Programme of activities design document form
(Version 09.0)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION	
Title of the PoA	Small-scale solar electrical programme, South Africa
Version number of the PoA-DD	12
Completion date of the PoA-DD	24/09/2020
Coordinating/managing entity	Blue World Carbon Asset Management (Pty) Ltd
Host Parties	Republic of South Africa
Applied methodologies and standardized baselines	Methodology 1: AMS-I.F.: Renewable electricity generation for captive use and mini-grid (Version 03) Methodology 2: AMS-I.D.: Grid connected renewable electricity generation (Version 18) Standardized baseline: ASB0040-2018: Grid emission factor for the Southern African power pool (Version 01.0)
Sectoral scopes	01

PART I. Programme of activities (PoA)

SECTION A. Description of PoA

A.1. Purpose and general description of PoA

Solar energy is the most readily accessible renewable energy resource in the Republic of South Africa (RSA). Most areas in the country have more than 2 500 hours of sunshine per year, and average solar radiation levels range between 4.5 and 6.5 kWh/m^2 in one day[1].

However, most electricity in the RSA is generated by burning coal. The energy system of the country is managed by the state-owned company Eskom which is in charge of generation, transmission and distribution of power to end-users. The company's total net maximum capacity as of 31 March 2010 is 40 870 MW, most of which is coal-fired (34 658 MW)[2]. The energy system of the RSA is integrated into the grid of the Southern African Power Pool (SAPP), where South Africa is represented by Eskom.[3]

The objective of this programme is to boost the use of renewable energy by domestic consumers and private companies of the RSA. A typical CPA under this PoA is either:

Type 1: The group of the independent activities under the predetermined province of the RSA, each of which is no larger than 0.15 MW installed capacity. Activities will be added *ex post* during the crediting period of the corresponding CPA (actual independent activities may not be known before the registration of the CPA under the PoA); or

Type 2: The identified independent activity or a group of identified independent activities of any capacity which taken together do not exceed 15 MW. The activities will be included in the corresponding CPA *ex ante* (actual independent activities will be known before the registration of the CPA under the PoA).

Activities included into a typical CPA envisage:

Option (1) Installation of a solar electrical system where there was no solar electrical system operating prior to the implementation of the activity; or/and

Option (2) a capacity addition [4].

Electricity which will be produced by the independent activity (solar electrical systems installed) may under the CPA be supplied to:

Scenario (a) An identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; or/and

Scenario (b) The national grid of the RSA.

Participation in this programme will enable the solar electrical system owners to discount the purchased price of the solar electrical system or get an annual income in the form of rebate in exchange for cession of their rights to claim greenhouse gas (GHG) emission reductions to the coordinating entity of this PoA. The owners of large installation will also be given an option to sell CERs generated to an independent buyer.

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[1] http://www.energy.gov.za/files/esources/renewables/r_solar.html

[2] Eskom Annual Report 2010, page 298, http://financialresults.co.za/2010/eskom_ar2010/downloads/eskom_ar2010.pdf

[3] http://www.sapp.co.zw, SAPP SADC Grid Map, main website page

[4] A capacity addition envisages an increase in the installed power generation capacity of an existing solar electrical system through the installation of a new solar electrical system beside the existing solar electrical system; or the installation of new solar electrical system, additional to the existing solar electrical system. The existing solar electrical system continues to operate after the implementation of the activity, furthermore the addition of the new capacity does not significantly affect the electricity generation by the existing solar electrical system and the electricity produced by the added solar electrical system could be directly and separately measured.

Each CPA will apply: (1) only AMS-I.F. or (2) only AMD-I.D. or (3) a combination of both methodologies. There are no cross effects between the technologies/measures applied. Moreover, both methodologies define that in the absence of the project activity (baseline scenario) electricity supplied by the CPA would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

GHG emissions from the electricity generation for the solar electrical systems amount to zero. The reduction of GHG emissions as a result of the implementation of the independent activities will be achieved due to reduction of CO_2 emissions from combustion of fossil fuel at the existing grid-connected power plants and plants which would likely be built in the absence of the independent activities.

The coordinating entity of this PoA is Blue World Carbon Asset Management (Pty) Ltd (BWC), which will either purchase rights to claim CERs produced under this PoA or receive a fee for their services.

General operating and implementing framework of the PoA

Participation in this programme will enable the solar electrical system owners either to:

(a) Get a discount for the purchased price of the solar electrical system or an annual rebate in exchange for cession of their rights to claim GHG emission reductions which will be achieved due to reduction in electricity generation at grid connected power plants. This case is presented in the Figure A.2-1; or

(b) Independently engage in the sale of CERs, therefore BWC will receive a fee for their service. This case is presented in the Figure A.2-2.

Case (a) envisages that the companies which sell the solar electrical systems and BWC shall sign the Emissions Reduction Purchase Agreement (ERPA). BWC will purchase rights to claim CERs generated as a result of the implementation of independent activities from sellers.

In case (b) owners of independent activities retain rights to dispose issued CERs, therefore they may sign ERPA with a buyer other than BWC. BWC and the owner of the independent activity (or the nominated CER buyer) shall sign a service agreement which appoints BWC to act as a carbon consultant.

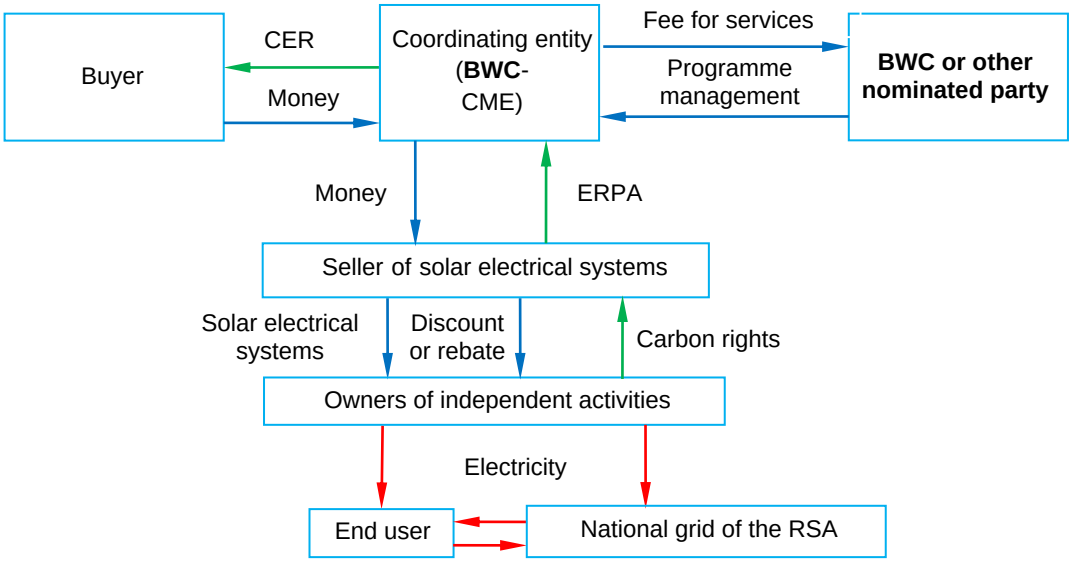

Figure A.2-1: Operating and implementing framework of the PoA for case (a)

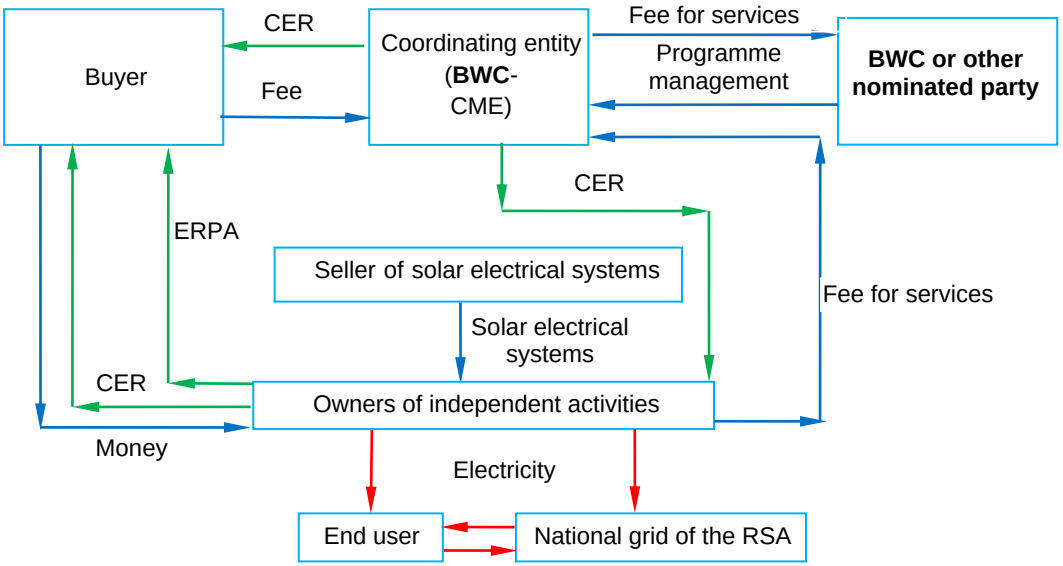

Figure A.2-2: Operating and implementing framework of the PoA for case (b)

Blue World Carbon Asset Management (Pty) Ltd (BWC) (or other party appointed by BWC) will undertake all measures in order to estimate and justify the expected GHG emission reductions due to the implementation of all independent activities as well as to compile them under the corresponding CPA. The PoA shall be monitored by BWC (or other party appointed by BWC).

In the case when electricity is supplied to the identified consumer (end user) in addition this consumer and the owner of the independent activity are not the same company/person, they have to sign a special agreement confirming that the GHG emission reductions will not be claimed by the identified consumer of electricity for using a zero-emission energy source.

Policy/measure or stated goal of the PoA

The programme satisfies all sustainable development criteria identified by the DNA of the RSA. The programme will promote:

- Development of renewable energy projects in the RSA, thus contributing materially to achieving the established RSA's energy target of having at least 10 000 GWh of electricity generated annually from renewable energy starting from 2013[5] as well as the established GHG mitigation target of getting a deviation below the current emissions baseline of around 34% by 2020[6];
- Enhancement of the motivation of the households and private companies in the RSA to use solar electrical systems for power generation purposes in order to reduce demand for Eskom's electricity;
- Creation of new jobs for the people and increase of tax revenues for the RSA budget; and
- Mitigation of the negative environmental impact. Combustion of fossil fuels (mostly coal) at Eskom's power plants and hereby emissions of the harmful substances into the atmosphere, such as flue ash, oxides of sulphur and nitrogen will be reduced due to the implementation of each independent activity under this PoA.

[5] http://www.energy.gov.za/files/renewables_frame.html

[6] http://www.unep.org/climatepledges/Default.aspx?pid=68

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

National policies and circumstances relevant to the baseline of the project activity

The Electricity Regulation Act, 2006 (Act No. 4 of 2006)[7] (ERA) provides an enabling framework for development of the power sector in the RSA.

NERSA is a regulatory authority established as a juristic person of the National Energy Regulator Act, 2004 (Act No. 40 of 2004)[8]. NERSA's mandate is to regulate, amongst others, the Electricity industry in terms of the ERA.[9]

The electricity system of the RSA is managed by the state-owned company Eskom which is in charge of generation, transmission and distribution of power to end-users. The most recent data on the electricity supplied to the national grid of the RSA, as per Eskom Annual Report 2010, is presented in Table E.6-1 of Section E.6 below. The graphical representation of the mentioned statistics for year 2010 is given in Figure A.2-3 below. It can be observed that RSA's grid is dominated mostly by fossil fuel based power plants with a negligible amount of renewal energy, share of electricity supplied from coal-fired power plants exceed 92%, from renewable energy is less than 0.5%.

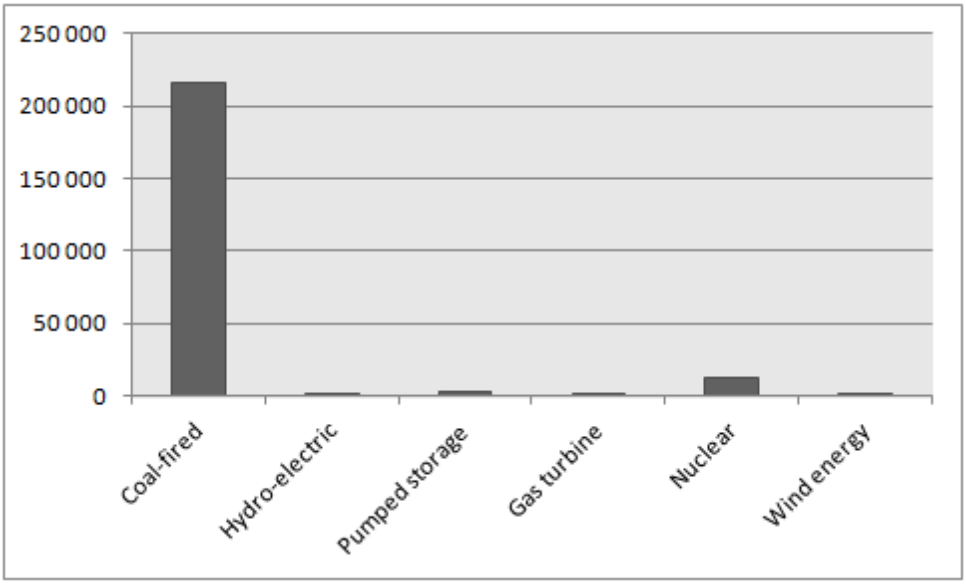

Figure A.2-3: Annual electricity supply for 2010 (GWh)

In May 2011 Government and NERSA developed "Integrated resource plan for electricity 2010-2030"[10] (IRP) in line with the ERA. This document summarises the balanced scenario of development of RSA's energy system during the project crediting period and demonstrates current and future dependence of RSA on coal fired power plants. In spite of the proposed increase in renewable technologies, such as wind, solar, hydro and a few others, which will be promoted by the government by introducing the Independent Power Purchase Procurement Programme and to which the proposed project is related to, constriction of the fossil-fuel power plants will be carried on. The share of new renewable is expected to increase from less than 0.5% to 25%, nevertheless business as usual is expected to be dominated by non renewable (fossil fuel).

The IRP also states in Section 6 that there is a risk involved "*in moving from dependence on a historically certain fuel supply, specifically coal in South Africa's case, to different commodities and technologies which are less certain (from a historical perspective).*"

[7] http://www.energy.gov.za/files/policies/ELECTRICITY%20REGULATION%20ACT%204%20OF%202006.pdf

[8] http://www.energy.gov.za/files/policies/NationalEnergyRegulatorAmendmentBill.pdf

[9] http://www.nersa.org.za/

[10] http://www.energy.gov.za/IRP/2010/IRP_2010.pdf

Thus, the national policy clearly prefers fossil fuel based power generation which forms the basis of the baseline scenario.

Based on this it can be deduced that this PoA is not implementing any mandatory policy or regulation of the Government of the RSA. It is a voluntary action and initiative of BWC. Participation in the PoA is also voluntary; the buyers of solar electrical systems (owners of independent activities) will be given a choice whether to participate in the programme or not.

A.2. Physical/geographical boundary of PoA

All independent activities included into the PoA shall be located within the geographical boundaries of the RSA (Figure A.4-1); which define the boundary of the PoA. The national and /or sectoral policies in the relevant sector i.e. Solar (PV) Power generation are the same within the geographical boundary of RSA.[11]

A range of GPS coordinates are given to cover the whole of the RSA:

Geographical latitude: -22 to -35 (Decimal Degrees).

Geographical longitude: 16 to 33 (Decimal Degrees).

Time zone: GMT +02:00

Figure A.4-1: Geographical boundaries of the RSA

A.3. Technologies/measures

A typical CPA under this PoA is either:

Type 1: The group of the independent activities under the predetermined province of the RSA, each of which is no larger than 0.15 MW installed capacity. Activities will be added *ex post* during

[11] - National Environmental Management Act 107 of 1998
- The Electricity Regulation Act, 2006 (Act No. 4 of 2006)
- Integrated resource plan for electricity 2010-2030

the crediting period of the corresponding CPA (actual independent activities may not be known before the registration of the CPA under the PoA); or

Type 2: The identified independent activity or a group of identified independent activities of any capacity which taken together do not exceed 15 MW. The activities will be included in the corresponding CPA *ex ante* (actual independent activities will be known before the registration of the CPA under the PoA).

Electricity which will be produced by activities under the CPA is supplied to:

Scenario (a) An identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; or/and

Scenario (b) The national grid of the RSA.

Each independent activity under the PoA envisages:

Option (1) Installation of a solar electrical system where there was no solar electrical system operating prior to the implementation of the activity; or/and

Option (2) a capacity addition.

A capacity addition envisages an increase in the installed power generation capacity of an existing solar electrical system through: the installation of a new solar electrical system beside the existing solar electrical system; or the installation of new solar electrical system, additional to the existing solar electrical system. The existing solar electrical system continues to operate after the implementation of the activity, furthermore the addition of the new capacity does not significantly affect the electricity generation by the existing solar electrical system and the electricity produced by the added solar electrical system could be directly and separately measured.

The CPA size for both types is limited by 15 MW installed capacity.

Each CPA comprises either the group of the independent activities or identified specific activity that uses solar electrical technologies which enable to convert solar radiation into electrical energy, taking advantage of the photovoltaic (PV) effect. Such technologies may include, but are not limited to: wafers (cells) made from single crystal silicon, polycrystalline silicon and ribbon silicon as well as advanced thin film technologies.

The cell absorbs solar radiation which energizes the electrons inside the cell and produces electricity. Individual solar cells are linked and placed behind a protective glass sheet to form a PV panel. PV panels may be connected together to form a solar array (see Figure A.4-2). PV panels may also be fitted with trackers. The solar tracker is a device capable of turning after the sun, which means following the sun track from it is rising in the east to its setting in the west[12].

A thin film solar cell (TFSC), also called a thin film photovoltaic cell (TFPV), is a solar cell that is made by depositing one or more thin layers (thin film) of photovoltaic material on a substrate (see Figure A.4-3). The thickness range of such a layer is wide and varies from a few nanometers to tens of micrometers. Many different photovoltaic materials are deposited with various deposition methods on a variety of substrates.

The solar electrical system may be connected either directly to the LV grid of the end user or the national grid of the RSA or via batteries for storage of the electrical energy.

[12] In case PV panels are fitted with trackers, the trackers will consume electricity either produced by PV panels or supplied from the grid of the RSA, no fossil fuel consumption will take place on the CPA site. Amount of electricity consumed by the trackers will be accounted in calculations of GHG emission reductions, since quantity of net electricity supplied is measured as per the monitoring plan.

Figure A.4-2: Solar cell, solar panel and solar array

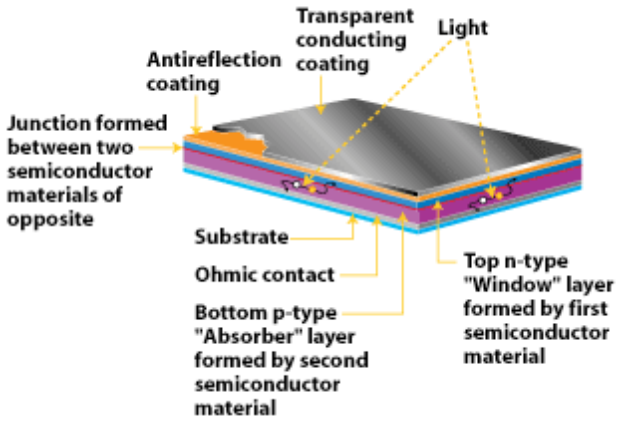

Figure A.4-3: Cross-section of thin film polycrystalline solar cell

Since the procedures set for the CDM do not define 'technology transfer'[13], it is generally interpreted as meaning the use of equipment and/or knowledge by the CDM project, not previously available in the host country; and therefore there is no technology transfer for this project.

A.4. Coordinating/managing entity

Blue World Carbon Asset Management (Pty) Ltd (Private company) (**BWC)** is the coordinating and managing entity of the PoA. BWC will purchase rights to claim CERs generated as a result of the implementation of independent activities from the sellers of the solar electrical systems. BWC may also receive a fee for their services. BWC will be the entity responsible for communication with the EB. BWC (or other party appointed by BWC) will act as a carbon consultant to develop all necessary CDM documentation, conduct procedures for PoA approval by the CDM Executive Board, direct CPA and activity inclusion and monitor all CPAs and activities under the PoA. BWC will manage the PoA according to the PoA management system.

A.5. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Republic of South Africa (host Party)	Blue World Carbon Asset Management (Pty) Ltd	No
…	…	
…	…	

A.6. Public funding of PoA

No public funding of the programme of activities (PoA)

[13] "The Contribution of the Clean Development Mechanism under the Kyoto Protocol to Technology Transfer" - http://cdm.unfccc.int/Reference/Reports/TTreport/TTrep10.pdf

SECTION B. Management system

The Management System for the South African Small-Scale Solar Electrical Programme developed by Blue World Carbon Asset Management (Pty) Ltd on 18/10/2012 (Version 02) is summarized below. The Management system was updated now while renewing the crediting period of the PoA.

1. Summary

This document is a management system that addresses UNFCCC requirements for a PoA. The CME and CPA management personnel shall follow the guidelines of The Management System for the South African Small-Scale Solar Electrical Programme (hereafter the management system). This document shall always be used in conjunction with the latest version of the CDM-PoA-DD and generic CDM-CPA-DD.

The document discusses the roles and responsibilities of the CPA and CME personnel, the required procedures for inclusion of a CPA to this PoA, as well as general aspects on monitoring, updating of the database and management system.

To facilitate the DOE during validation a special paragraph is included that illustrates how this management system meets the requirements of the UNFCCC. CDM-EB93-A07-STAN Standard: CDM project standard for programmes of activities (Version 02.0)[14] lists the requirements for a management system of a PoA (paragraph 36). These requirements are listed and discussed in Table 1.

Table 1: Requirements for a management system of a PoA

a)	A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;	Refer to paragraph 3 BWC's team is in charge of data collection, checking data from the solar park management, preparation of the CPA and monitoring reports, conducting procedures for CPA inclusion and CER issuance as well as maintaining, updating and enforcing this management system. BWC's team will communicate with the DOE and CDM EB regarding this PoA and provide them with required supporting documents.
b)	Records of arrangements for training and capacity development for personnel;	Refer to paragraph 3 BWC's management will ensure that the company staff that will collect the data has been trained for this, to guarantee that monitoring is correctly performed. Records of training shall be collected by BWC. BWC shall keep records of training at least for 2 years after the end of the crediting period.
c)	A procedure for technical review of inclusion of CPAs;	Refer to paragraph 4 and paragraph 5 CPA inclusion will be conducted in 5 phases: gathering of information, checking of eligibility criteria, drafting, reviewing and submitting of CPA-DD. BWC will only submit the CPA to the DOE when it has checked that the CPA satisfies the eligibility criteria of the latest version of the PoA-DD. Once CPA drafting is complete the document will be sent to the CME for approval.

[14] https://cdm.unfccc.int/Reference/Standards/index.html

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);	Refer to paragraph 4 and paragraph 5 as well as eligibility criteria 2 (Section K of the PoA-DD). The required supporting documents must be collected by BWC.
e)	Records and documentation control process for each CPA under the PoA;	Refer to paragraph 4, paragraph 5 and paragraph 6 All documents that are requested from the solar electrical system developers/owners will be checked and stored by BWC. A summary of CPA information, including the activities within the CPA, will be available on the PoA-database. For CPA Type 1, not all of the activities will be known before inclusion; therefore, they will be added and recorded once they have met the requirements for CPA Type 1. The information required for the monitoring report (see Section I.7 of the PoA-DD) will be collected by BWC or other company employed by BWC. BWC will check the data and draft the monitoring report.
f)	Measures for continuous improvements of the PoA management system;	Refer to paragraph 7 The CDM documentation in connection with this PoA shall be updated in accordance with the UNFCCC rules. The management system will be updated, if necessary, by BWC to facilitate more efficient management of the PoA.
g)	Any other relevant elements	-

2. Abbreviations

CME	Coordinating and Management Entity
CDM	Clean Development Mechanism
PoA	Programme of Activities
CPA	Component Project Activity
EB	(CDM) Executive Board
EU	European Union
DOE	Designated Operational Entity
CER	Certified Emission Reduction
SABS	South African Bureau of Standards
UNFCCC	United Nations Framework Convention on Climate Change
COD	Commercial Operation Date
CDM-PoA-DD	CDM-PoA Design Document

3. Overview of the PoA management

BWC undertakes all measures in order to estimate and justify the expected GHG emission reductions due to the implementation of all independent activities as well as to compile them under the corresponding CPA. BWC reports to the DOE or CDM Executive Board (EB).

Figure 1 illustrates that single and multiple activities can be added under a CPA. Different solar electrical systems (or capacity addition to existing solar electrical systems) under a CPA are referred to as activities.

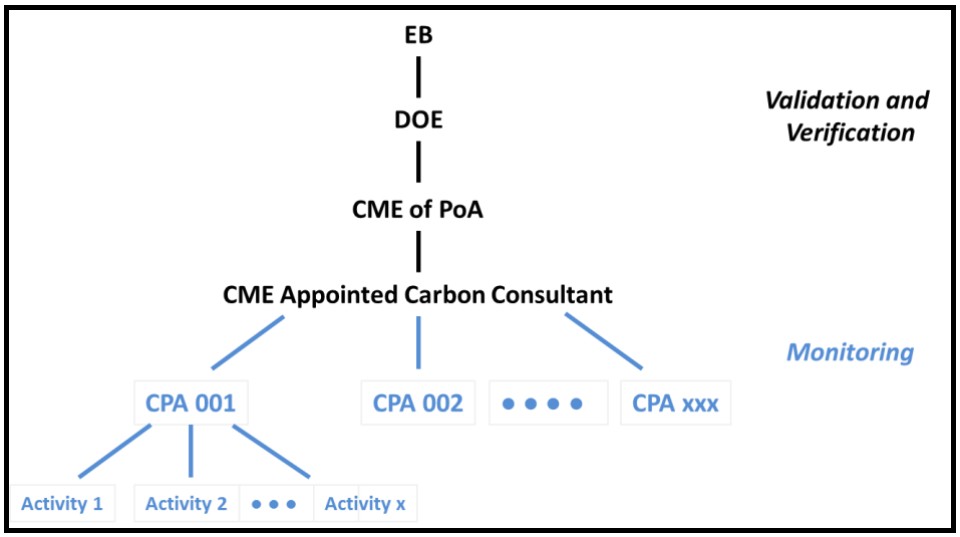

Figure 1: PoA management structure

The solar park management for each activity will communicate with the CDM specialist in charge of the specific activity (as shown in Figure 2).

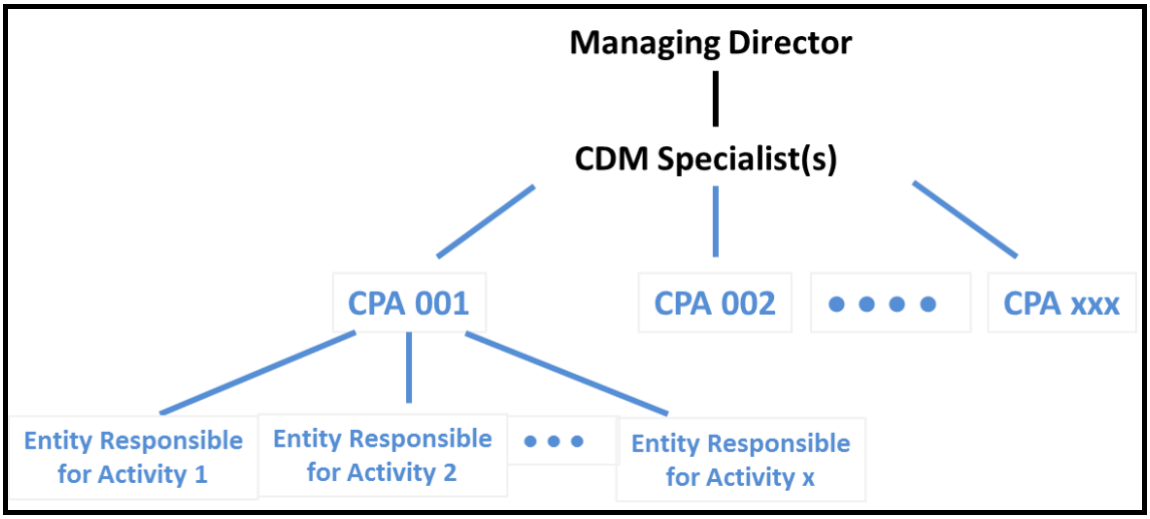

Figure 2: BWC Management Structure

For CPA Type 1:

The solar electrical system management will be the personnel of the company who sold the solar electrical system as well as the owner of the activity, or a third company employed by BWC.

Below the responsibilities of solar electrical system management (Table 2) and CME (Table 3) are described.

Table 2: Solar electrical system management for CPA Type 1

The solar electrical system management shall provide BWC with accurate and timely data as per the requirements of this document and the respective CDM-PoA-DD and generic CDM-CPA-DD (The required data is mentioned in paragraph 4 and paragraph 5 of this document). The tasks of the solar electrical system management include: (1) Calibration of the electricity meters according to SABS regulations and with the manufacturer's requirements (2) Arrangement of necessary training related to operation and maintenance of the solar electrical system and all of the installed equipment.

Table 3: CME management for CPA Type 1

The Coordinating and Managing Entity (CME) of this PoA is Blue World Carbon Asset Management (Pty) Ltd (or BWC). BWC has a team of carbon consultants[15] that are in charge of managing the PoA. BWC's team includes the managing director of the company (MD) and the CDM Specialists. MD shall appoint CDM Specialists to manage this PoA according to the requirements of this management system. The CDM Specialists shall have a degree in engineering, science or economics and experience in CDM industry of 1 year. The CDM Specialists' competence is to be checked annually. The tasks of BWC includes the following: • Communication with entities responsible for the CPA activities; • Collection of data required for CPA inclusion and preparation of the monitoring reports; • Development of all necessary CDM documentation; • Conducting procedures for PoA approval by the CDM Executive Board; • Conducting procedures for CPA inclusion into the PoA (refer to paragraph 4); • Conducting the monitoring of CPAs or ensuring that it is monitored by a third party (refer to Section I.7 of the PoA-DD). The CDM Specialist is in charge of maintaining, updating, and enforcing this management system, PoA-database, as well as PoA-DD and CPA-DD. BWC shall keep training records for at least 2 years after the end of the crediting period.

For CPA Type 2

The solar electrical system management will be the owner of the solar electrical system.

Below the responsibilities of solar electrical system management (Table 4) and CME (Table 5) are described.

[15] It is the responsibility of BWC to ensure that the employees are suitably trained to perform the necessary tasks required for managing the PoA.

Table 4: Solar electrical system management for CPA Type 2

The solar electrical system management (or the nominated CER buyer) shall provide BWC with accurate and timely data as per the requirements of this document and the respective CDM-PoA-DD and CDM-CPA-DD (The required data is mentioned in paragraph 4 of this document).

At least one person (or company)[16] shall be appointed by the solar electrical system management (or the nominated CER buyer) to deal with the CDM aspects of the relevant CPA. The person shall have a degree in engineering, science or economics and experience in renewable energy industry of 1 year. The person's competence is to be checked annually.

The tasks of the solar electrical system management includes:

(1) Gathering, primary check and supplying of data to BWC:

(2) Calibration of the electricity meters according to SABS regulations and with the manufacturer's requirements

(3) Arrangement of necessary training related to operation and maintenance of the solar electrical system and all of the installed equipment as well as gathering data required for the monitoring. Record of training shall be submitted to BWC.

Table 5: CME management for CPA Type 2

The CME of this PoA is BWC.

BWC has a team of carbon consultants[17] and is in charge of managing the PoA. BWC's team includes managing director of the company (MD) and the CDM Specialists. MD shall appoint CDM Specialists to manage this PoA according to the requirements of this management system. The CDM Specialists shall have a degree in engineering, science or economics and experience in CDM industry of 1 year. The CDM Specialists' competence is to be checked annually.

The tasks of BWC includes the following:

- Communication with entities responsible for the CPA activities;
- Collection of data required for CPA inclusion and preparation of the monitoring reports;
- Development of all necessary CDM documentation;
- Conducting procedures for PoA approval by the CDM Executive Board;
- Conducting procedures for CPA inclusion into the PoA (refer to paragraph 4);
- Conducting the monitoring of CPAs (refer to Section I.7 of the CPA-DD);
- Instructing the solar electrical system management to ensure that monitoring is correctly performed.

The CDM Specialists are in charge of maintaining, updating, and enforcing this management system, PoA-database, as well as PoA-DD and CPA-DD.

BWC shall keep training records for at least 2 years after the end of the crediting period.

[16] BWC's management will ensure that the appointed person has been trained to ensure that monitoring is correctly performed.

[17] It is the responsibility of BWC to ensure that the employees are suitably trained to perform the necessary tasks required for managing the PoA.

4. CPA inclusion

CPA inclusion will be conducted in 5 phases. The phases will be conducted in sequence. Only once a phase is complete the next phase will be started.

- Phase 1: Collection of CPA information and documentary evidences
- Phase 2: Checking of the eligibility criteria
- Phase 3: Drafting of the CDM-CPA-DD by the CDM specialist
- Phase 4: Reviewing of CDM-CPA-DD
- Phase 5: Submission of CDM-CPA-DD together with supporting document for inclusion

Participation in this programme will enable the solar electrical system owners either to:

(a) Get a discount for the purchased price of the solar electrical system or an annual rebate in exchange for cession of their rights to claim GHG emission reductions which will be achieved due to reduction in electricity generation at grid connected power plants; or

(b) Independently engage in the sale of CERs, thus BWC will receive a fee for their service.

Phase 1: Collection of CPA information and documentary evidences

The competencies required by the personnel responsible to collect the data for Phase 1 for both CPA types are as follows:

i. Should have clear understanding of CDM modalities and protocol
ii. Should have clear understanding of the eligibility criteria of the PoA
iii. Should be able to scrutinise all the project related documents of the CPA like PPA, Land documents, licences etc. to ascertain the qualification of the CPA to be included in the PoA
iv. Should be competent to check de bundling and all other criteria as listed in section K of the PoA DD
v. Should be fluent in English
vi. Should have at least 1 year of experience in validation / registration / documentation of CDM project activity

<u>For CPA Type 1</u>

Since actual independent activities will not be known before the inclusion of the CPA to this PoA, the CME is required to sign a declaration as per paragraph 8A.

See paragraph 5 for activity inclusion into CPA Type 1 after the CPA has been included into the PoA.

<u>For CPA Type 2</u>

The following is required:

1) Completed 'Activity information form' (see Table 6)
2) The GPS coordinates of each activity under the CPA should be crosschecked with previous records of GPS coordinates of existing CPAs under this PoA to ensure that no overlap between CPAs can occur.
3) The owner of each activity under the CPA has to contractually agree and sign the following:
   a) The CPA has neither been and will not be registered as a CDM project activity nor as a CPA under another PoA; and
   b) The owner is aware that the CPA will be subscribed to the present PoA.
   c) No official development aid has been and will be involved or diverted as a result of the activity. If Annex 1 countries are involved, then a declaration from the concerned agency in Annex 1 country should also be submitted before inclusion into the CPA
4) BWC has checked the UNFCCC CDM project database to verify that none of the activities under the proposed CPA has been previously submitted to the UNFCCC, before inclusion into the CPA, as well as provide a declaration for the same. If an activity has been

submitted to the UNFCCC for validation or registration, the activity developer has to prove that the process of validation or registration has been withdrawn.

5) For grid-connected system, a PPA with the relevant authority as per the host country is also required.
6) In case both (a) electricity produced by the independent activity is delivered to the end user (not to the national grid), and (b) the end user of electricity and the owner of the independent activity, to be included in the CPA, are not the same company/person, they have to sign a special agreement confirming that the GHG emission reductions will not be claimed by the end user of electricity for using a zero-emission energy source.
7) Signed contractual agreement between:
    a. The owner of the independent activity and seller of the solar electrical system where it cedes his rights to claim and own GHG emission reductions under the Clean Development Mechanism of the UNFCCC to the seller, who in turn sells CER's to BWC as well as a contractual agreement between BWC and the seller of the solar electrical system (applicable to case (a) only)
    b. The owner of the independent activity or CER buyer and the CME (applicable to case (b) only)
8) Environmental assessment: The appropriate environmental assessment report and environmental authorisation from the Department of Environmental Affairs of the RSA (if applicable)
9) Feasibility study (or separate documents proving the following)
    a. Design specifications, including the load factor
    b. Installed Capacity
    c. Proof of operational lifetime of equipment
10) Serial number and model of the electricity meters, meter accuracy class, location of the meter, calibration procedures, calibration certificate with the calibration date
11) Any other documents required by the CME

Table 6: Activity information form

Identification number of the solar electrical system	To be filled in by BWC in the following format: For CPA Type 1: BWC-[name of installer]-[CPA number]-[Activity number] For CPA Type 2: BWC-[name of activity owner]-[CPA number]-[Activity number]
Project Dates:	
Start date of construction	dd/mm/yyyy
Date of signing purchase contract for major electricity generating equipment (if available).	dd/mm/yyyy
Commercial Operational Date (COD)	dd/mm/yyyy
Seller Company details:	
Company name	
Contact name	
Office number	
Cell number	
Email	
Owner details:	
Owner name	
Phone number	
Cell number	
Email	
End user details (if not the same as owner):	
Company name	
Contact name	
Phone number	
Cell number	
Email	
Where will the generated electricity be supplied to?	If power is supplied straight to the consumer describe whether the consumer is connected to the grid
Solar electrical technology used	The following information can be provided: 1) Greenfield or capacity addition (with description of each phases); 2) rooftop or ground-mounted (if ground-mounted, indicate the total covered area); 3) Number of PV panels; 4) PV panel model
Installed capacity of the solar electrical system	(MW)
Estimated annual net electricity production of the solar electrical system	(MWh/year)
The lifetime of the system	
Location of proposed solar electrical system	Province/nearest town/ street address and house number if any
GPS coordinates	Also attach an energy bills from the utility dated before the start of construction

Phase 2: Checking of the eligibility criteria

BWC will perform an eligibility check based on the information that was provided in Phase 1 and the eligibility criteria listed in the CDM-PoA-DD (Section K).

If the CPA is found to be eligible under this PoA, BWC will continue with Phase 3.

Phase 3: Drafting of the CDM-CPA-DD

The CDM Specialist will draft the CPA-DD based on the registered generic CPA-DD and PoA-DD, using data collected during phase 1 and 2.

Phase 4: Reviewing of CDM-CPA-DD

Once drafting is complete the document will be sent to both the solar park developers (or the CER buyer) and senior CDM consultant for approval. CDM specialist shall address received comments and update the CDM-CPA-DD if required as well as send the modified document for approval again, till the CDM-CPA-DD is approved by both parties.

Phase 5: Submission of CDM-CPA-DD together with supporting document for inclusion

The approved document will be sent for inclusion with a registered DOE. The CDM Specialist will liaise with the DOE during inclusion and supply them with supplementary information. If the DOE confirms that the CPA meets the eligibility criteria for inclusion into the PoA, it will include the CPA in the PoA by submitting the specific CPA-DD to the Board via uploading it through a dedicated interface on the UNFCCC CDM website. The CPA identified in the specific CPA-DD uploaded by the DOE will be automatically included in the registered CDM PoA and displayed on the view page of the PoA.

5. Activity inclusion for CPA Type 1

As mentioned previously participation in this programme will enable the solar electrical system owners to:

(a) Get a discount for the purchased price of the solar electrical system or an annual rebate in exchange for cession of their rights to claim GHG emission reductions which will be achieved due to reduction in electricity generation at grid connected power plants; or

(b) Independently engage in the sale of CERs

A prospective solar electrical system owner seeking to add its project as a CPA activity to the PoA should supply BWC (directly or via the seller of the system or other appointed party) with the information listed below:

1) Completed 'Activity information form' (see Table 6)
2) Agreement/declaration with the seller (or another applicable party) where he shall contractually agree and sign the following:
   a) The activity has neither been and will not be registered as a CDM project activity nor as a CPA under another PoA; and
   b) The owner is aware that the activity will be subscribed to the present PoA.
   c) No official development aid has been and will be involved or diverted as a result of the activity. If Annex 1 countries are involved, then a declaration from the concerned agency in Annex 1 country should also be submitted before inclusion into the CPA
3) Technical specification from the seller of the electrical system/ technology supplier.
4) For grid-connected systems, a PPA with the relevant authority as per the host country is also required (if applicable).
5) Signed equipment purchase contract with the seller of the solar electrical system/technology provider
6) In case both (a) electricity produced by the independent activity is delivered to the end user (not to the national grid), and (b) the end user of electricity and the owner of the

independent activity, to be included in the CPA, are not the same company/person, they have to sign a special agreement confirming that the GHG emission reductions will not be claimed by the end user of electricity for using a zero-emission energy source.

7) Signed contractual agreement between:
    a. The owner of the independent activity and seller of the solar electrical system or CER buyer or BWC or other party appointed by BWC where it cedes his rights to claim and own GHG emission reductions under the Clean Development Mechanism of the UNFCCC, as well as a contractual agreement with BWC.
8) Any other documents required by the CME

Before inclusion BWC has to:

1) Crosscheck the GPS coordinates of the activity with previous records of GPS coordinates of existing activities under this PoA to ensure that no overlap between CPAs can occur.

6. PoA Database

The PoA database is set up for two reasons:

1. To prove that CPAs do not overlap with other CDM projects or CPAs under this PoA or other PoAs.
2. To display information from CPAs to facilitate efficient management of the PoA. The PoA-database will be continuously improved by BWC.

Currently the PoA database contains the following information:

- Information from the “Activity information form”
- All contractual agreements
- Basic information about other CDM projects and CPA submitted to the UNFCCC

Additional information which may be included to the PoA database

- Monitoring information of each CPA activity as per the established monitoring plan including monitoring parameters, such as Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CPA in year *y*
- CER issuance information
- Calibration history of electricity meters
- Training records of relevant personnel

Data should be archived electronically and be kept at least for 2 years after the end of the last crediting period

Documentation control process

The appointed person of the solar park (or CER buyer) should primary check data before supplying them to BWC. The CDM specialist shall check the data provided by the solar park management (or CER buyer). The CDM-CPA-DD shall be approved by the solar park developers (or CER buyer) and senior CDM consultant before submission to the DOE.

Competencies

The competencies required by the personnel responsible for monitoring and checking the data for both CPA types are as follows:

i. Should have clear understanding of CDM modalities and protocol
ii. Should have clear understanding of the Monitoring Requirement of the PoA
iii. Should be able to scrutinise all the monitoring related documents and equipment like electricity meters, calibration certificate, electricity bills / Invoice etc.
iv. Should have good communication skill and be able to effectively communicate the requirement of monitoring plan to project activity implementer

v. Should have good knowledge of Microsoft excel to be able to archive and maintain monitoring information
vi. Should be fluent in English
vii. Should have at least 1 year of experience in monitoring of CDM project activity

7. Database updating and improvement of the management system

The following updates will be performed to have the most recent information available and to continually improve the management system of the PoA.

1. All CDM documentation in connection with this PoA shall be updated in accordance with the UNFCCC rules.
2. Management system will be updated by BWC to facilitate more efficient management of the PoA (if required).

8. Declarations for CPA Type 1

8A: Example CME Declaration

Blue World Carbon Asset Management (Pty) Ltd (BWC) is the Coordinating and Managing Entity (CME) of the PoA: Small-scale solar electrical programme, South Africa.

BWC acts as a carbon consultant to develop all necessary CDM documentation, conduct procedures for PoA approval by the CDM Executive Board, direct CPA and activity inclusion and monitor all CPAs and activities under the PoA. BWC manages the PoA according to the PoA management system

Small-scale solar electrical programme, South Africa – CPA-*[CPA Number]* is designed for inclusion of activities located within the *[Province Name]*.

Before activity inclusion, BWC ensures that:

1) Table 6 is filled for each activity
2) All activities within the CPA are documented, and their GPS coordinates are recorded and crosschecked with previous records of GPS coordinates of activities under the existing CPAs under this PoA to ensure that no overlap between activities can occur.
3) The owner of each activity contractually agrees and signs the following:

   a) The activity has neither been and will not be registered as a CDM project activity nor as a CPA under another PoA; and

   b) The owner is aware that the activity will be subscribed to the present PoA;

4) A PPA with the relevant authority as per the host country is completed (if applicable)
5) A signed equipment purchase contract with the seller of the solar electrical system/technology provider is obtained
6) Technical specification from the seller of the electrical system/ technology supplier are recorded
7) A declaration from the seller or the owner of each activity that no official development aid has been and will be involved or diverted as a result of the activity. If Annex 1 countries are involved, then a declaration from the concerned agency in Annex 1 country should also be submitted before inclusion into the CPA
8) In the case that both (a) electricity produced by the independent activity is delivered to the end user (not to the national grid), and (b) the end user of electricity and the owner of the independent activity, to be included in the CPA, are not the same company/person; they will sign a special agreement confirming that the GHG emission reductions will not be claimed by the end user of electricity for using a zero-emission energy source.

9) The owner of the independent activity cedes his rights to claim and own GHG emission reductions under the Clean Development Mechanism of the UNFCCC to the seller or CER buyer or BWC or other party appointed by BWC. The seller of the solar electrical system or CER buyer or other party appointed by BWC also has a contractual agreement with BWC.

10) CPA-*[CPA Number]* satisfies the eligibility criteria of the latest version of the PoA-DD.

Signed on behalf of Blue World Carbon Asset Management (Pty) Ltd

……	……
Name	Title
……	……
Signature	Date

8B: An example of the clause of cession of rights to claim the GHG emission reductions signed between a seller and an owner of an independent activity in case the owner is given a discounted price

Option to join Small-Scale Solar Electrical Programme, South Africa

The Supplier is attempting to make use of the current Clean Development Mechanism (CDM) legislation of the UNFCCC in applying for Certified Emission Reductions (CERs) due to them from greenhouse gas (GHG) emission reductions generated as a result of the installation of their PV systems.

The Supplier has ceded its rights to claim and own GHG emission reductions under the CDM to the CME of the present Programme of Activities (PoA) in this regard. The Supplier has done this by partnering with the CME in order to facilitate the acquisition of CERs.

The Supplier also acknowledges that no official Development Aid will be involved or diverted as a result of joining the Supplier's Programme.

The Consumer hereby declares that he is joining the Supplier's programme voluntarily and in doing so, he will be entitled to a discount of *[Insert percentage value here]* for the hardware and/or installation costs pertaining to their purchased system.

In joining the Programme the Consumer recognises that their installed system will be subscribed to the present PoA, and that to-date it has not been, and nor shall it be, registered as a single CDM project activity or as a CPA under another PoA.

The Consumer shall grant to the Supplier, and hence to the CME, full legal and beneficial title in any rights to GHG emission reductions which may be generated in the course of the operation of the goods including any CERs issued with respect to such emission reductions. The Consumer pledges to the Supplier neither to dispose of any such rights to a third party nor to encumber them in any way.

Furthermore, both the Consumer and Supplier understand and will apply "The Management System for the South African Small-Scale Solar Electrical Programme" to their solar electrical system.

Signature of agreement:

Supplier Name: _____ Signature: _____ Date: _____

Consumer Name:_____ Signature: _____ Date: _____

8C: An example of the clause of cession of rights to claim the GHG emission reductions signed between a seller and an owner of an independent activity in case the owner is given a rebate

Option to join Small-Scale Solar Electrical Programme, South Africa

The Supplier is attempting to make use of the current Clean Development Mechanism (CDM) legislation of the UNFCCC in applying for Certified Emission Reductions (CERs) due to them from greenhouse gas (GHG) emission reductions generated as a result of the installation of their PV systems.

The Supplier has ceded its rights to claim and own GHG emission reductions under the CDM to the CME of the present Programme of Activities (PoA) in this regard. The Supplier has done this by partnering with the CME in order to facilitate the acquisition of CERs.

The Supplier also acknowledges that no official Development Aid will be involved or diverted as a result of joining the Supplier's Programme.

The Consumer hereby declares that he is joining the Supplier's programme voluntarily and in doing so; he will be eligible to receive a rebate from the Supplier due to the CER's generated over the course of the system's usage. Based on the success of the application, the Consumer will receive its allocated rebate(s) in line with an agreement between the Consumer and Supplier in this regard.

In joining the Programme the Consumer recognises that their installed system will be subscribed to the present PoA, and that to-date it has not been, and nor shall it be, registered as a single CDM project activity or as a CPA under another PoA.

The Consumer shall grant to the Supplier, and hence to the CME, full legal and beneficial title in any rights to GHG emission reductions which may be generated in the course of the operation of the goods including any CERs issued with respect to such emission reductions. The Consumer pledges to the Supplier neither to dispose of any such rights to a third party nor to encumber them in any way.

Furthermore, both the Consumer and Supplier understand and will apply "The Management System for the South African Small-Scale Solar Electrical Programme" to their solar electrical system.

Signature of agreement:

Supplier Name: _____ Signature: _____ Date: _____

Consumer Name:_____ Signature: _____ Date: _____

8D: An example of the CME declaration that the GPS coordinates have been cross checked for each activity

Blue World Carbon Asset Management (Pty) Ltd has crosschecked the GPS coordinates of activity *[Activity Name]* with previous records of existing activities under this PoA to ensure that no overlap between CPA's can occur.

The GPS coordinates of *[Activity Name]* are:

Latitude: *XXX*

Longitude: *XXX*

Time zone: GMT +02:00

These coordinates do not match any of the previous activities, and therefore no overlap exists.

Signed by Blue World Carbon Asset Management (Pty) Ltd

……. ……

Name Title

…….…… ……

Signature Date

9. Example Declaration for CPA Type 2

9A: Example CME Declaration

Blue World Carbon Asset Management (Pty) Ltd has checked the UNFCCC CDM project database to verify that each activity to be included in the proposed CPA has not been previously submitted to the UNFCCC. If an activity has been submitted to the UNFCCC for validation or registration, the activity developer has proven that the process of validation or registration has been withdrawn.

Signed by Blue World Carbon Asset Management (Pty) Ltd

……. ……

Name Title

…….…… ……

Signature Date

9B: Example of the clause of cession of rights to claim the GHG emission reductions signed between a seller and an owner of an independent activity in case the owner is given a discounted price

Option to join Small-Scale Solar Electrical Programme, South Africa

The Supplier of a Solar electrical system is attempting to make use of the current Clean Development Mechanism (CDM) legislation of the UNFCCC in applying for Certified Emission Reductions (CERs) due to them from greenhouse gas (GHG) emission reductions generated as a result of the installation of their PV systems.

The Supplier has ceded its rights to claim and own GHG emission reductions under the CDM to the CME of the present Programme of Activities (PoA) in this regard. The Supplier has done this by partnering with the CME in order to facilitate the acquisition of CERs.

The Consumer hereby declares that he is joining the Supplier's programme voluntarily and in doing so, he will be entitled to a discount of *[Insert percentage value here]* for the hardware and/or installation costs pertaining to their purchased system.

In joining the Programme the Consumer recognises that their installed system will be subscribed to the present PoA, and that to-date it has not been, and nor shall it be, registered as a single CDM project activity or as a CPA under another PoA.

The Consumer shall grant to the Supplier, and hence to the CME, full legal and beneficial title in any rights to GHG emission reductions which may be generated in the course of the operation of the goods including any CERs issued with respect to such emission reductions. The Consumer pledges to the Supplier neither to dispose of any such rights to a third party nor to encumber them in any way.

Furthermore, both the Consumer and Supplier understand and will apply "The Management System for the South African Small-Scale Solar Electrical Programme" to their solar electrical system.

The Owner also acknowledges that no official Development Aid will be involved or diverted as a result of joining the Supplier's Programme.

Signature of agreement:

Supplier Name: _____ Signature: _____ Date: _____

Consumer Name: _____ Signature: _____ Date: _____

9C: Example of the clause of cession of rights to claim the GHG emission reductions signed between a seller and an owner of an independent activity in case the owner is given a rebate

Option to join Small-Scale Solar Electrical Programme, South Africa

The Supplier is attempting to make use of the current Clean Development Mechanism (CDM) legislation of the UNFCCC in applying for Certified Emission Reductions (CERs) due to them from greenhouse gas (GHG) emission reductions generated as a result of the installation of their PV systems.

The Supplier has ceded its rights to claim and own GHG emission reductions under the CDM to the CME of the present Programme of Activities (PoA) in this regard. The Supplier has done this by partnering with the CME in order to facilitate the acquisition of CERs.

The Consumer hereby declares that he is joining the Supplier's programme voluntarily and in doing so; he will be eligible to receive a rebate from the Supplier due to the CER's generated over the course of the system's usage. Based on the success of the application, the Consumer will receive its allocated rebate(s) in line with an agreement between the Consumer and Supplier in this regard.

In joining the Programme the Consumer recognises that their installed system will be subscribed to the present PoA, and that to-date it has not been, and nor shall it be, registered as a single CDM project activity or as a CPA under another PoA.

The Consumer shall grant to the Supplier, and hence to the CME, full legal and beneficial title in any rights to GHG emission reductions which may be generated in the course of the operation of the goods including any CERs issued with respect to such emission reductions. The Consumer pledges to the Supplier neither to dispose of any such rights to a third party nor to encumber them in any way.

Furthermore, both the Consumer and Supplier understand and will apply "The Management System for the South African Small-Scale Solar Electrical Programme" to their solar electrical system.

The Owner also acknowledges that no official Development Aid will be involved or diverted as a result of joining the Supplier's Programme.

Signature of agreement:

Supplier Name: _____ Signature: _____ Date: _____

Consumer Name: _____ Signature: _____ Date: _____

SECTION C. Demonstration of additionality of PoA

At the time of the renewal of the PoA period, the CME has not reassessed the additionality of the PoA as per paragraph 285 of the CDM-EB93-A07-STAN Standard: CDM Project Standard for Programmes of Activities (version 02.0), but updated this section and the eligibility criterion 6 based on the new versions of the methodological tools.

Since CPA size must be smaller or equal to 15 MW installed capacity the additionality of the PoA is demonstrated using the TOOL21 Methodological tool: Demonstration of additionality of small-scale

project activities (version 13.1)[18] and TOOL32 Methodological tool: Positive lists of technologies (version 02.0)[19].

Paragraph 11 of TOOL21 states that the documentation of barriers, as per paragraph 10 of TOOL21*, "is not required for the positive list of technologies and project activity types that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds (e.g. installed capacity up to 15 MW). For the positive list of technologies, the project proponent shall refer to methodological tool "TOOL32: Positive lists of technologies".*

As per *paragraph* 17 of TOOL32, the following grid-connected renewable electricity generation technologies for small-scale grid-connected power generation are included in the positive list:

(a) Solar photovoltaic technologies;
(b) Solar thermal electricity generation including concentrating solar Power (CSP);
(c) Off-shore wind technologies;
(d) Marine wave technologies;
(e) Marine tidal technologies;
(f) Building-integrated wind turbines or household rooftop wind turbines of a size up to 100 kW;
(g) Biomass internal gasification combined cycle (BIGCC).

Each and every CPA that will be included into this PoA has to employ the solar technologies, as per eligibility criteria 3. This criterion also states that *"Each activity under the CPA (type 1 and type 2) shall be connected to either:*

i. An identified consumer (end user) or group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity (where excess electricity may be supplied to the grid) or;

ii. to the national grid of the RSA".

Furthermore the identified consumer or group of consumers which will be supplied electricity from the activities under the CPA shall be connected to the grid before the activity implementation in line with the requirements of § 2 of AMS-I.F. (Version 03),

Thus, any CPA to be included into this PoA is additional and would not be implemented in the absence of the PoA.

SECTION D. Start date and duration of PoA

D.1. Start date of PoA

01/01/2013 or date of registration whichever is later (the date after publishing of the PoA for global stakeholder consultation)

D.2. Duration of PoA

28 years

[18] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.1.pdf

[19] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-32-v2.0.pdf

SECTION E. Environmental impacts

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

1. Environmental Analysis is done at PoA level □
2. Environmental Analysis is done at CPA level □

The environmental analysis will be done at a CPA level. The localized impact of each CPA will need to be assessed individually which justifies separate environmental analyses.

E.2. Analysis of environmental impacts

Not applicable

E.3. Environmental impact assessment

Not applicable

The environmental analysis will be done at a CPA level. Since all CPAs are either grid connected solar electrical systems or solar electrical systems where an identified consumer (end user) or group of consumers would have been supplied with electricity from the national grid of the RSA in the absence of the activity, they will contribute to the reduction of greenhouse gas (GHG) emissions by replacing electricity from fossil fuel based power plants. The positive environmental benefits include:

- Decreased air pollution linked to the use of the fossil fuels;
- Displacement of fossil fuels and GHG emission reductions;
- Decreased dependency on fossil fuels;
- Job creation.

Solar power is a recognised form of clean renewable energy. The use of solar energy for electricity generation is a non-consumptive use of a natural resource and consumes no fuel for continuing operation. Using solar power will contribute to South Africa's sustainable development and effectively reduce GHG emissions and the dependence on fossil fuels in the country. Solar electrical systems do not emit any harmful by-products or pollutants and is therefore not negatively associated with possible health risks to observers. In order to apply for environmental authorisation of a solar power project governmental laws and regulations should be followed.

The National Environmental Management Act 107 of 1998[20], amended in June 2010, governs Environmental Impact Assessment (EIA) and requires a scoping assessment and EIA or Basic Assessment (BA) depending on the nature of the activity. The Act is to provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state; and to provide for matters connected therewith. The Listing Notices specify measures which cannot be started without environmental authorisation from the competent authority. The localised impact of each CPA will need to be assessed individually, which justifies separate environmental analyses. The legislation regarding the electricity production is given below.

Within the framework of CPA type 1, there will be installed independent activities with capacity of up to 0.15 MW each and hence both EIA and Basic Assessment are not required for the measures undertaken under this CPA.

For CPA type 2 according to the NEMA listing notice 1 basic assessment is required.

[20] http://www.info.gov.za/view/DownloadFileAction?id=70641

Notice	Description of activity involving electricity production	Effect
NEMA listing notice 1	The construction of facilities or infrastructure for the generation of electricity where: (a) the electricity output is more than 10 megawatts but less than 20 megawatts; or (b) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare, excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs within an urban area.	Basic assessment is required.
NEMA listing notice 2	The construction of facilities or infrastructure for the generation of electricity where the electricity output is 20 megawatts or more.	Scoping assessment and EIA is required

SECTION F. Local stakeholder consultation

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

1. Local stakeholder consultation is done at PoA level □
2. Local stakeholder consultation is done at CPA level □

As the geographical boundary of the PoA is the country and the PoA is coordinated on a national level by BWC, the project participants considered appropriate to carry out the local stakeholder consultation at PoA level.

F.2. Modalities for local stakeholder consultation

Comments from local stakeholders where invited via a local newspaper (Sunday times). The adverts were placed on 27th of November inviting people to a public participation meeting, and to submit comments and queries via phone and email. Comments were invited until the 15th December 2011.

The public participation meeting was held on the 12th December 2011 in BWC Office in the V&A Marina (Suite 102, 7 West Quay Rd, Cape Town), and it included presentation of the programme and discussion around it. Meeting started at 10 a.m., and 4 people attended.

This meeting was held before submission of this PoA and therefore had CDM in mind before submission. BWC uses the incentives of CDM to encourage participation in this programme by enabling solar electrical system owners to either:

i) Get a discount for the purchased price of the solar electrical system or an annual rebate in exchange for cession of their rights to claim GHG emission reductions which will be achieved due to reduction in electricity generation at grid connected power plants, or

ii) Independently engage in the sale of CERs, therefore BWC will receive a fee for their service

F.3. Summary of comments received

All stakeholders' comments and concerns were recorded. No negative comments were raised by the stakeholders as can be seen below:

Summary of comments received:

- How can we join your PoA?
- How many installations in a PoA?
- What type of monitoring equipment is required?
- Do you get carbon credits for off-grid projects?

- Can we include backdated Projects?

F.4. Consideration of comments received

All the stakeholders' comments were addressed during the meeting and concerns were taking into account in the present version of the PoA-DD. All stakeholders attended were provided with more information and explanation on how to join the programme, and how credits could be obtained.

The number of installations in a PoA was explained as per section A of this PoA-DD.

Each installation will have an electricity meter as monitoring equipment.

The interest of the stakeholders on the programme was positive.

SECTION G. Approval and authorization

The Letter of Approval for this PoA has been issued by the DNA of the RSA on the 08/07/2020.

PART II. Generic component project activity (CPA)

SECTION H. Description of generic CPA

H.1. Title of generic CPA

Generic CPA under PoA 'Small-scale solar electrical programme, South Africa'

H.2. Reference number of generic CPA

gCPA-7484-1

H.3. Purpose and general description of generic CPA

The purpose of this generic CPA is to provide an instruction for the subsequent CPA inclusions.

Each CPA under this PoA falls under small-scale project Type I project activities: Renewable energy project activities which have an output capacity up to 15 megawatts (or an appropriate equivalent), in accordance with the CDM rules and requirements.

Each CPA comprises either the group of the independent activities or identified specific activity that uses solar electrical technologies which enable to convert solar radiation into electrical energy, taking advantage of the photovoltaic (PV) effect. Electricity can be supplied to grid-connected end-users or the national grid of the RSA.

H.4. Technologies/measures

There are 2 CPA types under this PoA:

Type 1: The group of the independent activities under the predetermined province of the RSA, each of which is no larger than 0.15 MW installed capacity. Activities will be added *ex post* during the crediting period of the corresponding CPA (actual independent activities may not be known before the registration of the CPA under the PoA); or

Type 2: The identified independent activity or a group of identified independent activities of any capacity which taken together do not exceed 15 MW. The activities will be included in the corresponding CPA *ex ante* (actual independent activities will be known before the registration of the CPA under the PoA).

Activities included into a typical CPA envisage:

Option (a) Installation of a solar electrical system where there was no solar electrical system operating prior to the implementation of the activity; and/or

Option (b) a capacity addition [21].

Electricity which will be produced by the independent activity (solar electrical systems installed) may under the CPA be supplied to:

Scenario (i) An identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; and/or

Scenario (ii) The national grid of the RSA.

Solar electrical technologies may include, but are not limited to: wafers (cells) made from single crystal silicon, polycrystalline silicon and ribbon silicon as well as advanced thin film technologies.

The cell absorbs solar radiation which energizes the electrons inside the cell and produces electricity. Individual solar cells are linked and placed behind a protective glass sheet to form a PV panel. PV panels may be connected together to form a solar array. PV panels may also be fitted with trackers. The solar tracker is a device capable of turning after the sun, which means following the sun track from it is rising in the east to its setting in the west[22].

The solar electrical system may be connected either directly to the LV grid of the end user or the national grid of the RSA or via batteries for storage of the electrical energy.

The CPA size is limited by 15 MW installed capacity.

Solar electrical systems typically have a designed operating lifetime of 25 years. A high-quality solar panel has a guaranteed lifespan of 25 to 30 years. [23]

The load factor/generation of the solar electrical systems will vary base the location of the activity, tilt and orientation of the of PV panels, cleaning frequency.

The electricity supplied by the independent activities shall be measured by electricity meters located at the point of supply.

Most electricity in the RSA is generated by burning coal. The energy system of the country is managed by the state-owned company Eskom which is in charge of generation, transmission and distribution of power to end-users. The energy system of the RSA is integrated into the grid of SAPP, where South Africa is represented by Eskom.

Baseline scenario as established in Section I.5 below:

Net electricity delivered by the CPA would have otherwise been generated by the operation of the grid-connected power plants of the SAPP and by the addition of new generation sources that is reflected in the combined margin CO_2 emission factor of 0.9871 t CO_2/MWh adopted for the electricity system of the SAPP.

For each CPA the following information shall be provided under each activity in CPA-DD as per Activity information forms (where applicable):

[21] A capacity addition envisages an increase in the installed power generation capacity of an existing solar electrical system through: the installation of a new solar electrical system beside the existing solar electrical system; or the installation of new solar electrical system, additional to the existing solar electrical system. The existing solar electrical system continues to operate after the implementation of the activity, furthermore the addition of the new capacity does not significantly affect the electricity generation by the existing solar electrical system and the electricity produced by the added solar electrical system could be directly and separately measured.

[22] In case PV panels are fitted with trackers, the trackers will consume electricity either produced by PV panels or supplied from the grid of the RSA, no fossil fuel consumption will take place on the CPA site. Amount of electricity consumed by the trackers will be accounted in calculations of GHG emission reductions, since quantity of net electricity supplied is measured as per the monitoring plan.

[23] https://www.canadiansolar.com/make-the-difference/industry-leading-quality-control

(a) Activity name, identification number, location (GPS coordinates), start date and COD date, Province for CPA Type 1;
(b) Solar electrical technology used. Installed capacity of the solar electrical system. Describe the technologies/measures existing prior to the implementation of the activity. Whether project activities involve Greenfield sites or capacity addition or a mix of both;
(c) Estimated annual net electricity production of the solar electrical system provided by the engineering company. Whether electricity is supplied to the grid or an identified consumer;
(d) The lifetime of the system;
(e) The monitoring equipment and their location in the systems.

SECTION I. Application of methodologies and standardized baselines

I.1. References to methodologies and standardized baselines

AMS-I.F.: "Renewable electricity generation for captive use and mini-grid" (Version 03)[24]

AMS-I.D: "Grid connected renewable electricity generation" (Version 18)[25]

ASB0040-2018: Grid emission factor for the Southern African power pool (Version 01.0)[26]

I.2. Applicability of methodologies and standardized baselines

A typical CPA under this PoA is either:

Type 1: The group of the independent activities under the predetermined province of the RSA, each of which is no larger than 0.15 MW installed capacity. Activities will be added *ex post* during the crediting period of the corresponding CPA (actual independent activities may not be known before the registration of the CPA under the PoA); or

Type 2: The identified independent activity or a group of identified independent activities of any capacity which taken together do not exceed 15 MW. The activities will be included in the corresponding CPA *ex ante* (actual independent activities will be known before the registration of the CPA under the PoA).

Electricity which will be produced by activities under the CPA is supplied to:

Scenario (a) An identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; or/and

Scenario (b) The national grid of the RSA.

Activities included into a typical CPA envisage:

Option (1) Installation of a solar electrical system where there was no solar electrical system operating prior to the implementation of the activity; or/and

Option (2) a capacity addition.

The CME applies the combination of small-scale methodologies. Combinations of the AMS-I.F. and AMS-I.D. are eligible according to the "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities"[27] (see paragraph 29 (c)). This has also been clarified in the "Clarification on the applicability of AMS-I.F and possibility of the combined use of AMS-I.D and AMS-I.F in one PDD".[28]

[24] https://cdm.unfccc.int/methodologies/DB/9KJWQ1G0WEG6LKHX21MLPS8BQR7242

[25] https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

[26] https://cdm.unfccc.int/methodologies/standard_base/2015/sb131.html

[27] http://cdm.unfccc.int/Reference/Standards/meth/meth_stan04.pdf

[28] SSC_565 (SSC WG 34, § 21, Page: 4) (http://cdm.unfccc.int/Panels/ssc_wg/meetings/034/ssc_034_report.pdf)

Solar electrical technology will be applied consistently in each CPA using multiple combinations of the methodologies; either only AMS-I.F. or only AMD-I.D or a combination of both methodologies. There are no cross effects between the technologies/measures applied.

Methodology AMS-I.F. is only applicable to CPA Type 1 and 2, where produced electricity is supplied to an identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid. The applicability criteria of the methodology are defined and addressed as follows (Table I.2-1):

Table I.2-1: Applicability conditions for AMS-I.F.

Applicability criterion	Applicability	Comment
This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s). The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e. in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below: a) A national or a regional grid (grid hereafter); b) Fossil fuel fired captive power plant; c) A carbon intensive mini-grid.	Applicable	Each CPA comprises renewable electricity generation, by means of solar electrical systems. Furthermore, electricity will be supplied to users which would have been supplied electricity from the national grid of the RSA.
Illustration of respective situations under which each of the methodology (AMS-I.D, AMS-I.F and AMS-I.A) applies is included in Table 3[29].	Applicable	Each activity which envisages supplying produced electricity to an identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; falls under methodology AMS-I.F. since it displaces grid electricity consumption at the end user.

[29] AMS-I.F. (version 03), page 11

Applicability criterion	Applicability	Comment
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m^2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m^2.	Not applicable	Any CPA is not the installation of a hydro power plant, so it does not need to satisfy this applicability condition.
This methodology is applicable for project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition, (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s).	Applicable	Each independent activity under the PoA envisages either: (a) Installing a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity; or (b) Involves a capacity addition.
In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Applicable	In case the independent activity involves the capacity addition, the added capacity will be lower than 15 MW according the eligibility criteria (5) and be physically distinct from the existing units.
In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	Not applicable	Each independent activity under the PoA does not involve retrofit or replacement of an existing facility, so it does not need to satisfy this applicability condition.
If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	Not applicable	Any CPA does not have non-renewable components, so it does not need to satisfy this applicability condition.

Applicability criterion	Applicability	Comment
Combined heat and power (co-generation) systems are not eligible under this category.	Not applicable	Any CPA does not involve co-generation. According to the AMS-I.F., the CPA must not satisfy this applicability condition.
If electricity and/or steam/heat produced by the project activity is delivered to a third party i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered that ensures that there is no double counting of emission reductions.	Applicable	In case electricity produced by the independent activity under the CPA is delivered to a third party a contract between the supplier and consumer(s) of the energy will be signed. See eligibility criterion (2).
In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Not applicable	Any CPA does not involve using biomass, so it does not need to satisfy this applicability condition.

AMS-I.F. refers to the latest approved versions of the following documents (paragraph 14):

(a) "Project emissions from cultivation of biomass";

(b) "ACM0002: Grid-connected electricity generation from renewable sources";

(c) "AMS-I.A.: Electricity generation by the user";

(d) "AMS-I.C.: Thermal energy production with or without electricity";

(e) "AMS-I.D.: Grid connected renewable electricity generation";

(f) "Tool to calculate baseline, project and/or leakage emissions from electricity consumption;

(g) "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion";

(h) "Tool to calculate the emission factor for an electricity system".

Document (a) is not used since any CPA does not involve using biomass (refer to the eligibility criteria).

Document (b) is not used since any CPA does not involve hydro or geothermal plants (refer to paragraph 24 and paragraph 30 of AMS-I.F. as well as the eligibility criteria).

Document (c) is not used since no projects supplying electricity to household users (included in the project boundary) located in off grid areas are included into this PoA (refer to the eligibility criteria).

Document (d) is not used since no heat generation or cogeneration projects are included into this PoA (refer to the eligibility criteria).

Document (e) may be used. Methodology AMS-I.D. is applicable for both CPA types and where produced electricity is supplied to the national grid of the RSA. The applicability criteria of the methodology are defined and addressed as follows (Table I.2-2):

Table I.2-2: Applicability conditions for AMS-I.D.

Applicability criterion	Applicability	Comment
This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: a) Supplying electricity to a national or a regional grid; or b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	Applicable	Each CPA comprises renewable electricity generation, by means of solar electrical systems. Furthermore electricity will be supplied to the national electricity grid of the RSA.
Illustration of respective situations under which each of the methodology (i.e. "AMS-I.D.: Grid connected renewable electricity generation", "AMS-I.F.: Renewable electricity generation for captive use and mini-grid" and "AMS-I.A.: Electricity generation by the user) applies is included in the appendix [30].	Applicable	Each activity which envisages produced electricity to be supplied to the national electricity grid of the RSA, falls under methodology AMS-I.D. since it supplies electricity to the national grid.
This methodology is applicable for project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s), (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s)/units(s); or (e) Involve a replacement of (an) existing plant(s).	Applicable	Each independent activity under the PoA envisages either: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity; or (b) Involve a capacity addition.
Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m^2; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m^2.	Not applicable	Any CPA is not the installation of a hydro power plant, so it does not need to satisfy this applicability condition.

[30] AMS-I.D. (version 18), page 17

Applicability criterion	Applicability	Comment
If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	Not applicable	Any CPA does not have non-renewable components, so it does not need to satisfy this applicability condition.
Combined heat and power (co-generation) systems are not eligible under this category.	Not applicable	Any CPA does not involve co-generation. According to the AMS-I.D., the CPA must not satisfy this applicability condition.
In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Applicable	In case the independent activity involves the capacity addition, the added capacity will be lower than 15 MW according the eligibility criteria (5) and be physically distinct from the existing units.
In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement power plant/unit shall not exceed the limit of 15 MW.	Not applicable	Each independent activity under the PoA does not involve retrofit or replacement of an existing facility, so it does not need to satisfy this applicability condition.
In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.	Not applicable	Landfill gas, waste gas, wastewater treatment and agro-industries projects are not eligible under this PoA, so it does not need to satisfy this applicability condition.
In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply	Not applicable	Biomass projects are not eligible under this PoA, so it does not need to satisfy this applicability condition.

In addition, AMS-I.D. refers to the latest approved versions of the following documents (paragraph 14):

(i) “Tool to determine the remaining lifetime of equipment”

(j) "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period"

Document (f) is not used since no captive electricity generation will take place in the baseline scenario (refer to paragraph 19 of AMS-I.F. and Section I.5 below).

Document (g) is not used since the project emissions for all CPAs are zero (refer to paragraph 25 of AMS-I.F. and Section I.6 below).

Document (h) is not used since ASB0040-2018: Standardized baseline "Grid emission factor for Southern African Power Pool" (Version 01.0) is used to determine the value of the emission factor for an electricity system. The CPA meets all necessary applicability conditions of ASB0040-2018 to apply (see Table I.2-3).

Table I.2-3: ASB0040-2018 applicability conditions check

Applicability condition	Applicability	Comment
3 (a) The project activity is implemented in any one of following countries, which are the SAPP member countries, and is connected to the SAPP: (i) Republic of Botswana; (ii) Democratic Republic of Congo; (iii) Kingdom of Lesotho; (iv) Republic of Mozambique; (v) Republic of Namibia; (vi) Republic of South Africa; (vii) Kingdom of Swaziland; (viii) Republic of Zambia, and (ix) Republic of Zimbabwe	Applicable	All activities under the CPA are located in the RSA as per Eligibility Criterion 1 and is connected to the grid as per Eligibility Criterion 3
3 (b) The CDM approved methodology that is applied to the project activity requires the determination of CO_2 emission factor(s) through the application of the grid tool	Applicable	AMS-I.F. refers to procedures provided in AMS-I.D. to calculate the grid emission factor (paragraph 19). AMS-I.D. refers to Tool to calculate the emission factor for an electricity system to calculate the grid emission factors (paragraph 22).
3 (c) The project activity uses the ex-ante options for both the operating margin and build margin grid emissions factors, as described in the grid tool, and therefore no monitoring or recalculation of the emission factor during the crediting period is required.	Applicable	The ex-ante options for both the operating margin and build margin grid emissions factors are used.
4. The latest approved and valid values of this standardized baseline are the only values of the CO_2 emission factor(s) that shall be applied for the project electricity system in the SAPP member countries listed under sub-para 3(a) above	Applicable	The Standardized Baseline is valid till 06/10/2021 (later that the completion date of the PoA-DD).[31]

[31] https://cdm.unfccc.int/methodologies/standard_base/2015/sb4.html, Validity Column

Document (i) is not used since no projects that (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s)/units(s); or (e) Involve a replacement of (an) existing plant(s) are eligible under this PoA (refer to the Eligibility Criteria).

Document (j) is not used. The document is applicable at the renewal of a crediting period. No renewal of a crediting period will take place during the CPA inclusion.

Each CPA falls under small-scale project Type I project activities: Renewable energy project activities which have an output capacity up to 15 megawatts. According with Eligibility Criterion 3 each activity to be included into the CPA shall only use solar PV systems and the installed capacity of the CPA shall be equal or less than 15 MW.

I.3. Application of multiple methodologies

The CME applies the combination of small-scale methodologies. According to paragraph 93 (footnote 16) of CDM-EB93-A07-STAN Standard: CDM project standard for programmes of activities (Version 02.0)[32] combination of methodologies contained in the "General guidelines for SSC CDM methodologies" may be applied without further assessment of cross effects or other conditions, while other combinations can be applied with the analysis of cross effects. Combinations of AMS-I.F. and AMS-I.D. may be applied without further assessment of cross effects as per paragraph 19(f) of CDM-EB66-A23-GUID Guideline: General guidelines for SSC CDM methodologies (Version 23.0)[33].

Solar electrical technology will be applied consistently in each CPA using multiple combinations of the methodologies; either only AMS-I.F. or only AMD-I.D or a combination of both methodologies. There are no cross effects between the technologies/measures applied.

Methodology AMS-I.F. is only applicable to CPA Type 1 and 2, where produced electricity is supplied to an identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid.

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

According to AMS-I.F.:

- *"The spatial extent of the project boundary includes industrial, commercial facilities consuming energy generated by the system. In the case of electricity generated and supplied to distributed users (e.g. residential users) via mini/isolated grid(s) the project boundary may be confined to physical, geographical site of renewable generating units. The boundary also extends to the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to."*

Thus, the spatial extent of the CPA boundary includes each independent activity, each end user of electricity as well as all power plants connected physically to the grid of the SAPP (Figure I.4-1).

According to AMS-I.D.:

- *"The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to."*

Thus, the spatial extent of the CPA boundary includes each independent activity and all power plants connected physically to the grid of the SAPP (Figure I.4-1).

The greenhouse gases and emission sources included in or excluded from the CPA boundary are shown in Table I.4-1

[32] https://cdm.unfccc.int/Reference/Standards/index.html

[33] https://cdm.unfccc.int/Reference/Guidclarif/index.html

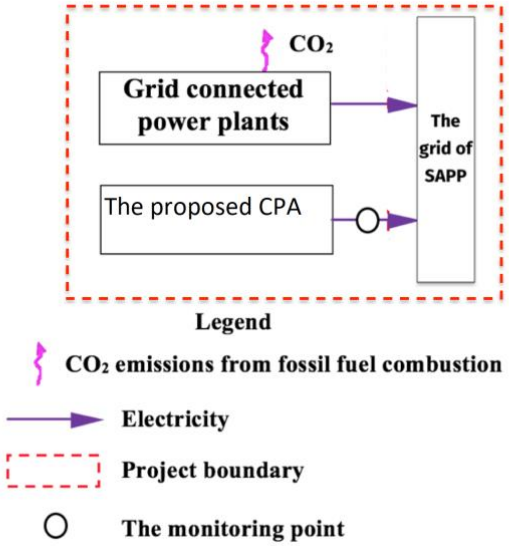

Figure I.4-1: Project boundary

Table I.4-1: Emissions sources included in or excluded from the CPA boundary

	Source	GHG	Included?	Justification/Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants connected to the grid of the SAPP	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project activity	GHG emissions from the combustion of fossil fuel for electricity generation in the independent installations	CO_2	No	GHG emissions for the CPA are equal to zero and no fossil fuels combustion will occur as part of the CPA
		CH_4	No	
		N_2O	No	

I.5. Establishment and description of baseline scenario

According to paragraphs 2 and 19 of AMS-I.F.:

- *"The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e. in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below:*

  (a) A national or a regional grid (grid hereafter)

  (b) Fossil fuel fired captive power plant;

  (c) A carbon intensive mini-grid."

- *"Baseline emissions for other systems are the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor...Emission factor of a grid shall be calculated as per the procedures provided in AMS-I.D"*

According with eligibility criterion (3) in case electricity is supplied to the identified consumer (end user) or the group of consumers, these consumers would have been supplied with electricity from the national grid of the RSA in the absence of the activity.

According to paragraph 19 of AMS-I.D.:

- *"The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid."*

Thus, for the Greenfield independent activities both methodologies suggest that in the absence of the project activity electricity supplied by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

Baseline scenario for the Greenfield independent activities is as follows:

The electricity delivered to the grid by the independent activities as well as electricity supplied to the end users (where applicable) would have otherwise been generated by the operation of grid-connected power plants of the SAPP and by the addition of new generation sources to the grid.

In the case an independent activity involves a capacity addition, paragraph 22 of AMS-I.F. mentions:

- For project activities that involve retrofit of an existing facility and/or capacity addition at an existing facility, the baseline emissions shall be calculated following the applicable procedures prescribed in AMS-I.D. with the exception that emission factor ($EF_{CO2,y)}$ is calculated as described in this methodology.

In the case of capacity addition, paragraph 21 of AMS-I.D. mentions:

- If the project activity is a capacity addition to existing grid-connected renewable energy power plant/unit, the baseline scenario is the existing facility that would continue to supply electricity to the grid at historical levels, until the time at which the generation facility would likely be replaced or retrofitted ($DATE_{BaselineRetrofit}$), and electricity delivered to the grid by the added capacity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and no emission reductions are assumed to occur.

Thus, the baseline scenario for the independent activities that involve a capacity addition is as follows:

The existing facility would continue to supply electricity to the grid at historical levels, until the time at which the generation facility would likely be replaced or retrofitted ($DATE_{BaselineRetrofit}$), and electricity delivered to the grid by the added capacity would have otherwise been generated by the operation of grid-connected power plants of the SAPP and by the addition of new generation sources. From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and no emission reductions are assumed to occur.

In summary, taking into account paragraph 27 of AMS-I.D, the baseline is:

Net electricity delivered by the CPA would have otherwise been generated by the operation of the grid-connected power plants of the SAPP and by the addition of new generation sources that is reflected in the combined margin CO_2 emission factor of 0.9871 t CO_2/MWh adopted for the electricity system of the SAPP.

I.6. Estimation of emission reductions

I.6.1. Explanation of methodological choices

A typical CPA under this PoA is either:

Type 1: The group of the independent activities under the predetermined province of the RSA, each of which is no larger than 0.15 MW installed capacity. Activities will be added *ex post* during the crediting period of the corresponding CPA (actual independent activities may not be known before the registration of the CPA under the PoA); or

Type 2: The identified independent activity or a group of identified independent activities of any capacity which taken together do not exceed 15 MW. The activities will be included in the corresponding CPA *ex ante* (actual independent activities will be known before the registration of the CPA under the PoA).

Electricity which will be produced by activities under the CPA is supplied to:

Scenario (a) An identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; or/and

Scenario (b) The national grid of the RSA.

Baseline emissions

For both CPA types which envisage scenario (a) according to AMS-I.F. baseline emissions for Greenfield independent activities are calculated as follows:

$$BE_y = EG_{BL,y} \times EF_{CO2,y} \quad \text{(I.6-1)}$$

Where:

BE_y	=	Baseline emissions in year *y* (tCO_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 (tCO_2/MWh)

For both CPA types which envisage scenario (b) according to AMS-I.D. baseline emissions are calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,y} \quad \text{(I.6-2)}$$

Where:

BE_y	=	Baseline emissions in year *y* (tCO_2)
$EG_{PJ,y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year *y* (MWh)
$EF_{grid,y}$	=	Combined margin CO_2 emission factor for the grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

Calculation of $EG_{PJ,y}$

Each independent activity under the PoA envisages:

Option (1) Installation of a solar electrical system where there was no solar electrical system operating prior to the implementation of the activity; or/and

Option (2) A capacity addition.

For combination of *option (1) and scenario (b)*, where there is an installation of a solar electrical system where there was no solar electrical system operating prior to the implementation of the activity and the electricity is supplied to the national grid of the RSA, $EG_{PJ,y}$ is calculated as follows (as paragraph 26 of AMS-I.D.):

$$EG_{PJ,y} = EG^{b}_{Solar\ systems,y} \quad \text{(I.6-3)}$$

Where:

$EG^{b}_{Solar\ systems,y}$	=	Net quantity of electricity supplied to the national grid of the RSA from all independent activities (solar electrical systems installed) under the CPA in year *y* (MWh)

According to paragraph 27 of AMS-I.D.: "*In the case of wind, solar, wave or tidal power plants, it is assumed that the addition of new capacity does not significantly affect the electricity generated by existing plants/units.* The electricity fed into the grid by the added power plant/unit shall be directly measured and used to determine $EG_{PJ,y}$. Since the electricity produced by the added solar electrical systems can be directly metered, for combination of *option (2) and scenario (b)*, where the electricity from a capacity addition is supplied to the national grid of the RSA, $EG_{PJ,y}$ is also calculated using Formula (I.6-3).

For combination of *option (1) and scenario (a)*, where there is an installation of a solar electrical system where there was no solar electrical system operating prior to the implementation of the

activity and the electricity is supplied to an identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; $EG_{BL,y}$ is calculated as follows:

$$EG_{BL,y} = EG^{a}_{Solar\ systems,y} \quad \text{(I.6-4)}$$

Where:

$EG^{a}_{Solar\ systems,y}$ = Net quantity of electricity displaced as a result of implementation of all independent activities (solar electrical systems installed) under the CPA in year *y* (MWh)

According to paragraph 22 of AMS-I.F. $EG_{BL,y}$ *"shall be calculated following the applicable procedures prescribed in AMS-I.D with the exception that emission factor (* $EF_{CO_2,y}$ *) is calculated as described in this methodology".* Since the electricity produced by the added solar electrical systems can be directly metered, $EG_{BL,y}$ for combination of *option (2) and scenario (a),* where the electricity from a capacity addition is supplied to an identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; $EG_{BL,y}$ is also calculated using Formula (I.6-4).

Following on from this, since there are two different scenario's in terms of where electricity can be supplied to, namely:

Scenario (a) An identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; or

Scenario (b) The national grid of the RSA,

each scenario is given its own baseline parameter for clarity purposes ($EG^{a}_{Solar\ systems,y}$ and $EG^{b}_{Solar\ systems,y}$ respectively), instead of just the one ($EG_{BL,y}$) given in the methodologies.

Calculation of emission factor

According to paragraph 23 of AMS-I.D.: "*the emission factor shall be calculated in a transparent and conservative manner as follows:*

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the Emission Factor for an electricity system"; or

(b) The weighted average emissions (in tCO_2/MWh) of the current generation mix. The data of the year in which project generation occurs must be used."

Choice (a) has been selected for electricity supplied to the national grid of the RSA (*scenario (b)*).

Thus $EF_{grid,y}$ is calculated as follows:

$$EF_{grid,y} = EF_{grid,CM,y} \quad \text{(I.6-5)}$$

Where:

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for the project electricity system in year *y* (tCO_2/MWh)

According to paragraph 19 of AMS-I.F, for all independent activities under the CPA which envisages electricity supplied to an identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid *(scenario (a))*:

"(a)" Emission factor of a grid shall be calculated as per the procedures provided in AMS-I.D;

(b) For a mini-grid system other than described in paragraph 18 above, the baseline emission factor shall be determined as per the weighted average emissions for the current generation mix following the procedure provided in AMS-I.D;

(c) Emission factor for captive electricity generation shall be calculated as per the procedures described in the latest version of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"."

Choice (a) has been selected.

Paragraph 23 of AMS-I.D. is described above. Choice (a) has also been selected. Thus $EF_{CO_2,y}$ is calculated as follows:

$$EF_{CO_2,y} = EF_{grid,CM,y} \quad \text{(I.6-6)}$$

Standardized baseline ASB0040-2018 is selected for each CPA of the PoA (the applicability of ASB0040-2018 is justified above). Table 1 of this standardized baseline provides the value of the combined margin CO_2 emission factor for the project electricity system applicable to wind and solar power generation for the determination of baseline emissions of 0.9871 t CO_2/MWh.

Calculation of Baseline emissions

Baseline emissions are calculated as follows:

$$BE_y = (EG^{a}_{Solar\ systems,y} + EG^{b}_{Solar\ systems,y}) \times EF_{grid,CM,y} \quad \text{(I.6-7)}$$

Where:

BE_y	=	Baseline emissions in year *y* (tCO_2)
$EG^{a}_{Solar\ systems,y}$	=	Net quantity of electricity displaced as a result of implementation of all independent activities (solar electrical systems installed) under the CPA in year *y* (MWh)
$EG^{b}_{Solar\ systems,y}$	=	Net quantity of electricity supplied to the national grid of the RSA from all independent activities (solar electrical systems installed) under the CPA in year *y* (MWh)
$EF_{grid,CM,y}$	=	Combined margin CO_2 emission factor for the project electricity system in year *y* (tCO_2/MWh)

Project emissions

According to AMS-I.F. and AMS-I.D. no project emissions need to be taken into account. Therefore:

$$PE_y = 0 \quad \text{(I.6-8)}$$

Leakage

Solar electrical systems are not transferred from another activity, so no leakage is to be considered. Therefore:

$$LE_y = 0 \quad \text{(I.6-9)}$$

Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad \text{(I.6-10)}$$

Where:

ER_y = Emission reductions in year *y* (tCO_2/y)

BE_y = Baseline emissions in year *y* (tCO_2/y)

PE_y = Project emissions in year *y* (tCO_2/y)

LE_y = Leakage emissions in year *y* (tCO_2/y)

CPAs shall always apply the fixed parameters of the latest version of the PoA-DD.

I.6.2. Data and parameters fixed ex ante

Data/Parameter	$LF_{Solar\ systems}$
Data unit	-
Description	Load factor of the solar systems
Source of data	The National Energy Regulator of South Africa, Review of Renewable Energy Feed - In Tariffs, Table A7, page 30[34]
Value(s) applied	To be determined for each CPA
Choice of data or Measurement methods and procedures	Default value of 0.18 can be used for CPA Type 1.
Purpose of data	Calculation of baseline emissions
Additional comment	This value is used to predict the annual net electricity generation. This value is required in order to perform calculations for expected CER's. Since these are small installations, there is not a set value for this, and each CPA will have a different value, therefore an estimate is required to perform the initial calculation.

Data/Parameter	$EF_{grid,CM}$
Data unit	tCO_2/MWh
Description	Combined margin CO_2 emission factor for grid connected power generation calculated ex ante
Source of data	ASB0040-2018, Table 1, page 5
Value(s) applied	0.9871
Choice of data or Measurement methods and procedures	Standardized baseline ASB0040-2018 is selected for the project (the applicability of ASB0040-2018 is justified Section 3.1.2 above). Table 1 of this standardized baseline provides the value of the combined margin CO_2 emission factor for the project electricity system applicable to wind and solar power generation for the determination of baseline emissions of 0.9871 t CO_2/MWh
Purpose of data	Calculation of baseline emissions
Additional comment	This value will be a constant for each crediting period and then recalculated for each new crediting period.

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

The total emission reductions of the CPA are calculated on the basis of the equations and parameters presented and explained above.

[34] http://www.nersa.org.za/Admin/Document/Editor/file/Electricity/Consultation/Documents/Review%20of%20Renewable%20Energy%20Feed-In%20Tariffs%20Consultation%20Paper.pdf

Project emissions are zero:

Leakage emissions are zero: $LE_y = 0$

Baseline Emissions and Emission reductions calculation

Since project emissions and leakage emissions are zero, $ER_y = BE_y$.

Baseline emissions are calculated as follows (Formula I.6-7):

$$BE_y = (EG^{a}_{Solar\ systems,y} + EG^{b}_{Solar\ systems,y}) \times EF_{grid,CM,y}$$

For CPA Type 2 estimated annual net electricity production of the solar electrical system provided by the engineering company (refer to the Activity Information Form (Table 6)) shall be used to define $EG^{a}_{Solar\ systems,y}$ and $EG^{b}_{Solar\ systems,y}$. For the CPA Type 1, where actual independent activities will be known before the inclusion of the CPA, for assessment purposes emission reductions in year *y* are calculated as follows:

$$ER_y = \left(P^{a}_{Solar\ systems,y} + P^{b}_{Solar\ systems,y}\right) \cdot LF_{Solar\ systems} \cdot Hours_y \cdot EF_{grid,CM} \quad \text{(I.6-11)}$$

Where:

$P^{a}_{Solar\ systems,y}$ = Total capacity of all independent activities which supply electricity to end users under the CPA in year *y* (MW)

$P^{b}_{Solar\ systems,y}$ = Total capacity of all independent activities which supply electricity to the national grid of the RSA under the CPA in year *y* (MW)

$LF_{Solar\ systems}$ = Load factor of solar electrical systems, $LF_{Solar\ systems}$ = 0.18

$Hours_y$ = Amount of hours in the year *y*

Combined margin CO_2 emission factor for grid connected power generation calculated ex ante is fixed for all CPAs of the PoA and equal to 0.9871 tCO_2/MWh.

Sample calculation

CPA Type 1: the group of the independent activities under in Western Cape Province of the RSA, each of which is no larger than 0.15 MW installed capacity. The activities supply power the end users.

$PE_y = 0$

$LE_y = 0$

$P^{b}_{Solar\ systems,y}$ = 0

BE_y = (15 MW + 0) x 0.18 x 8760 x 0.9871 tCO_2/kWh = 23,346.8 tCO_2/y

$ER_y = BE_y$ = 23,346.8tCO_2/y

CPA Type 2: one identified independent activity with the installed capacity of 10MW, located in Northern Cape, supplying 18 000 MWh a year into the national grid of the RSA.

$PE_y = 0$

$LE_y = 0$

$EG^{a}_{Solar\ systems,y}$ = 0

BE_y = (0 + 18,000 MWh) x 0.9871 tCO_2/kWh = 17,767.8 tCO_2/y

$ER_y = BE_y = 17,767.8\ tCO_2/y$

I.7. Monitoring plan

I.7.1. Data and parameters to be monitored

Since there are two different scenario's in terms of where electricity can be supplied to, namely:

Scenario (a) An identified consumer (end user) or the group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity, furthermore excess electricity may be supplied to the grid; or

Scenario (b) The national grid of the RSA,

each scenario is given its own baseline parameter for clarity purposes ($EG^{a}_{Solar\ systems,y}$ and $EG^{b}_{Solar\ systems,y}$ respectively), instead of just the one ($EG_{BL,y}$ and $EG_{PJ,y}$) given in the methodologies.

Data/Parameter	$EG^{a}_{Solar\ systems,y}$
Data unit	MWh
Description	Net quantity of electricity displaced as a result of implementation of all independent activities (solar electrical systems installed) under the CPA in year *y*
Source of data	Measurement with electricity meters
Value(s) applied	-
Measurement methods and procedures	Measurement by means of electricity meters installed for each independent activity under the CPA. The net electricity displaced is the gross energy generation by the project activity power plant minus the auxiliary/station electricity consumption. Data on electricity supply will be digitally archived at least on a monthly basis. Excess electricity supplied to the grid will also be recorded and used for the calculation of the baseline emissions.
Monitoring frequency	The generated electricity will be continuously measured and recorded.
QA/QC procedures	Electricity meters are regularly calibrated. In the case of electricity sold to a third party, measurement results shall be cross-checked with records of sold/purchased electricity (e.g. invoices/receipts).
Purpose of data	Calculation of baseline emissions
Additional comment	This parameter will be used instead of $EG_{BL,y}$, in order to clarify that this is applicable to scenario (a).

Data/Parameter	$EG^{b}_{Solar\ systems,y}$
Data unit	MWh
Description	Net quantity of electricity supplied to the national grid of the RSA from all independent activities (solar electrical systems installed) under the CPA in year *y*
Source of data	Measurement with electricity meters
Value(s) applied	-
Measurement methods and procedures	Measurement by means of electricity meters installed for each independent activity under the CPA. Net electricity supplied will be calculated by deducting electricity import from electricity export. Data on electricity supply will be digitally archived at least on a monthly basis.
Monitoring frequency	The generated electricity will be continuously measured and recorded.
QA/QC procedures	Electricity meters are regularly calibrated; readings are cross-checked with records for sold electricity
Purpose of data	Calculation of baseline emissions

Additional comment	This parameter will be used instead of $EG_{PJ,y}$, in order to clarify that this is applicable to scenario (b).

Data/Parameter	$P^{a}_{Solar\ system,\ y}$
Data unit	MW
Description	Total capacity of all independent activities which supply electricity to end users under the CPA in year *y*
Source of data	BWC
Value(s) applied	-
Measurement methods and procedures	Actual data provided to BWC by - the owner of the independent activity; or - the nominated CER buyer; or - another nominated party.
Monitoring frequency	Continuous monitoring, at least monthly recordings
QA/QC procedures	NA
Purpose of data	NA
Additional comment	This parameter will be used in order to clarify that this is applicable to scenario (a). The activities can supply the excess electricity to the grid.

Data/Parameter	$P^{b}_{Solar\ system,\ y}$
Data unit	MW
Description	Total capacity of all independent activities which supply electricity to the national grid of the RSA under the CPA in year *y*
Source of data	BWC
Value(s) applied	-
Measurement methods and procedures	Actual data provided to BWC by - the owner of the independent activity; or - the nominated CER buyer; or - another nominated party.
Monitoring frequency	Continuous monitoring, at least monthly recordings
QA/QC procedures	NA
Purpose of data	NA
Additional comment	This parameter will be used in order to clarify that this is applicable to scenario (b).

I.7.2. Sampling plan

Not applicable for the proposed PoA, since the CME opts for 100% monitoring and verification for each CPA.

This PoA does not use a sampling method but will verify each CPA.

All introduced system by this PoA has input/output data and monitoring equipment will be installed at each project system to check the input/output data of this project. Each CPA will report its monitoring data to CME and CME manages the monitoring data. The CPA project database includes the following data-set that can unambiguously determine the emission reductions attributable to each CPA:

Table A.4-3: Sample of data-set

Data Type	List of Data
System Information	• Serial Number

	• System Type • Location • Introduced date
Energy Production	• Generated electricity quantity

The CME will produce a monitoring report and send to the DOE to verify, corresponding to the preceding monitoring period of each CPA. This report will unambiguously set-out the data related to the emission reductions generated by that specific CPA during the monitoring period.

PoA record keeping procedures will prevent double counting across CPAs. The data-set corresponding to each CPA will be mutually exclusive of the data-set of another CPA under the PoA.

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

I.7.3. Other elements of monitoring plan

The monitoring plan is designed to calculate the GHG emission reductions at the CPA level. The monitoring plan was designed based on AMS-I-D., AMS-I-F and CDM-EB66-A23-GUID Guideline: General guidelines for SSC CDM methodologies (Version 23.0)[35]. The following procedures shall be applied to the monitoring for all CPA under this PoA:

1. Monitoring period

The 7-year renewable crediting period was chosen for the PoA. The monitoring period starts from the date of commissioning of the first activity under the CPA or the date of inclusion of the proposed CPA into the PoA (whichever is later). At the end of each reporting year monitored data shall be aggregated to a monitoring report.

2. Data monitored and sources

Quantity of net electricity displaced as a result of implementation of all independent activities (solar electrical systems installed) under the CPA in year *y*, and quantity of net electricity supplied to the national grid of the RSA from all independent activities (solar electrical systems installed) under the CPA in year *y*, shall be determined on the basis of electricity meters.

For all activities the applicable parameter in section I.7.1 will be monitored continuously and recorded at least on a monthly basis by the CPA personnel. Data on electricity supply will be digitally archived and submitted to the CME.

The sources of data for calculation of GHG emission reductions in the course of monitoring shall be the internal electricity meter reports of the solar electrical systems.

Combined margin CO_2 emission factor for grid connected power generation calculated *ex ante* is fixed for all CPAs of the PoA.

GHG emission reductions for both CPA types shall be calculated using formula (I.6-10).

3. The monitoring team

The management of BWC is fully responsible for the coordination and overall control of this PoA.

[35] https://cdm.unfccc.int/Reference/Guidclarif/index.html

The personnel of the seller of solar electrical systems as well as the independent activity owners are responsible for correct installation and maintenance of solar electrical systems.

The company staff that will collect the data will undergo the necessary training for this. Operation and maintenance of the solar electrical system will be done by either the trained personnel of the solar electrical system suppliers or by the trained personnel employed by the owners of the system.

The CPA shall be monitored by BWC. BWC will undertake, either itself or through another credible company specially appointed for that, to install meters and/or other instrumentation and measurement equipment as is necessary to provide for accurate data needed for the calculation of GHG emission reductions, and to collect such data in a timely manner.

The GHG emission reductions shall be calculated by BWC specialists on the basis of data representing operation of solar electrical systems collected by BWC or by another company employed by BWC. In case of any doubts as to the accuracy of the input data, the specialists of the company shall check and correct the data. The preliminary monitoring report shall be reviewed by the appointed BWC's team member. In case any mistakes are found, BWC will undertake to correct such.

4. Data storage

All data collected as part of monitoring should be archived electronically and kept at least for 2 years after the end of the crediting period. Data collection will occur on a monthly basis

5. Instrumentation calibration

BWC or another company employed by BWC will be responsible for timely calibration of all installed meters, instrumentation and other measurement equipment in accordance with the manufacturer's requirements and the South African Bureau of Standards (SABS)[36].

6. Emergency situations

In case of breakdown of any of the solar electrical system the electricity generation will go down, and amount of net electricity supplied by the system will be reduced. If any measuring instrument that is used in the monitoring process fails, either BWC or another company employed by BWC shall remedy or, if necessary, replace it as soon as possible.

SECTION J. Crediting period type and duration

7-year renewable crediting period is applicable to all the corresponding CPAs.

SECTION K. Eligibility criteria for inclusion of CPAs

The criteria developed are based on the requirements of the "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities." (Version 01.0) reported as Annex 3 to EB 65[37]. The list of criteria covers the applicability conditions of the methodology AMS-I.F. (Version 03) and methodology AMS-I.D. (Version 18).

The CPA will be assessed against this list of criteria by the CME at the time when the CPA applies to enrol in the PoA. The eligibility criteria shall cover as a minimum the conditions set out in the Table below.

[36] SANS 474:2009 Edition 1.1: Code of practice for electricity metering

[37] See paragraph 14, http://cdm.unfccc.int/Reference/Standards/meth/meth_stan04.pdf

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
1	The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA	1. The CPA (type 1 and type 2) shall be located within the geographical boundaries of the RSA	1. For CPA Type 1: the signed form from the owner of activity to be included into the CPA providing the following information: Name, address, GPS coordinates (Management system, Table 6) and Power Purchase Agreement (if applicable) For CPA Type 2: the signed form from the owner of activity to be included into the CPA providing the following information: Name, address, GPS coordinates (Management system, Table 6) and Environmental Authorisation (EA) from the relevant Competent Authority (CA) of the RSA[38] (if applicable) and Power Purchase Agreement (if applicable)

[38] The Department of Environmental Affairs at the time of PoA-DD drafting

2	Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo)	2. For CPA Type 1: the seller of solar electrical system (or nominated CER buyer or other nominated party) for each activity shall provide the signed Table 6 of the Management System of the PoA and agreement with the owner of activity where he shall contractually agree and sign the following before inclusion into the CPA: a) The activity has neither been and will not be registered as a CDM project activity nor as a CPA under another PoA; and b) The owner is aware that the activity will be subscribed to the present PoA. For CPA Type 2: the owner of each activity shall provide the signed Table 6 of the Management System of the PoA and agreement with CME where he shall contractually agree and sign the following before inclusion into the CPA: a) The activity has neither been and will not be registered as a CDM project activity nor as a CPA under another PoA; and b) The owner is aware that the activity will be subscribed to the present PoA. Moreover for CPA Type 2, BWC shall check the UNFCCC CDM project database to verify that each activity to be included in the proposed CPA, has not been previously submitted to the UNFCCC, before inclusion into the CPA, as well as provide a declaration for the same.	2. For CPA Type 1: the signed form from the owner of activity to be included into the CPA as per Table 6 of the Management system and agreement with the seller (or nominated CER buyer or other nominated party). For CPA Type 2: the signed form from the owner of activity to be included into the CPA as per Table 6 of the Management system and agreement with the CME and declaration from BWC.

3	The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications	3. Technology: Each activity to be included into the CPA (type 1 and type 2) shall only use solar PV systems. For CPA type 1: the installed capacity of each activity shall be equal or less than 0.15 MW. For CPA type 2: the installed capacity of the CPA shall be equal or less than 15 MW. Services: Electricity generation. Measure for AMS-I.D. or AMS-I.F. or combination of both: GHG emission reduction due to displacement of grid electricity. Each activity under the CPA (type 1 and type 2) shall be connected to either: i) An identified consumer (end user) or group of consumers, which would have been supplied with electricity from the national grid[39] of the RSA in the absence of the activity (where excess electricity may be supplied to the grid) or; ii) to the national grid of the RSA Furthermore the owner of each activity under the CPA connected to (i) and using methodology AMS-I.F. shall be connected to the grid before the activity implementation.	3. Technology: For both CPA types: Technical specification from the seller of the electrical system/ technology supplier. Services: for grid-connected systems (both CPA types): PPA with the relevant authority as per the host country; For captive users: signed Table 6 of the Management system of the PoA from the owner of the activity. For identified consumer: signed Table 6 of the Management system of the PoA/contract (between seller and end user) from the owner of the activity. For identified consumer using AMS-I.F.: Electricity bill or proof of pre-paid electricity from the owner. Measure: For AMS-I.D.: GHG emission reduction due to the supply of electricity to the grid. For AMS-I.F.: GHG emission reduction due to the displacement of electricity which would have been generated in the grid and consumed by the user in absence of the Solar PV technology, as per a CPA of this PoA; excess electricity under this methodology would also be supplied to the grid. Hence, the measure would primarily remain the same in case of both the methodologies and usage of the combination of the above-mentioned methodologies in the same CPA under this PoA shall not result in any cross-effects. This combination is also allowed as explained in section I.3 of this PoA.
4	Conditions to check the start date of the CPA through documentary evidence	4. The start date of the activity under CPA (type 1 and type 2) shall be after the date of start of global stakeholder process for the PoA (23/12/2011).	4. Signed equipment purchase contract with a seller of the solar electrical system/technology provider

[39] The national grid of the RSA includes the national transmission, distribution or reticulation lines ('Eskom grid' at the time of drafting of the PoA-DD) and a municipal electricity network that is connected to the national transmission, distribution or reticulation lines.

5	Conditions that ensure compliance with applicability and other requirements of single or multiple methodology/ies applied by CPAs	5. Both CPA type 1 and type 2 shall meet the applicability conditions and other requirements of either AMS-I.D. (version 18) or AMS-I.F. (version 0) or combination of both methodologies.	5. For both CPA types: Technical specification from the seller of the electrical system/technology supplier and PPA with the relevant authority as per the host country (if applicable) and signed Table 6 of the Management system of the PoA from the owner of the activity. For identified consumer: signed Table 6 of the Management system of the PoA/contract (between seller and end user) from the owner of the activity. For identified consumer using AMS-I.F.: Electricity bill or proof of pre-paid electricity from the owner.
6	The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in Section C above	6. Each and every CPA to be included into this PoA has to employ the solar technologies as per eligibility criteria 3. This criterion also states that "Each activity under the CPA (type 1 and type 2) shall be connected to either: i. An identified consumer (end user) or group of consumers, which would have been supplied with electricity from the national grid of the RSA in the absence of the activity (where excess electricity may be supplied to the grid) or; ii. to the national grid of the RSA"	6. Technology/measure: For both CPA types: Technical specification from the seller of the electrical system/ technology supplier. Services: for grid-connected systems (both CPA types): PPA with the relevant authority as per the host country; For captive users: signed Table 6 of the Management system of the PoA from the owner of the activity and Electricity bill or proof of pre-paid electricity from the owner. For identified consumer: signed Table 6 of the Management system of the PoA/contract (between seller and end user) from the owner of the activity or Electricity bill or proof of pre-paid electricity from the owner.
7	The PoA-specific requirements stipulated by the CMEs including any conditions related to undertaking local stakeholder consultations and environmental impact analysis	7. For CPA (type 1 and type 2) environmental impact assessment shall be carried out in line with NEMA[40] regulation[41]	7. For both CPA types: EIA or basic assessment along with environmental authorisation (if applicable).

[40] NEMA: National Environmental Management Act. Also see section C.3.

[41] Related to the capacity, size or other characteristics of the plant

8	Conditions to provide an affirmation that funding from Annex I party, if any, does not result in a diversion of official development assistance	8. No official Development Aid shall be involved or diverted as a result of activities under the CPA (type 1 and type 2).	8. For CPA type 1: The declaration from the seller or the owner of the solar electrical system. For CPA type 2: The declaration from the owner of the activity
9	Where applicable, target group (e.g. domestic/ commercial/industrial, rural /urban, grid-connected/ off-grid) and distribution mechanisms (e.g. direct installation)	9. For both CPA types where applicable, target group (e.g. domestic/commercial/ industrial, rural/urban, grid-connected/off-grid) and distribution mechanisms (e.g. direct installation) shall be identified in accordance with applied methodology or methodologies i.e., either AMS-I.D. (version 18) or AMS-I.F. (version 03) or combination of both methodologies.	9. Since this requirement has particularly been reflected in eligibility criterion (3), no supplementary evidence required
10	Where applicable, the conditions related to sampling requirements for a PoA in accordance with the approved guidelines/ standard from the Board pertaining to sampling and surveys	10. For CPA (type 1 and type 2) sampling requirements shall be assessed and carried out in line with requirements of Annex 4 & 5 of EB 69.	10. This PoA and CPA do not use the sampling method for monitoring, therefore no supplementary evidence is required.
11	Where applicable, the conditions that ensure that CPA in aggregate meets the small-scale or micro-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA	11. For both CPA types where applicable, the conditions that ensure that CPA in aggregate meets the small-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA shall be assessed.	11. Since this requirement has particularly been reflected in eligibility criterion (3), no supplementary evidence required. In addition, the total capacity of all independent activities included into the CPA is monitored throughout the crediting period of the CPA.
12	Where applicable, the requirements for the debundling check, in case CPAs belong to small-scale (SSC) or microscale project categories	12. For CPA (type 1 and type 2) debundling checks shall be performed in line with TOOL20 Methodological tool: Assessment of debundling for small-scale project activities (Version 04.0).	12. For both CPA types: confirmation in CPA-DD that the SSC-CPA is not a debundled component of a large scale CPA or CDM project activity For CPA type 2: the declaration from the owner of the activity and the CME
13	The conditions related to leakage for activities within a CPA	13. For both CPA types leakage shall be assessed and carried out in accordance with applied methodology or methodologies i.e., either AMS-I.D. (version 18) or AMS-I.F. (version 03) or combination of both methodologies, as shown in Table I.2-1 and I.2-2 in the PoA-DD.	13. For both CPA types: Signed equipment purchase contract with a seller of the solar electrical system or technology provider and signed Table 6 of the Management system of the PoA from the owner of the activity.

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

Coordinating/managing entity and/or project participants	☒ Coordinating/managing entity ☐ Project participant
Organization name	Blue World Carbon Asset Management (Pty) Ltd (BWC)
Country	The Republic of South Africa
Address	
Telephone	+27 (0)71 609 2276
Fax	+27 (0)86 609 2770
E-mail	joost.van.lier@blueworldcarbon.com
Website	http://www.blueworldcarbon.com
Contact person	Mr. Joost van Lier

Appendix 2. Affirmation regarding public funding

Not used

Appendix 3. Applicability of methodologies and standardized baselines

Not used

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

Not used

Appendix 5. Further background information on monitoring plan

Not used

Appendix 6. Summary report of comments received from local stakeholders

Not used

Appendix 7. Summary of post-registration changes

Not used