at least annually.

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

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)

>> 15th December 2008

Mr Philip Cohn
Cool nrg Carbon Investments Pty Ltd
phil.cohn@coolnrg.com

Annex 1

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

Organization:	Cool nrg Carbon Investments Pty Ltd
Street/P.O.Box:	269 Stewart Street
Building:	
City:	Brunswick East
State/Region:	Victoria
Postfix/ZIP:	3057
Country:	Australia
Telephone:	+61 3 9387 2964
FAX:	+61 3 9387 0299
E-Mail:	phil.cohn@coolnrg.com
URL:	www.coolnrg.com
Represented by:	Philip Cohn
Title:	Carbon Markets and Accreditation
Salutation:	Mr
Last Name:	Cohn
Middle Name:	Robert
First Name:	Philip
Department:	
Mobile:	+61 410 411 161
Direct FAX:	As above
Direct tel:	As above
Personal E-Mail:	As above

Organization:	Cool nrg Mexico SRL de CV
Street/P.O.Box:	Vosgos #220int. 102-B
Building:	
City:	Col. Lomas de Virreyes
State/Region:	Mexico, D.F. C.P.
Postfix/ZIP:	11000
Country:	Mexico
Telephone:	+52 55 2789 7751
FAX:	
E-Mail:	rodrigo.castellanos@coolnrg.com
URL:	www.coolnrg.com
Represented by:	Rodrigo Castellanos
Title:	CDM Projects Latin America
Salutation:	Mr
Last Name:	Rodrigo
Middle Name:	
First Name:	Castellanos
Department:	
Mobile:	+61 424 178 216

Direct FAX:	As above
Direct tel:	As above
Personal E-Mail:	As above

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding is used for this PoA.

Annex 3

BASELINE INFORMATION
Estimation of current and future penetration of CFLs in Mexico

	CFL Programs in Mexico											
Years	Prior to Ilumex	Ilumex	FIDE Programs	Fitaperm/ASI	CFE Programs	LyFC Programs	Estimated Market Sales	**Total CFLS per Year**	# of operating CFLS per year (5 years lifetime)	Total Households in Mexico	# of lightbulbs in Mexico	Estimated CFL Penetration
1990	858						125,000	**125,858**	125,858	12,320,958	98,567,663	0.1%
1991	17,300						125,000	**142,300**	268,158	12,813,796	102,510,370	0.3%
1992	17,300						125,000	**142,300**	410,458	13,326,348	106,610,785	0.4%
1993	43,250						125,000	**168,250**	578,708	13,859,402	110,875,216	0.5%
1994	43,250						125,000	**168,250**	746,958	14,413,778	115,310,225	0.6%
1995	47,500	630,000	305,000				125,000	**1,107,500**	1,728,600	14,990,329	119,922,634	1.4%
1996		630,000	305,000				125,000	**1,060,000**	2,646,300	15,589,942	124,719,539	2%
1997		630,000	305,000				125,000	**1,060,000**	3,564,000	16,213,540	129,708,320	3%
1998		630,000	305,000				250,000	**1,185,000**	4,580,750	16,862,082	134,896,653	3%
1999		80,000	1,400,000				650,000	**2,130,000**	6,542,500	17,536,565	140,292,519	5%
2000			1,060,000	500,000			1,600,000	**3,160,000**	8,595,000	18,238,028	145,904,220	6%
2001			950,000	50,000			2,300,000	**3,300,000**	10,835,000	18,967,549	151,740,389	7%
2002			1,340,000	70,000	2,600,000	180,000	1,200,000	**5,390,000**	15,165,000	19,726,251	157,810,004	10%
2003			1,230,000	90,000		180,000	5,000,000	**6,500,000**	20,480,000	20,515,301	164,122,405	12%
2004			890,000	30,000		150,000	6,250,000	**7,320,000**	25,670,000	21,335,913	170,687,301	15%
2005			750,000	40,000		200,000	6,875,000	**7,865,000**	30,375,000	22,189,349	177,514,793	17%
2006			50,000	40,000		150,000	7,562,500	**7,802,500**	34,877,500	23,076,923	184,615,385	19%
2007				40,000		100,000	8,318,750	**8,458,750**	**37,946,250**	**24,000,000**	**192,000,000**	**20%**

Sources:
World Bank GEF Post-Implementation Impact Assessment, Mexico-Ilumex Project, 2006, p. 50
"Mexico's Energy Efficiency Financing: Assessment Report", May 2007, APEC Efficiency Valuation Organisation in collaboration with Mexico's National Commission for Energy Conservation (CONAE).
World Bank, Report No. 22074, PERFORMANCE AUDIT REPORT MEXICO, page 4, April 12, 2001.
www.fide.org.mx/english08/09-is.html
www.fide.org.mx/el_fide/avances-dic-07/23-pr.html

Notes:
Assumes 10% annual growth in retail sales from 2004.

Discussion of Baseline Penetration Factor, Free-Riders and Free-Drivers

The coordinating entity has proposed the use of a Baseline Penetration Factor (BP) in order to discount the emission reductions generated by SSC-CPAs under the PoA. A value for BP of 5% will be used for the PoA. BP accounts for autonomous replacement of incandescent bulbs with CFLs in the baseline scenario or "free-riders". That is, households receiving free CFLs who would have purchased them regardless of the PoA. As has been discussed in Section E.4 the value of 2% corresponds to the current the uptake of CFLs amongst low-income households in Mexico.

Discounting emission reductions by applying BP at a rate above the current penetration of CFLs in target low-income households is a very conservative approach. BP does not account for changes in future purchasing patterns, quality of CFLs available through retail channels or positive spillover effects of energy efficiency programmes.

BP assumes that current CFL penetration represents future purchasing patterns by consumers, without taking into consideration habitual behaviour, lack of access to specialty CFL types in many markets and dynamics such as changes to local economic conditions, and alterations in electricity prices. Of particular relevance in the present circumstances in Mexico is the dramatic decline in current economic conditions. For example, the Mexican peso has devalued by 35% relative to the US dollar since 2008, increasing the price of all imported goods including CFLs. For the foreseeable future, it can be expected that declining consumer sentiment will drive purchasers, particularly low-income households, away from expensive goods such as CFLs when there is cheaper alternative that is already is use.

In cases where households do choose to autonomously replace incandescent bulbs with CFLs, there is also strong likelihood that the quality of CFLs available to consumers will be substantially lower than international manufacturing standards require[38]. There are significant issues with the quality, longevity and output of CFLs available to consumers in developing countries. Because of the price premium CFLs attract due to the expense of manufacture of a high quality CFL product, lower quality and cheaper CFLs often dominate CFL retail sales in those countries.

A review conducted by USAID Asia confirms CFL quality issues across the region:

> "The findings in this regional analysis suggest that the total market share of low-quality CFLs produced in Asia – those for which there is no evidence of product testing and registration, and/or which have a rated lifetime of less than 6,000 hours – averages close to 50 percent of the market. This means that Asian consumers have a 50-50 chance of selecting a sub-standard CFL."[39]

Whilst this research relates to CFL sales in Asia, anecdotal evidence in Mexico suggests that similar experiences are likely. This research would suggest that if SSC-CPA involves the distribution of high quality CFLs they will be delivering greater energy savings than the average CFL found in the baseline scenario, which will be poorer quality and fail sooner. Therefore, as the PoA results in the installation of high quality CFLs, discounting its emission reductions against a baseline penetration of lower quality CFLs is very conservative.

[38] The Manilla Compact was concluded in June 2008 to address this problem by developing a quality identification system for CFLs.

[39] USAID, 2007: "CONFIDENCE IN QUALITY: Harmonization of CFLs to Help Asia Address Climate Change", p.2

Finally, it is also methodologically conservative to consider free riders without commensurate attention given to positive spillover effects or "free-drivers" (i.e. additional uptake of CFLs above and beyond those offered directly through the scheme). The coordinating entity's previous experience with free CFL distribution programs has found that such programs can stimulate significant increases in retail purchases, creating a substantial numbers of free drivers.

For example, in the Australian state of New South Wales (NSW) under the demand side abatement component of the Greenhouse Gas Abatement Scheme, companies like Cool nrg provided households with free CFLs. In 2006, the year the energy efficient lighting campaign was undertaken, CFL suppliers reported that NSW experienced a 10 to 12% higher growth rate in CFL retail sales when compared to adjacent states without such programs. Rather than succumbing to high rates of free ridership that would have seen retail sales fall in NSW, the program actually created significant positive spillover effects. Whilst the positive effect on retail purchases in countries such as Mexico can be expected to be more muted than in OECD countries where consumers have greater purchasing power, this impact will be in proportion to the low level of free ridership experienced in these countries.

By applying the BP discount factor above the current penetration in low-income households, without considering the additional energy savings and emission reductions attributable to free-drivers, the coordinating entity's approach results in a very conservative assessment of emission reductions generated by the PoA. Such an approach is robust and maintains the environmental integrity of the CDM.

Annex 4

MONITORING INFORMATION

Monitoring information is provided in the following Annexes:

Annex 7 – CUIDEMOS Mexico – Monitoring Equipment
Annex 8 – CUIDEMOS Mexico – Selection of Sample Groups.

- - - - -