CLEAN DEVELOPMENT MECHANISM

CDM-MP78-A15

Draft New Guideline

Use of the CDM in urban sectors

Version 01.0

United Nations
Framework Convention on
Climate Change

COVER NOTE

1. Procedural background

1. The Executive Board of the clean development mechanism (CDM) (hereinafter referred to as the Board) at its ninetieth meeting considered the concept note on “Further development of the CDM in urban sectors” jointly prepared by the CDM Methodologies Panel (MP), Small-Scale Working Group (SSC WG), and the secretariat and requested the MP, in consultation with the SSC WG and the secretariat, to develop guidelines to facilitate the development of CDM projects and programmes in the urban context providing best practice examples in a PoA-DD template, for its consideration at a future meeting. In addition, the Board provided the following guidance on further work on the development of CDM in the urban sectors:

    (a) Work towards the standardization of parameters for the estimation of emission reductions in the context of improving of the relevant methodologies;

    (b) Develop innovative methods for demonstrating additionality for urban sectors, provided that it is not already being addressed under existing work streams.

2. Also, at its ninety-fourth meeting, the Board requested the secretariat, the MP, and the SSC WG to explore tiered approaches in methodologies relevant to the urban context, when these methodologies are being revised.

3. The Board at its ninety-seventh meeting, took note of the information note titled "CDM in urban sectors" as contained in annex 15 to the MP74 meeting report. The Board requested the MP to continue the work as proposed under section 2.1 of the information note on guidelines for developing CDM projects in the urban context, section 2.2. on best-practice examples in a PoA-DD template, and section 2.3 on standardization of parameters. Regarding the innovative methods for demonstrating additionality contained in section 2.4, the Board decided not to pursue the proposed work as it is deemed covered under existing work streams of the Board; for example, the work related to standards with a methodological framework for the standardized baselines for energy efficiency in the building sector.

2. Purpose

4. The purpose of the draft new guidelines is to facilitate the development of CDM project activities and programme of activities (PoAs) in the urban context.

3. Key issues and proposed solutions

5. This document provides guidance in the following aspects:

    (a) List of CDM methodologies applicable to mitigation measures;

    (b) Standardization of parameters;

    (c) Consideration of cross effects;

(d) Best-practice examples in a PoA-DD template.

4. Impacts

6. The proposed guideline, once approved, will facilitate the development of CDM project activities and PoAs in urban sectors.

5. Subsequent work and timelines

7. The draft new guideline is recommended by the MP for consideration by the Board at its 102nd meeting. No further work is envisaged.

6. Recommendations to the Board

8. The MP recommends that the Board approve this draft new guideline, to be made effective at the time of the Board's approval.

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1. Introduction

1. This document provides general guidelines to facilitate the development of CDM project activities and programme of activities (PoAs) in the urban context, providing best practice examples in a PoA-DD and CPA-DD template.

2. Scope and applicability

2. These guidelines are applicable to project participants or coordinating/managing entities (CMEs) seeking to implement different types of climate change mitigation measures in the urban context using CDM. The document provides guidance on the design of CDM project activities (PAs) and programme of activities (PoA) when combining multiple component activities for emission reductions undertaken in the context of urban sectors.

3. Definitions

3. The definitions contained in the Glossary of CDM terms shall apply.

4. Methodological aspects

4.1. CDM methodologies applicable to city-based mitigation programmes

4. In cities, there are several opportunities for reducing greenhouse gas (GHGs) emissions. City-based mitigation programmes may contain a range of measures in each sector that will reduce GHG emissions. Urban mitigation projects may target various sectors, including buildings, transport, energy supply and demand, water supply and treatment, and waste management.

5. Many of these interventions could result in GHG emission reductions that are additional to the present scenario and could qualify under the CDM. However, these measures may be quite dispersed and the emission reduction resulting from each individual measure may be relatively low. On the other hand, if these measures are implemented together at a community or city level, they could potentially generate significant emission reductions when the individual reductions are summed together. Each mitigation initiative may also be implemented in a phased manner, in which case they may be better suited to be implemented as a Programme of Activities (PoA) because that would allow a stage-wise implementation of the projects and an expansion of the mitigation measures during the PoA period (i.e. 28 years).

6. In addition, the CDM framework offers a wide range of methodologies and tools to estimate the emission reduction effect of these projects. A city-wide mitigation programme should apply these methodologies and take into account any cross effects that may occur as a result of their application.

7. The tables below show a non-exhaustive list of methodologies applicable to different sectors, Transport (Table 1), Household & Building energy generation and energy efficiency (Table 2), and Waste management and wastewater (Table 3).

Table 1. List of CDM methodologies relevant to Urban - Transport

Measure	CDM methodology
Bicycles, tricycles, e-bikes or e-tricycles	AMS-III.BM. Lightweight two and three wheeled personal transportation
Bus systems	AM0031 Bus rapid transit projects
Mass rapid transit systems	ACM0016 Mass Rapid Transit Projects AMS-III.U. Cable Cars for Mass Rapid Transit System (MRTS)
Energy efficiency	AMS-III.C. Emission reductions by electric and hybrid vehicles AMS-III.AA. Transportation Energy Efficiency Activities using Retrofit Technologies AMS-III.AP. Transport energy efficiency activities using post - fit Idling Stop device AMS-III.BC. Emission reductions through improved efficiency of vehicle fleets
Fuel switch	AMS-III.S. Introduction of low-emission vehicles/technologies to commercial vehicle fleets AMS-III.T. Plant oil production and use for transport applications AMS-III.AK. Biodiesel production and use for transport applications AMS-III.AQ. Introduction of Bio-CNG in transportation applications AMS-III.AY. Introduction of LNG buses to existing and new bus routes
Transportation of cargo	AM0090 Modal shift in transportation of cargo from road transportation to water or rail transportation
Transportation of liquid fuels	AM0110 Modal shift in transportation of liquid fuels
Technology for improved driving	AMS-III.AT. Transportation energy efficiency activities installing digital tachograph systems to commercial freight transport fleets AMS-III.BC. Emission reductions through improved efficiency of vehicle fleets

Table 2. List of CDM methodologies relevant to Urban – Household & Building energy generation and energy efficiency

Measure	CDM methodology
Renewable electricity (captive power)	AMS-I.F. Renewable electricity generation for captive use and mini-grid
Thermal energy for cooking	AMS-I.E. Switch from non-renewable biomass for thermal applications by the user AMS-I.I. Biogas/biomass thermal applications for households/small users AMS-I.K. Solar cookers for households AMS-II.G. Energy efficiency measures in thermal applications of non-renewable biomass
Solar water heating	AMS-I.J. Solar water heating systems (SWH)
Energy efficiency in water delivery	AM0020 Baseline methodology for water pumping efficiency improvements AMS-II.C. Demand-side energy efficiency activities for specific technologies AMS-II.S. Energy efficiency in motor systems

Measure	CDM methodology
Water purifier	AM0086 Distribution of zero energy water purification systems for safe drinking water AMS-III.AV. Low greenhouse gas emitting safe drinking water production systems
Water saving	AMS-II.M. Demand-side energy efficiency activities for installation of low-flow hot water savings devices
Refrigerators/chillers	AM0060 Power saving through replacement by energy efficient chillers AMS-II.C. Demand-side energy efficiency activities for specific technologies AMS-II.O. Dissemination of energy efficient household appliances AMS-III.X. Energy Efficiency and HFC-134a Recovery in Residential Refrigerators AM0120 Energy-efficient refrigerators and air-conditioners
Lighting	AM0046 Distribution of efficient light bulbs to households AM0113 Distribution of compact fluorescent lamps (CFL) and light-emitting diode (LED) lamps to households AMS-II.C. Demand-side energy efficiency activities for specific technologies AMS-II.J. Demand-side activities for efficient lighting technologies AMS-II.N. Demand-side energy efficiency activities for installation of energy efficient lighting and/or controls in buildings AMS-III.AR. Substituting fossil fuel based lighting with LED/CFL lighting systems
Street lighting	AMS-II.L. Demand-side activities for efficient outdoor and street lighting technologies
Whole building	AM0091 Energy efficiency technologies and fuel switching in new and existing buildings AMS-II.E. Energy efficiency and fuel switching measures for buildings AMS-II.K. Installation of co-generation or tri-generation systems supplying energy to commercial building AMS-II.Q. Energy efficiency and/or energy supply projects in commercial buildings AMS-II.R. Energy efficiency space heating measures for residential buildings AMS-III.AE. Energy efficiency and renewable energy measures in new residential buildings
District heating/cooling	AM0044 Energy efficiency improvement projects - boiler rehabilitation or replacement in industrial and district heating sectors AM0058 Introduction of a district heating system AM0072 Fossil Fuel Displacement by Geothermal Resources for Space Heating AM0117 Introduction of a new district cooling system AMS-II.B. Supply side energy efficiency improvements – generation
Others/various technologies	AMS-II.C. Demand-side energy efficiency activities for specific technologies

Table 3. List of methodologies relevant to Urban – Waste management and wastewater

Measure	CDM methodology
Alternative waste – composting	ACM0022 Alternative waste treatment processes AMS-III.F. Avoidance of methane emissions through composting AMS-III.AF. Avoidance of methane emissions through excavating and composting of partially decayed municipal solid waste (MSW)
Alternative waste treatment – other technologies	ACM0022 Alternative waste treatment processes AM0112 Less carbon intensive power generation through continuous reductive distillation of waste AMS-III.E. Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment AMS-III.L. Avoidance of methane production from biomass decay through controlled pyrolysis AMS-III.Y. Methane avoidance through separation of solids from wastewater or manure treatment systems AMS-III.BJ. Destruction of hazardous waste using plasma technology including energy recovery
Alternative waste treatment – aerobic	AM0083 Avoidance of landfill gas emissions by in-situ aeration of landfills AM0093 Avoidance of landfill gas emissions by passive aeration of landfills AMS-III.AX. Methane oxidation layer (MOL) for solid waste disposal sites
Landfill gas recovery	ACM0001 Flaring or use of landfill gas AMS-III.G. Landfill methane recovery
Lagoons and biodigester – biogas	ACM0014 Treatment of wastewater AMS-III.H. Methane recovery in wastewater treatment AMS-III.AO. Methane recovery through controlled anaerobic digestion
Manure treatment	AM0073 GHG emission reductions through multi-site manure collection and treatment in a central plant ACM0010 GHG emission reductions from manure management systems AMS-III.D. Methane recovery in animal manure management systems AMS-III.R. Methane recovery in agricultural activities at household/small farm level
Aerobic wastewater treatment	AM0080 Mitigation of greenhouse gases emissions with treatment of wastewater in aerobic wastewater treatment plants AMS-III.I. Avoidance of methane production in wastewater treatment through replacement of anaerobic systems by aerobic systems
Utilization of biogenic methane	ACM0024 Natural gas substitution by biogenic methane produced from the anaerobic digestion of organic waste AM0053 Biogenic methane injection to a natural gas distribution grid AM0069 Biogenic methane use as feedstock and fuel for town gas production AM0075 Methodology for collection, processing and supply of biogas to end-users for production of heat AMS-III.O. Hydrogen production using methane extracted from biogas
Recycling	AMS-III-AJ. Recovery and recycling of materials from solid wastes AMS-III-BA. Recovery and recycling of materials from E-waste

8. Short descriptions of the methodologies listed in the table can be found in the CDM Methodologies Booklet, available at: <https://cdm.unfccc.int/methodologies/documentation/index.html>.

4.2. Standardization of parameters

9. Applying the methodologies indicated in the Section 4.1 may entail undertaking a number of surveys and data collection to determine the parameter values required for estimation of baseline, project and leakage emissions, which can be complex and time consuming.

10. Through the decision made by CMP6, Parties and PPs through the host country's DNAs may submit proposals for standardized baselines. A wide range of parameters in methodologies indicated in the Section 4.1 could be standardized by taking a region/country specific approach for a sector. This will facilitate cost-effectiveness and scalability for CDM PoAs in urban sector.

11. The table below includes some examples of parameters in methodologies that may be standardized in accordance with the procedures for development, revision, clarification and update of standardized baselines (SB Procedure).

Table 4. Examples of parameters that may be standardized

Sector/Measure	CDM methodology / tool	Parameters	Possible data sources for standardization of parameters
Electricity generation	TOOL07: Tool to calculate the emission factor for an electricity system	CO2 emission factor of the electricity system	Official report/statistics
Energy-efficient refrigerators and air-conditioners	TOOL29: Determination of standardized baselines for energy-efficient refrigerators and air-conditioners	Baseline energy consumption	See requirements in TOOL29
Energy efficiency measures in buildings	TOOL31: Determination of standardized baselines for energy efficiency measures in residential, commercial and institutional buildings	CO2 emissions per m2 for different building categories	Surveys
Energy-efficient Lighting	AMS-II.C.: Demand-side energy efficiency activities for specific technologies AMS-II.J.: Demand-side activities for efficient lighting technologies	Utilization hours	Surveys, peer-reviewed literature, official reports/statistics, etc

Sector/Measure	CDM methodology / tool	Parameters	Possible data sources for standardization of parameters
Solid Waste	AMS-III.G.: Landfill methane recovery ACM0001: Flaring or use of landfill gas TOOL04: Emissions from solid waste disposal sites	Waste composition	Test results, peer-reviewed literature, official reports/statistics, etc
		Legal requirements to destroy methane as part of regular operation of landfills	Local regulations/legislation
Cooking	AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user AMS-II.G.: Energy efficiency measures in thermal applications of non-renewable biomass	Baseline woody biomass consumption	Surveys, peer-reviewed literature, official reports/statistics, etc
Non-renewable biomass	TOOL30: Calculation of the fraction of non-renewable biomass	Fraction of non-renewable biomass	See requirements in TOOL30
Transport	ACM0016: Mass Rapid Transit Projects AM0031: Bus rapid transit projects TOOL18: Baseline emissions for modal shift measures in urban passenger transport	Specific CO2 emissions per passenger-kilometer transported in the baseline	Surveys, official reports/statistics, etc
	AMS-III.AY.: Introduction of LNG buses to existing and new bus routes	Specific fuel consumption of baseline buses	Official report/statistics
	AMS-III.BM.: Lightweight two and three wheeled personal transportation	CO2 emission factor per passenger-kilometer corresponding to public transportation-mix in the city	Peer-reviewed literature, official reports/statistics

4.3. Consideration of cross effects

12. The application of multiple methodologies listed in Tables 1 to 3 above may result in an overestimation of the emission reductions if due care is not taken to ensure that any overlaps in project baselines or emission reduction estimates are considered and accounted for. To address the issue, the CME shall apply the "Appendix 1. Instructions for the consideration of cross effects for the application of multiple methodologies for programmes of activities" of CDM Project Standard for PoAs.

13. One example that may lead to cross effects is a CPA that implements energy-efficiency measures in a building including two measures:

    (a) Measure A: lighting energy efficiency is achieved under one component by replacing the inefficient lighting technology with an efficient one applying a relevant methodology;

    (b) Measure B: lighting control efficiency is also implemented as a separate component applying a different methodology in the same building.

14. In this case, if historic energy consumption for lighting is used by both components, then it is likely that GHG emission reductions are over-estimated due to cross effects. Similarly, if measure B precedes measure A in terms of timelines for implementation, and measure B uses historic information for the baseline and measure A uses default factors (e.g. 3.5 hours of usage per day and a difference in wattages of the incandescent lamps and compact fluorescent lamps as in the methodology AMS-II.J.), there can be over-estimation due to cross effects. Therefore, reduced energy consumption of the lights should be taken into account when determining savings from the light controls project and vice versa.

15. Furthermore, combinations of the following measures/methodologies may result in cross-effects, and therefore possible cross-effects shall be analysed following Appendix 1 of the CDM Project Standard for PoAs: "Instructions for the consideration of cross effects for the application of multiple methodologies for programmes of activities".

    (a) For Energy generation, combination of the **methodologies for district heating** (such as AMS-II.B., AM0044, AM0058, AM0072) and the **methodologies for heat for cooking, water and space** (such as AMS-I.I., AMS-I.J., AMS-I.K., AMS-III-AC., AMS-II.A., AMS-II.K.);

    (b) For Building energy, combination of the **methodologies for appliances** (such as AMS-II.C., AMS-II.E., AMS-II.J., AMS-III-M., AMS-II.N., AMS-II.O., AMS-II.Q., AMS-II.R., AMS-III-AV., AM0046, AM0070, AM0091, AM0113, AM0060, AM0086) and the **methodologies for building efficiency and renewable energy** (such as AMS-III.AE., AMS-I.F., AMS-I.J., AM0091);

    (c) For Transport, combination of the **methodologies for fuel switch** (such as AMS-III.C., AMS-III.S., AMS-III.T., AMS-III.AK., AMS-III-AQ., AMS-III-AY.), the **methodologies for modal shift** (such as AMS-III.U., ACM0016, AM0031), and the **methodologies for vehicular efficiency** (such as AMS-III.AA., AMS-III-AP., AMS-III-AY., AMS-III-BC.)**.**

16. Also, in accordance with the applied methodologies, CMEs of city-wide mitigation PoAs shall avoid potential double counting of emission reductions. For instance:

    (a) **Example 1:** "AM0070: Manufacturing of energy efficient domestic refrigerators" is applicable to project activities undertaken by manufacturers of refrigerators that increase the energy efficiency of manufactured refrigerators, thus credits are claimed by manufacturers of efficient appliances. If the appliance is used in a building and claims emission reductions, there could be a double crediting, which shall be avoided as per the requirements of the applied methodologies.

    (b) **Example 2:** Project activities that increase the renewable energy (RE) share of city electricity and also introduce a shift to Electric Vehicles could result in double counting. RE project activities in the city will earn credits by reducing the GHG emissions by displacing baseline fossil fuel plants. A project activity in the city on shifting Internal Combustion Engines Vehicles to Electric Vehicles would get higher emissions reductions when the RE share in the city grid becomes higher, as the higher RE share implies lower project emissions from e-vehicles. Thus, both the project activities would be accounting for emission reductions from increased share of RE. The above issue could be addressed using the appropriate baseline.

    (c) **Example 3:** A project activity with a set of buildings using AM0091 "Energy efficiency technologies and fuel switching in new and existing buildings" accounts for baseline emissions due to consumption of building appliances, and the same set of buildings may apply for emission reduction credits due to efficient lighting using AMS-II.C. "Demand-side energy efficiency activities for specific technologies".

4.4. Best-practice examples in a PoA-DD template

17. Appendix 1 of this document illustrates one example PoA-DD and specific guidance on the mitigation measures applicable for buildings.

18. The following technologies/measures are considered in the PoA-DD.

Table 5. Technologies/measures considered in the PoA-DD

Technology/Measure	Methodology reference
Roof-top solar PV, wind electric generator	AMS-I.F.: Renewable electricity generation for captive use and mini-grid
Solar water heating system	AMS-I.J.: Solar water heating systems
Energy efficient equipment/appliances	AMS-II.E.: Energy efficiency and fuel switching measures for buildings
	AMS-II.C.: Demand-side energy efficiency activities for specific technologies
	AMS-II.Q.: Energy efficiency and/or energy supply projects in commercial buildings
Energy efficient lighting	AMS-II.J.: Demand-side activities for efficient lighting technologies
	AMS-II.N.: Demand side EE activities for installation of EE lighting and/or controls in buildings
Energy efficient space heating	AMS-II.R.: Energy efficiency space heating measures for residential buildings

19. In addition, one example of a CPA-DD with specific guidance is presented in Appendix 2. The example was developed mainly based on the data and information from the Bureau of Energy Efficiency of the Government of India[1];

[1] https://beeindia.gov.in/content/buildings

Appendix 1. Best-practice examples for PoA-DD

Note:

- General guidance from "Attachment. Instructions for completing this form" from PoA-DD and CPA-DD forms are provided in the grey box.
- Specific guidance for Urban CDM PoA-DD and CPA-DD, if any, are provided in the white box.

Programme of activities design document form (Version 08.1)	
Complete this form in accordance with the instructions attached at the end of this form.	
BASIC INFORMATION	
Title of the PoA	Program of activities in urban buildings with individual and cross-cutting interventions in energy generation and use
Version number of the PoA-DD	DRAFT
Completion date of the PoA-DD	
Coordinating/managing entity	ABC City Development Company Ltd.
Host Parties	
Applied methodologies and standardized baselines	AMS-I.F., AMS-I.J., AMS-II.C., AMS-II.E., AMS-II.J., AMS-II.N., AMS-II.Q. and AMS-II.R.
Sectoral scopes linked to the applied methodologies	Sectoral Scope 1: Energy industries (renewable / non-renewable sources) and Sectoral Scope 3: Energy demand

1. Indicate the following information on the cover page:
   (a) Title of the PoA;
   (b) Version number of the PoA-DD;
   (c) Completion date of the PoA-DD (dd/mm/yyyy);
   (d) Name of the coordinating/managing entity;
   (e) Names of the host Parties;
   (f) Titles and UNFCCC reference numbers of the applied methodologies and, where applicable, applied standardized baselines;
   (g) Sectoral scopes linked to the applied methodologies, clearly indicating mandatory sectoral scopes and if applicable, conditional sectoral scopes for the PoA.

Specific guidance: This best practice document covers technologies/measures in renewable energy generation and energy efficiency improvements in buildings. However, there is scope for emission reductions in other urban sectors, including solid waste management, wastewater treatment and transport. The administrative setup in these sectors is diverse, and often administration and management is done by multiple agencies. Some components of such setup is under control of the city administration, but others may be controlled by the provincial or federal government, depending on the legal and political system in each Host Country.
Similar best practice documents may be conceived in these sectors in the future, keeping in mind sources of emissions, mitigation measures, relevant applicable methodologies, extent of emission reductions, additionality demonstration aspects, appropriate choice of Coordinating and Managing Entity (CME) for the PoA, etc. A summary of all the relevant methodologies to these measures has been presented in the “Guideline: Use of the CDM in the urban sectors”.

PART I. Programmes of activities (PoA)

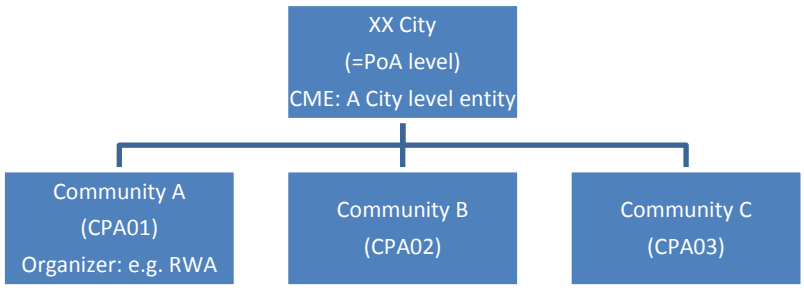
Specific guidance: This document provides a guide to urban stakeholders interested in undertaking measures in their buildings for improving energy efficiency, and use of renewable energy to generate power for their own consumption. These projects are implemented at the city level but not a single project. Hence, it covers a large number of participating buildings and their owners/occupants. As the size of cities are large, smaller component project activities (CPA) are expected to be developed, under the Programme of Activities (PoA). This document describes all the processes of forming CPAs, including; inclusion in the PoA, applicable methodologies, demonstrating additionality, estimation of emission reductions, identifying cross-effects between the applied methodologies and conditions for inclusion of individual participants in a CPA and in the PoA.

SECTION A. Description of PoA

A.1. Purpose and general description of PoA

1. Provide the purpose and a general description of the PoA, including:
   (a) The policy/measure or stated goal that the PoA seeks to achieve;
   (b) A framework for the implementation of the PoA;
   (c) A confirmation that the PoA is a voluntary action by the coordinating/managing entity;
   (d) How the PoA contributes to the sustainable development of the host Party (not more than one page).

Specific guidance: The CME should conduct a survey of their coverage area, organize an awareness program for the building occupants about the requirements for participating in the PoA, and present the included measures and procedures prior to the starting date of the program. The CME should develop a recording system of enrolment of individual buildings, their occupants and the measures they propose for individual units and common use. For example, the measures could be roof top solar system for common electricity consumption in a building. The organisation of the PoA can be on a hierarchical basis. For example, the overall CME could be at the whole city level, and each CPA may be at the community level groups managed by Community Associations.



RWA – Resident Welfare Association

Example: The purpose of this PoA is to assist project proponents to develop a building sector PoA. Technologies for energy efficiency interventions (EEI) and renewable energy technologies (RET) described here are micro-scale and do not provide sufficient incentive to set up as an individual project activity under CDM. This best practice example PoA addresses activities that focus on electricity savings and renewable electricity generation, which address demand side and supply side activities that reduce emissions from fossil fuel-based grid power to the buildings in the geographical area of a CPA/PoA.

The technology/measures addressed in this PoA include roof-top solar photovoltaic plants and the replacement of inefficient equipment, and appliances by individual owners of building units. The participants of the PoA are encouraged to participate in order to save electricity and fuels.

All the above described measures help cut down the use of grid electricity, which is generally fossil fuel based, or thermal energy consumption. Reducing power consumption by end users also results in reduction of GHGs emissions attributed to transmission & distribution (T&D) losses.

A.2. Physical/geographical boundary of PoA

1. Describe the physical/geographical boundary of the PoA in terms of a geographical area (e.g. municipality, region within a country, country or several countries) within which all CPAs to be included in the PoA will be implemented.

Specific guidance: The physical/geographical boundary of the PoA should align with the administrative boundary of the city or province. Buildings/residences in any community within that city boundary will be eligible to participate in this PoA. The CME may design a system where proceeds from the sale of CERs are shared with participating building owners so that they are incentivized to participate in the CPAs of the PoA.

The individual owners should be registered into the system by the CME or its local representative. For better administration, each CPA should cover a distinguishable area such as a community.
If the PoA includes different types of buildings (e.g. residential, commercial and institutional buildings), then they may be covered by different CPAs.

Example: The physical/geographical boundary of the PoA is the administrative boundary of the city. Buildings/residences in any community within that city will be eligible to participate in this PoA.

A.3. Technologies/measures

1. Provide a summary of the technologies/measures to be employed and/or implemented by CPAs under the PoA.
2. Describe how the technologies/measures and know-how for their use are transferred to the host Parties.

Specific guidance:
In this section, each of the technologies/measures included in the PoA should be described.
This example PoA includes technologies/measures in existing buildings dealing with use of energy in common equipment and individual unit owners' appliances and onsite generation of energy using renewable energy sources.

Example:

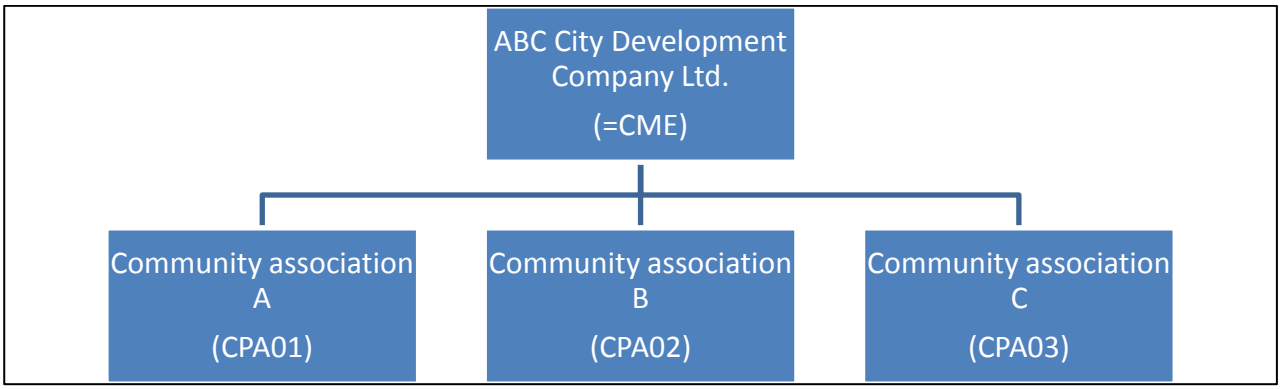
- Installation of renewable energy systems like Roof-top solar PV and solar water heating systems, preceded by;
- Energy efficient common amenities like elevators, water pumps and lighting in the lobbies/corridors of buildings. In the case of housing complexes, it may also include individual household systems such as energy efficient air-conditioners, refrigerators, lighting and other domestic appliances like fans and kitchen equipment.

A.4. Coordinating/managing entity

1. Provide the name of the coordinating/managing entity of the PoA and provide its contact information in Appendix 1 below.

Specific guidance: The CME should be an organization with administrative responsibilities at the city, sub-city or province level. Examples of appropriate CMEs include the municipality, special purpose company for managing infrastructure, provincial development authorities etc. The organization should have a mandate for regulating/administering various sectors covered under this PoA, e.g. building permits, power distribution, town planning. The organization could have sub-offices at the CPA level. For example; a municipality or city development organization could act as CME of the PoA and their branch offices as the CPA organizers. This would be based on laws and practices prevalent in the host country or its provinces.

Example:
ABC City Development Company Ltd.
The possible structure of the coordination/management of the PoA is indicated below:



Communities or administrative sub-divisions of the city may form CPAs, and community association to be the CPA proponents.

A.5. Parties and project participants

1. Using the table, list the Parties and the project participants involved in the PoA, and provide contact information of the project participants in Appendix 1 below Project participants may or may not be involved in one of the CPAs under the PoA.
2. Indicate the host Parties of the PoA by adding "(host Party)" after the Parties' name.

Specific guidance: Project participants may be community associations, or owners of the buildings, or individual house owners who join the CPA. They may authorize the respective community associations, RWA or their representatives to act as PPs. The CME shall maintain a database system to keep the records and be able to demonstrate these to the DOE in validation and verification.

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Party A (host Party)	Private entity A Public entity A …	No
Party B	Private entity B Public entity B …	

A.6. Public funding of PoA

1. Indicate whether the PoA receives public funding from Parties included in Annex I to the Convention.
2. If so:
   (a) Provide information on Parties providing public funding;
   (b) Attach in Appendix 2 below, the affirmation obtained from such Parties in accordance with applicable provisions related to official development assistance in the project standard.

Example: There is no public funding of the PoA from Parties included in Annex I to the Convention.

SECTION B. Management system

1. Describe the operational and management system for the implementation of the PoA, as established in accordance with the applicable provisions in the project standard, including:
   (a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;
   (b) Records of arrangements for training and capacity development for personnel;
   (c) A procedure for technical review of inclusion of CPAs;
   (d) A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or included as a CPA in another registered CDM PoA);
   (e) Records and documentation control process for each CPA under the PoA;
   (f) Measures for continuous improvements of the PoA management system;
   (g) Any other relevant elements.

Specific guidance: The CME will develop a system to admit the participants into the CPAs, record the details of measures they propose to adopt from among the technology/measures listed above including number of devices, their capacities in Watts, hours of operation, capacity of the RET systems etc.

CPA No.	Building	Technologies/Measures
CPA01	Building01	Technology A: xx units Technology B: yy units Technology C: zz units
	Building02	
CPA02		

CPAs can be added at any time in the lifetime of the PoA. The participating buildings will join at the start of the CPA and will be indicated in the CPA DD.

The CME may, on its own or through agencies appointed, conduct an energy use survey of equipment/appliances in the buildings to be included in CPAs of the PoA, and monitor the performance of the equipment periodically in order to qualify for emission reductions.

The CME or CPA implementers will survey a pre-decided number of dwellings selected through possibly cluster sampling method. They may also consider applying other sampling methods illustrated in the Guideline for Sampling and surveys for CDM PAs and PoAs. The CME will invite energy efficient appliance and equipment manufacturers to submit technical specifications and other details. The CME and CPA implementers will also verify the performance of equipment and type-testing reports. They may rely on reports published by host country government approved laboratories and institutions regarding performance. Similarly, the CME and CPA implementers may short list suppliers of the RETs based on their quality reports.

SECTION C. Demonstration of additionality of PoA

1. Describe how in the absence of the PoA, none of the CPAs that will be implemented under the PoA would occur.

Specific guidance: Individual technologies/measures will generally result in very small amounts of ERs. The guidance provided in the latest version of "TOOL19: Demonstration of additionality of microscale project activities" or "TOOL21: Demonstration of additionality of small-scale project activities" may be applied for demonstrating additionality of CPAs.

As per para 14 of the TOOL19 (version 09.0), the term 'project activities' mentioned in the tool shall be considered as "units" or as "independent subsystems" or "technology/measures" in CDM regulatory documents.

In the case of roof-top solar PVs, as per TOOL19, they could be considered as additional (up to 5 MW installed capacity) for the following cases:

- Where the geographic location of CPAs is in one of the least developed countries or the small island developing States (LDCs/SIDS) or in a special underdeveloped zone (SUZ) of the host country;
- where end users are households, communities or small and medium-sized enterprises (SMEs).

In the case of energy efficient equipment/appliances, as per Tool19, they can be also considered as additional (up to 20 GWh) if the geographic location of CPAs is in one of the LDCs/SIDS or in a SUZ of the host country. For other cases, additionality may be demonstrated using barriers mentioned in Tool 21.

Example: The guidance in the TOOL19 shall be applied for this PoA. As this PoA is implemented in LDC, all individual technologies/measured proposed in the PoA can be considered as additional as long as each unit size is less than 5 MW or 20 GWh savings.

SECTION D. Start date and duration of PoA

D.1. Start date of PoA

1. State the start date of the PoA.
2. Describe how the start date has been determined in accordance with the definition of the start date in the "Glossary: CDM terms".
3. If the date of publication of the PoA-DD for global stakeholder consultation is chosen as the start date of the PoA, indicate the start date of the PoA as "the date of publication of the PoA-DD" at the stage of global stakeholder consultation, and indicate the exact date of the publication in the format of dd/mm/yyyy before submitting the request for registration of the PoA. Do not attach any qualifications to the start date, such as "expected".

D.2. Duration of PoA

1. State the duration of the PoA in years and months.

SECTION E. Environmental impacts

E.1. Level at which environmental impacts analysis is undertaken

1. Indicate whether the analysis of the environmental impacts was carried out for the whole PoA or to be carried out at the CPA level, and justify the choice of the level.

Specific guidance: Approval and authorization from local government as well as state/federal government shall be obtained in accordance with host country regulations.

Environmental impacts analysis will be undertaken at the PoA level. However, the impacts due to the disposal of the replaced equipment/appliances shall be assessed at the CPA level. The CME shall maintain the records of environmentally safe disposal of the replaced devices.

E.2. Analysis of environmental impacts

1. If the analysis of the environmental impacts was carried out for the whole PoA, provide a summary of the analysis and references to all related documentation, including those on transboundary impacts. 2. For the PoA that will include only small-scale, non-afforestation or reforestation (A/R) CPAs, provide a summary of the analysis of the environmental impacts if such analysis is required by the host Party(ies). If such analysis is not carried out, indicate "Not applicable" and provide a justification. 3. If the analysis of the environmental impacts is to be carried out at the CPA level, indicate "Not applicable".

Specific guidance: The environmental impacts of the programme should include estimation of number of old appliances or equipment that will be discarded. The CME should also elaborate the mechanism of collection of the discarded equipment and how they will be disposed of and not sold as used equipment outside the PoA boundary.

Example: The project helps reduce the environmental foot-print of the residents by reducing use of fossil fuels. In the baseline study, the CME/CPA implementers will measure the usage of electricity by the participating buildings and by the equipment covered under the PoA (common use equipment such as elevators, water pumps and individual electric appliances such as air-conditioners, refrigerators, fans washing machines and kitchen appliances). The grid emission factor published by official sources in the host country will provide an idea of the environmental impact. Besides GHGs reduction due to reduced energy use by participants, the PoA will also reduce local pollutant emissions by the thermal power plant connected to the grid, the transportation of fuels such as coal, fuel oil etc. and electromagnetic emissions due to transmission of electricity. The analysis will be conducted at the PoA level.

E.3. Environmental impact assessment

1. If an environmental impact assessment was carried out for the whole PoA in accordance with the applicable provisions in the project standard, provide conclusions and references to all related documentation. If an environmental impact assessment was not carried out, indicate "Not applicable" and provide a justification.

Specific guidance: Follow the rules and regulations under the environmental laws in the Host Country to decide whether and to what extent EIA needs to be carried out. The EIA would record the conditions prevailing prior to the implementation of the PoA and would help in determining effectiveness of the PoA.

The EIA acts and rules prevailing in most countries may not categorise the activities covered under the PoA as they are individually very small. However, since the activities under this PoA help in reducing environmental impacts, the EIA study prior to the program start will help in assessing the reduction of these emissions after the program activities start.

Example: The proposed PoA and the CPAs under it would have many other benefits besides emission reductions. The energy efficient appliances will improve indoor environmental conditions and reduce air pollutants. The reduced electricity and fuel consumption will also result in operational cost savings.

SECTION F. Local stakeholder consultation

F.1. Level at which local stakeholder consultation is undertaken

1. Indicate whether the local stakeholder consultation was carried out for the whole PoA or to be carried out at the CPA level, and justify the choice of the level.

Example: The local stakeholder consultation will be undertaken at the PoA level.

F.2. Modalities for local stakeholder consultation

1. If the local stakeholder consultation was carried out for the whole PoA, follow the instructions in 2–5 below.
2. If there are host Party rules on local stakeholder consultations applicable to the PoA, provide a summary of the consultations carried out under the host Party rules, including the direct positive and negative impacts identified and how the negative impacts identified will be addressed. If such host Party rules do not exist, follow the instructions in 3–5 below.
3. Describe the process of the local stakeholder consultation undertaken for the PoA and demonstrate how the process complies with the relevant requirements in the project standard regarding:
   (a) The scope of local stakeholder consultation;
   (b) The minimum group of stakeholders to be involved;
   (c) The means for inviting stakeholders' participation;
   (d) The information to be made available to stakeholders;
   (e) The conduct of consultation.
4. For 3(b) above, provide evidence that invitations were sent to the relevant stakeholders and that their comments were invited. If any of the relevant stakeholders were not invited, provide an appropriate justification.
5. For 3(c) above, describe the steps/actions taken to invite comments, taking into account local and national circumstances.
6. If the local stakeholder consultation is to be carried out at the CPA level, indicate "Not applicable".

Specific guidance:

The CME should conduct local stakeholder consultation with participants from city buildings, representatives of community associations, local authorities, pollution control agencies, electricity distribution companies, equipment suppliers, host country agencies which control labelling of efficient appliances (if established), etc.

The CME should inform the city residents about the PoA through advertisements/ announcements about the PoA and invite citizens from all the wards or counties of the city for their comments, doubts etc. The consultation should be held after a notice of minimum 15 days at a convenient time and place in the city. Besides raising queries during consultation, citizens could be given questionnaire or sheets for comments.

Information about the proposed PoA/CPAs and implementation procedures will be provided and questions can be answered, proceedings should be recorded and shared with all stakeholders.
In urban PoAs, the consultation will provide information about the programme directly to the prospective participants, clarify questions and obtain suggestions on improving the PoA design.

The following types of stakeholder consultation may be possible:

- a meeting or series of meetings;
- a survey of stakeholders;
- on-line query;
- social media;
- newspaper announcement specifying that all urban stakeholders affected by the PoA measures should be invited to give comments.

Example: Representatives of all the interested community associations will participate in the local stakeholder consultation along with the residents. Before and during the consultation, information about the PoA activities and modalities will be distributed. The CME will present the features of the programme including, eligibility requirements, proposed method for disposal of the scrapped devices and best practices. The energy efficient appliance and equipment providers will also be invited to participate. The CME representatives will describe the activities/technology/measures included in the PoA. The modalities, baseline identification, monitored and non-monitored variables would be explained to the stakeholders.

F.3. Summary of comments received

1. If the local stakeholder consultation was carried out for the whole PoA:
   (a) Prepare a summary report of the comments received during the consultation and attach the report as Appendix 6 below;
   (b) Provide an executive summary of the comments in this section;
   (c) Describe complaints from local stakeholders, if any, submitted to the DNA(s) of the host Party(ies) and forwarded through the DOE on the handling of the outcome of the local stakeholder consultation.
2. If the local stakeholder consultation is to be carried out at the CPA level, indicate "Not applicable".

Specific guidance: A summary of comments received shall be prepared in a concise manner covering different aspects of the PoA design.

Example: Opinions and suggestions would be sought, studied and responded and included in the PoA-DD.

F.4. Consideration of comments received

1. If the local stakeholder consultation was carried out for the whole PoA, describe how the comments and, where applicable, complaints provided by local stakeholders have been taken into account in the PoA-DD or in the revised PoA-DD, including a justification if any comments were not incorporated.
2. If the local stakeholder consultation is to be carried out at the CPA level, indicate "Not applicable".

Specific guidance: Depending on the comments the CME may decide to alter parts of the PoA design. For example, the CME may decide a cut-off manufacturing date of certain new appliances if the stakeholders point out significant changes in that type of appliances e.g. refrigerators.

Example: The PoA design may be revised based on the suggestions as required.

SECTION G. Approval and authorization

1. Indicate whether the letters of approval from Parties that wish to be involved in the PoA are available at the time of submitting the PoA-DD to the DOE for validation. If so, proved the letters.
2. Indicate whether each project participant listed in the PoA-DD is authorized by at least one Party involved in the PoA in the respective letter of approval or in a separate authorization letter. If there are separate authorization letters, provide the letters.
3. Indicate whether the coordinating/managing entity is authorized by each host Party of the PoA for its coordination in the respective letter of approval or in a separate authorization letter. If there are separate authorization letters, provide the letters.

Example: The <Host Country> DNA will approve the PoA if it is in line with the national energy and environmental policies. The letter of DNA approval of the PoA will be attached.

PART II. Generic component project activity (CPA)

1. Use this section to describe a generic CPA, defining the common features and the modalities for designing specific-case CPAs that correspond to the generic CPA. Duplicate Part II of this form for each additional generic CPA.
2. If more than one technology/measure or more than one methodology is applied to the PoA, prepare a generic CPA for each technology/measure, each methodology and each combination thereof. In this case, repeat Part II for each generic CPA such that one completed Part II represents one generic CPA-DD, and collate all the generic CPA-DDs, not repeating the sections within a generic CPA-DD.
3. If a generic CPA employs and/or implements technologies/measures that are included in the positive lists for additionality demonstration in the "Methodological tool: Demonstration of additionality of small-scale project activities" or "Methodological tool: Demonstration of additionality of microscale project activities", the generic CPA-DD may cover more than one technology/measure. However, in this case, include all information related to eligibility criteria, emission reduction calculations and monitoring requirements for each technology/measure separately taking into account any specific guidance in the applied methodologies. A generic CPA can be prepared to include either small-scale CPAs or large-scale CPAs.
4. Use only small-scale methodologies and, where applicable, standardized baselines for designing a generic CPA for small-scale CPAs following the annexes to decision 4/CMP.1, including annex II (CDM SSC M&Ps) and other CDM rules and requirements for small-scale project activities (hereinafter referred to as generic small-scale CPA). However, large-scale methodologies and, where applicable, standardized baselines may be used for a generic CPA that is within the small-scale project activity thresholds if the generic CPA follows the annex to decision 3/CMP.1 (CDM M&Ps) and other CDM rules and requirements for large-scale project activities.

SECTION H. Description of generic CPA

H.1. Title of generic CPA

1. Indicate the title of the generic CPA.

Example: CDM Program Activity for individual and cross-cutting interventions in energy generation and efficient use in residential buildings located in Community ## in the ## City

H.2. Reference number of generic CPA

1. Assign a reference number to each generic CPA. The reference number may be a cardinal number referring to the chronological order of generic CPAs (e.g. "Generic CPA 1").

Example: Generic CPA01

H.3. Purpose and general description of generic CPA

1. Provide a general description of the generic CPA, including:
   (a) The purpose of the generic CPA;
   (b) A summary of the technologies/measures to be employed and/or implemented by the corresponding CPAs.
2. Provide a full description of 1(b) above in section H.4 below.

Additional specific instructions for generic small-scale CPAs:

3. Indicate the small-scale project type (Type I, Type II and/or Type III) applicable to the generic CPA in accordance with the project standard.
4. If applicable, indicate and demonstrate that the generic CPA qualifies for a microscale project type (Type I, Type II and/or Type III) in accordance with the project standard.
5. If there is more than one component in the generic CPA, indicate the small-scale or microscale project type for each component separately.

Specific guidance: Describe the purpose of the CPA in line with the PoA. Include a description of the area covered by the CPA including the geography, type of communities, planned number of buildings, and describe the type of technologies/measures.

Example: The Community <> is located in the <>locality of the City <>.
There are <> residential apartment buildings/condominiums in the <> area with <> stories on an average.
The tallest building has <> stories and includes <> apartments.
The multi-story buildings of the <> locality has house mainly middle class and affluent families.
All buildings are eligible to join the CPA, subject to satisfying eligibility conditions.
The population of buildings in <> locality is around <>.
The Community Association <> will represent the building residents who are interested to join the CPA.

H.4. Technologies/measures

1. Describe the technologies/measures to be employed and/or implemented by the corresponding CPAs including:
   (a) A list of the facilities, systems and equipment that will be installed and/or modified by the corresponding CPAs;
   (b) The arrangement of the facilities, systems and equipment;
   (c) The monitoring equipment and their location in the systems.
2. Describe the types and levels of services (normally in terms of mass or energy flows) provided by the facilities, systems and equipment that will be modified and/or installed under the corresponding CPAs and their relation, if any, to other facilities, systems and equipment outside the project boundary.
3. For the facilities, systems and equipment that will be modified and/or installed under the corresponding CPAs, provide information on:
   (a) The range of the age and average lifetime of the equipment based on the manufacturer's specifications and industry standards;
   (b) The range of the existing and forecast installed capacities, load factors and efficiencies;
   (c) The energy and mass flows and balances of the facilities, systems and equipment, if necessary.
4. Provide a short summary of facilities, systems and equipment in the baseline scenario as established in section I.5 below.
5. Do not provide information that is not essential to understanding the purpose of the generic CPA and how it reduces GHG emissions. Do not include information related to facilities, systems and equipment that are auxiliary to the main scope of the generic CPA and do not affect directly or indirectly GHG emissions and/or mass and energy balances of the processes related to the generic CPA.

Additional specific instructions for generic small-scale CPAs:

6. If there is more than one component in the generic small-scale CPA, provide the information for each component separately.

Example: The CPA ## shall include the following technologies/measures in existing buildings:

- Installation of RETs like Roof-top solar PV and flat plate solar water heating systems.
- Energy efficient common amenities, for example, elevators, water pumps and lights in common areas of the buildings. It may also include individual household appliances such as energy efficient air-conditioners, refrigerators, lighting and other domestic appliances such as fans and kitchen equipment.

SECTION I. Application of selected methodologies and standardized baselines

Additional specific instructions for generic small-scale CPAs:

1. If there is more than one component in the generic small-scale CPA, provide the information for each component separately in the entire section I.

I.1. Reference to methodologies and standardized baselines

1. Indicate exact reference (number, title, version) of:
   (a) The selected methodologies (e.g. ACM0001: "Large-scale Consolidated Methodology: Flaring or use of landfill gas" (Version 18.0));
   (b) Any tools and other methodologies to which the selected methodologies refer (e.g. "Methodological Tool: TOOL07: Tool to calculate the emission factor for an electricity system" (Version 05.0));
   (c) The selected standardized baselines, where applicable (e.g. ASB0001: "Standardized baseline: Grid emission factor for the Southern African power pool" (Version 01.0)).
2. Refer to the UNFCCC CDM website for the exact reference of approved methodologies, tools and standardized baselines.

Specific guidance: Please list all the methodologies that are expected to be applied. The CME should choose the format for describing the methodologies i.e. tabular or descriptive. If a methodology is relevant to multiple devices (e.g. AMS-II.C), a list of such devices should be provided.

Example: The technology/measures included in this CPA are covered under the following approved methodologies:

Table I: Methodology references

Technology/Measure	Methodology reference
Roof-top solar PV, Wind electric generator	AMS-I.F. Renewable electricity generation for captive use and mini-grid
Solar water heating system	AMS-I.J. – Solar water heating systems
Energy efficient equipment/appliances	AMS-II.E. – Energy efficiency and fuel switching measures for buildings
	AMS-II.C – Demand-side energy efficiency activities for specific technologies
	AMS-II.Q. – Energy efficiency and/or energy supply projects in commercial buildings
Energy efficient lighting	AMS-II.J. – Demand-side activities for efficient lighting technologies
	AMS-II.N. – Demand side EE activities for installation of EE lighting and/or controls in buildings
Energy efficient space heating	AMS-II.R. – Energy efficiency space heating measures for residential buildings

I.2. Applicability of methodologies and standardized baselines

1. Justify the choice of the selected methodologies and, where applicable, the selected standardized baselines by showing that the design of the generic CPA meets all applicability conditions of the methodologies and, where applicable, the standardized baselines. Explain documentation that has been used for the justification and provide references to it or include the documentation in Appendix 3 below.
2. Ensure that the design of the generic CPA complies with all the relevant requirements of the selected methodologies and, where applicable, the selected standardized baselines, including the application of any tools, standards or guidelines required by the methodologies and, where applicable, the standardized baselines.

Additional specific instructions for generic small-scale CPAs:

3. Demonstrate that the design of the generic CPA qualifies as Type I, Type II, and/or Type III in accordance with applicable provisions on small-scale project type and eligibility in the project standard.
4. In case the generic CPA contains more than one component, demonstrate that the sum of components for each type does not exceed the limits of that project type.

Specific guidance: The CPA proponents shall describe all the applicability conditions of the applied methodologies and state how these are met.

CME/CPA proponents may choose to apply "AMS-II.E: Energy efficiency and fuel switching measures for buildings" in conjunction with "TOOL31: Determination of standardized baselines for energy efficiency measures in residential, commercial and institutional buildings". This tool describes methodological procedure to standardise the specific CO_2 emissions for whole buildings in terms of tCO_2/m^2 of floor area of building.

The CPA proponents may conduct the project in phases, i.e. first implement one or some of the EE measures and then install RE measures. If a Standardized Baseline is available to determine parameters, for example the emission factor of electricity grid of that host country, it shall be used by the CPA.

The CMEs shall evaluate possible cross-effects while applying the methodologies. A key cross-effect to consider is the order in which baseline is determined. If the baseline for RETs is considered as the equipment/appliances prior to their replacement, it may lead to overestimation of emission reductions. Therefore, the baseline for determination of the energy efficiency improvement measures shall be set before the baseline for RETs.

Example: A brief summary of key applicability criteria of the applicable methodologies is presented in the Table II.

Table II: Applicability criteria of the applicable methodologies

Methodology/ Brief description	Applicability conditions (Key conditions)
AMS-I.F. Renewable electricity generation for captive use and mini-grid	For project activities that: (a) are Greenfield- Install a new RE power plant (b) Add capacity (c) retrofit existing plant(s); or (d) Replace existing plant(s). **Only Solar photovoltaics for generation of electricity as specified in Para. 2 of the methodology is applicable.**
AMS-I.J. Solar water heating systems (SWH)	(a) For Retrofit that replace existing electric /fossil fuel based WH systems; (b) SWH projects installed in (i) new facilities (ii) in existing facilities with no SWH prior to project (iii) SWH project for capacity expansions; or (iv) Replacing the failed SWHs
AMS-II.E. Energy efficiency and fuel switching measures for buildings	For (i) EE and fuel switching measure at a single building or group of similar buildings. (ii) where it is possible to directly measure/record the energy use. (iii) where the impact of the measures implemented can be clearly distinguished from changes in energy use
AMS-II.C. Demand-side energy efficiency activities for specific technologies	(i) the service level (e.g. rated capacity or output) of the installed, project EE equipment is between 90% and 150% of the service level of the baseline equipment. (ii) refrigerant if used in the project case shall have no ozone depleting potential (ODP). (iii) ER only due to the reduction in electricity and/or fossil fuel consumption from use of more efficient equipment.
AMS-II.Q. Energy efficiency and/or energy supply projects in commercial buildings	For commercial buildings. New equipment to be used. Refrigerants should have no ODP. Allowable projects include energy efficient building design features; energy efficient appliances, equipment and/or technologies; energy management controls; on-site renewable energy projects; on-site cogeneration; and/or fossil fuel switching - alone or in combination.
AMS-II.J. Demand-side activities for efficient lighting technologies	(i) Total light output of a project lamp should be = or > than the baseline lamp (ii) Rated average life of each project lamp type shall be known ex ante. (iii) Project lamps shall be marked for unique identification (iv) PoA-DD/CPA-DD shall explain proposed method of distribution of lamps and of destruction of baseline lamps (v) Project activity shall ensure undesired secondary market

Methodology/ Brief description	Applicability conditions (Key conditions)
	effects/free riders by ensuring that replaced lamps are collected/ destroyed. (vi) Lamp utilization hours should be relatively high (vii) Households receiving project lamps are connected to national or regional electricity grid.
AMS-II.N. Demand side EE activities for installation of EE lighting and/or controls in buildings	(i) For non-residential and multi-family residential buildings supplied with grid electricity. (ii) Project equipment shall have warranties stated which shall cover free replacement or repair of any failed equipment. (iii) project lighting equipment and/or controls meet the requirements stated. (iv) Collection, destruction and/or recycling of baseline devices are required. (v) project procedures eliminate any possible double counting of ERs.
AMS-II.R. Energy efficiency space heating measures for residential buildings	(i) Involves (a) improving building insulation; (b) Enhancing glazing of windows; (c) Improving efficiency of heating equipment and/or systems. (ii) Only for existing residential buildings. (iii) impact of the measures implemented by the project activity can be clearly distinguished from changes in energy use

I.3. Application of multiple methodologies

1. Indicate whether the generic CPA applies a combination of multiple methodologies in accordance with the project standard. If so, indicate which of the following combinations is applied:
   (a) Multiple small-scale methodologies;
   (b) Multiple large-scale methodologies; or
   (c) Combination of large-scale and small-scale methodologies.
2. If multiple methodologies are applied, demonstrate that all associated conditions for application of multiple methodologies in the project standard are met, including those relating to cross effects.

Specific guidance: Please describe any expected cross effects due to application of several methodologies. For example, focuses should include impact on identification of baseline scenario, errors/over estimation of baseline emissions from one or more measures, any sequential approach to be employed, etc.

Example: The technologies/measures included in this PoA address different sources of emission reductions and, therefore, have to apply different methodologies to respective measures. In order to ensure accurate emission estimation, cross-effects have to be analysed and suitable conditions have to be made for inclusion in the PoA. The guidance provided in "Guidelines for the consideration of interactive effects for the application of multiple CDM methodologies for a programme of activities" should be followed. The Projects involving RET and EEI will apply at least two methodologies. In this case, the baseline will be defined sequentially, i.e. first for the EEI measures (primary measure) and the reduced energy consumption will then be considered for baseline determination for RET measures (secondary measure). This is in accordance to guidance on Type I and II cross effects in the Appendix 1 of Standard: CDM project standard for programmes of activities (ver 01.0) and EB68 Report Annex 3.

I.4. Project boundary, sources and greenhouse gases (GHGs)

1. Describe how to define the project boundary of each corresponding CPA, including how to determine the physical delineation of each corresponding CPA, and which sources and GHGs are to be included in the project boundary in accordance with the applied methodologies, and where applicable, the applied standardized baselines.
2. Use the table in the form to describe emission sources and GHGs to be included in the project boundary for the purpose of calculating project emissions, baseline emissions and, if applicable, leakage emissions.
3. In addition to the table, where possible, present a flow diagram of the project boundary, based on the description provided in section H.4 above. Include in the flow diagram all the facilities, systems, equipment and flows of mass and energy described in that section. In particular, indicate in the diagram the emissions sources and GHGs included in the project boundary and the data and parameters to be monitored.

Example: The physical project boundary of a CPA is the administrative area under Community ## in the ## City. It includes buildings which have enrolled under the CPA.

	Source	GHG	Included?	Justification/Explanation
Baseline	Source 1	CO_2	Yes	The primary source of emission reductions is savings in and displacement of electricity drawn from grid, which is a mix of thermal, hydro, nuclear and renewable energy, which emit greenhouse gas CO_2. CH_4 and N_2O emissions are not significant.
		CH_4	No	
		N_2O	No	

	Source 2	CO_2		
		CH_4		
		N_2O		

Project activity	Source 1	CO_2	Yes	The energy efficiency improvements reduce grid electricity and Renewable Energy Devices displace part of the grid power, thereby reducing GHG emissions. Also, project emissions due to use of backup fossil fuel heaters or electric heaters. CH_4 and N_2O emissions are not significant.
		CH_4	No	
		N_2O	No	

	Source 2	CO_2		
		CH_4		
		N_2O		

I.5. Establishment and description of baseline scenario

1. Describe how to establish the baseline scenario for each corresponding CPA in accordance with applicable provisions for the establishment and description of baseline scenarios in the project standard, the applied methodologies and, where applicable, the applied standardized baselines.
2. Where the procedure in the applied methodologies and, where applicable, the applied standardized baselines involves several steps, describe how each step is applied and transparently document the outcome of each step. Explain and justify key assumptions and rationales. Provide and explain all data used to describe how to establish the baseline scenario (variables, parameters, data sources, etc.). Provide all relevant documentation and/or references.
3. Where "future anthropogenic emissions by sources are projected to rise above current levels due to the specific circumstances of the host Party", use the "Guidelines on the consideration of suppressed demand in CDM methodologies" to propose a revision to an approved methodology to cover such scenario if it is not covered in the methodology.
4. Describe how the relevant national and/or sectoral policies, regulations and circumstances are to be taken into account in accordance with the project standard.

Specific guidance: Describe the baseline scenarios as required by all applied methodologies by providing necessary evidences.

Several methodologies may be included in the CPA. This will be done to give flexibility to apply different technologies/measures for different units/buildings. The CME/CPA implementers shall keep record of the units/buildings' choice among these methodologies and accordingly the baseline for these units/buildings. The database system of the CME has to be designed to make this possible.

If a CPA applies AMS-II.E in conjunction with the "TOOL31: Determination of standardized baselines for energy efficiency measures in residential, commercial and institutional buildings", specific baseline CO2 emission per gross floor area of buildings in the geographical locality of the CPA will be defined.

The CPA will highlight if there are any cross effects while determining the baseline scenarios under these methodologies and detail how they have been addressed, demonstrating how the baseline emission estimation is conservative.

For large-scale methodologies, determine the baseline scenario based on the provisions in the methodologies, and include the outcome in the table below.

Example: Table III below provides baseline scenarios of the selected applied methodologies and their baseline emissions estimation provisions.

Table III: Baseline scenario and baseline emissions

Specific guidance: For description of the parameters, refer to the individual applied methodologies and describe each parameter with its units.

Methodology	Baseline scenario	Baseline emissions
AMS-I.F. Renewable electricity generation for captive use and mini-grid	The emissions from grid power which is displaced by the electricity generated by Renewable Energy Technologies	Product of RET generated electricity and the emission factor of the displaced grid electricity $BE_y = EG_{BL,y} \times EF_{CO2,y}$

Methodology	Baseline scenario	Baseline emissions
AMS-I.J. Solar water heating systems (SWH)	For retrofit projects, the operating SHW and energy source (fossil fuel /electricity) are used. For new construction projects, (fossil fuel/ electricity) that is typical of new construction	Emissions due to use of fossil fuels or grid electricity generated with fossil fuel power plants. Energy savings calculated using 3 methods (a) Model simulation method (b) System metering method or (c) Stipulated energy savings method
AMS-II.E. Energy efficiency and fuel switching measures for buildings	Energy use of the existing equipment that is replaced for retrofits. Energy use of facility that would otherwise be built in the case of a new Facility.	Energy saved* by EE device multiplied by the emission factor of the baseline fuel or electricity replaced.
AMS-II.C. Demand-side energy efficiency activities for specific technologies	Consumption of fossil fuel or grid electricity by the replaced equipment.	If the energy displaced is electricity, the emission baseline is determined using one of the three following options: (i) Option 1 - Constant load equipment: This option applies to equipment that requires the same power (kW) to operate whenever it is energized within specified limits, i.e. is (are) constant load equipment. Baseline emissions are calculated, considering rated power (kW) of baseline equipment and annual operating hours. $BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$ $E_{BL,y} = \sum_i (n_i \times \rho_i \times o_i / (1 - l_{y)}$ (ii) Option 2 – Variable load device(s), regression approach: This option applies to baseline equipment for which the rate of energy consumption, demand (kW), varies in response to independent variable(s) such as weather. A mathematical function is developed, using regression techniques, to determine baseline energy consumption as a function of the relevant independent variable(s). $E_{BL,y} = \sum_i (n_i \times kWh_i)/(1 - l_{y)}$ (iii) Option 3 – Production efficiency/ specific energy consumption approach: This option is only applicable if the ratio of energy output to energy input for the baseline equipment can be shown to not be variable over the range of outputs experienced during the crediting period. The baseline is calculated by using specific energy consumption per unit of output in the baseline multiplied by the output in project year y multiplied by the emission factor for the electricity displaced. $E_{BL,y} = \sum_i [EER_i \times \frac{Q_{i,y}}{1 - l_y}]$
AMS-II.Q. Energy efficiency and/or energy	For retrofits based on the energy consumed over the past 12 months in the subject building(s). For new	For retrofits, based on the energy consumed over a period of a year as calculated using a calibrated whole building model of the subject baseline building.

Methodology	Baseline scenario	Baseline emissions
supply projects in commercial buildings	buildings, (i) Areas where building codes are mandated: baseline emissions scenario is based on minimum energy requirements in the building code (ii) Areas where building codes are not mandated: baseline emissions scenario is based on the average energy consumption in buildings of the same or similar building type.	For New Construction, based on the energy consumed over a period of a year as calculated, using a calibrated model, of a reference baseline building, generated by a whole building computerized simulation tool.
AMS-II.J. Demand-side activities for efficient lighting technologies	Lighting by the project lamps would have been provided by the lamps collected and replaced by the project activity.	The annual electricity savings by comparing the nameplate/rated power rating of the project lamp with that of the baseline lamp and multiplying by annual hours of operation and the number of project lamps $NES_y = \sum_{i=1}^{n} Q_{PJ,i} \times (1 - LFR_{i,y}) \times ES_i \times \frac{1}{(1 - TD_y)} \times NTG$ $ES_i = (P_{i,BL} - P_{i,PJ}) \times O_i \times 365/1000$
AMS-II.N. Demand side EE activities for installation of EE lighting and/or controls in buildings	Saving of electricity by EE devices	Emissions due to displaced equipment. The following equations are used to determine lighting electricity savings for each fixture/lamp/ballast/ballast factor combination for each building in which a project is implemented: $= \sum_{u,i} \left(\frac{1}{1{,}000{,}000}\right) \times [(W/fixture_{b,u,i} \times N_{b,u,i} \times Hours_{b,u,i}) - (W/fixture_{p,u,i} \times N_{p,u,i,y} \times Hours_{p,u,i,y})]$ $ES_y = \sum_{j} [(\frac{1}{1{,}000}) \times [(Average\ kWh_{b,j})_{baseline} - (Average\ kWh_{p,j,y})_{project}]$
AMS-II.R. Energy efficiency space heating measures for residential buildings	Emissions due to additional use of fuel/electricity in absence of the project.	(i) Use of a "Baseline Measurement Survey" carried out prior to or in parallel with the implementation of the project activity. (ii) Use of a "Treatment Group Versus Control Group Study" (iii) Use of "Existing Data from Registered CDM Projects". Also, provides method for Baseline emissions under suppressed demand scenario.

I.6. Estimation of emission reductions

I.6.1. Explanation of methodological choices

1. Explain how the methods or methodological steps in the applied methodologies and, where applicable, the applied standardized baselines, for calculating baseline emissions, project emissions, leakage emissions and emission reductions are applied to the generic CPA. Clearly state which equations will be used in calculating emission reductions for the corresponding CPAs.

2. Explain and justify all relevant methodological choices, including:

   (a) Where the applied methodologies and, where applicable, the applied standardized baselines include different scenarios or cases, indicate and justify which scenario or case applies to the generic CPA;
   (b) Where the applied methodologies and, where applicable, the applied standardized baselines provide different options to choose from (e.g. “combined margin” under AMS I.D, which methodological approach is used to calculate the “operating margin” in ACM0002), indicate and justify which option has been chosen for the generic CPA;
   (c) Where the applied methodologies and, where applicable, the applied standardized baselines allow different default values (e.g. values for MCF under AMS III.E), indicate and justify which default value has been chosen for the generic CPA.

Specific guidance: In case of grid electricity, the emission factor should be determined using latest version of the Tool to calculate the emission factor for an electricity system. Emission factors published by official sources in the Host Country should be used if they exist.
The energy consumption of the baseline devices shall be measured. Or it shall be determined using the Tool 31: Determination of standardized baselines for energy efficiency measures in residential, commercial and institutional buildings.

Example: The project components fall in the Sectoral scopes 1 Energy industries (renewable / non-renewable sources) and 3 – Energy demand. The parameters and scope of the projects in the CPA satisfy the applicability criteria of the selected methodologies AMS-I.F., AMS-I.J., and AMS-II.C. Therefore, the selected methodologies are appropriate for the measures proposed in the PoA.

I.6.2. Data and parameters fixed ex ante

1. Include a compilation of information on the data and parameters that are not monitored during the crediting period of the corresponding CPAs but are determined before the registration of the PoA and remain fixed throughout the PoA period. Do not include here data that will only become available with the implementation of the corresponding CPAs (e.g. measurements after the implementation of the corresponding CPAs), but include them in the table in section I.7.1 below.
2. The compilation of information may include data that are measured or sampled, and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.). Do not include data that are calculated with equations provided in the applied methodologies or default values specified in the methodologies in the compilation.
3. For each piece of data or parameter, complete the table, following the instructions below:
   (a) "Value(s) applied": provide the value applied. Where a time series of data is used, where several measurements are undertaken or where surveys have been conducted, provide detailed information in Appendix 4 below. To report multiple values referring to the same data or parameter, use one table. If necessary, use references to spreadsheets;
   (b) "Source of data": indicate and justify the choice of data source. Provide clear and valid references and, where applicable, additional documentation in Appendix 4 below;
   (c) "Measurement methods and procedures": where values are based on measurement, include a description of the measurement methods and procedures applied (e.g. which standards have been used), indicate the responsible person/entity that undertook the measurement, the date of the measurement and the measurement results. More detailed information can be provided in Appendix 4 below;
   (d) "Purpose of data": choose one of the following:
      (i) Calculation of baseline emissions;
      (ii) Calculation of project emissions;
      (iii) Calculation of leakage.

(Copy this table for each piece of data and parameter.)

Data/Parameter	
Data unit	
Description	
Source of data	
Value(s) applied	
Choice of data or Measurement methods and procedures	
Purpose of data	
Additional comment	

Specific guidance: Describe all the data parameters fixed ex ante referred to in the applied methodologies in detail in the table format at the end of this section.

Example: The data and parameters to be fixed ex ante depend on the methodologies applied and the tools referenced by the methodologies as well as measures included in the CPA. Some of the eight methodologies selected do not explicitly state these parameters. A brief summary list is indicated in the Table IV below:

Table IV: Data parameters fixed ex ante

Methodology	Data parameters fixed ex ante
AMS-I.F. Renewable electricity generation for captive use and mini-grid	Combined margin emission factor, when fixed ex-ante
AMS-I.J. Solar water heating systems (SWH)	Model inputs to determine baseline emissions fuel or electricity Input and output of the system, temperature in and out, water flow rate
AMS-II.E. Energy efficiency and fuel switching measures for buildings	Specifications of the baseline equipment replaced, energy use of the building prior to project.
AMS-II.C. Demand-side energy efficiency activities for specific technologies	Number and "power" of a representative sample of the replaced equipment
AMS-II.Q. Energy efficiency and/or energy supply projects in commercial buildings	A (i) building physical properties; (ii) characteristics of the space conditioning system; (iii) initial load and operating assumptions; (iv) typical year weather file; (v) occupancy schedules; (vi) HVAC and lighting control settings; and (vii) lighting schedules; B (i) initial simulation results for baseline building; and (ii) accuracy with which the simulation results match the calibration energy data.
AMS-II.J. Demand-side activities for efficient lighting technologies	Nameplate/rated power (Watts) of the baseline incandescent lamps to be replaced; operating hours of project (and baseline) lamps either fixed value of 3.5 hrs/day or determined using average measured value from measurements of a representative sample conducted once, prior to or concurrent with the first ex post monitoring survey.
AMS-II.N. Demand side EE activities for installation of EE lighting and/or controls in buildings	Baseline lighting demand per fixture of type i in usage group u, Quantity of baseline affected fixtures, adjusted for inoperative lighting fixtures, Baseline annual operating hours for operative lighting fixtures, Lighting baseline energy use, The number and specifications of replaced fixtures/lamps/ballasts, Parameters determined by sampling and survey described in Table 2 of the methodology
AMS-II.R. Energy efficiency space heating measures for residential buildings	For Baseline Measurement Survey: energy use of the baseline heating equipment, independent variables that determine energy use, such as ambient temperatures and occupancy For Treatment Group Versus Control Group Study: energy used (for each fuel type) by the system(s) affected by the project activities is measured using a census or representative sample of the residences in treatment group and control group.

I.6.3. Modalities for ex ante calculation of emission reductions

1. Provide modalities for a transparent ex ante calculation of baseline emissions, project emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period of the corresponding CPAs, applying all relevant equations provided in the applied methodologies and, where applicable, the applied standardized baselines. For data or parameters available before the registration of the PoA, use values contained in the table in section I.6.2 above.
2. For data or parameters not available before the registration of the PoA and to be monitored during the crediting period of the corresponding CPAs, use estimates contained in the table in section I.7.1 below. If any of these estimates has been determined by a sampling approach, provide a description of the sampling efforts undertaken in accordance with the "Standard: Sampling and surveys for CDM project activities and programme of activities".
3. Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Where relevant, provide additional background information and/or data in Appendix 4 below, including relevant spreadsheets.
4. Provide a sample calculation for each equation used.

Specific guidance: The CME shall provide detailed calculations of ex ante estimates of the baseline emissions in the PoA DD.

In case of RE activities, baseline emissions are the product of amount electricity displaced by the renewable generating unit and an emission factor.

In case of EE activities, the emission reductions calculation involves estimation of energy savings from the EE devices and the emission factor of the electricity grid supplying the locality of the CPA. Multiplying these two parameters provides and estimation for the ERs.

The CME shall also provide detailed calculations of ex ante estimates of the project emissions and leakage emissions in the PoA DD.

Example: Table III above summarises the modalities for ex ante estimation of baseline emissions. The CME shall provide detailed calculations of ex ante estimate of the emission reductions in the CPA-DD.

Table V elaborates the procedure to calculate emission reductions from baseline, project and leakage emissions considered in the respective methodologies.

Table V: Estimation of Baseline, Project and leakage emissions and Emission reductions

AMS-I.F. Renewable electricity generation for captive use and mini-grid (Ver03.0 EB81)

Baseline emissions	Product of RET generated electricity and the emission factor of the displaced grid electricity given by Equation 1 in Para 19 $$BE_y = EG_{BL,y} \times EF_{CO2,y}$$ Where: BE_y = Baseline emissions in year y (t CO_2) $EG_{BL,y}$ = Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y (MWh) $EF_{CO2,y}$ = Emission factor of the grid (t CO_2/MWh) shall be calculated as per the procedures provided in AMS-I.D. The other two conditions relevant to mini-grid system and captive electricity generation are not applicable to this PoA
Project emissions	Nil as per para 24 of the methodology, since the CPA will not involve geothermal or hydropower.
Leakage	Nil since the CPA will not include biomass-based power as referred to in Para 27 of the methodology.

Emission Reductions	$$ER_y = BE_y - PE_y - LE_y$$ Where, ER_y = Emission reduction in year y BE_y = Baseline emissions in year y PE_y = Project emissions in year y and LE_y = Leakage emissions in the year y

AMS-I.J. Solar water heating systems (SWH) (ver02.0 EB100)

Baseline emissions	Emissions due to use of fossil fuels or grid electricity generated with fossil fuel power plants. Energy savings calculated using 3 methods (a) Model simulation method (b) System metering method or (c) Stipulated energy savings method. Out of these from ease of use and cost control point of view, it is proposed to apply option (b) for commercial buildings and option (c) for the residential buildings. **Option (b)** requires that energy content (flow rate integrated with temperature difference between inlet and outlet water temperature) of consumed/ utilized hot water delivered by the project SWH system(s) to the end users within the boundary is measured and integrated, at least once every minute by a thermal meter and recorded on a daily basis. This energy content, on at least a monthly basis, is used to calculate the equivalent amount of energy that would have been consumed in the baseline system (fossil fuel or electricity) to heat an equivalent amount of useful hot water. **Option (c)** there are two allowable stipulated energy savings values: (i) For applications that can be reasonably demonstrated to have substantial hot water consumption demand year-round: a single value of 450 kWh/year per square meter of collector area is stipulated for energy savings and is based on 5 kWh/m^2/day solar resource, 25% solar water heater efficiency, and 365 days/year of hot water use; (ii) For applications that cannot be reasonably demonstrated to have substantial hot water consumption demand year-round: a single value of 300 kWh/year per square meter of collector area is stipulated for energy savings.
Project emissions	Fossil fuel and/or electricity use of project SWH system is continuously measured and recorded at least monthly for electricity, liquid or gas fuels and daily for solid fuels. In lieu of measurement, the energy use of auxiliary loads may be stipulated based on the rated power consumption rate and metered or conservatively estimated auxiliary load run-time(s), if such loads can be shown to be less than 10 per cent of the annual project energy consumption.
Leakage	In case project equipment is transferred from another activity and/or baseline equipment is not destroyed.
Emission Reductions	Emission reductions are calculated as the energy savings that result from the project implementation multiplied by an emission factor for the electricity and/or fossil fuel displaced, adjusted for leakage as appropriate.

AMS-II.E. Energy efficiency and fuel switching measures for buildings (Ver10.0 EB35)

Baseline emissions	The energy baseline consists of the energy use of the existing equipment that is replaced in the case of retrofit measures and of the facility that would otherwise be built in the case of a new facility. Each energy form in the emission baseline is multiplied by an emission coefficient. For the electricity displaced, the emission coefficient is calculated in accordance with provisions under category I.D. For fossil fuels, the IPCC default values for emission coefficients may be used.
Project emissions	Energy use by the project equipment multiplied by emission coefficient*.
Leakage	To be considered if the energy efficiency technology is equipment transferred from another activity or if the existing equipment is transferred to another activity.

Emission Reductions	$$ER_y = BE_y - PE_y - LE_y$$ Where, ER_y = Emission reduction in year y BE_y = Baseline emissions in year y PE_y = Project emissions in year y and LE_y = Leakage emissions in the year y

AMS-II.C. Demand-side energy efficiency activities for specific technologies (Ver 15.0 EB89)

Baseline emissions	(i) Option 1 - Constant load equipment. Applicable to retrofit and Greenfield projects. It applies to equipment that requires the same power (kW) to operate whenever it is energized within specified limits, i.e. is (are) constant load equipment. $BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$ $E_{BL,y} = \sum_i (n_i \times \rho_i \times o_i / (1 - l_y)$ (ii) Option 2 – regression approach. Only for retrofits. Variable load device(s), $E_{BL,y} = \sum_i (n_i \times kWh_i)/(1 - l_y)$ (iii) Option 3 – Production efficiency/ specific energy consumption approach. It does not apply to Greenfield projects. This option is only applicable if the ratio of energy output to energy input for the baseline equipment can be shown to not vary over the range of outputs experienced during the crediting period. $E_{BL,y} = \sum_i [EER_i \times \frac{Q_{i,y}}{1 - l_y}]$
Project emissions	$PE_y = EP_{PJ,y} X\ EF_{CO2,y} + PE_{ref,y}$ $EP_{PJ,y} = \sum_t \sum_i \frac{(n_i X \rho_i X o_i)}{(1 - l_i)}$ Where, n_i = Number of groups i project devices operating in time interval t year y ρ_i = Electrical power demand (kW) of the group i project devices measured during the time interval t in year y o_i = Operating hours of group of i project devices in the time interval t in year y. Project emissions shall include any incremental emissions as compared to the baseline associated with refrigerants used in the project equipment.
Leakage	If the energy efficiency technology equipment is transferred from another activity, leakage is to be considered.
Emission Reductions	$ER_y = BE_y - PE_y - LE_y$ Where, ERy = Emission reduction in year y BEy = Baseline emissions in year y PEy = Project emissions in year y and LEy = Leakage emissions in the year y

AMS-II.Q. Energy efficiency and/or energy supply projects in commercial buildings (Ver01.0 EB68)

Baseline emissions	For Retrofits, the baseline emissions scenario is based on the energy consumed over a period of a year as calculated using a calibrated whole building model of the subject baseline building(s). The model's B building settings for the baseline scenario should match the original building features before the retrofit. For New Construction, the baseline emissions scenario is based on the energy consumed over a period of a year as calculated, using a calibrated model of a reference baseline building generated by a whole building computerized simulation tool. The reference baseline model shall be configured as a building on the project site that matches the project's building type and size (i.e. height or number of floors, and floor area), with a window-to-wall ratio and front façade orientation on the site the same as that can be demonstrated as typical of the project location (i.e. in the neighbourhood). The baseline model's weather, and tenancy T settings shall match those in the calibrated model of the project activity building(s).
Project emissions	Emissions from physical leakage of refrigerant, with a GWP greater than zero, from new cooling equipment
Leakage	No leakage expected
Emission Reductions	Sum of ERs from thermal and electrical savings minus project emissions of reference building

AMS-II.J. Demand-side activities for efficient lighting technologies (Ver 07.0 EB89)

Baseline emissions	Emissions due to displaced equipment. (a) Estimate the nameplate/rated power (Watts) of the baseline incandescent lamps to be replaced (b) Determine operating hours of project (and baseline) lamps using one of the following two options Option 1: a default value of 3.5 hours per 24 hours period for 'daily operating hours' Option 2: measured value can be used for the ex-ante estimate using the sampling requirements indicated in the definition of Oi. (c) Calculate the annual gross electricity savings by comparing the nameplate/rated power rating of the project lamp with that of the baseline incandescent lamp and multiplying by: (i) annual hours of operation; and (ii) the estimated number of Project Lamps that are part of the project. (d) Calculate the annual net electricity saving (NES), for each year of the assumed crediting period, by correcting the gross electricity savings for leakage, a net-to-gross adjustment (NTG) factor, transmission & distribution losses, and Lamp Failure Rate. $NES_y = \sum_{i=1}^{n} Q_{PJ,i} \times (1 - LFR_{i,y}) \times ES_i \times \frac{1}{(1 - TD_y)} \times NTG$ $ES_i = (P_{i,BL} - P_{i,PJ}) \times O_i \times 365/1000$ Where, NES_y = Net electricity saved in year y (kWh) $Q_{PJ,i}$ = Number (quantity) of pieces of equipment (project lamps) of type i distributed or installed under the project activity (units). n = Number of types of equipment i ES_i = Estimated annual electricity savings for equipment of type i, for the relevant technology (kWh) $LFR_{i,y}$ = Lamp Failure Rate for equipment type i in year y (fraction) TD_y = Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction. NTG = Net-to-gross adjustment factor, a default value of 0.95 is to be used unless a more appropriate value based on a lighting use survey from the same region and not older than two years is available.

	$P_{i,BL}$ = Rated power of the baseline lighting devices of the group of i lighting devices (Watts). $P_{i,PJ}$ = Rated power of the project lighting devices of the group of i lighting devices (Watts) o_i = Average daily operating hours of the lighting devices replaced by the group of i lighting devices.
Project emissions	Nil. (Baseline is based on net electricity saved)
Leakage	Scrapping of replaced equipment to avoid leakage is provided.
Emission Reductions	$$ER_y = NES_y \times EF_{CO2,ELEC,y}$$ Emission Factor (EF) calculated in accordance with provisions under AMS-I.D

AMS-II.N Demand side EE activities for installation of EE lighting and/or controls in buildings (Ver02.0 EB75)

Baseline emissions	In this methodology baseline emissions are not estimated, but the savings due to project fixtures is estimated. And then multiplied with emission factor of the electricity. (a) When baseline and project fixture count and wattages are surveyed and operating hours are monitored. $$ES_y = \sum_{u,i} \left(\frac{1}{1{,}000{,}000}\right) \times [(W/fixture_{b,u,i} \times N_{b,u,i} \times Hours_{b,u,i}) - (W/fixture_{p,u,i} \times N_{p,u,i,y} \times Hours_{p,u,i,y})]$$ (b) When baseline and project lighting circuits are monitored. $$ES_y = \sum_{j} [(\frac{1}{1{,}000}) \times [(Average\ kWh_{b,j})_{baseline} - (Average\ kWh_{p,j,y})_{project}]$$ Where, ES_y = Lighting energy savings associated with project in year y (MWh) $W/fixture_{b,u,i}$ = Baseline lighting demand per fixture of type i in usage group u, Watts $W/fixture_{p,u,i}$= Project lighting demand per fixture of type i in usage group u, Watts $N_{b,u,i}$ = Quantity of baseline affected fixtures, adjusted for inoperative lighting fixtures, of type i in usage group u $N_{p,u,i,y}$ = Quantity of project affected fixtures of type i in usage group u (for controls and efficiency projects, this value may be same for project and baseline) in operation in year y $Hours_{b,u,I}$ = Baseline annual operating hours for operative lighting fixtures, of type i in usage group u, hours and adjusted to represent an annual value. $Hours_{p,u,i,y}$ = Project annual operating hours for operative lighting fixtures, of type i in usage group u, hours in year y adjusted to represent an annual value u = Building usage groups with similar operating hour characteristics $Average\ kWh_{b,j}$= Lighting baseline energy use based on lighting circuit time period measurements, adjusted to represent an annual value, for lighting circuit j $Average\ kWh_{p,j,y}$= Lighting project energy use based on lighting circuit time period measurements, adjusted to represent an annual value in year y, for lighting circuit j
Project emissions	Nil (ER is calculated using the reduction in electricity consumption.)
Leakage	Not considered

Emission Reductions	$ER_y = \left[ES_y \times (1 + IF_{e,c} + IF_{e,h}) \times \frac{3600{,}00kJ}{1MWh} \times EF_{CO2,ELEC,y} / (1 - l_y)\right] + TIF_y$ $TIF_y = \left[(ES_y \times IF_{ff,c} \times EF_{CO2,ff,c}) + (ES_y \times IF_{ff,h} \times EF_{CO2,ff,h})\right] \times \frac{3600{,}00kJ}{1MWh}$ Where, $If_{e,c}$ = Interactive factor for electric space cooling system impacts in building in which project is implemented, positive fraction. $If_{e,h}$ = Interactive factor for electric space heating system impacts in building in which project is implemented, negative fraction. $IF_{ff,c}$ = Interactive factor for fossil fuel based space cooling system impacts in building in which project is implemented, positive fraction. $IF_{ff,h}$ = Interactive factor for fossil fuel based space heating system impacts in building in which project is implemented, negative fraction. l_y = Average annual technical grid losses (transmission and distribution) during year y for the grid serving the locations where the devices are installed, expressed as a fraction. TIF_y = Thermal Interactive Effect $EF_{CO2,ff,c}$ = Emission factor for fossil fuel(s) used in cooling system(s) (t CO_2/kJ) $EF_{CO2,ff,h}$ = Emission factor for fossil fuel(s) used in heating systems(s) (t CO_2/kJ)

AMS-II.R. Energy efficiency space heating measures for residential buildings (Ver01.0 EB73)

Baseline emissions	(i) Use of a "Baseline Measurement Survey" carried out prior to or in parallel with the implementation of the project activity. The survey shall include direct measurements and recording of the energy use within the project boundary. (ii) Use of a “Treatment Group Versus Control Group Study”. Under this option, throughout the crediting period, energy used (for each fuel type) by the system(s) affected by the project activities (e.g. stoves/heaters) is measured using a census or representative sample of the residences participating in the project (treatment group) and compared with energy use (for each fuel type) of a control group of non-participating residences (control group). The difference in energy use between the participating residences and the control group residences is used to determine energy savings and emission reductions. (iii) Use of “Existing Data from Registered CDM Projects”. This option is only applicable when a suppressed demand scenario exists per the requirements of paragraph 19 of the methodology. In such a case, credible data sources that depict the energy consumption level in the baseline scenario could be used.
Project emissions	Project emissions shall be determined by multiplying the quantity of the energy consumed by its emission factor.
Leakage	If the EE equipment is transferred from another activity or if existing equipment is transferred to another activity, leakage is to be considered.
Emission Reductions	$\boldsymbol{ER_y = BE_y - PE_y - LE_y}$ Where, ER_y = Emission reduction in year y BE_y = Baseline emissions in year y PE_y = Project emissions in year y and LE_y = Leakage emissions in the year y

I.7. Monitoring plan

1. Through sections I.7.1–I.7.3 below, provide a detailed description of how to develop the monitoring plan for each corresponding CPA in accordance with the applicable provisions in the project standard, the applied methodologies and, where applicable, the applied standardized baselines.
2. If the coordinating/managing entity chooses to delay the submission of the description of how to develop the monitoring plan in accordance with the applicable provisions in the project standard, clearly state that the submission of the description of how to develop the monitoring plan is delayed and that this form does not contain information related to the monitoring plan.

I.7.1. Data and parameters to be monitored

1. Include specific information on how the data and parameters that need to be monitored in accordance with the applied methodologies and, where applicable, the applied standardized baselines will actually be collected during monitoring. Include here data and parameters that are determined only once for the crediting period of the corresponding CPAs but that will become available only after the implementation of the corresponding CPAs.
2. For each piece of data or parameter, complete the table, following the instructions below:
   (a) "Source of data": indicate the source(s) of data that will be used for the corresponding CPAs (e.g. which exact national statistics). Where several sources are used, justify which data sources should be preferred;
   (b) "Value(s) applied": the value applied is an estimate of the data or parameter that will be monitored during the crediting period of the corresponding CPAs, but is used for the purpose of calculating estimated emission reductions in the CPA-DDs of the corresponding CPAs. To report multiple values referring to the same data or parameter, use one table. If necessary, use references to spreadsheets;
   (c) "Measurement methods and procedures": where data or parameters are to be monitored, specify the measurement methods and procedures, standards to be applied, accuracy of the measurements, person/entity responsible for the measurements, and, in case of periodic measurements, the measurement intervals;
   (d) "QA/QC procedures": describe the Quality Assurance (QA)/Quality Control (QC) procedures to be applied, including the calibration procedures, where applicable;
   (e) "Purpose of data": choose one of the following:
      (i) Calculation of baseline emissions;
      (ii) Calculation of project emissions;
      (iii) Calculation of leakage emissions.
3. Provide any relevant further background documentation in Appendix 5 below.

(Copy this table for each piece of data or parameter.)

Data/Parameter	
Data unit	
Description	
Source of data	
Value(s) applied	
Measurement methods and procedures	
Monitoring frequency	
QA/QC procedures	
Purpose of data	
Additional comment	

Specific guidance: The CPA proponents shall describe each applicable data parameter that will be monitored in accordance with the applied monitoring methodologies specific to their CPA.

Example: Some of the methodologies require measurement of parameters to estimate project emissions. The procedures and data and parameters monitored in the selected eight methodologies is described in Table VI below:

Table VI: Data and parameters to be monitored

Methodology	Data parameters to be monitored
AMS-I.F. Renewable electricity generation for captive use and mini-grid	Grid emission factor (if determined ex-post), CO2 emission factor of fossil fuel type i, Net calorific value of fossil fuel type i, Quantity of fossil fuel consumed in year y, Quantity of net electricity displaced in year y
AMS-I.J. Solar water heating systems (SWH)	Daily/monthly Solar radiation data, Fossil fuel and/or electricity use of project SWH system, energy use of project auxiliary loads e.g. pumps/controls
AMS-II.E. Energy efficiency and fuel switching measures for buildings	Energy use of the buildings and energy savings due to energy efficient devices
AMS-II.C. Demand-side energy efficiency activities for specific technologies	"power" and "operating hours" by recording the "power" of the project equipment installed 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 Metering the "energy use" of an appropriate sample of the project equipment installed.
AMS-II.Q. Energy efficiency and/or energy supply projects in commercial buildings	(a) Weather data, obtained monthly from third-party sources (b) Electricity emission factor; (c) Energy consumption (electrical and/or thermal, as appropriate to the project activity) of the project building(s) at least monthly; (d) Base building B substantive setting change(s) such that a recalibration of model(s) is required (frequency: annual); (e) Substantive occupancy or tenancy-related T setting change(s) including lighting and HVAC schedules and control settings such that a recalibration of model(s) is required (frequency: annual).
AMS-II.J. Demand-side activities for efficient lighting technologies	Nameplate/power rating of the project lamp, annual hours of operation, estimated number of Project Lamps that are part of the project, net-to-gross adjustment (NTG) factor, transmission & distribution losses, and Rated Average Life for equipment type i to determine Lamp Failure Rate
AMS-II.N. Demand side EE activities for installation of EE lighting and/or controls in buildings	Project lighting demand per fixture of type i in usage group u, Quantity of project affected fixtures of type i in usage group u in operation, Project annual operating hours for operative lighting fixtures, Lighting project energy use, Grid electricity emission factor, interactive factors for electricity and fossil fuel based heating and cooling systems, Average annual technical grid losses, operation and estimated efficiency of building heating and/or cooling systems, Number, type and wattage of project fixtures/lamps/ballasts/ballast factors and/or control systems installed under the project activity, identified by the manufacturer and model numbers and the date of supply for each space, and thus usage group, in the project building(s),
AMS-II.R. Energy efficiency space heating measures for residential buildings	Emission factor for an electricity system, each type of fuel and the quantity by fuel type consumed by the system(s) affected by the project activities.

I.7.2. Sampling plan

1.	If data and parameters to be monitored in section I.7.1 above are to be determined by a sampling approach, provide a description of how to establish the sampling plan in accordance with the recommended outline for a sampling plan in the "Standard: Sampling and surveys for CDM project activities and programme of activities".

Specific guidance: Sampling will be necessary in order to determine the average consumption of devices in the buildings. Buildings near to each other are expected to be uniform and would generally exhibit similar types of households and similar types of appliances/equipment. In that sense the area of the CPA is divided in sub-groups or clusters, which exhibit uniform characteristics. Therefore, Cluster sampling will be more cost-effective. As suggested in the Guideline for sampling and surveys, larger samples will help in minimising the standard errors of estimates. For examples of the sample size calculation for cluster sampling, please refer to "Guideline: Sampling and surveys for CDM project activities and programmes of activities".

Example: Most of the selected methodologies require using the "Standard for Sampling and surveys for CDM project activities and programmes of activities" for conducting surveys, selecting samples and for the analysis of results from such surveys. Sampling for the CPAs under the PoA will also be done through methods in the above standard.

Cluster sampling will be conducted to sample the buildings which exhibit uniform characteristics. Sample sizes will be calculated, ensuring that the precision of the sample means/proportions are in accordance with the requirements of the applied methodologies and the sampling standard, with the applicable methodology having precedence. In cases where survey results indicate that desired precision is not achieved, the lower bound value of corresponding confidence interval of the parameter value may be used as an alternative to repeating the survey. Alternatively, the survey may be expanded to reach the required confidence/precision.

In the case of parameters monitored for the first time, the expected variation for that parameter in the sample may be based on results from similar studies, pilot studies, or from the project planner's own knowledge / experience of the data.

I.7.3. Other elements of monitoring plan

1.	Describe the other elements of the monitoring plan as outlined in the project standard, the applied methodologies and, where applicable, the applied standardized baselines, including the operational and management structure for monitoring, provisions for data archiving, and responsibilities and institutional arrangements for data collection and archiving.
2.	Provide any relevant further background information in Appendix 5 below.

Example: The member buildings of the CPA shall adhere to the monitoring plans in the relevant applied methodologies and the tools that they incorporate.

SECTION J. Crediting period type and duration

1.	State the type of crediting period (renewable or fixed) chosen for the generic CPA that is applicable to all the corresponding CPAs.
2.	State the length of crediting period that is applicable to all the corresponding CPAs, in years and months.

Example: Renewable crediting period.

SECTION K. Eligibility criteria for inclusion of CPAs

1. Demonstrate the usability of the eligibility criteria for inclusion of CPAs in the PoA by using the table, defining the eligibility criteria in accordance with the project standard, and setting out required conditions for a CPA to be included in the PoA.
2. For each eligibility criterion, specify the category of criterion, conditions to meet the criterion and required supporting evidence in each row of the table.
3. Add rows to the table as necessary.

Example:

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
1	Geographical boundary	All buildings in each CPA are located within the geographical boundary of the PoA.	GPS coordinates or street address
2	Double counting	The CPAs of PoA shall not result in double counting of emission reductions.	For each CPA, all the following are fulfilled: - Contractual agreements between CME and CPA implementer on CER transfer. - Precise location of buildings recorded in the database (GPS coordinates)
3	Other PoAs or projects	There is no other registered CDM project activity included in another registered PoAs, or deregistered project activities with the same identification data.	GPS coordinates, Analysis of projects in the CDM pipeline
4	Technology/ Measure	CPA implementers will provide manufacturer's specifications of applied RE and EE technology/measure. CME to verify the claims of the project component through physical site visit and documents submitted before admitting participant in the CPA.	Description of the technologies (e.g. expected lifetime, capacity, plant load factor, and any manufacturer specifications) Documents such as energy audit report of the building and report on implementation of energy audit recommendations, quotations received for equipment from pre-approved vendors.
5	Start date	The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA.	
6	Compliance with the applicability conditions of applied methodologies	Each CPA will satisfy the applicability conditions of applied methodologies	Supporting documents to demonstrate compliance with applicability conditions of applied methodologies, which will be provided in Section B.1 of CPA-DD

7	Additionality	Each CPA will follow the process in Section C of PoA-DD to demonstrate additionality of the project activity.	Data sheets of equipment to prove the capacity of the RE PV or the consumption of the equipment for EE measures
8	Local stakeholder consultation and Environmental impact analysis	Local stakeholders consultation will be conducted at PoA level	Minutes, stakeholder consultation reports, etc. will be provided. Initial Environmental Examination (IEE) report, Environmental Approval from the government authority.
9	Public funding	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance.	Confirmation on No public funding from Annex 1 party
10	Target Group	The target group will be a group of buildings included in the CPA.	List of participating buildings
11	Sampling	Each CPA will follow the requirements of the sampling standard.	Sampling protocol applied
12	Small-scale thresholds	The capacity of RE equipment and energy savings of EE equipment will not exceed 15 MW and 60 GWh respectively, over the entire crediting period as small-scale CDM project activities. In case of microscale CPA, the installed capacity of RE equipment and energy savings of EE equipment will not exceed 5 MW and 20 GWh respectively, over the entire crediting period.	Data sheets of equipment to prove the capacity of the RE PV or the consumption of the equipment for EE measures
13	Debundling Check	Each CPA is not a debundled component of a large scale project activity.	Data sheets of equipment to prove the capacity of the RE PV or the consumption of the equipment for EE measures

Appendix 1. Contact information of coordinating/managing entity and project participants

1. For each of the coordinating/managing entity and the project participants listed in section A.4 and A.5 above respectively, complete the table. Copy and paste the table as needed.

Coordinating/managing entity and/or project participants	☐ Coordinating/managing entity ☐ Project participant
Organization name	
Country	
Address	
Telephone	
Fax	
E-mail	
Website	
Contact person	

Appendix 2. Affirmation regarding public funding

1.	If applicable, attach the affirmation obtained from Parties included in Annex I to the Convention providing public funding to the PoA.

Appendix 3. Applicability of methodologies and standardized baselines

1.	Provide any further background information on the applicability of the selected methodologies and, where applicable, the selected standardized baselines.

Appendix 4. Further background information on ex ante calculation of emission reductions

1.	Provide any further background information on the ex ante calculation of emission reductions. This may include data, measurement results, data sources, etc.

Appendix 5. Further background information on monitoring plan

1.	Provide any further background information used in the description of how to develop the monitoring plan for each corresponding CPA. This may include tables with time series data, additional documentation of measurement equipment, procedures, etc.

Appendix 6. Summary report of comments received from local stakeholders

1.	If the local stakeholder consultation was carried out for the whole PoA, provide a summary report of comments received from local stakeholders on the PoA during and, if any, after the consultation. In the report, also identify stakeholders who have made comments, including comments forwarded by the DNA(s) of the host Party(ies).

Appendix 7. Summary of post-registration changes

1.	Provide a summary of the post-registration changes being proposed in this version of the PoA-DD, and where applicable, the history of all post-registration changes to the PoA that have been approved by the Board after its registration. For all post-registration changes, include reasons for the changes and any additional information relating to the changes.

Appendix 2. Best-practice examples for specific CPA-DD

Note:

- General guidance from “Attachment. Instructions for completing this form” from CPA-DD form are provided in the grey box.

Component project activity design document form (Version 08.1)	
Complete this form in accordance with the instructions attached at the end of this form.	
BASIC INFORMATION	
Title of the CPA	CDM Program Activity for individual and cross-cutting interventions in energy generation and efficient use in residential buildings located in Community No. 10 in the ABC city
Scale of the CPA	☐ Large-scale ☒ Small-scale
Version number of the CPA-DD	
Completion date of the CPA-DD	
Title and UNFCCC reference number of the registered CDM PoA	Program of activities in urban buildings with individual and cross-cutting interventions in energy generation and use
Title and reference number of the corresponding generic CPA	CDM Program Activity for individual and cross-cutting interventions in energy generation and efficient use in residential buildings located in Community ## in the ## City (Generic CPA01)
Coordinating/managing entity	ABC City Development Company Ltd.
Host Party	
Applied methodologies and standardized baselines	AMS-I.F., AMS-I.J., AMS-II.C.
Sectoral scopes linked to the applied methodologies	Sectoral Scope 1: Energy industries (renewable / non-renewable sources) and Sectoral Scope 3: Energy demand
Estimated amount of annual average GHG emission reductions	52,966 tCO2e p.a.

2. Indicate the following information on the cover page:
   (h) Title of the CPA and its unique identification (e.g. sequential number);
   (i) Scale of the CPA (large-scale or small-scale);
   (j) Version number of the CPA-DD;
   (k) Completion date of the CPA-DD (dd/mm/yyyy);
   (l) Title and UNFCCC reference number of the registered CDM PoA;
   (m) Title and reference number of the corresponding generic CPA;
   (n) Name of the coordinating/managing entity;
   (o) Name of the host Party;
   (p) Titles and UNFCCC reference numbers of the applied methodologies and, where applicable, the applied standardized baselines;
   (q) Sectoral scopes linked to the applied methodologies, clearly indicating mandatory sectoral scopes and if applicable, conditional sectoral scopes for the project activity.
   (r) Estimated amount of annual average GHG emission reductions during the crediting period (t CO_2e).

SECTION A. Description of component project activity (CPA)

A.1. General description of CPA

1. Provide the purpose and general description of the CPA, including a summary of:
   (a) The location of the CPA;
   (b) The technologies/measures employed by the CPA;
   (c) The project boundary;
   (d) The baseline scenario;
   (e) The estimates of annual average and total GHG emission reductions for the chosen crediting period.
2. Provide a full description of 1(a)–(e) above in sections A.2, A.3, B.2, B.3 and B.4 below, respectively.

Additional specific instructions for small-scale CPAs:

3. Indicate the small-scale project type (Type I, Type II and/or Type III) applicable to the CPA in accordance with the corresponding generic CPA.
4. If applicable, indicate and demonstrate that the CPA qualifies for a microscale project type (Type I, Type II and/or Type III) in accordance with the corresponding generic CPA.
5. If there is more than one component in the CPA, indicate the small-scale or microscale project type for each component separately in accordance with the corresponding generic CPA.

Example: The ABC city is located in the <> Province of <Host Country>. It has an area of <zzz> sq. km, population of <Y> million and is divided into <25> communities.

The Community No. 10 included in this CPA is located in the north part of the ABC city and has primarily residential and commercial buildings, and institutional buildings such as schools, colleges, and hospitals. The population of the Community No. 10 is approximately 250,000.

Most of the buildings in the Community were constructed over the last decade within the last 5 years. The area is dense and buildings are multi-storey with an average of 20 floors. The standard structure of residential buildings is 4 units per floor, totalling 80 apartment units in each building. The average occupancy is 4 to 5 residents per unit, averaging 350-360 residents per building. Occupants are mostly middle or upper middle-income and possess upper end appliances such as air conditioners, refrigerators, washing machines and fans, etc. Each building has on an average 2 elevators (some tall buildings have 4), high pressure water pumps, and common area lighting (mostly fluorescent tube lights). Some upper end buildings have club houses, gyms, swimming pools and activity courts.

The buildings of the ABC city are managed by a Resident Welfare Associations which raise monthly charges from the residence owners. These maintenance charges are used to operate the common amenities such as elevators, water pumps and common lighting. The average consumption for the common amenities is in the range of 3000 kWh/month or 36,000 kWh/year. A significant part of monthly collection from residents goes to meet electricity charges.

The CME conducted energy audits for 300 household[1] and found that there is an energy reduction potential of around 20% on average[2]. The savings results from installation of energy efficient equipment such as motors for elevators, energy efficient pumps and LED lighting in common areas. Moreover, savings can be achieved by replacement of older inefficient appliances such as air conditioners, refrigerators, washing machines, microwave ovens, food processors, and vacuum cleaners with efficient ones certified under the energy label program in <Host Country>.

Annual savings from each building are expected to reach approximately 300 MWh/year. All 175 residential buildings will reach approximately 52.5 GWh/year, which is lower than the small-scale threshold of 60 GWh/year.

The participant buildings/units in the CPA can adopt the energy efficiency measures described above and install renewable energy systems such as rooftop solar photovoltaic systems, and rooftop solar water heating systems. The roof areas of most of the building are sufficient for installing up to 15 kW of rooftop solar PV systems or 21,000 lit/day solar hot water systems. The overall capacity of these systems in the buildings of the CPA will be much lower than the small-scale limits.

The CPA is part of the PoA in the <Host Country>.

A.2. Location of CPA

1. Provide details of the physical/geographical location of the CPA, including physical address (host Party, region/state/province, city/town/community, street name and number) and a map, and if necessary, other information allowing for the unique identification of the CPA (e.g. geographic coordinates). 2. Provide proof that the CPA is located within the geographical boundary of the PoA. 3. Do not exceed one page for the description of location.

Example: The CPA is located within the geographical boundary of Ward No. 10 of the ABC city in <Host Country>. The geographical position is from xx0 N, yy0 E to pp0 N, qq0 E. The location of the CPA is indicated in the map below.

[1] Calculated in accordance with "Standard for sampling and surveys for CDM Project Activities and PoAs"

[2] The potential for savings in energy consumption from an appliance will depend on the age of the appliance, availability of better technologies in the market, the efficiency offered by the current appliance's technology etc. Some ideas can be found in https://help.leonardo-energy.org/hc/en-us/articles/203598661-How-many-types-of-energy-audit-are-there-, https://beeindia.gov.in/sites/default/files/1Ch3.pdf, and http://lab.fs.uni-lj.si/kes/erasmus/Energy%20Management%20Handbook.pdf

A.3. Technologies/measures

1. Describe the technologies/measures to be employed and/or implemented by the CPA in accordance with the corresponding generic CPA, including:
   (a) A list of the facilities, systems and equipment that will be installed and/or modified by the CPA;
   (b) The arrangement of the facilities, systems and equipment;
   (c) The monitoring equipment and their location in the systems.
2. Describe the types and levels of services (normally in terms of mass or energy flows) provided by the facilities, systems and equipment that are being modified and/or installed under the CPA and their relation, if any, to other facilities, systems and equipment outside the project boundary, in accordance with the corresponding generic CPA.
3. For the facilities, systems and equipment that are being modified and/or installed under the CPA, provide information on:
   (a) The age and average lifetime of the equipment based on the manufacturer's specifications and industry standards that are within the range specified in the corresponding generic CPA;
   (b) The existing and forecast installed capacities, load factors and efficiencies that are within the range specified in the corresponding generic CPA;
   (c) The energy and mass flows and balances of the facilities, systems and equipment, if necessary, in accordance with the corresponding generic CPA.
4. Provide a short summary of facilities, systems and equipment in the baseline scenario as established in section B.3 below.
5. Do not provide information that is not essential to understanding the purpose of the CPA and how it reduces GHG emissions. Do not include information related to facilities, systems and equipment that are auxiliary to the main scope of the CPA and do not affect directly or indirectly GHG emissions and/or mass and energy balances of the processes related to the CPA.

Additional specific instructions for small-scale CPAs:

6. If there is more than one component in the CPA, provide the information for each component separately.

Example: The CPA includes the following technology measures:

1. Energy efficiency improvements in
   - Common building equipment such as elevators, water pumps, lighting in common areas, and
   - Electrical appliances owned by individual residents/unit owners
2. Renewable energy technologies (RET) including rooftop solar PV and solar hot water systems in the residential buildings.

A.4. Coordinating/managing entity

1. Provide the name of the coordinating/managing entity of the PoA.

Example: ABC City Development Company Ltd. (ABCDCL), a wholly owned organization of the ABC City municipality is the Coordinating/Managing Entity (CME) of the PoA. The ABC city is divided into ## communities and in each community ABCDCL's local office will act as co-ordinator of the CPA.

The local ward office of ABCDCL (CPA implementer) will maintain a system for recording all information of the program including building details, data on the existing and proposed technology/measures in the buildings, and their installation date, as well as a unique ID number that will be allotted to each technology. The ABCDCL local office shall conduct energy audits through independent agencies and record the measured energy consumption of the replaced common equipment and individual appliances.

A.5. Parties and CPA implementers

1. Using the table, list the Parties and CPA implementers involved in the CPA, and provide contact information of the CPA implementers in Appendix 1 below. CPA implementers are the entities/individuals responsible for the operation of the CPA, and may or may not be the project participants recorded at the PoA level or the coordinating/managing entity.

Example:

Parties involved	CPA implementers	Indicate if the Party involved wishes to be considered as CPA implementer (Yes/No)
Party A (host Party)	Private building owners/ ABC City Development Company Ltd.	No
Party B	Private entity B Public entity B …	

A.6. Public funding of CPA

1. Indicate whether the CPA receives public funding from Parties included in Annex I to the Convention. If so:
   (a) Provide information on Parties providing public funding;
   (b) Attach in Appendix 2 below the affirmation obtained from such Parties in accordance with the applicable provisions in the project standard.

Example: No public funding is involved in this CPA.

A.7. History of CPA

1. Confirm that:
   (a) The proposed CPA is neither registered as a CDM project activity nor included in another registered CDM PoA;
   (b) The proposed CPA is not a project activity that has been deregistered.
2. Declare whether:
   (a) The proposed CPA was a CPA that has been excluded from a registered CDM PoA;
   (b) A registered CDM project activity or a CPA under a registered CDM PoA whose crediting period has or has not expired (hereinafter referred to as former project) exists in the same geographical location as the proposed CPA.
3. If the declaration on 2(a) or 2(b) above is positive, demonstrate that the proposed CPA meets all conditions for inclusion in the PoA in accordance with the applicable provisions in the project standard relating to re-inclusion of an excluded CPA in a registered CDM PoA or inclusion of a CPA that is in the same geographical location as a former project.

Example: The CPA has been developed along with the registration of the PoA in urban buildings with cross-cutting interventions in energy generation and use.

A.8. Debundling

1. For large-scale CPAs, indicate 'Not applicable'.
2. For small-scale CPAs, demonstrate that the CPA is not a debundled component of a large-scale project activity or CPA in accordance with the applicable provisions in the "Methodological tool: Assessment of debundling for SSC project activities".

Example: The CPA is not part of a debundled component of a small scale CDM project or another PoA. Moreover, as the CPA solely comprises "microscale CDM units" as defined in the "Methodological tool: Demonstration of additionality of microscale project activities", the requirement regarding debundling as stated here is not applicable[3].

SECTION B. Application of selected methodologies and standardized baselines

Additional specific instructions for small-scale CPAs:

2. If there is more than one component in the small-scale CPA, provide the information for each component separately in the entire section B.

B.1. Reference to methodologies and standardized baselines

1. Indicate the exact reference (number, title, version) of:
   (a) The selected methodologies (e.g. ACM0001: "Large-scale Consolidated Methodology: Flaring or use of landfill gas" (Version 15.0));
   (b) Any tools and other methodologies to which the selected methodologies refer (e.g. "Tool07 "Tool to calculate the emission factor for an electricity system" (Version 05.0));
   (c) The selected standardized baselines, where applicable (e.g. ASB0001 "Standardized baseline: Grid emission factor for the Southern African power pool" (Version 01.0)).
2. Refer to the corresponding generic CPA for the exact reference of approved methodologies, tools and standardized baselines.

Example: The measures mentioned in Section A.3 are covered under the following approved small-scale CDM methodologies

Technology/Measure	Methodology reference
Roof-top solar PV, Wind electric generator	AMS-I.F. Renewable electricity generation for captive use and mini-grid
Solar water heating systems	AMS-I.J. – Solar water heating systems
Energy efficient equipment/appliances	AMS-II.C. – Demand-side energy efficiency activities for specific technologies

The above methodologies are covered under the PoA. This CPA is located in a <Host Country> that has a tropical climate and the buildings do not have space heating requirements. Therefore, the methodology AMS-II.R. is not applied for this CPA. Also, AMS-II.J. and AMS-II.N. is not applied for this CPA. Instead AMS-II.C is applied because it is more comprehensive and it covers not only energy efficient lighting but also other energy efficient appliances.

The applicability conditions of the applied methodologies and how they are met is elaborated in the Table[4] below:

Methodology/ Brief description	Applicability conditions of methodology	Conditions in the CPA
AMS-I.F. Renewable electricity generation for captive use and mini-grid	For project activities that: (a) Greenfield- Install a new RE power plant (Greenfield) (b) Add capacity (c) retrofit existing plant(s); or (d) Replace existing plant(s)	The CPA will install new rooftop solar PV.

[3] Standard: CDM project standard for programmes of activities Version 01.0 Foot note 37

[4] Only key applicability conditions are listed above. The CPA proponents shall describe all applicability conditions in accordance with the applied monitoring methodologies specific to their CPA.

Methodology/ Brief description	Applicability conditions of methodology	Conditions in the CPA
AMS-I.J. Solar water heating systems (SWH)	(a) For Retrofit that replace existing electric/fossil fuel based WH systems (b) SWH projects installed in new facilities (c) SWH projects installed in existing facilities with no SWH prior to project (d) SWH project for capacity expansions; or (e) Replacing failed SWHs	The solar water heating systems installed shall be new, retrofit, replacement or capacity expansion in existing or new buildings. They replace either electric or LPG/PNG/Kerosene heated water heaters.
AMS-II.C. Demand-side energy efficiency activities for specific technologies	(i) the service level (e.g. rated capacity or output) of the installed, project EE equipment is between 90% and 150% of the service level of the baseline equipment. (ii) refrigerant if used in the project case shall have no ozone depleting potential (ODP). (iii) ER only due to the reduction in electricity and/or fossil fuel consumption from use of more efficient equipment.	The service level of the installed EE appliances will be less than or equal to 150% of that of the existing/replaced equipment installed in the same location. The refrigerating devices will not contain ODPs[5]. Emission reductions shall be claimed only from savings in electricity or fossil fuel consumption.

B.2. Project boundary, sources and greenhouse gases (GHGs)

1. Define the project boundary of the CPA, including physical delineation of the CPA, and which sources and GHGs are included in the project boundary, in accordance with the modalities in the corresponding generic CPA.
2. Use the table in the form to describe emission sources and GHGs included in the project boundary for the purpose of calculating project emissions, baseline emissions and, if applicable, leakage emissions.
3. In addition to the table, where possible, present a flow diagram of the project boundary based on the descriptions provided in section A.3 above and in accordance with the corresponding generic CPA. Include in the flow diagram all the facilities, systems and equipment, and flows of mass and energy described in that section. In particular, indicate in the diagram the emissions sources and GHGs included in the project boundary and the data and parameters to be monitored.

Example: The physical project boundary of the CPA is the administrative area under the Community No.10 of the ABC City. It includes buildings that have enrolled under the CPA.

[5] The <Host Country> has accepted the Montreal Protocol and already prevents sale of ODP refrigerants.

Source		GHG	Included?	Justification/Explanation
Baseline	Source 1	CO_2	Yes	The primary source of emission reductions is savings in and displacement of electricity drawn from grid, which is a mix of thermal, hydro, nuclear and renewable energy, which emit greenhouse gas CO_2. CH_4 and N_2O emissions are not significant.
		CH_4	No	
		N_2O	No	

	Source 2	CO_2		
		CH_4		
		N_2O		

Project activity	Source 1	CO_2	Yes	The energy efficiency improvements reduce grid electricity and Renewable Energy Devices displace part of the grid power, thereby reducing GHG emissions. Also, project emissions due to use of backup fossil fuel heaters or electric heaters. CH_4 and N_2O emissions are not significant.
		CH_4	No	
		N_2O	No	

	Source 2	CO_2		
		CH_4		
		N_2O		

B.3. Establishment and description of baseline scenario

1. Describe the baseline scenario for the CPA and explain how it is established in accordance with the modalities in the corresponding generic CPA.
2. Provide a list of facilities, systems and equipment in the baseline scenario, and clearly explain how the same types and levels of services provided by the CPA as elaborated in section A.3 above would have been provided in the baseline scenario.
3. Provide a transparent description of the baseline scenario as established above.

Example: The baseline scenarios and method of calculating individual baseline emissions with regard to the measures adopted in the CPA are in line with the ones identified in the above applied baseline methodologies. These are summarised in the table below:

Methodology	Baseline scenario	Baseline emissions
AMS-I.F. Renewable electricity generation for captive use and mini-grid	The emissions from grid power which is displaced by the electricity generated by Renewable Energy Technologies	Product of RET generated electricity and the emission factor of the displaced grid electricity $BE_y = EG_{BL,y} \times EF_{CO2,y}$
AMS-I.J. Solar water heating	For retrofit projects, the operating SHW and energy source (fossil fuel /electricity) are used. For new	Emissions due to use of fossil fuels or grid electricity generated with fossil fuel power plants.

Methodology	Baseline scenario	Baseline emissions
systems (SWH)	construction projects, (fossil fuel/ electricity) that is typical of new construction	Energy savings calculated using 3 methods (a) Model simulation method (b) System metering method or (c) Stipulated energy savings method
AMS-II.C. Demand-side energy efficiency activities for specific technologies	Consumption of fossil fuel or grid electricity by the EE equipment.	If the energy displaced is electricity, the emission baseline is determined using one of the three following options: (i) Option 1 - Constant load equipment: This option applies to equipment that requires the same power (kW) to operate whenever it is energized within specified limits, i.e. is (are) constant load equipment. Baseline emissions are calculated, considering rated power (kW) of baseline equipment and annual operating hours. $BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$ $E_{BL,y} = \sum_i (n_i \times \rho_i \times o_i / (1 - l_{y)}$ (ii) Option 2 – Variable load device(s), regression approach: This option applies to baseline equipment for which the rate of energy consumption, demand (kW), varies in response to independent variable(s) such as weather. A mathematical function is developed, using regression techniques, to determine baseline energy consumption as a function of the relevant independent variable(s). $E_{BL,y} = \sum_i (n_i \times kWh_i)/(1 - l_{y)}$ (iii) Option 3 – Production efficiency/ specific energy consumption approach: This option is only applicable if the ratio of energy output to energy input for the baseline equipment can be shown to not be variable over the range of outputs experienced during the crediting period. The baseline is calculated by using specific energy consumption per unit of output in the baseline multiplied by the output in project year y multiplied by the emission factor for the electricity displaced. $E_{BL,y} = \sum_i [EER_i \times \frac{Q_{i,y}}{1 - l_y}]$

In this CPA, the baseline scenario for EE measures is the emission of GHGs due to the use of the existing inefficient equipment/appliances, which is calculated by multiplying energy consumed by old devices by emission factor of the electric power grid supplying power to the CPA location.

For estimating emissions reductions from installation of the solar rooftop systems, the baseline electricity consumption corresponds to the energy consumption of the newly installed energy efficient devices in the project. Thus GHG emission reduction is calculated by multiplying energy consumed by the efficient devices by the grid emission factor.

B.4. Estimation of emission reductions

B.4.1. Explanation of methodological choices

1. Explain how the modalities in the corresponding generic CPA for calculating baseline emissions, project emissions, leakage emissions and emission reductions are applied to the CPA. Clearly state which equations will be used in calculating emission reductions.

Example: See Section B.4.3

B.4.2. Data and parameters fixed ex-ante

1. Include a compilation of information on the data and parameters that are not monitored during the crediting period of the CPA but are determined before the inclusion of the CPA in the PoA and remain fixed throughout the crediting period, in accordance with the corresponding generic CPA. Do not include here data that will only become available with the implementation of the CPA (e.g. measurements after the implementation of the CPA), but include them in the table in section B.5.1 below. 2. The compilation of information may include data that are measured or sampled, and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.). Do not include data that are calculated with equations provided in the applied methodologies or default values specified in the methodologies in the compilation. 3. For each piece of data or parameter, complete the table, following the instructions below: (a) "Value(s) applied": provide the value applied. Where a time series of data is used, where several measurements are undertaken or where surveys have been conducted, provide detailed information in Appendix 3 below. To report multiple values referring to the same data or parameter, use one table. If necessary, use references to spreadsheets; (b) "Source of data": indicate and justify the choice of data source. Provide clear and valid references and, where applicable, additional documentation in Appendix 3 below; (c) "Measurement methods and procedures": where values are based on measurement, include a description of the measurement methods and procedures applied (e.g. which standards have been used), indicate the responsible person/entity that undertook the measurement, the date of the measurement and the measurement results. More detailed information can be provided in Appendix 3 below; (d) "Purpose of data": choose one of the following: (i) Calculation of baseline emissions; (ii) Calculation of project emissions; (iii) Calculation of leakage.

(Copy this table for each piece of data or parameter.)

Data/Parameter	
Data unit	
Description	
Source of data	
Value(s) applied	
Choice of data or measurement methods and procedures	
Purpose of data	
Additional comment	

Example: ABCDCL and its local ward offices will maintain details of the equipment replaced in each building both electronically and with physical records to be checked by the DOE during validation and

verification. A suggested tabular form is indicated below. This includes details of the existing equipment and the installed energy efficient equipment. These details will be in conformity with the applied approved baseline/monitoring methodologies listed in Section B.3. above. A database will be created by ABCDCL accessible to all local offices with appropriate rights to enter, modify, view and print data. The data in the table will be collected for each individual building and maintained in the central server as well as kept with the building owners who are members of the CPA.

CPA 001	Cross-cutting interventions in energy generation and efficient use in residential buildings located in Ward No. 10 in the ABC city									
	Building code	Location in Ward	Building owner	No. of floors	No. of residents		Area available for rooftop SPV			m^2
	xxx						Combined margin Emission factor			tCO_2/MWh
			Replaced equipment							
		Common Equipment								
	Elevator	Water pump	Lights							
Sr. No.										
Make										
Capacity										
Operating hours										
Consumption										
Apartment No.	Air conditioner		Refrigerator		Electric Geyser		Lights		Ceiling Fan	
	capacity	Consumption	capacity	Consumption	capacity	Consumption	capacity	Consumption	capacity	Consumpt
1										
2										
3										
4										
80										
Total	Sum of cap	Sum of cons	Sum of cap	Sum of cons	Sum of cap	Sum of cons	Sum of c	Sum of cons	Sum of ca	Sum of co

B.4.3. Ex ante calculation of emission reductions

1. Provide a transparent ex ante calculation of baseline emissions, project emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period of the CPA, applying all relevant equations provided in the applied methodologies and, where applicable, the applied standardized baselines, in accordance with the corresponding generic CPA. For data or parameters available before the inclusion of the CPA in the PoA, use values contained in the table in section B.4.2 above. 2. For data or parameters not available before the inclusion of the CPA in the PoA and to be monitored during the crediting period of the CPA, use estimates contained in the table in section B.5.1 below. If any of these estimates has been determined by a sampling approach, provide a description of the sampling efforts undertaken in accordance with the "Standard: Sampling and surveys for CDM project activities and programme of activities". 3. Document how each equation is applied, in a manner that enables the reader to reproduce the calculation. Where relevant, provide additional background information and/or data in Appendix 4 below, including relevant spreadsheets. 4. Provide a sample calculation for each equation used.

Example: The following considerations have been made for ex ante calculations from the CPA.

A. RETs installed in the buildings, using AMS-I.F. and AMS-I.J

It is assumed that out of 175 buildings, 50% will install 15kW rooftop solar PV systems and 20% will install 20,000 LPD rooftop solar water heating systems. The actual numbers per system will be monitored.

For emission reductions by solar PV installations, the small-scale methodology **AMS-I.F**. is applied. Under this methodology, emission reductions are calculated as the product of RET-generated electricity and the emission factor of the displaced grid electricity:

$$BE_y = EG_{BL,y} \times EF_{CO2,y}$$

Where:

BE_y = Baseline emissions in year y (t CO_2)

$EG_{BL,y}$ = Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO2,y}$ = Emission factor of the grid (t CO_2/MWh) shall be calculated as per the procedures provided in AMS-I.D

System	Numbers	Size (kW)	Capacity Utilization factor	Expected total annual generation MWh ($EG_{BL,y}$)	Emission factor of the grid (t CO2/MWh)	Emission reductions tCO_2 p.a.
Rooftop Solar PV	87	15	15%	1,715	0.92	1,578

For emission reductions by solar hot water systems replacing electric or fossil fuel fired heaters, the emission reductions are calculated by applying the small-scale methodology **AMS-I.J.**

Under this methodology AMS-I.J, the energy savings are calculated by applying the **Option (c): Stipulated energy savings method.** There is substantial hot water consumption demand year-round in the ward x, so a single value of 450 kWh/year per square meter of collected area is stipulated for energy savings, which

is based on 5 kWh/m^2/day solar resource, 25% solar water heater efficiency, and 365 days/year of hot water use. Emissions reductions estimates are included in the Table below.

System	Numbers	Stipulated energy savings[6] kWh/year/m^2	Area m^2	Expected total annual savings MWh	Emission factor of the grid (t CO2/MWh)	Emission reductions tCO_2 p.a.
Solar Water heating	35	450	200	3,150	0.92	2,898

Project emissions for use of backup fossil fuel heaters or electric heaters should be included in the project emissions based on actual measurement of these sources. In both these cases i.e. electricity and gas the meter readings can be used to estimate the consumption. During the project design phase, the individual units would note down average consumption during usage time and arrive at the default rate of consumption. This default rate will be applied during the project wherein the usage time of the back up system will be monitored.

B. Energy Efficiency measures in the buildings, using AMS-II.C

For replacement of old equipment and appliances with energy efficient ones, the small-scale methodology **AMS-II.C.** is applied. Most of the equipment exhibits constant load, hence the **Option 1 of the methodology AMS-I.C** and corresponding equations are applied to calculate baseline and project emissions.

Thus,

$$BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$$

And

$$E_{BL,y} = \sum_i (n_i \times \rho_i \times o_i / (1 - l_y)$$

Where:

BE_y	=	Baseline emissions in year *y* (tCO_2e)
$E_{BL,y}$	=	Energy consumption for the baseline in year *y* (kWh)
$EF_{CO2,ELEC,y}$	=	Electricity emissions factor. The electricity displaced is grid, so the emission factor in year *y* has been calculated in accordance with the provisions in AMS-I.D (tCO_2/MWh). 0.92
$\sum_i$	=	Sum over the group of i baseline equipment replaced or that would have been replaced. The devices in group i must be closely related by type (e.g. motor), size (e.g. 5 hp), service (e.g. building water pump), and any other relevant factors that determine energy consumption of the equipment
n_i	=	Number of pieces of equipment of the group of i baseline equipment replaced or that would have been replaced
ρ_i	=	Electrical power demand (kW) of the group of i baseline equipment (e.g. 40W incandescent lamps, 5 hp motors).
o_i	=	Average annual operating hours of the group of i baseline equipment.

[6] AMS-I.J Ver01 Para 10 (c) (i) page 5

l_y	=	Average annual technical grid losses (transmission and distribution) during year *y* for the grid serving the locations where the devices are installed, expressed as a fraction.	0.10
$Q_{ref,BL}$	=	Average annual quantity of refrigerant used in the baseline to replace the refrigerant that has leaked (tonnes/year). Only applies to projects that replace equipment containing ODP refrigerants.	0
$GWP_{ref,BL}$	=	Global Warming Potential of the baseline refrigerant (tCO_2e/t refrigerant)	NA

Similarly, the project activity emissions are given by the following equation:

$$PE_y = EP_{PJ,y} \times EF_{CO2,y} + PE_{ref,y}$$

In both baseline as well as project scenarios, the refrigerators do not use refrigerants having ODS as the <Host Country> has implemented the provisions of Montreal Protocol.

The Bureau of Energy Efficiency (BEE) under the Ministry of Power of Government of <Host Country> has published norms of energy efficiency as well as published norms under their Star labelling program[7][8]. These are updated regularly and serve as one of the reference values for this CPA.

B-1. Energy savings from equipment installed in the common areas of the buildings:

Energy savings from equipment in common areas of the buildings such as elevators and pumps, are due to energy efficient motors[9]. The methodology uses baseline emissions from energy used prior to installation of energy efficient devices. The energy audits conducted by independent auditors found the efficiency of existing motors to be 85% while that for the efficient motors is 90%.

B-1.1 Elevator motors

For each 10 KVA (8.5 kW) (ρ_i) elevator motor operating for around 2000 hrs (o_i) in a year, baseline electricity consumption is 8.5 X 2000 X 100/85 = 20,000 kWh/year.

After replacement by an energy efficient motor with 90% efficiency the consumption would be 8.5 X 2000 X 100/90 = 18,888 kWh/year.

Thus, the annual energy savings by one elevator would be 20,000 – 18,888 = 1,112 kWh/year.

For two elevators, this would be 2,224 kWh/year.

B-1.2 Water pump

For a 15 hp (11.25 kW) (ρi) water pump operating 730 hrs (o_i), savings would be 1,074 kWh/year.

[7] https://beeindia.gov.in/content/standards-labeling The CME may apply norms applicable in their <Host Country>

[8] Many developing countries have published such norms. If not, norms/standards of a neighbouring country with similar economic status can be applied. If no such indicators are available then European or US values could be considered.

[9] Bureau of Energy Efficiency (BEE), Schedule 6 Energy Efficient 3 Phase squirrel cage Induction Motors 14 May 2013

B-1.3 Lights

For ex-ante estimation of lighting, it is assumed that a bulb is changed from 36 W FTL to 18 W LED for common areas.

For ex-ante calculation purposes, in the common areas of a 20-story building, approximately 200 lights of 7.2 kW would be replaced by 3.6 kW use.

Thus, the savings would be approximately 11 kW.

As most of these lights would operate for almost 5,000 hrs in a year, the saving in electricity would be [36-18] X 200 X 5000 = 18 MWh/year.

Thus, annual savings from these three equipment classes would be around 21.3 MWh/year for each building.

Device	Number	Savings MWh/year
Elevator motors	2	2,224
Water pump	1 (at a time)	1,074
Lights	200	18,000
Total		21,298

B-2. Energy savings from the equipment installed in individual households:

The following assumptions are made based on general lifestyle profile of the residents of ABC city. The 20-story buildings have 80 flats with 2 bedrooms, a drawing room, a kitchen and two bathrooms.

- On average, each flat has two air-conditioners of 1.5 tons of refrigeration (as ABC City is in a tropical climate with temperatures ranging from 18^0C in winter to 37^0C in summer).
- Each house has a refrigerator of 320 litre capacity, 4 ceiling fans, 2 electric water heaters, 5 FTLs and 6 lamps. Assuming that the residents replace only a part of their high value appliances and all small value ones, the likely savings are listed in the below. The local electricity distribution company provides a 230 AC power supply with max connected load of 10 kW.

Device	Nos per house n_i	Operating hrs/day o_i	Days/year	Savings*	Annual savings kWh/year
Air-conditioners[10]	1	8	180	2.196 kW	1028
Refrigerator[11]	1	24	365		316
Water heaters[12]	2	0.5	200		125
Ceiling fans	4	10	300	0.045 kW	540
Lights FTL[13]	5	8	365	0.030 kW	438
Incandescent lamps	6	10	365	0.048 kW	1051
Total savings per house					3499
Total saving per building (80 flats)					279,882

* Refer to the attached worksheet

Thus, the total energy saving per building per year = 21.3 +279.9 = 301.2 MWh/year

Total energy savings from 175 buildings = 52,707 MWh/year

The grid T&D losses (l_i) are around 10%.

[10] Bureau of Energy Efficiency (BEE) Ministry of Power (MOP), Govt. of India Notification 8 Aug 2017
[11] BEE Notification Schedule – 5 Direct Cool Refrigerator 26 May 2016
[12] MOP notification S.O. 2901(E) 07 September 2016
[13] MOP Notification S.O. 178 (E) 12 January 2009

Hence, the savings is 58,563 MWh/year.

C. Total emission reductions due to RETs and EE measures in the buildings of the CPA

The grid emission factor $EF_{CO2,y}$ for the <Host Country> is estimated using the "Tool to calculate the emission factor for an electricity system" for the year is 0.92 tCO_2/MWh.

Thus, the emission reductions from the CPA will be:

RET installations	4,476 tCO_2 p.a.
Energy efficiency measures	53,878 tCO_2 p.a.
Total from CPA	**58,354[14] tCO_2 p.a.**

B.4.4. Summary of ex ante estimates of emission reductions

1. Summarize the results of the ex ante calculation of emission reductions for all years of the crediting period of the CPA, using the table in the form.

Additional specific instructions for small-scale CPAs:

2. If the small-scale CPA contains more than one component, provide a separate table for each component. In addition, provide a table showing the aggregate emission reductions of the CPA.

Example:

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
Year 1				58,354
Year 2				58,354
Year 3				58,354
Year …				58,354
Total				
Total number of crediting years				
Annual average over the crediting period				

B.5. Monitoring plan

1. Through sections B.5.1–B.5.3 below, provide a detailed description of the monitoring plan for the CPA developed in accordance with the corresponding generic CPA.
2. If the coordinating/managing entity chooses to delay the submission of the monitoring plan in accordance with the applicable provisions in the project standard, clearly state that the submission of the monitoring plan is delayed and that this form does not contain information related to the monitoring plan.

[14] In terms of CDM project standard for project activities Ver01 Para 115 (a) the three project types viz. Renewable energy, Energy efficiency improvement and other projects are mutually exclusive.

B.5.1. Data and parameters to be monitored

1. Include specific information on how the data and parameters that need to be monitored in accordance with the applied methodologies and, where applicable, the applied standardized baselines, will actually be collected during monitoring, in accordance with the corresponding generic CPA. Include here data and parameters that are determined only once for the crediting period of the CPA but that will become available only after the implementation of the CPA.
2. For each piece of data or parameter, complete the table, following the instructions below:
   (a) "Source of data": indicate the source(s) of data that will be used for the CPA (e.g. which exact national statistics). Where several sources are used, justify which data sources should be preferred;
   (b) "Value(s) applied": the value applied is an estimate of the data or parameter that will be monitored during the crediting period of the CPA, but is used for the purpose of calculating estimated emission reductions in sections B.4.3 and B.4.4 above. To report multiple values referring to the same data or parameter, use one table. If necessary, use references to spreadsheets;
   (c) "Measurement methods and procedures": where data or parameters are to be monitored, specify the measurement methods and procedures, standards to be applied, accuracy of the measurements, person/entity responsible for the measurements, and, in case of periodic measurements, the measurement intervals;
   (d) "QA/QC procedures": describe the Quality Assurance (QA)/Quality Control (QC) procedures to be applied, including the calibration procedures, where applicable;
   (e) "Purpose of data": choose one of the following:
      (i) Calculation of baseline emissions;
      (ii) Calculation of project emissions;
      (iii) Calculation of leakage emissions.
3. Provide any relevant further background documentation in Appendix 4 below.

(Copy this table for each piece of data or parameter.)

Data/Parameter	
Data unit	
Description	
Source of data	
Value(s) applied	
Measurement methods and procedures	
Monitoring frequency	
QA/QC procedures	
Purpose of data	
Additional comment	

Example: The data and parameters to be monitored would be as stated in the applied approved methodologies. These are listed out in the tables below for the methodologies relevant to this CPA DD.

AMS-I.F.

Data Parameter	Data Unit	Description	Measurement Procedures	Monitoring Frequency
$EF_{CO2,y}$	tCO_2/MWh	CO_2 emission factor of the grid	As per procedure in AMS-I.D	Annually
$EG_{BL,y}$	MWh/y	Quantity of net electricity displaced in year y	Measurements are undertaken using energy meters. The net electricity displaced is the gross energy generation by the project activity power plant minus the auxiliary/station electricity consumption	Continuous monitoring, hourly measurement and at least monthly recording

AMS-I.J.

Data Parameter	Data Unit	Description	Measurement Procedures	Monitoring Frequency
$EF_{CO2,y}$	tCO_2/MWh	CO_2 emission factor of the grid	As per procedure in AMS-I.D	Annually
T_{in} and T_{out}	^0C	Temperature of water Inlet and outlet and ambient temperature	Thermocouples installed in the Inlet and outlets	Continuously
	Fossil fuel/ electricity input, System efficiency	Characteristics of baseline system	Observations made prior to project system installations and manufacturers	Once prior to project installation
	Solar collector size, Technical specs	Characteristics of project SWH system	From supplier	
T_L	%	Technical losses in transmission	Official data published by national grid operator	Annually
	Fossil fuel/ electricity consumption	Use of backup fossil fuel heaters or electric heaters, to be used for calculation of project emissions	As per TOOL03 "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" and TOOL05 "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation"	

AMS-II.C.

Data Parameter	Data Unit	Description	Measurement Procedures	Monitoring Frequency
n_i	Number	No of appliances replaced	Representative sample of the replaced equipment	Once at the start of project
P_i	Watt	Power rating of the device	Representative sample of the replaced equipment Name plate data or bench tests or metering energy use	Once at the start of project
O_i	Hrs	Operating hours		Annually

B.5.2. Sampling plan

1.	If data and parameters monitored in section **Error! Reference source not found.** are to be determined by a sampling approach, provide a description of the sampling plan in accordance with the corresponding generic CPA.

Example: There are a large number of participants in the CPA. While individual building owners and the apartment owners will monitor their consumption after replacement of the inefficient appliances in their overall electricity bills, it will also be necessary for the CME to track energy savings of the equipment. This will be done through measurement of energy consumed by a representative sample of the equipment, following the guidance in the latest version of Standard: Sampling and surveys for CDM project activities and programmes of activities. For sampling, the approach of cluster sampling will be adopted with a 90/10 confidence/precision.

B.5.3. Other elements of monitoring plan

1.	Describe the other elements of the monitoring plan as outlined in the project standard in accordance with the corresponding generic CPA, including the operational and management structure for monitoring, provisions for data archiving, and responsibilities and institutional arrangements for data collection and archiving.
2.	Provide any relevant further background information in Appendix 4.

SECTION C. Start date, crediting period type and duration

C.1. Start date of CPA

1.	State the start date of the CPA in the format of dd/mm/yyyy.
2.	Describe how the start date has been determined in accordance with the definition of start date provided in the “Glossary: CDM terms”, and provide evidence to support this date.

C.2. Expected operational lifetime of CPA

1.	State the expected operational lifetime of the CPA in years and months.

C.3. Crediting period of CPA

C.3.1. Type of crediting period

1.	State the type of crediting period (fixed or renewable) chosen for the CPA in accordance with the corresponding generic CPA.
2.	For the renewable crediting period type, indicate whether it is the first, second or third crediting period.

Example: Renewable crediting period

C.3.2. Start date of crediting period

1.	State the start date of the crediting period of the CPA in the format of dd/mm/yyyy. Do not attach any qualifications to the start date, such as “expected”.

C.3.3. Duration of crediting period

1.	State the length of the crediting period of the CPA in years and months in accordance with the corresponding generic CPA.

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

1. If the analysis of the environmental impacts was carried out at the CPA level as indicated in the PoA-DD, provide a summary of the analysis and references to all related documentation, including those on transboundary impacts.
2. For a small-scale CPA, provide a summary of the analysis of the environmental impacts if such analysis is required by the host Party. If such analysis was not carried out, indicate "Not applicable" and provide a justification.
3. If the analysis of the environmental impacts was carried out for the whole PoA, indicate so.

Example: Replacing inefficient equipment will reduce energy use. Improvements in end use efficiency also reduces transmission and distribution losses, generation need and in turn emissions of GHG and other pollutants, which result in a positive impact on the environment.

D.2. Environmental impact assessment

1. If an environmental impact assessment was carried out at the CPA level in accordance with the applicable provisions in the project standard, provide conclusions and references to all related documentation. If an environmental impact assessment was not carried out, indicate "Not applicable" and provide a justification.
2. If an environmental impact assessment was carried out for the whole PoA, indicate so.

Example: EIA will be carried out at the PoA level.

SECTION E. Local stakeholder consultation

E.1. Modalities for local stakeholder consultation

1. If the local stakeholder consultation was carried out at the CPA level as indicated in the PoA-DD, follow the instructions in 2–5 below.
2. If there are host Party rules on local stakeholder consultations applicable to the CPA, provide a summary of the consultations carried out under the host Party rules, including the direct positive and negative impacts identified and how the negative impacts identified will be addressed. If such host Party rules do not exist, follow the instructions in 3–5 below.
3. Describe the process of the local stakeholder consultation undertaken for the CPA and demonstrate how the process complies with the relevant requirements in the project standard regarding:
   (a) The scope of local stakeholder consultation;
   (b) The minimum group of stakeholders to be involved;
   (c) The means for inviting stakeholders' participation;
   (d) The information to be made available to stakeholders;
   (e) The conduct of consultation.
4. For 3(b) above, provide evidence that invitations were sent to the relevant stakeholders and that their comments were invited. If any of the relevant stakeholders were not invited, provide an appropriate justification.
5. For 3(c) above, describe the steps/actions taken to invite comments, taking into account local and national circumstances.
6. If the local stakeholder consultation was carried out for the whole PoA, indicate so.

Example: Local stakeholder consultation is done at the PoA level.

E.2. Summary of comments received

1. If the local stakeholder consultation was carried out at the CPA level:
   (a) Prepare a summary report of the comments received during the consultation and attach the report as Appendix 5 below;
   (b) Provide an executive summary of the comments in this section;
   (c) Describe complaints from local stakeholders, if any, submitted to the DNA of the host Party and forwarded through the DOE on the handling of the outcome of the local stakeholder consultation.
2. If the local stakeholder consultation was carried out for the whole PoA, indicate "Not applicable".

E.3. Consideration of comments received

1. If the local stakeholder consultation was carried out at CPA level, describe how the comments and, where applicable, complaints provided by local stakeholders have been taken into account in the CPA-DD or in the revised CPA-DD, including a justification if any comments were not incorporated.
2. If the local stakeholder consultation was carried out for the whole PoA, indicate "Not applicable".

SECTION F. Eligibility for inclusion

1. For the columns "Eligibility criterion - Category", "Eligibility criterion - Required condition" and "Supporting evidence for inclusion", replicate the information from the corresponding generic CPA-DD.
2. For the column "Description of this CPA in relation to the criterion and supporting evidence", describe how the CPA meets the respective criterion and provide supporting evidence.
3. Add rows to the table as necessary.

Example:

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion	Description of this CPA in relation to the criterion and supporting evidence
1	Geographical boundary	All buildings in each CPA are located within the geographical boundary of the PoA.	GPS coordinates or street address	Section A.2 of CPA-DD
2	Double counting	The CPAs of PoA shall not result in double counting of emission reductions.	For each CPA, all the following are fulfilled: - Contractual agreements between CME and CPA implementer on CER transfer. - Precise location of buildings recorded in the database (GPS coordinates)	
3	Other PoAs or projects	There is no other registered CDM project activity included in another registered PoAs, or deregistered project activities with the same identification data.	GPS coordinates, Analysis of projects in the CDM pipeline	

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion	Description of this CPA in relation to the criterion and supporting evidence
4	Technology/ Measure	CPA implementers will provide manufacturer's specifications of applied RE and EE technology/measure. CME to verify the claims of the project component by physical site visit and documents submitted before admitting participant in the CPA.	Description of the technologies (e.g. expected lifetime, capacity, plant load factor, and any manufacturer specifications) Documents such as energy audit report of the building and report on implementation of energy audit recommendations, quotations received for equipment from pre-approved vendors.	Section A.3 of CPA-DD ABCDCL community representatives will visit the buildings to be admitted in the CPA and verify the documents related to the common equipment as well as appliances before admitting the owners in the CPA. Copies of the documents remain with ABCDCL.
5	Start date	The start date of any proposed CPA will be on or after the start date of the proposed CDM PoA.		
6	Compliance with the applicability conditions of applied methodologies	Each CPA will satisfy the applicability conditions of applied methodologies	Supporting documents to demonstrate compliance with applicability conditions of applied methodologies	Section B of CPA-DD
7	Additionality	Each CPA will follow the process in Section C of PoA-DD to demonstrate additionality of the project activity.	Data sheets of equipment to prove the capacity of the RE PV or the consumption of the equipment for EE measures	Section A.1 of CPA-DD Section F of CPA-DD
8	Local stakeholder consultation and Environmental impact analysis	Local stakeholders consultation will be conducted at PoA level	Minutes, stakeholder consultation reports, etc. will be provided. Initial Environmental Examination (IEE) report, Environmental Approval from the government authority.	Section D of CPA-DD
9	Public funding	Each CPA will provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance.	Confirmation on No public funding from Annex 1 party	

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion	Description of this CPA in relation to the criterion and supporting evidence
10	Target Group	The target group will be a group of buildings included in the CPA.	List of participating buildings	Section A.1 of CPA-DD
11	Sampling	Each CPA will follow the requirements of the sampling standard.	Sampling protocol applied	
12	Small-scale thresholds	The capacity of RE equipment and energy savings of EE equipment will not exceed 15 MW and 60 GWh respectively, over the entire crediting period as small-scale CDM project activities. In case of microscale CPA, the installed capacity of RE equipment and energy savings of EE equipment will not exceed 5 MW and 20 GWh respectively, over the entire crediting period.	Data sheets of equipment to prove the capacity of the RE PV or the consumption of the equipment for EE measures	Section A.3 of CPA-DD
13	Debundling Check	Each CPA is not a debundled component of a large scale project activity.	Data sheets of equipment to prove the capacity of the RE PV or the consumption of the equipment for EE measures	Section A.8 of CPA-DD

Appendix 1. Contact information of CPA implementers

1. For each CPA implementer listed in section A.5 above, complete the table. Copy and paste the table as needed.

Organization name	
Country	
Address	
Telephone	
Fax	
E-mail	
Website	
Contact person	

Appendix 2. Affirmation regarding public funding

1.	If applicable, attach the affirmation obtained from Parties included in Annex I to the Convention providing public funding to the CPA.

Appendix 3. Further background information on ex ante calculation of emission reductions

1.	Provide any further background information on the ex ante calculation of emission reductions. This may include data, measurement results, data sources, etc.

Appendix 4. Further background information on monitoring plan

1.	Provide any further background information used in the development of the monitoring plan. This may include tables with time series data, additional documentation of measurement equipment, procedures, etc.

Appendix 5. Summary report of comments received from local stakeholders

1.	If the local stakeholder consultation was carried out at the CPA level, provide a summary report of comments received from local stakeholders on the CPA during and, if any, after the consultation. In the report, also identify stakeholders who have made comments, including comments forwarded by the DNA of the host Party.

Appendix 6. Summary of post-registration changes

1.	Provide a summary of the post-registration changes being proposed in this version of the CPA-DD, and where applicable, the history of all post-registration changes to the CPA after its inclusion. For all post-registration changes, include reasons for the changes and any additional information relating to the changes.

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Document information

Version	*Date*	*Description*
01.0	11 March 2019	MP 78, Annex 15 To be considered by the Board at EB 102.

Decision Class: Regulatory
Document Type: Guideline
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