



**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**

<b>Title of the PoA</b>	PoA on RE
<b>Version number of the PoA-DD</b>	02
<b>Completion date of the PoA-DD</b>	10/02/2020
<b>Coordinating/managing entity</b>	Core CarbonX Solutions Private Limited
<b>Host Parties</b>	India
<b>Applied methodologies and standardized baselines</b>	AMS-I.D. ver. 18 - Grid connected renewable electricity generation
<b>Sectoral scopes</b>	1 : Energy industries (renewable - / non-renewable sources)

## PART I. Programme of activities (PoA)

### SECTION A. Description of PoA

#### A.1. Purpose and general description of PoA

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##### ***General Implementation Framework***

The programme of activities (hereafter referred as “PoA on RE”) aims to encourage installation of grid connected renewable energy technologies/measure comprising of solar PV and off shore wind energy technologies across various regions. Initially, the PoA will be establishing the platform in India and it will be further expanded to other countries in future. The projects under the PoA will be Supplying electricity to a national; and/or Supplying electricity to an identified consumer facility via national grid through a contractual arrangement such as wheeling.

The CDM Programme Activity under individual project activity (hereafter referred as “CPA”) included in the PoA will be installed in geographically distinct areas across India. The PoA will be managed by the Coordinating/managing entity Core CarbonX Solutions Private Limited (hereafter referred as “CME”). The CME will work closely with the developers of the power plants (henceforth, CPA Implementers) to facilitate the development of new renewable energy power plants covering solar PV technologies and off-shore wind energy technologies and their inclusion in the PoA. The component project activity (CPA) which will constitute the grid connected solar Photo Voltaic (Solar PV) power plants and grid connected off-shore wind power plants will be limited to small scale projects with the installed capacity less than or equal to 15MW.

The objective of the PoA is to generate renewable electricity using solar PV and offshore-wind energy. The electricity generated by CPA's included as part of the PoA will be supplied to the National grid electricity distribution system of India.

##### ***Policy/measure or stated goal of the PoA***

The goal of the PoA is to facilitate the installation of renewable technologies (hereafter “RE”) constituting of solar energy technologies (consisting of Solar PV Technology) and off-shore wind energy technologies to generate electricity from renewable energy sources by providing access to carbon finance. The electricity generated by these projects will replace the equivalent amount of electricity generated by the operation of existing/ grid connected carbon emissive power plants (mostly fossil fuel based power plants) and by addition of new generation sources into the grid.

The PoA thus reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from the existing grid connected power plants (mostly fossil fuel) and by addition of new generation sources into the grid. Core CarbonX Solutions Private Limited is the Coordinating/managing entity (“CME”) for this PoA. Specific installations included in the CPA involve implementations for solar (Solar PV Technology) and off shore grid wind based power project.

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

The proposed PoA is a voluntary action by the Co-ordinating /Managing Entity (CME) - Core CarbonX Solutions Private Limited.

##### **Contribution to Sustainable development**

##### **Environmental well-being:**

- The PoA will create a platform for the development of solar PV and off shore wind renewable technologies that will generate greener energy which will replace/displace

energy generated from fossil fuel fired power station in the electricity grid and thus reduce the emissions of greenhouse gases (GHG's) and particulate matter into the surroundings.

### **Economic well-being:**

- Implementation of CPA under the PoA will result in employment opportunities for people involved with installation of RE Technologies.
- Each CPA will also help in reducing demand-supply gap of electricity in the country.

### **Social well-being:**

- The PoA increases the employment opportunities in the area where each CPA is located, leading to a general increase in local-community income.
- The PoA will create the employment opportunities for the local people during the installation of the renewable energy (solar PV and off-shore wind project) under each CPA.

### **Technological well-being:**

- The PoA creates a platform for promotion of environment friendly, inexhaustible and clean technology to generate power i.e., Off-shore Wind, Solar PV renewable energy technologies.
- The successful registration of PoA will create a platform for investors for development of renewable technologies & thus lead to technological well being.

## **A.2. Physical/geographical boundary of PoA**

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The given PoA includes the entire geographical region in India. The physical boundary for each SSC CPA confines to the physical boundary and geographical area of the renewable energy projects covered in the SSC CPA. The geographical boundary in each specific CPAs included in this PoA will be mentioned in the CPA-DD.



### A.3. Technologies/measures

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The given PoA proposes to use the environment friendly, renewable and clean technology to produce power using renewable technology installations. The CPAs under this PoA will constitute installation and operation of off-shore Wind Turbine Generators (WTG's) as well as Solar Photo Voltaic (Solar PV), Power Plants in India. The detailed technical characteristics may differ per CPA according to the type, installed capacities and make of technology.

#### Solar power Technologies

Solar power is the conversion of sunlight into electricity. Sunlight can be converted directly into electricity using photovoltaic (PV) which normally focuses the sun's energy to boil water which is then used to provide power.

#### Photo-voltaic

A solar cell or photovoltaic cell (PV) is a device that converts light into electric current using the photoelectric effect. Solar cells produce direct current (DC) power, which fluctuates with the intensity of the irradiated light.

This usually requires conversion to certain desired voltages or alternating current (AC), which requires the use of inverters. Multiple solar cells are connected inside the modules. The Modules are classified into mono crystalline, poly crystalline and thin film solar cell. Modules are wired together to form arrays, then tied to an inverter, which produces power at the desired voltage, and for AC, frequency/phase.

#### OFFSHORE WIND POWER

**Offshore wind power** refers to the construction of wind projects in the water bodies to generate electricity from the wind. The availability of better wind speed in offshore compared to land results in higher generation from offshore wind turbine.

The average nameplate capacity of an offshore wind turbine available in the current market is 3 MW-5 MW, and the capacity of future turbines is expected to increase to 10 MW capacity.

Offshore turbines require different types of bases for stability, according to the depth of water. To date a number of different solutions exist:

- A monopile (single column) base, six meters in diameter, is used in waters up to 30 meters deep.
- Gravity Base Structures, for use at exposed sites in water 20- 80 m deep.
- Tripod piled structures, in water 20-80 metres deep.
- Tripod suction caisson structures, in water 20-80m deep.
- Conventional steel jacket structures, as used in the oil and gas industry, in water 20-80m deep.
- Floating wind turbines are being developed for deeper water.

Turbines are much less accessible when offshore (requiring the use of a service vessel for routine access, and a jackup rig for heavy service such as gearbox replacement), and thus reliability is more important than for an onshore turbine. Because of their remote nature, prognosis and health-monitoring systems on offshore wind turbines will become much more necessary. They would enable better planning just-in-time maintenance, thereby reducing the operations and maintenance costs. (source: [http://en.wikipedia.org/wiki/Offshore\\_wind\\_power](http://en.wikipedia.org/wiki/Offshore_wind_power)).

### A.4. Coordinating/managing entity

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M/s Core CarbonX Solutions Private Limited is the Coordinating/managing entity ("CME") and the Project Participant for this SSC-PoA.

#### A.5. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host party)	Core CarbonX Solutions Private Limited	No

#### A.6. Public funding of PoA

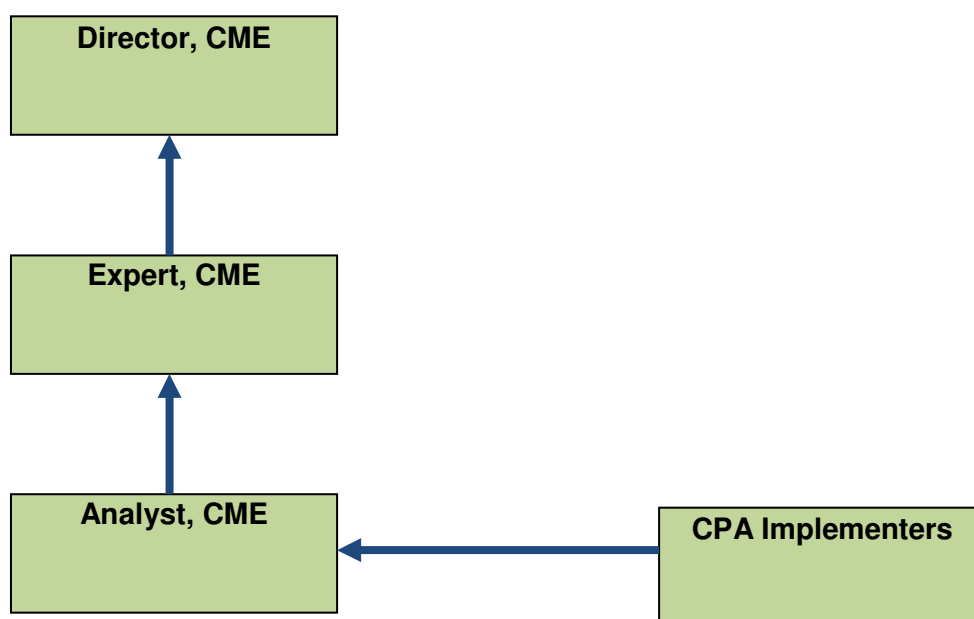
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The PoA will not receive any public funding from the parties listed in the Annex I. Also the PoA will not involve diversion of the Official Development Assistance (ODA).

#### SECTION B. Management system

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The CME shall develop and implement a management system. The management structure involved for the review of the inclusion of the CPA in the PoA is as follows:



Role	Responsibility
Analyst CME	<ul style="list-style-type: none"> <li>Facilitate CPA inclusion agreement</li> <li>Obtains the inputs from the CPA Implementers</li> <li>Ensures that the geographical location if it falls in India</li> <li>Check the earliest date at which either the implementation or construction or real action of a CPA begins and ensure that the same is after the Publication of the PoA for Global Stakeholder Consultation Process.</li> <li>Registration/Incorporation of the CPA with the DNA, India.</li> <li>Checks if the CPA constitutes of only Solar PV Technologies (involving photovoltaic) and/or Off-shore wind technologies with the total installed capacity of CPA less than or equal to 15 MW confirming to the para 2 (a) of the "Guidelines on the demonstration of additionality of small-scale</li> </ul>

	<p>project activities”, Version 09.0.</p> <ul style="list-style-type: none"> <li>• Facilitates the Local Stakeholder Consultation Meeting in coordination with the CPA Implementer.</li> <li>• Performs the Debundling Check</li> <li>• CPA-DD Preparation which will adhere to all the requirements of the eligibility and additionality criteria.</li> <li>• Drafting monitoring reports for all CPAs in accordance with the methodology outlined in the PoA DD and calculation of emission reduction.</li> </ul>
Expert, CME	<ul style="list-style-type: none"> <li>• Execute CPA inclusion agreement with the CPA implementer</li> <li>• Check if all the eligibility criteria of the inclusion of the CPA in the PoA are being met by the CPA</li> <li>• Coordinating and communicating with the validating/verifying DoE and UNFCCC</li> <li>• Check the earliest date at which either the implementation or construction or real action of a CPA begins and ensure that the same is after the Publication of the PoA for Global Stakeholder Consultation Process.</li> <li>• Conduct training and capacity building exercises for personnel of CPA implementing bodies for data monitoring, recording and reporting in accordance with CPA-DD</li> <li>• Forwards the CPA to Director CME for the inclusion in the POA</li> </ul>
Director, CME	<ul style="list-style-type: none"> <li>• Reviews the eligibility criteria.</li> <li>• Reviews the work done by the Analyst CME.</li> <li>• Forwards the inclusion of the CPA to the DOE</li> </ul>

(b) Records of arrangements for training and capacity development for personnel;

The project activity will be operated and managed by the owner of the project or by third party. The operation will be carried out by the party on their own or by manufacturer, and training on how to operate and maintain will be as per the standard procedures.

(c) 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 as a CPA of another PoA);

During the investment decision, the project developer shall be informed that CDM finance is being used to fund the project, and the user shall agree, as per the Contract with CME, to:

- Cooperate with the CME for monitoring purposes
- Transfer the rights of the CERs to the CME

#### Monitoring

The CME will implement a monitoring protocol which will consolidate all individual monitoring reports allowing the Designated Operational Entity (DOE) to verify all CPAs in the PoA. Monitoring will be carried out by each CPA on their own or by representative designated by them. For each CPA, all the parameters that required to be monitored will be monitored, if applicable, by the developer of the CPA. The main measurement for each CPA is the measurement of net electricity supplied to the grid and assuring the correct operation and maintenance and calibration of the measuring equipment.

The CPA owner is responsible for the construction of the respective wind farm project and providing accurate data to avoid any conflict between the CPA-DD and the actual site conditions. The CPA owners will also ensure that the project meets the stated timelines for construction, operation and maintenance over the life time of the project. As defined by the CME, the CPA owner shall ensure that the periodic data is collected, recorded and stored for appropriate use.

#### Data collection

The CME will establish and maintain a central Monitoring Database covering information and data of each CPA. CoreCarbonX will actively manage the data and check the information as per the requirements.

Each CPA keeps commissioning Record, which lists all projects, implemented as part of the CPA along with a unique serial number of each project activity in addition to a record of the location of the project including the geographical coordinates. All records are screened by the CME together with cross-checks on project registered as individual project activity, in validation as CDM Project activities or as part of another PoA to ensure that CPA is not a part of any other PoA or will not be registered as individual project activity.

(d) Records and documentation control process for each CPA under the PoA;

Monitoring will be carried out by each CPA developer and recorded in the CPA monitoring records. The CME will provide guidance to the CPA developer on the monitoring approach that need to be conducted and data should be verified and collected with regards to emission reduction calculations. The start and end dates of each monitoring period for each individual CPA, together with the CPA monitoring records to that monitoring period will be recorded in the PoA monitoring database.

The amount of electricity exported is calculated as the difference of the net amount of electricity imported and exported by means of metering system installed at the respective project site. The records indicating net amount of electricity transported to the grid is kept in safe custody for future verifications. Also the details of calibration records of meters used for measurement of data will be kept for verification. The quantity of net electricity supplied to the national grid as a result of the implementation of the Component project activity in year y is procured from the Joint Meter Reading copies and the Invoices copies of the client. The records for the same will be stored in both electronic and paper format for crediting period + 2 years. The calibration certificates will also be stored for the crediting period + 2 years. The CME then stores the scan copies of the invoices and the joint meter reading copies and the calibration reports in the Hard Disk/computer dedicated for the PoA.

(e) Measures for continuous improvements of the PoA management system;

It will be ensured that the PoA management system will be reviewed annually for the continuous improvements for the management system. There will be a systematic collection and analysis of data to ensure that:

The CME will manage below activities associated with the CDM procedures:

- Development of F-CDM-PoA-DD and F-CDM-CPA-DD.
- Checking eligibility criteria before inclusion of CPA
- Approach NCDMA for LoA
- Co-ordination with the DOE
- Conduct training and capacity building exercises for personnel of CPA implementing bodies for data monitoring, recording and reporting in accordance with CPA-DD
- Collecting and compilation of data on monitoring parameters from CPA implementers as per the monitoring plan of CPA-DD
- Communication with UNFCCC for issuance request and other formalities
- Check the double counting for the project

#### **Updating eligibility criteria**

Updating of eligibility criteria will be done as per the “standard Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities.” Version 03.0 As per the standard Updating eligibility criteria will be done in case :

- Para 23 If the version of methodologies applied by the PoA is revised or replaced, subsequent to being placed on hold, the CME shall update the eligibility criteria to the

requirements of the revised or new methodologies with immediate effect. A new version of the PoA-DD (e.g. version 1.1) and the generic CDM-CPA-DDs containing updated eligibility criteria validated<sup>8</sup> by a DOE shall be submitted to the Board secretariat for approval by the Board.

(a) Once the changes have been approved by the Board, the inclusion of all new CPAs shall be based on the updated eligibility criteria applying the corresponding new generic CDM-CPA-DDs;

(b) CPAs that were included before the methodology was put on hold shall apply the revised version of the corresponding generic CDM-CPA-DDs only at the time of the renewal of their crediting periods.

- Para 24. No action is required if the version of the methodologies applied by the PoA is revised without being placed on hold or is withdrawn for the purpose of inclusion in a consolidated methodologies, unless otherwise indicated in the respective report of the meeting of the Board that has approved the new methodologies.
- Para 25. If the boundary of the PoA is amended post-registration to expand the geographic coverage or to include one or more additional host Parties, the CME shall update the eligibility criteria to reflect the consequent changes. A new version of the PoA-DD and the generic CDM-CPA-DDs containing updated eligibility criteria validated by a DOE shall be submitted to the Board secretariat for approval by the Board.

## **SECTION C. Demonstration of additionality of PoA**

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### **Reduction of anthropogenic GHG emissions by implemented SSC-CPA under PoA**

The electricity generated by the PoA will replace the equivalent amount of electricity generated by the operation of existing/ grid connected power plants (mostly fossil fuel based power plants) and by addition of new generation sources into the grid. The Project activity thus reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from the existing grid connected power plants (mostly fossil fuel) and by addition of new generation sources into the grid.

### **The proposed PoA is a voluntary coordinated action:**

The PoA will facilitate access to carbon revenues to Off-shore wind energy developers and Solar PV Power Plant Developers. Renewable Energy projects ( Off-shore wind energy developers and Solar PV Power Plant Developers) are voluntary in nature and are not a result of any legal mandates in India. Likewise, no mandatory laws or regulations exist requiring the CME or any other party to develop a programme for renewable generation plants in the host country (India). The Electricity Act 2003 and national Electricity Policy 2005 was in force at the time of the completion of the baseline study for the PoA DD. As per the section 7 of the National Electricity Act 2003, “Any generating company may establish, operate and maintain a generating station without obtaining a licence under this Act if it complies with the technical standards related to connectivity with the grid referred to in clause(b) of section 73”. Further, clause (b) of section 73, states that the electricity generating entity should specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid as directed by the Central Electricity Authority (CEA). Also the National Electricity Policy (2005) asserts “coal would necessarily continue to remain the primary fuel for meeting future electricity demand”.

Hence it can be concluded that in India, national electricity policy 2005 & Electricity Act 2003, doesn't restrict the power producer for the choice of fuel for power production. Further there are no policies and circumstances which mandate the implementation of renewable energy projects. Thus the proposed PoA is as a voluntary coordinated action.

### **Demonstration of additionality of proposed PoA:**

As per “Standard for Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities” Version 03.0 Annex 05, EB 70 “Additionality shall be demonstrated by establishing that in the absence of CDM, none of the implemented CPA’s included in the PoA would occur.”

As per guidance of the EB 47 report, paragraph 73, the additionality can be demonstrated either on a PoA level or a CPA level. Also the Annex 11 of the EB 51 states that the PoA “are required to comply with the additionality requirements of the applied methodology”. For the proposed PoA, all the CPA’s will be apply the methodology, the small scale methodology AMS ID (version 18) and constitute of Solar PV technologies and off-shore wind technologies with the total installed capacity of less than or equal to 15 MW.

As per the Standard “demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities” version 02.1 , EB 70 para 3.1-9 states that “PoAs that consists of one or more small scale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of the “Guidelines for demonstrating additionality of small scale project activities. ”Para 3.1-13 states that “The CME shall demonstrate that compliance with the additionality related eligibility criteria set in the PoA-DD will ensure that all the relevant additionality related guidelines, tools or any requirements embedded in the methodologies are met.”

Thus, additionality will be demonstrated in accordance with simplified modalities and procedures for small-scale Clean Development Mechanism (CDM) project activities, by demonstrating that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in “Guidelines on the demonstration of additionality of small-scale project activities”, Version 09, Annex 27, EB68.

As per the paragraph 2 of Annex 27 of EB 68, “Guidelines on the demonstration of additionality of small scale project activities”, Version 09.0, “Documentation of barriers, as per paragraph 1 above, 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 15MW). The positive list comprises of:

- a) The following grid-connected and off-grid renewable electricity generation technologies:
  - i. Solar technologies (photovoltaic and solar thermal electricity generation);
  - ii. Off-shore wind technologies;
  - iii. Marine technologies (wave, tidal);
  - iv. Building-integrated wind turbines or household rooftop wind turbines of a size up to 100 kW.

Since the renewable technologies included in the PoA involves solar photovoltaic technology and Off - shore wind technologies in which the capacity of the aggregate project is less than or equal to 15 MW, the proposed PoA is automatically defined to be additional in accordance with para 2 (a) of “Guidelines on the demonstration of additionality of small-scale project activities”, Version 09, Annex 27, EB68. Hence as per guidance of the meeting report of EB 47, paragraph 73, the additionality is demonstrated at the PoA level.

## **SECTION D. Start date and duration of PoA**

### **D.1. Start date of PoA**

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13/11/2012 (which is the date of webhosting of the PoA for the Global Stakeholder Consultation Process)

**D.2. Duration of PoA**

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The Duration of the PoA is 28 years 00 Months

**SECTION E. Environmental impacts****E.1. Level at which environmental impacts analysis is undertaken**

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As the analysis of the environmental impacts vary with each CPA due to the varied demographics amongst the CPA's that will be implemented the CME proposes to undertake the environmental analysis at the CPA level.

**E.2. Analysis of environmental impacts**

&gt;&gt;

Not Applicable.

**E.3. Environmental impact assessment**

&gt;&gt;

Not Applicable

According to Indian regulation, the implementation of the wind power project does not require an environmental impact assessment. As all the CPA's involved in the PoA involves installation of the offshore wind power project and solar power projects and as the Indian regulation on the Environmental Impact Assessment is the same for all the Offshore Wind Power Projects and Solar PV power projects, it is decided to analyze the environmental impacts at the PoA Level. As per the Ministry of Environment and Forests (Government of India) notification dated September 14, 2006 regarding the requirement of environmental Impact Assessment (EIA) studies as per the Environmental Protection Rule, 1986 (Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii) Ministry of Environment and Forests), any project developer in India needs to file an application to the Ministry of Environment and Forests (including a public hearing and an EIA) in case the proposed industry or project is listed in a predefined list. Offshore Wind power Projects and solar power projects are not included in this list and thus an EIA is not required. Hence, environmental analysis is not required for CPA Sxxx and CPA Oxxx.

As per the Ministry of Environment & Forests dated May 13, 2011 regarding the applicability of environmental clearance for Solar Photo Voltaic (PV) Power Projects, It is clarified that the Solar PV Project not covered under the ambit of EIA Notification, 2006 and no environment clearance is required for Solar PV Power projects under the provisions thereof.

The CPA Sxxx and CPA Oxxx doesn't have any significant impact on the environment

**SECTION F. Local stakeholder consultation****F.1. Level at which local stakeholder consultation is undertaken**

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The stakeholder consultation will be conducted at CPA level.

Due to the varied demographics amongst the CPA's that will be implemented the CME has decided to conduct the stakeholder meeting for each of the CPA's included in the PoA to gauge the opinions and comments of the stakeholders in the immediate project area.

**F.2. Modalities for local stakeholder consultation**

&gt;&gt;

Not applicable.

Due to the varied demographics amongst the CPA's that will be implemented the CME has decided to conduct the stakeholder meeting for each of the CPA's included in the PoA to gauge the opinions and comments of the stakeholders in the immediate project area.

**F.3. Summary of comments received**

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Not applicable.

Local Stakeholder consultation meeting will be conducted for each CPA involved in the PoA.

**F.4. Consideration of comments received**

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Not applicable.

Local Stakeholder consultation meeting will be conducted for each CPA involved in the PoA.

**SECTION G. Approval and authorization**

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Letter(s) of approval from the Host Party (India), dated 12/12/2012 with reference number 4/16/2012 –CCC, which wishes to be involved in the PoA has been provided to the DOE.

Generic CPA Covering Solar PV Technologies**PART II. Generic component project activity (CPA)****SECTION H. Description of generic CPA****H.1. Title of generic CPA**

&gt;&gt;

[capacity] MW Solar Power Project at [location] by [CPA implementer]

**H.2. Reference number of generic CPA**

&gt;&gt;

CPA Sxxx

**H.3. Purpose and general description of generic CPA**

&gt;&gt;

The proposed Small Scale Component Project activity (hereafter referred as CPA Sxxx) involves installation of grid connected solar photovoltaic (Solar PV) power plants in the state of [Name of the State], district [Name of district], India. The total installed capacity of the CPA is [Capacity in MW]. The objective of the CPA is to generate renewable electricity using solar energy. The electricity generated by solar PV power plants installed as part of the CPA will be supplied to the National grid electricity distribution system.

The electricity generated by the CPA Sxxx will thus replace the equivalent amount of electricity generated by the operation of existing/ grid connected power plants (mostly fossil fuel based power plants) and by addition of new generation sources into the grid. The CPA Sxxx thus reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from the existing grid connected power plants (mostly fossil fuel) and by addition of new generation sources into the grid. M/s Core CarbonX Solutions Private Limited is the coordinating/managing entity ("CME") for this SSC-PoA and [Name of the CPA implementer] will be implementing the CPA Sxxx. The crediting period chosen for the CPA Sxxx is [Fixed crediting period of 10 years/Renewable Crediting Period. The annual estimated emission reductions from CPA Sxxx is [Annual estimated emission reductions in tCO<sub>2</sub>e/annum].

The project will be commissioned on (date/mm/yr).

**Contribution of the project activity to sustainable development**

Ministry of Environment and Forests, Govt. of India has stipulated the social wellbeing, economic wellbeing, environmental wellbeing and technological wellbeing as the four indicators for sustainable development.

**Environmental well-being:**

The solar CPA Sxxx replaces/displaces energy generated from fossil fuels and reduces the emissions of greenhouse gases (GHGs) and other gases like SO<sub>x</sub>, NO<sub>x</sub> and particulate matter.

**Economic well-being:**

- Implementation of solar CPA Sxxx under the PoA will result in employment opportunities for people involved with installation of RE Technologies.
- The implementation of solar CPA Sxxx will also help in reducing demand-supply gap of electricity in the country.

**Social well-being:**

- The solar CPA Sxxx involves generation of electricity utilizing solar PV energy technologies without emitting GHGs into atmosphere. This reduces the adverse impact of GHG emissions leading to cleaner environment.

- The solar CPA Sxxx will create the employment opportunities for the local people during the installation of the renewable energy.

#### **Technological well-being:**

- The solar CPA Sxxx will use environment friendly, inexhaustible and clean solar energy.

#### **H.4. Technologies/measures**

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The CPA which are included in the PoA proposes to use the environment friendly, renewable and clean technology to produce power using renewable technology installations. The CPAs under this PoA will constitute installation and operation of Solar Photo Voltaic (Solar PV), Power Plants in India. The detailed technical characteristics may differ per CPA according to the type, installed capacities and make of technology.

#### **Solar power Technologies**

Solar power is the conversion of sunlight into electricity. Sunlight can be converted directly into electricity using photovoltaic (PV) which normally focuses the sun's energy to boil water which is then used to provide power.

#### **Photo-voltaic**

A solar cell or photovoltaic cell (PV) is a device that converts light into electric current using the photoelectric effect. Solar cells produce direct current (DC) power, which fluctuates with the intensity of the irradiated light.

This usually requires conversion to certain desired voltages or alternating current (AC), which requires the use of inverters. Multiple solar cells are connected inside the modules. The Modules are classified into mono crystalline, poly crystalline and thin film solar cell. Modules are wired together to form arrays, then tied to an inverter, which produces power at the desired voltage, and for AC, frequency/phase.

### **SECTION I. Application of methodologies and standardized baselines**

#### **I.1. References to methodologies and standardized baselines**

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AMS-I.D Grid connected renewable electricity generation<sup>1</sup>

Version 18.0

TYPE I – Renewable Energy Projects

Tool: Tool to calculate the emission factor for an electricity system', Version 07.0<sup>2</sup>.

#### **I.2. Applicability of methodologies and standardized baselines**

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The proposed PoA uses the following approved SSC methodology

TYPE I – Renewable Energy Projects

Category – AMS I D Version 18, EB

Title – Grid Connected renewable electricity generation

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<sup>1</sup> [https://cdm.unfccc.int/filestorage/2/P/7/2P7FS6ZQAR84LG3NMKYUH50WI9ODBC/EB81\\_repan24\\_AMS-I.D\\_ver18.pdf?t=R2l8cTZ0c3RufDDOwUJA6bRQYyrkBSPPIDUu](https://cdm.unfccc.int/filestorage/2/P/7/2P7FS6ZQAR84LG3NMKYUH50WI9ODBC/EB81_repan24_AMS-I.D_ver18.pdf?t=R2l8cTZ0c3RufDDOwUJA6bRQYyrkBSPPIDUu)

<sup>2</sup> <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

S.No	Technology /Measure as per AMS I.D/version 18	Measure of Component project activity
1	<p>This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass<sup>3</sup>:</p> <p>(a) Supplying electricity to a national or a regional grid; or</p> <p>(b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.</p>	<p>The CPA Sxxx involves in this PoA involves renewable energy generation using solar PV Technology plant:</p> <p>(a) Supplying electricity to a national grid; or</p> <p>(b) Supplying electricity to an identified consumer facility via national grid through a contractual arrangement such as wheeling.</p>
2	Illustration of respective situations under which each of the methodology (i.e. AMS-I.D,AMS-I.F and AMS-I.A) applies is included in Table 2.	The electricity generated by the CPA Sxxx under PoA will be supplied to the national grid and/or project supplies electricity to an identified consumer facility via national grid. Hence AMS- I.D is applicable.
3	This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition <sup>4</sup> in (an) existing plant(s); (c) Involve a retrofit <sup>5</sup> of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement <sup>6</sup> of (an) existing plant(s)	The CPA Sxxx involves installation of solar PV power plant at sites where there was no renewable energy power plant operating prior to the implementation of the project activity.
4	<p>Hydro power plants with reservoirs<sup>7</sup> that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <p>(a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</p> <p>(b) The project activity is implemented in an existing reservoir<sup>8</sup>, 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<sup>2</sup>;</p>	This is not applicable as the CPA Sxxx do not include hydro power plant.

<sup>3</sup> Refer to EB 23, annex 18 or the definition of renewable biomass.

<sup>4</sup> A capacity addition is an increase in the installed power generation capacity of an existing power plant through: (i) The installation of a new power plant besides the existing power plant/units; or (ii) The installation of new power units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity.

<sup>5</sup> Retrofit (or rehabilitation or refurbishment). It involves an investment to repair or modify an existing power plant/unit, with the purpose to increase the efficiency, performance or power generation capacity of the plant, without adding new power plants or units, or to resume the operation of closed (mothballed) power plants. A retrofit restores the installed power generation capacity to or above its original level. Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures.

<sup>6</sup> Replacement. It involves investment in a new power plant or unit that replaces one or several existing unit(s) at the existing power plant. The installed capacity of the new plant or unit is equal to or higher than the plant or unit that was replaced.

<sup>7</sup> A reservoir is a water body created in valleys to store water generally made by the construction of a dam.

<sup>8</sup> A reservoir is to be considered as an "existing reservoir" if it has been in operation for at least three years before the implementation of the project activity.

	(c) 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 <sup>2</sup> .	
5	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 <sup>9</sup> , the capacity of the entire unit shall not exceed the limit of 15 MW.	The CPA Sxxx will generate electricity from solar PV power plant which is renewable source of energy; hence this condition is not applicable.
6	Combined heat and power (co-generation) systems are not eligible under this category.	The CPA Sxxx doesn't involve co-generation; hence this condition is not applicable.
7	In the case of project activities that involve the 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 <sup>10</sup> from the existing units.	The CPA Sxxx does not involve the addition of renewable energy generation units at an existing renewable power generation facility. This will involve only new solar PV projects. Hence this condition is not applicable.
8	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.	The CPA Sxxx involved will be new solar PV plant, hence this condition is not applicable.
9	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.	The CPA Sxxx does not involve landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions, hence this condition is not applicable
10	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The CPA Sxxx does not involve biomass that is sourced from dedicated plantations, hence this condition is not applicable.

Table 2: Applicability of AMS-I.D, AMS-I.F and AMS-I.A based on project types

	Project type	AMS-I.A	AMS-I.D	AMS-I.F
1	Project supplies electricity to a national/regional grid		Yes	

<sup>9</sup> A co-fired system uses both fossil and renewable fuels, for example the simultaneous combustion of both biomass residues and fossil fuels in a single boiler. Fossil fuel may be used during a period of time when the biomass is not available and due justifications are provided.

<sup>10</sup> Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct".

2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			Yes
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		Yes	
4	Project supplies electricity to a mini grid <sup>11</sup> system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			Yes
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	Yes		

### I.3. Application of multiple methodologies

>> AMS I.D is only applicable for the generic CPA

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

>>

Source		GHG	Included?	Justification/Explanation
Baseline	CO <sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO <sub>2</sub>	Yes	Major Source of emissions
		CH <sub>4</sub>	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.
		N <sub>2</sub> O	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.
Project activity	Generation of electricity from Solar PV Power Plants	CO <sub>2</sub>	No	Electricity generation from renewable power project involving solar energy does not incur any emission
		CH <sub>4</sub>	No	Electricity generation from renewable power project involving solar energy does not incur any emission
		N <sub>2</sub> O	No	Electricity generation from renewable power project involving solar energy does not incur any emission

### I.5. Establishment and description of baseline scenario

>>

As per the paragraph 19 of the applied methodology AMS I.D. Version 18, "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 the baseline for CPA Sxxx is the electricity delivered to the grid by the CPA Sxxx would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

<sup>11</sup> The sum of installed capacities of all generators connected to the mini-grid is equal to or less than 15 MW.

In accordance with the “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of crediting period” (EB66 Annex 47), the demonstration of the validity of the original baseline or its update does not require a reassessment of the baseline scenario, but rather an assessment of the emissions which would have resulted from that scenario. The “CDM project standard for programmes of activities” (Version 02.0) states in paragraph 289 that the coordinating/managing entity shall assess and incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the PoA period on the modalities to estimate baseline GHG emissions for the subsequent crediting period of each corresponding CPA, without reassessing the baseline scenario.

As such and in accordance with Tool and AMS I.D version 18, the “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” is applied for the demonstration of the validity of the current baseline;

### **Step 1: Assess the validity of the current baseline for the next crediting period**

The validity of the current baseline is assessed using the following sub-steps.:

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies.

As the proposed activity (CPA xxx) is a Greenfield activity and in the absence of the project activity (the current baseline) 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 in the grid. The baseline meets all current national and sectoral policies. The

relevant national laws and regulations pertaining to generation of energy are:

- Electricity Act 2003
- National Electricity Policy
- Tariff Policy

The above mentioned Acts or policies do not mandate the choice of fuel to be used for power project. Power generation using renewable energy is not a mandatory legal requirement in India.

Step 1.2: Assess the impact of circumstances

On 31st December 2013, with the integration of Southern Region to Central Grid in Synchronous mode, India achieved “One Nation-One Grid-One Frequency” for India. India has now one national grid for the whole country and there are no separate regional grids exist. This will have no impact on baseline emissions as national grid emission factor will be considered for any new CPA inclusion in PoA or at the time of renewal of existing CPAs. Hence conditions used to determine baseline emissions are still valid. There is no impact of circumstances on the original baseline.

The updated emission factor for the national grid in the country will be used based on the database published by Central Electricity Authority (CEA), Government of India. The latest version of emission factor that will be available at the time of inclusion of CPA xxx will be applied to calculate the baseline emissions for the project activity, CPA xxx.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

Not applicable as the projects in the PoA are all green field projects.

Step 1.4: Assessment of the validity of data and parameters

The updated emission factor for the national grid in the country will be used based on the database published by Central Electricity Authority (CEA), Government of India. The latest version of

emission factor available at the time of inclusion of CPA xxx will be applied to calculate the baseline emissions for the project activity as a part of the CPA xxx.

## I.6. Estimation of emission reductions

### I.6.1. Explanation of methodological choices

>>

As per AMS I D version 18 paragraph 22:

The baseline emissions are the product of electrical energy baseline  $EG_{PJ,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{PJ,y} * EF_{grid,y}$$

Where:

$BE_y$	Baseline Emissions in year y; t CO <sub>2</sub>
$EG_{PJ,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
$EF_{grid,y}$	CO <sub>2</sub> emission factor of the grid in year y (t CO <sub>2</sub> /MWh)

Input values and data sources for emission reductions associated with electricity displacement

Parameter	Description	Source
$BE_y$	Baseline Emissions in year y; t CO <sub>2</sub>	Calculated
$EG_{PJ,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CPA [CPA name] in year y in MWh	Calculated as Installed Capacity × PLF × Operating Hours The PLF of [PLF]; considered for the determination of ex-ante emission reductions.
$EF_{grid,y}$ = $EF_{grid,CM,y}$	CO <sub>2</sub> Emission Factor in year y; t CO <sub>2</sub> e/MWh of [National grid]	The emission factor as reported by Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.

As per paragraph 23, AMS ID Version 18, the Emission Factor can be calculated in a transparent and conservative manner as follows:

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', Version 07.0.

OR

The weighted average emissions (t CO<sub>2</sub>e/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

In the CPA [CPA name], the option A may be used which prescribes use of 'Tool to calculate the emission factor for an electricity system', Version 07.0.

#### Step 1. Identify the relevant electricity systems

As the CPA [CPA name] is connected to the national grid, it is preferred to take the National grid as project boundary than the state boundary. It also minimizes the effect of interstate power transactions, which are dynamic and vary widely.

## Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

One of the following two options may be chosen to calculate the operating margin and build margin emission factor:

**Option I:** Only grid power plants are included in the calculation.

**Option II:** Both grid power plants and off-grid power plants are included in the calculation.

Option I will be considered for the CPA.

## Step 3. Select a method to determine operating margin (OM)

The calculation of the operating margin emission factor ( $EF_{grid,OM,y}$ ) is based on one of the following methods: (a) Simple OM, (b), Simple adjusted OM, (c) Dispatch Data Analysis, or (d) Average OM. The two variants "Simple adjusted operating margin" and "Dispatch data analysis operating margin" cannot currently be applied in India due to lack of necessary data.

In India, hydro and nuclear stations qualify as low-cost / must-run sources and are excluded.

The average of the low cost / must-run sources to the Net generation of the National Grid over the period of the last five years is as per the below table:

Share of Must-Run (% of Net Generation)	[Year 1]	[Year 2]	[Year 3]	[Year 4]	[Year 5]
National Grid					

As the low-cost/must-run resources constitute less than 50% of total grid generation in the five most recent years, thus Simple O.M. has been used to calculate the operating margin. The [Central Electricity Authority (CEA) CO<sub>2</sub> database or any other official source made available by the host party] have been publicized and the simple OM may be referred for the OM calculation.

The ex-ante option is selected for the CPA Sxxx.

## Step 4. Calculate the operating margin emission factor according to the selected method (OM)

The simple OM emission factor is calculated as the generation-weighted average CO<sub>2</sub> emissions per unit net electricity generation (tCO<sub>2</sub>e/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

The simple OM may be calculated by one of the following two options:

Option A: Based on the net electricity generation and a CO<sub>2</sub> emission factor of each power unit; or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Option A of the above two options which is "Option A - Based on the net electricity generation and a CO<sub>2</sub> emission factor of each power unit" is used for the calculation simple O.M.

The formula used for calculating the simple operating margin is as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \cdot EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

$EF_{grid,OMsimple,y} = EF_{grid,OM,y}$  = Simple operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>e/MWh)

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

$EF_{EL,m,y}$  = CO<sub>2</sub> emission factor of power unit  $m$  in year  $y$  (tCO<sub>2e</sub>/MWh)

$m$  = All power units serving the grid in year  $y$  except low-cost / must-run power units

$y$  = The relevant year as per the data vintage

The [Central Electricity Authority (CEA) CO<sub>2</sub> database or any other official source made available by the host party] have been publicised and the simple OM may be referred for the OM calculation

The Operating Margin for the CPA Sxxx may be calculated considering the 3 year generation weighted average of Operating Margin data for National grid as published by [Central Electricity Authority (CEA) CO<sub>2</sub> database or any other official source made available by the host party].

The value is [Operating Margin Emission Factor in tCO<sub>2e</sub>/MWh].

#### Step 5. Calculate the build margin emission factor

The build margin for the last one year may be considered and the data for the build margin can be taken from the Central Electricity Authority Baseline Carbon Dioxide Emission database. The value is [Build Margin Emission Factor in tCO<sub>2e</sub>/MWh].

#### Step 6. Calculate the combined margin emission factor

The combined margin emission factor is calculated as follows:

Input values and data sources for the calculation of  $EF_{CO_2}$  ( $EF_{grid,CM,y}$ )

Parameter	Description	Unit	Source
$EF_{grid, CM, y} = EF_{grid, OM, y} * W_{OM} + EF_{grid, BM, y} * W_{BM}$			"Tool to calculate the emission factor for an electricity system" version 07.0, equation 16
$EF_{grid,CM,y}$ $EF_{grid,y}$	Combined margin CO <sub>2</sub> emission factor in year $y$ . This equals to $EF_{CO_2}$ for National grid.	tCO <sub>2</sub> /MWh	Calculated
$EF_{grid,OM,y}$	Simple operating margin CO <sub>2</sub> emission factor for National grid in year $y$ .	tCO <sub>2</sub> /MWh	Calculated
$EF_{grid,BM,y}$	Build margin CO <sub>2</sub> emission factor for National grid in year $y$	tCO <sub>2</sub> /MWh	Calculated
$w_{OM}$	Weighting of operating margin emission factor	0.75	"Tool to calculate the emission factor for an electricity system" version 07.0"
$w_{BM}$	Weighting of build margin emission factor	0.25	"Tool to calculate the emission factor for an electricity system" version 07.0"

As per "Tool to calculate the emission factor for an electricity system" version 07.0,

"The following default values should be used for  $w_{OM}$  and  $w_{BM}$ :

Wind and solar power generation project activities:  $w_{OM} = 0.75$  and  $w_{BM} = 0.25$  (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods"

Hence the values used are  $w_{OM} = 0.75$  and  $w_{BM} = 0.25$

Hence, the grid emission factor,  $EF_{grid,CM,y}$  is calculated as [Value of the Grid Emission Factor].

Baseline Emission Factor:  $EF_{grid,y} = EF_{grid,CM,y}$

### Leakage

In accordance with methodology AMS I.D, leakage is to be considered only if the energy generating equipment is transferred from another activity.

This is not applicable for the CPA Sxxx as the energy generating equipment's are not transferred from another activity, hence,  $LE_y = 0$

### Project Emissions

As per AMS ID, Version 18, "For most renewable energy project activities,  $PE_y = 0$ . However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002.

- Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption)
- Emissions from water reservoirs of hydro power plants" As the project activity is solar power project, hence  $PE_y = 0$

As the CPA Sxxx is solar PV power project, hence  $PE_y = 0$

Emissions Reductions = Baseline Emissions ( $BE_y$ ) – Project Emissions ( $PE_y$ ) – Leakage ( $LE_y$ )

Hence,

**$ER_y = BE_y$**

**I.6.2. Data and parameters fixed ex ante***(Copy this table for each piece of data and parameter.)*

<b>Data/Parameter</b>	$EF_{grid,OM,y}$
Data unit	tCO <sub>2</sub> /MWh
Description	The Operating Margin emission factor of National Grid.
Source of data	The Operating Margin emission factor of National Grid.
Value(s) applied	-
Choice of data or Measurement methods and procedures	As per the Tool to calculate the emission factor for an electricity system. [Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.]
Purpose of data	The value used can be calculated ex-ante as generation based weighted average of the last three years of the Operating margin provided by [Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.]
Additional comment	-

<b>Data/Parameter</b>	$EF_{grid,BM,y}$
Data unit	tCO <sub>2</sub> /MWh
Description	The Build Margin emission factor of National Grid.
Source of data	The Build Margin emission factor of National Grid.
Value(s) applied	-
Choice of data or Measurement methods and procedures	The value used can be calculated ex-ante as generation based weighted average of the last three years of the Build margin provided by [Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.] As per the Tool to calculate the emission factor for an electricity system.
Purpose of data	Calculation of baseline emission
Additional comment	-

<b>Data/Parameter</b>	$EF_{grid,CM,y} = EF_{grid,y}$
Data unit	tCO <sub>2</sub> /MWh
Description	CO <sub>2</sub> Emission Factor in year y; t CO <sub>2e</sub> /MWh of National Grid
Source of data	calculated
Value(s) applied	-
Choice of data or Measurement methods and procedures	The value can be calculated as $0.75 * EF_{grid,OM,y} + 0.25 * EF_{grid,BM,y}$
Purpose of data	Calculation of baseline emission
Additional comment	-

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

&gt;&gt;

As per AMS I D version 18 paragraph 22:

The baseline emissions are the product of electrical energy baseline  $EG_{BL,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor:

Parameter	Description	Value	Source
$BE_y = EG_{PJ,y} * EF_{grid,y}$			
$BE_y$	Baseline Emissions in year y; t CO <sub>2</sub>		Calculated
$EG_{PJ,y}$	Quantity of net electricity supplied to the National Grid as a result of the implementation of the CPA Sxxx in year y in MWh		Calculated as Installed Capacity ' PLF ' Operating Hours The PLF of [PLF]; along with annual degradation factor [Degradation Factor] has been considered for the determination of ex ante emission reductions.
$EF_{grid,y}$	CO <sub>2</sub> Emission Factor in year y; t CO <sub>2</sub> e/MWh of National Grid		[Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.]

#### Leakage

In accordance with methodology AMS I.D, leakage is to be considered only if the energy generating equipment is transferred from another activity.

This is not applicable for the CPA Sxxx as the energy generating equipment's are not transferred from another activity, hence,  $LE_y = 0$

#### Project Emissions

As per AMS ID, Version 18, "For most renewable energy project activities,  $PE_y = 0$ . However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002.

- Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption)
- Emissions from water reservoirs of hydro power plants" As the project activity is solar power project, hence  $PE_y = 0$

As the CPA Sxxx is solar PV power project, hence  $PE_y = 0$

Emissions Reductions = Baseline Emissions ( $BE_y$ ) – Project Emissions ( $PE_y$ ) – Leakage ( $LE_y$ )

Hence,

**$ER_y = BE_y$**

**I.7. Monitoring plan****I.7.1. Data and parameters to be monitored**

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

Data/Parameter	EG <sub>PJ,y</sub>
Data unit	MWh
Description	The quantity of net electricity supplied to the grid as a result of the implementation of the CPA Sxxx in year y.
Source of data	Calculated from reading taken from the state electricity distribution company showing the Energy Generated
Value(s) applied	-
Measurement methods and procedures	<p>The net electricity supplied by the CPA Sxxx will be based on measurements at the Grid Interconnection Point. The energy meter at grid interconnection point will be under the control of state electricity distribution company of the concerned state.</p> <p>The following data will be mentioned separately for each specific CPA: Accepted industry standard : National standard as described in the Power Purchase Agreement.</p> <p>Measurement equipment : Energy meters</p> <p>Calibration frequency : [calibrated according to the national standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in five<sup>12</sup> years]</p> <p>Accuracy of the meters : [value of the accuracy class]</p> <p>Measurement interval: Continuous measurement, monthly.</p>
Monitoring frequency	Continuous measurement, monthly recording
QA/QC procedures	The data on the quantity of net electricity supplied to the grid as a result of the implementation of the CPA Sxxx in year y can be cross-checked with the invoices raised by the CPA Sxxx Implementer. The data will be archived electronically for a minimum of two years after the end of the crediting period or the last issuance of CERs for CPA Sxxx, whichever occurs later.
Purpose of data	Baseline Emissions.
Additional comment	-

**I.7.2. Sampling plan**

>>  
NA

**I.7.3. Other elements of monitoring plan**

>>

The CPA Sxxx is operated and managed by the CPA Implementer. For the accurate execution of the CPA Sxxx a project team has been constructed. The solar PV power project abides and will abide by all regulatory and statutory requirements as prescribed under the state and central laws and regulations. The project team is delegated with the responsibility of monitor and document the electricity generated and also safe keeping of the recorded data.

Monitoring shall consist of metering the electricity generated by the renewable technology. Energy meter shall be HT Tri-vector Electrostatic with the Accuracy class of meter [Accuracy Class]. The electricity being generated is monitored at the grid interconnection point. The monthly meter readings will be taken jointly by the representative from the appropriate authority and the representative

<sup>12</sup> According to No. 502/70/CEA/DP&D In exercise of the powers conferred by sub-section (1) of section 55 and clause (e) of section 73 read with sub-section (2) of section 177 of Electricity Act, 2003 "Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006" and subsequent amendments clause 18 (1), (2) and (3), para number 18 of Calibration and periodical testing of meters need to be calibrated at least once in five years.

of the CPA Implementer and this reading will comprise of the electricity generation for the month from the CPA Sxxx.

**Metering:** The Delivered Energy may be metered by the responsible authority and representative of [CPA Implementer] at the high voltage side of the step up transformer installed at the Project Site.

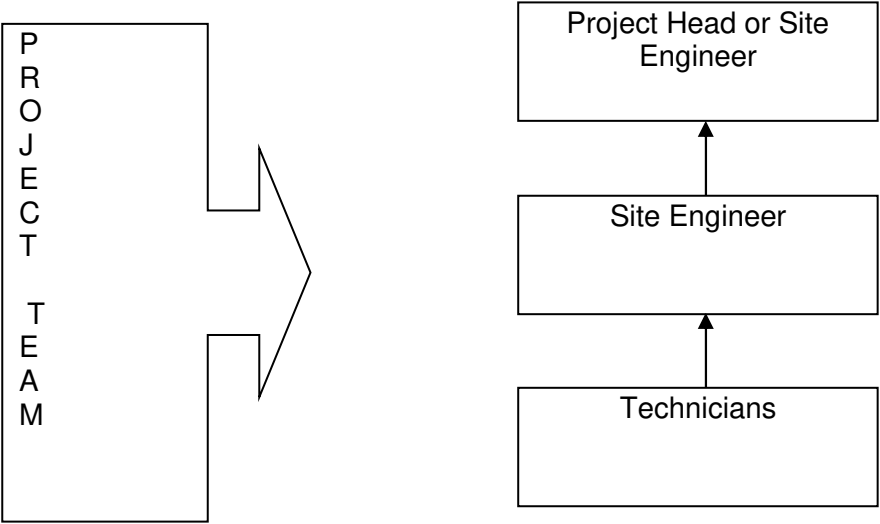
**Metering Equipment:** Metering equipment will be electronic tri-vector energy meter/ ABT meter of accuracy class [Accuracy Class] required for the Project.

**Meter Readings:** The monthly meter reading will be taken jointly by the representative of the responsible authority and representative of CPA Implementer. At the conclusion of each meter reading an appointed representative of the concerned state distribution company and the representative of CPA Implementer sign a document indicating the number of Kilowatt-hours indicated by the meter.

**Meter Test Checking:** The meter will be calibrated according to the national standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years. The meters are deemed to be working satisfactorily if the errors are within specifications. If during the tests, the meter is found to be beyond the permissible limits of error, the meter shall be immediately calibrated and the correction applied to the reading registered by the meter to arrive the correct reading of energy supplied for billing purposes for the period from the last month's meter reading up to the current test. Billing for the period thereafter till the next monthly reading shall be as per the calibrated meter.

**Emergency procedures:** Although main and backup meters will be installed as an emergency measure in the substation, onsite meters will be available in case both meters at the substation are out.

Designation	Responsibilities
Project Head or Site Manager (Personnel from CPA Implementer)	<ul style="list-style-type: none"> <li>• Performance reviews and review of the data every month.</li> <li>• Operation, Monitoring and Verification of Data</li> <li>• Data Recording and archiving</li> <li>• Storage of data</li> <li>• Implementation of corrective action for the identified discrepancies</li> <li>• Review of report submitted by the supervisors/engineers w.r.t the electricity generated by the project</li> <li>• Check on calibration of monitoring meters</li> </ul>
Site Engineer	<ul style="list-style-type: none"> <li>• Data measurement</li> <li>• Operation and maintenance of equipment</li> <li>• Supervision of Data collection</li> <li>• Monitoring of the electricity continuously and monthly consolidation as per the guidance mentioned in the CPA</li> <li>• Preparation of monthly and annual generation statistics</li> <li>• Reporting discrepancies in monitored parameters</li> <li>• Ensuring calibration of monitoring meters.</li> </ul>
Technicians	<ul style="list-style-type: none"> <li>• Data measurement</li> <li>• Operation and maintenance of equipment</li> <li>• Data collection</li> <li>• Data recording</li> </ul>



Generic CPA Covering Off-shore Wind Technologies**PART III. Generic component project activity (CPA)****SECTION H. Description of generic CPA****H.1. Title of generic CPA**

&gt;&gt;

[capacity] MW Off-shore Wind Power Project at [location] by [CPA implementer]

**H.2. Reference number of generic CPA**

&gt;&gt;

CPA OXXX

**H.3. Purpose and general description of generic CPA**

&gt;&gt;

The proposed Small Scale Component Project activity (hereafter referred as CPA OXXX) involves installation of grid connected Off-shore wind power plants in the state of [Name of the State] India. The total installed capacity of the CPA is [Capacity in MW]. The objective of the CPA is to generate renewable electricity using Off-shore wind energy. The electricity generated by Off-shore wind power plants installed as part of the CPA will be supplied to the national grid electricity distribution system.

The electricity generated by the Off-shore wind CPA OXXX will thus replace the equivalent amount of electricity generated by the operation of existing/ grid connected power plants (mostly fossil fuel based power plants) and by addition of new generation sources into the grid. The CPA OXXX thus reduces the anthropogenic emissions of greenhouse gases (GHGs) in to the atmosphere associated with the equivalent amount of electricity generation from the existing grid connected power plants (mostly fossil fuel) and by addition of new generation sources into the grid. Core CarbonX Solutions Private Limited is the coordinating/managing entity ("CME") for this SSC-PoA and [Name of the CPA implementer] will be implementing the CPA OXXX. The crediting period chosen for the CPA OXXX is [Fixed crediting period of 10 years/Renewable Crediting Period]. The annual estimated emission reductions from CPA OXXX is [Annual estimated emission reductions in tCO<sub>2</sub>e/annum]

The project will be commissioned on (date/mm/yr)

**Contribution of the project activity to sustainable development**

Ministry of Environment and Forests, Govt. of India has stipulated the social wellbeing, economic wellbeing, environmental wellbeing and technological wellbeing as the four indicators for sustainable development in the host country approval eligibility criteria for Clean Development Mechanism (CDM) projects.

**Environmental well-being:**

- The CPA OXXX replaces energy generated from fossil fuels and reduces the emissions of greenhouse gases (GHGs) and other gases like SO<sub>x</sub>, NO<sub>x</sub> and particulate matter.

**Economic well-being:**

- Implementation of CPA OXXX under the PoA will result in employment opportunities for people involved with installation of RE Technologies.
- The implementation of CPA OXXX will also help in reducing demand-supply gap of electricity in the country.

**Social well-being:**

- The CPA OXXX involves generation of electricity utilizing Off-shore wind energy technologies without emitting GHGs into atmosphere. This reduces the adverse impact of GHG emissions leading to cleaner environment.
- The CPA OXXX will create the employment opportunities for the local people during the installation of the renewable energy.

**Technological well-being:**

- The CPA OXXX will use environment friendly, inexhaustible and clean technology.

**H.4. Technologies/measures**

&gt;&gt;

The CPA which are included in the PoA proposes to use the environment friendly, renewable and clean technology to produce power using renewable technology installations. The CPAs under this PoA will constitute installation and operation of off-shore Wind Turbine Generators (WTG's) in India. The detailed technical characteristics may differ per CPA according to the type, installed capacities and make of technology.

**OFFSHORE WIND POWER**

**Offshore wind power** refers to the construction of wind projects in the water bodies to generate electricity from the wind. The availability of better wind speed in offshore compared to land results in higher generation from offshore wind turbine.

The average nameplate capacity of an offshore wind turbine available in the current market is 3 MW-5 MW, and the capacity of future turbines is expected to increase to 10 MW capacity.

Offshore turbines require different types of bases for stability, according to the depth of water. To date a number of different solutions exist:

- A monopile (single column) base, six meters in diameter, is used in waters up to 30 meters deep.
- Gravity Base Structures, for use at exposed sites in water 20- 80 m deep.
- Tripod piled structures, in water 20-80 metres deep.
- Tripod suction caisson structures, in water 20-80m deep.
- Conventional steel jacket structures, as used in the oil and gas industry, in water 20-80m deep.
- Floating wind turbines are being developed for deeper water.

Turbines are much less accessible when offshore (requiring the use of a service vessel for routine access, and a jackup rig for heavy service such as gearbox replacement), and thus reliability is more important than for an onshore turbine. Because of their remote nature, prognosis and health-monitoring systems on offshore wind turbines will become much more necessary. They would enable better planning just-in-time maintenance, thereby reducing the operations and maintenance costs. (source: [http://en.wikipedia.org/wiki/Offshore\\_wind\\_power](http://en.wikipedia.org/wiki/Offshore_wind_power)).

**SECTION I. Application of methodologies and standardized baselines****I.8. References to methodologies and standardized baselines**

&gt;&gt;

AMS-I.D Grid connected renewable electricity generation

Version 18.0

TYPE I – Renewable Energy Projects

**I.9. Applicability of methodologies and standardized baselines**

&gt;&gt;

The proposed PoA uses the following approved SSC methodology

TYPE I – Renewable Energy Projects

Category – AMS I D Version 18, EB

Title – Grid Connected renewable electricity generation

Applicability conditions of the CPA OXXX for the methodology are given below.

S.No	Technology /Measure as per AMS I.D/version 18	Measure of Component project activity
1	This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass <sup>13</sup> : (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.	The CPA OXXX involves in this PoA involves renewable energy generation using Off-shore wind power plant:  (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.
2	Illustration of respective situations under which each of the methodology (i.e. AMS-I.D,AMS-I.F and AMS-I.A) applies is included in Table 2.	The electricity generated by the CPA OXXX under PoA will be supplied to the national/ regional grid and/or project supplies electricity to an identified consumer facility via national/regional grid. Hence AMS- I.D is applicable.
3	This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition <sup>14</sup> in (an) existing plant(s); (c) Involve a retrofit <sup>15</sup> of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement <sup>16</sup> of (an) existing plant(s)	The CPA OXXX involves installation of Off-shore power plant at sites where there was no renewable energy power plant operating prior to the implementation of the project activity.
4	Hydro power plants with reservoirs <sup>17</sup> that satisfy at least one of the following conditions are eligible to apply this methodology:	This is not applicable as the CPA OXXX do not include hydro power plant.

<sup>13</sup> Refer to EB 23, annex 18 or the definition of renewable biomass.<sup>14</sup> A capacity addition is an increase in the installed power generation capacity of an existing power plant through: (i) The installation of a new power plant besides the existing power plant/units; or (ii) The installation of new power units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity.<sup>15</sup> Retrofit (or rehabilitation or refurbishment). It involves an investment to repair or modify an existing power plant/unit, with the purpose to increase the efficiency, performance or power generation capacity of the plant, without adding new power plants or units, or to resume the operation of closed (mothballed) power plants. A retrofit restores the installed power generation capacity to or above its original level. Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures.<sup>16</sup> Replacement. It involves investment in a new power plant or unit that replaces one or several existing unit(s) at the existing power plant. The installed capacity of the new plant or unit is equal to or higher than the plant or unit that was replaced.<sup>17</sup> A reservoir is a water body created in valleys to store water generally made by the construction of a dam.

	<p>(a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</p> <p>(b) The project activity is implemented in an existing reservoir <sup>18</sup>, 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<sup>2</sup>;</p> <p>(c) 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<sup>2</sup>.</p>	
5	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 <sup>19</sup> , the capacity of the entire unit shall not exceed the limit of 15 MW.	The CPA OXXX will generate electricity from Off-shore power plant which is renewable source of energy; hence this condition is not applicable.
6	Combined heat and power (co-generation) systems are not eligible under this category.	The CPA OXXX doesn't involve co-generation; hence this condition is not applicable.
7	In the case of project activities that involve the 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 <sup>20</sup> from the existing units.	The CPA OXXX does not involve the addition of renewable energy generation units at an existing renewable power generation facility. This will involve only new offshore wind power projects. Hence this condition is not applicable.
8	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.	The CPA OXXX involved will be new offshore wind power plant, hence this condition is not applicable.
9	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	The CPA OXXX does not involve landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions, hence this condition is not applicable

<sup>18</sup> A reservoir is to be considered as an "existing reservoir" if it has been in operation for at least three years before the implementation of the project activity.

<sup>19</sup> A co-fired system uses both fossil and renewable fuels, for example the simultaneous combustion of both biomass residues and fossil fuels in a single boiler. Fossil fuel may be used during a period of time when the biomass is not available and due justifications are provided.

<sup>20</sup> Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered "physically distinct".

	Type-I methodologies such as “AMS-I.C.: Thermal energy production with or without electricity” shall be explored.	
10	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool “Project emissions from cultivation of biomass” shall apply.	The CPA OXXX does not involve biomass is sourced from dedicated plantations, hence this condition is not applicable.

Table 3: Applicability of AMS-I.D, AMS-I.F and AMS-I.A based on project types

	Project type	AMS-I.A	AMS-I.D	AMS-I.F
1	Project supplies electricity to a national/regional grid		Yes	
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			Yes
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		Yes	
4	Project supplies electricity to a mini grid <sup>21</sup> system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			Yes
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	Yes		

**I.10. Application of multiple methodologies**

>> AMS I.D is only applicable for the generic CPA.

**I.11. Project boundary, sources and greenhouse gases (GHGs)**

>>

	Source	GHG	Included?	Justification/Explanation
Baseline	CO <sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO <sub>2</sub>	Yes	Major Source of emissions
		CH <sub>4</sub>	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.
		N <sub>2</sub> O	No	Minor source of emissions and limited data available. Exclusion is conservative assumption.
Project activity	Generation of electricity from Solar PV Power Plants	CO <sub>2</sub>	No	Electricity generation from renewable power project involving solar energy does not incur any emission
		CH <sub>4</sub>	No	Electricity generation from renewable power project involving solar energy does not incur any emission

<sup>21</sup> The sum of installed capacities of all generators connected to the mini-grid is equal to or less than 15 MW.

Source	GHG	Included?	Justification/Explanation
	N <sub>2</sub> O	No	Electricity generation from renewable power project involving solar energy does not incur any emission

## I.12. Establishment and description of baseline scenario

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As per the paragraph 19 of the applied methodology AMS I.D. Version 18, "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 the baseline for CPA OXXX is the electricity delivered to the grid by the CPA OXXX would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid.

## I.13. Estimation of emission reductions

### I.6.4. Explanation of methodological choices

>>

As per AMS I D version 18 paragraph 22:

The baseline emissions are the product of electrical energy baseline  $EG_{BL,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{PJ,y} * EF_{grid,y}$$

Where:

$BE_y$	Baseline Emissions in year y; t CO <sub>2</sub>
$EG_{PJ,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y(MWh)
$EF_{grid,y}$	CO <sub>2</sub> emission factor of the grid in year y (t CO <sub>2</sub> /MWh)

Input values and data sources for emission reductions associated with electricity displacement

Parameter	Description	Source
$BE_y$	Baseline Emissions in year y; t CO <sub>2</sub>	Calculated
$EG_{PJ,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CPA [CPA name] in year y in MWh	Calculated as Installed Capacity × PLF × Operating Hours The PLF of [PLF]; considered for the determination of ex-ante emission reductions.
$EF_{grid,y}$ = $EF_{grid,CM,y}$	CO <sub>2</sub> Emission Factor in year y; t CO <sub>2e</sub> /MWh of [National grid]	The emission factor as reported by Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.

As per paragraph 23, AMS ID Version 18, the Emission Factor can be calculated in a transparent and conservative manner as follows:

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', Version 07.0.

OR

The weighted average emissions (t CO<sub>2</sub>e/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

In the CPA [CPA name], the option A may be used which prescribes use of 'Tool to calculate the emission factor for an electricity system', Version 07.0.

### Step 1. Identify the relevant electricity systems

As the CPA [CPA name] is connected to the National grid, it is preferred to take the National grid as project boundary than the state boundary. It also minimizes the effect of interstate power transactions, which are dynamic and vary widely.

### Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

One of the following two options may be chosen to calculate the operating margin and build margin emission factor:

**Option I:** Only grid power plants are included in the calculation.

**Option II:** Both grid power plants and off-grid power plants are included in the calculation.

Option I will be considered for the CPA.

### Step 3. Select a method to determine operating margin (OM)

The calculation of the operating margin emission factor (EF<sub>grid,OM,y</sub>) is based on one of the following methods: (a) Simple OM, (b), Simple adjusted OM, (c) Dispatch Data Analysis, or (d) Average OM. The two variants "Simple adjusted operating margin" and "Dispatch data analysis operating margin" cannot currently be applied in India due to lack of necessary data.

In India, hydro and nuclear stations qualify as low-cost / must-run sources and are excluded.

The average of the low cost / must-run sources to the Net generation of the National Grid over the period of the last five years is as per the below table:

Share of Must-Run (% of Net Generation)	[Year 1]	[Year 2]	[Year 3]	[Year 4]	[Year 5]
National Grid					

As the low-cost/must-run resources constitute less than 50% of total grid generation in the five most recent years, thus Simple O.M. has been used to calculate the operating margin. The [Central Electricity Authority (CEA) CO<sub>2</sub> database or any other official source made available by the host party] have been publicized and the simple OM may be referred for the OM calculation.

The ex-ante option is selected for the CPA OXXX.

### Step 4. Calculate the operating margin emission factor according to the selected method (OM)

The simple OM emission factor is calculated as the generation-weighted average CO<sub>2</sub> emissions per unit net electricity generation (tCO<sub>2</sub>e/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

The simple OM may be calculated by one of the following two options:

Option A: Based on the net electricity generation and a CO<sub>2</sub> emission factor of each power unit; or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Option A of the above two options which is "Option A - Based on the net electricity generation and a CO<sub>2</sub> emission factor of each power unit" is used for the calculation simple O.M.

The formula used for calculating the simple operating margin is as follows:

$$EF_{\text{grid,OMsimple},y} = \frac{\sum_m EG_{m,y} \cdot EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

$EF_{\text{grid,OMsimple},y} = EF_{\text{grid,OM},y}$  = Simple operating margin CO<sub>2</sub> emission factor in year  $y$  (tCO<sub>2</sub>e/MWh)  
 $EG_{m,y}$  = Net quantity of electricity generated and delivered to the grid by power unit  $m$  in year  $y$  (MWh)  
 $EF_{EL,m,y}$  = CO<sub>2</sub> emission factor of power unit  $m$  in year  $y$  (tCO<sub>2</sub>e/MWh)  
 $m$  = All power units serving the grid in year  $y$  except low-cost / must-run power units  
 $y$  = The relevant year as per the data vintage

The [Central Electricity Authority (CEA) CO<sub>2</sub> database or any other official source made available by the host party] have been publicized and the simple OM may be referred for the OM calculation

The Operating Margin for the CPA Oxxx may be calculated considering the 3 year generation weighted average of Operating Margin data for national grid as published by [Central Electricity Authority (CEA) CO<sub>2</sub> database or any other official source made available by the host party].  
The value is [Operating Margin Emission Factor in tCO<sub>2</sub>e/MWh].

#### Step 5. Calculate the build margin emission factor

The build margin for the last one year may be considered and the data for the build margin can be taken from the Central Electricity Authority Baseline Carbon Dioxide Emission database. The value is [Build Margin Emission Factor in tCO<sub>2</sub>e/MWh].

#### Step 6. Calculate the combined margin emission factor

The combined margin emission factor is calculated as follows:

Input values and data sources for the calculation of  $EF_{\text{CO}_2}$  ( $EF_{\text{grid,CM},y}$ )

Parameter	Description	Unit	Source
$EF_{\text{grid,CM},y} = EF_{\text{grid,OM},y} \cdot W_{\text{OM}} + EF_{\text{grid,BM},y} \cdot W_{\text{BM}}$			"Tool to calculate the emission factor for an electricity system" version 07.0, equation 13
$EF_{\text{grid,CM},y} = EF_{\text{grid},y}$	Combined margin CO <sub>2</sub> emission factor in year $y$ . This equals to $EF_{\text{CO}_2}$ for National grid.	tCO <sub>2</sub> /MWh	Calculated
$EF_{\text{grid,OM},y}$	Simple operating margin CO <sub>2</sub> emission factor for National grid in year $y$ .	tCO <sub>2</sub> /MWh	Calculated
$EF_{\text{grid,BM},y}$	Build margin CO <sub>2</sub> emission factor for National grid in year $y$	tCO <sub>2</sub> /MWh	Calculated
$W_{\text{OM}}$	Weighting of operating margin emission factor	0.75	"Tool to calculate the emission factor for an electricity system" version 07.0"
$W_{\text{BM}}$	Weighting of build margin emission factor	0.25	"Tool to calculate the emission factor for an

			electricity system" version 07.0"
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As per "Tool to calculate the emission factor for an electricity system" version 07.0,

"The following default values should be used for  $w_{OM}$  and  $w_{BM}$ :

Wind and solar power generation project activities:  $w_{OM} = 0.75$  and  $w_{BM} = 0.25$  (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods"

Hence the values used are  $w_{OM} = 0.75$  and  $w_{BM} = 0.25$

Hence, the grid emission factor,  $EF_{grid,CM,y}$  is calculated as [Value of the Grid Emission Factor].

Baseline Emission Factor:  $EF_{grid,y} = EF_{grid,CM,y}$

### Leakage

In accordance with methodology AMS I.D, leakage is to be considered only if the energy generating equipment is transferred from another activity.

This is not applicable for the CPA Oxxx as the energy generating equipment's are not transferred from another activity, hence,  $LE_y = 0$

### Project Emissions

As per AMS ID, Version 18, "For most renewable energy project activities,  $PE_y = 0$ . However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002.

- Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption)
- Emissions from water reservoirs of hydro power plants" As the project activity is offshore wind power project, hence  $PE_y = 0$

As the CPA Oxxx is Offshore wind power project, hence  $PE_y = 0$

Emissions Reductions = Baseline Emissions ( $BE_y$ ) – Project Emissions ( $PE_y$ ) – Leakage ( $LE_y$ )

Hence,

**$ER_y = BE_y$**

**I.6.5. Data and parameters fixed ex ante***(Copy this table for each piece of data and parameter.)*

<b>Data/Parameter</b>	$EF_{grid,OM,y}$
Data unit	tCO <sub>2</sub> /MWh
Description	The Operating Margin emission factor of National Grid.
Source of data	The Operating Margin emission factor of National Grid.
Value(s) applied	-
Choice of data or Measurement methods and procedures	As per the Tool to calculate the emission factor for an electricity system. [Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.]
Purpose of data	The value used can be calculated ex-ante as generation based weighted average of the last three years of the Operating margin provided by [Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.]
Additional comment	-

<b>Data/Parameter</b>	$EF_{grid,BM,y}$
Data unit	tCO <sub>2</sub> /MWh
Description	The Build Margin emission factor of National Grid.
Source of data	The Build Margin emission factor of National Grid.
Value(s) applied	-
Choice of data or Measurement methods and procedures	The value used can be calculated ex-ante as generation based weighted average of the last three years of the Build margin provided by [Central Electricity Authority (CEA) CO <sub>2e</sub> database or any other official source made available by the host party.] As per the Tool to calculate the emission factor for an electricity system.
Purpose of data	Calculation of baseline emission
Additional comment	-

<b>Data/Parameter</b>	$EF_{grid,CM,y} = EF_{grid,y}$
Data unit	tCO <sub>2</sub> /MWh
Description	CO <sub>2</sub> Emission Factor in year y; t CO <sub>2e</sub> /MWh of National Grid
Source of data	calculated
Value(s) applied	-
Choice of data or Measurement methods and procedures	The value can be calculated as $0.75 * EF_{grid,OM,y} + 0.25 * EF_{grid,BM,y}$
Purpose of data	Calculation of baseline emission
Additional comment	-

### I.6.6. Modalities for ex ante calculation of emission reductions

&gt;&gt;

As per AMS I D version 18 paragraph 22:

The baseline emissions are the product of electrical energy baseline  $EG_{BL,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor:

Parameter	Description	Value	Source
$BE_y = EG_{PJ,y} * EF_{grid,y}$			
$BE_y$	Baseline Emissions in year y; t CO <sub>2</sub>		Calculated
$EG_{PJ,y}$	Quantity of net electricity supplied to the National Grid as a result of the implementation of the CPA Oxxx in year y in MWh		Calculated as Installed Capacity ´ PLF ´ Operating Hours The PLF of [PLF]; along with annual degradation factor [Degradation Factor] has been considered for the determination of ex ante emission reductions.
$EF_{grid,y}$	CO <sub>2</sub> Emission Factor in year y; t CO <sub>2</sub> e/MWh of National Grid		[Central Electricity Authority (CEA) CO <sub>2</sub> database or any other official source made available by the host party.]

#### Leakage

In accordance with methodology AMS I.D, leakage is to be considered only if the energy generating equipment is transferred from another activity.

This is not applicable for the CPA Oxxx as the energy generating equipment's are not transferred from another activity, hence,  $LE_y = 0$

#### Project Emissions

As per AMS ID, Version 18, "For most renewable energy project activities,  $PE_y = 0$ . However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002.

- Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption)
- Emissions from water reservoirs of hydro power plants" As the project activity is offshore wind power project, hence  $PE_y = 0$

As the CPA Oxxx is offshore wind power project, hence  $PE_y = 0$

Emissions Reductions = Baseline Emissions ( $BE_y$ ) – Project Emissions ( $PE_y$ ) – Leakage ( $LE_y$ )

Hence,

**$ER_y = BE_y$**

**I.14. Monitoring plan****I.7.4. Data and parameters to be monitored**

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

Data/Parameter	EG <sub>PJ,y</sub>
Data unit	MWh
Description	The quantity of net electricity supplied to the grid as a result of the implementation of the CPA OXXX in year y.
Source of data	Calculated from reading taken from the state electricity distribution company showing the Energy Generated
Value(s) applied	-
Measurement methods and procedures	<p>The net electricity supplied by the CPA OXXX will be based on measurements at the Grid Interconnection Point. The energy meter at grid interconnection point will be under the control of state electricity distribution company of the concerned state.</p> <p>The following data will be mentioned separately for each specific CPA:</p> <p>Accepted industry standard : National standard as described in the Power Purchase Agreement.</p> <p>Measurement equipment : Energy meters</p> <p>Calibration frequency : [calibrated according to the national standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in five<sup>22</sup> years]</p> <p>Accuracy of the meters : [value of the accuracy class]</p> <p>Measurement interval: Continuous measurement, monthly.</p>
Monitoring frequency	Continuous measurement, monthly recording
QA/QC procedures	The data on the quantity of net electricity supplied to the grid as a result of the implementation of the CPA OXXX in year y can be cross-checked with the invoices raised by the CPA OXXX Implementer. The data will be archived electronically for a minimum of two years after the end of the crediting period or the last issuance of CERs for CPA OXXX, whichever occurs later.
Purpose of data	Baseline Emissions.
Additional comment	-

**I.7.5. Sampling plan**

>>  
NA

**I.7.6. Other elements of monitoring plan**

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The CPA OXXX is operated and managed by the CPA Implementer. For the accurate execution of the CPA OXXX a project team has been constructed. The Off-shore wind power project abides and will abide by all regulatory and statutory requirements as prescribed under the state and central laws and regulations. The project team is delegated with the responsibility of monitor and document the electricity generated and also safe keeping of the recorded data.

Monitoring shall consist of metering the electricity generated by the renewable technology.

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<sup>22</sup> According to No. 502/70/CEA/DP&D In exercise of the powers conferred by sub-section (1) of section 55 and clause (e) of section 73 read with sub-section (2) of section 177 of Electricity Act, 2003 "Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006" and subsequent amendments clause 18 (1), (2) and (3), para number 18 of Calibration and periodical testing of meters need to be calibrated at least once in five years.

Energy meter shall be HT Tri-vector Electrostatic with the Accuracy class of meter [Accuracy Class].

The electricity being generated is monitored at the grid interconnection point. The monthly meter readings will be taken jointly by the representative from the appropriate authority and the representative of the CPA Implementer and this reading will comprise of the electricity generation for the month from the CPA Sxxx.

**Metering:** The Delivered Energy may be metered by the responsible authority and representative of [CPA Implementer] at the high voltage side of the step up transformer installed at the Project Site.

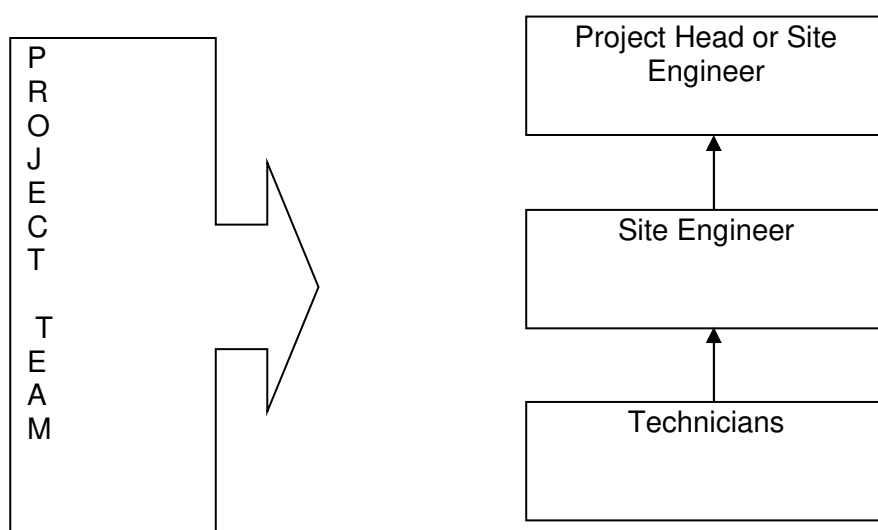
**Metering Equipment:** Metering equipment will be electronic tri-vector energy meter/ABT meter of accuracy class [Accuracy Class] required for the Project.

**Meter Readings:** The monthly meter reading will be taken jointly by the representative of the responsible authority and representative of CPA Implementer. At the conclusion of each meter reading an appointed representative of the concerned state distribution company and the representative of CPA Implementer sign a document indicating the number of Kilowatt-hours indicated by the meter.

**Meter Test Checking:** The meter will be calibrated according to the national standards and recalibrated at appropriate intervals according to manufacturer specifications, but at least once in three years. The meters are deemed to be working satisfactorily if the errors are within specifications. If during the tests, the meter is found to be beyond the permissible limits of error, the meter shall be immediately calibrated and the correction applied to the reading registered by the meter to arrive the correct reading of energy supplied for billing purposes for the period from the last month's meter reading up to the current test. Billing for the period thereafter till the next monthly reading shall be as per the calibrated meter.

**Emergency procedures:** Although main and backup meters will be installed as an emergency measure in the substation, onsite meters will be available in case both meters at the substation are out.

Designation	Responsibilities
Project Head or Site Manager (Personnel from CPA Implementer)	<ul style="list-style-type: none"> <li>• Performance reviews and review of the data every month.</li> <li>• Operation, Monitoring and Verification of Data</li> <li>• Data Recording and archiving</li> <li>• Storage of data</li> <li>• Implementation of corrective action for the identified discrepancies</li> <li>• Review of report submitted by the supervisors/engineers w.r.t the electricity generated by the project</li> <li>• Check on calibration of monitoring meters</li> </ul>
Site Engineer	<ul style="list-style-type: none"> <li>• Data measurement</li> <li>• Operation and maintenance of equipment</li> <li>• Supervision of Data collection</li> <li>• Monitoring of the electricity continuously and monthly consolidation as per the guidance mentioned in the CPA</li> <li>• Preparation of monthly and annual generation statistics</li> <li>• Reporting discrepancies in monitored parameters</li> <li>• Ensuring calibration of monitoring meters.</li> </ul>
Technicians	<ul style="list-style-type: none"> <li>• Data measurement</li> <li>• Operation and maintenance of equipment</li> <li>• Data collection</li> <li>• Data recording</li> </ul>



## SECTION J. Crediting period type and duration

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Renewable crediting period  
21 Years 00 months

## SECTION K. Eligibility criteria for inclusion of CPAs

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The CME of the PoA will use the following mentioned eligibility conditions for the consideration of SSC-CPA under the PoA as per “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for Programme of Activities”, Version 03.0, annex 5 of EB 74.

The eligibility criteria for inclusion of a CPA under the PoA are in accordance with the “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for Programme of Activities”, Version 03.0, annex 5 of EB 74 as follows:

No.	Eligibility criterion - Category	Eligibility criterion - Required condition	Supporting evidence for inclusion
1	Geographical boundaries of CPAs consistent with the geographical boundary of the PoA;	The geographical boundary of the SSC-CPA area is uniquely defined and located in India.	CPA to provide detailed documentation regarding the exact geographical location of the CPA such as feasibility study report or third party PLF assessment report or land documents.
2	Conditions to confirm that CPAs are neither registered as CDM project activities, included in another registered PoAs, nor the project activities that have been deregistered;	The CPA is not part of any other PoA or will not be registered as individual project activity. The installed power plant of the CPA will constitute unique geographical location to avoid double counting. The proposed CPA will be located at a site where	It will be verified through the UNFCCC website in the list of projects (under Validation, Requesting Registration, Registered, Request for Review, Under Review, Rejected) and also through the list of PoA (under Validation, Requesting Registration, Registered, Request for Review, Under Review, Rejected) that the CPA is not a part of any other PoA or will not be registered as individual

		there was no renewable energy power plant operating prior to the implementation of the proposed CPA (Greenfield plant)	project activity. The same will also be verified through Undertaking from the CPA implementing body confirming that project activity is not an individual CDM project or part of any other PoA. CPA will provide with the unique geographical location in terms of latitude and longitude. The unique geographical location can be cross verified by the feasibility study report or third party PLF assessment report to confirm that the proposed CPA will be located at a site where there was no renewable energy power plant operating prior to the implementation of the proposed CPA (Greenfield plant)
3	Specification of the technology/measure, such as the level and type of service, as well as performance specification based on, inter alia, testing/certification;	Technology Employed by the CPA: Solar PV Technology, Off-shore Wind Technology Level of Implementation: Greenfield new Power Plant Type of Service: The power plants installed as part of the CPA should be connected to the grid. Target Group: Grid Connected : Supplied to national/regional grid and/or supplies of electricity to an identified consumer facility via national/regional grid	Feasibility study report or the offer from the party providing the equipment / construction / operation services proving that the CPA does not use involve capacity addition or retrofit or replacement activity at an existing power plant. The connectivity to the grid can be verified using the Power Purchase Agreement or the Approval from the relevant local authority or the Purchase Orders /Work Order / contract with party providing equipment/construction/operation services.
4	Conditions to check the start dates of CPAs through documentary evidence;	The earliest date at which either the implementation or construction or real action of a CPA will be the start date of the CPA and the start date of the CPA will be after the start of the PoA. The start date of the PoA is considered as 13/11/2012 which is the webhosting date of the PoA on the UNFCCC website for the global stakeholder commenting process	Contract with party providing equipment/construction/operation services or Purchase Order / Contracts for equipment's or document in line with the start date definition as per the glossary of CDM terms will be considered.
5	Conditions to ensure compliance with the applicability of the applied methodologies, the applied standardized baselines and the other applied methodological regulatory documents;	The CPA will use the methodology AMS ID Version 18 and will satisfy all the applicable conditions.	Detailed assessment that the project meets all the applicability criteria of version 18 of AMS-I.D Grid connected renewable electricity generation. Explanation is provided in section I.2 of the specific CPA- DD.
6	Conditions to ensure that CPAs meet the requirements for demonstration of additionality.	As per the paragraph 2 of Annex 4 of EB 105, "Demonstration of additionality of small-scale project activities", Version 13.0, "Documentation of barriers, as per paragraph	It will be demonstrated that the CPA constitutes of only Solar PV Technologies (photovoltaic) and/or Off-shore wind technologies confirming to the Section 5.2.3, para 17 of " Tool 32: Positive list of technologies".

		<p>10 , 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 15MW). As per Section 5.2.3, para 17 of "Tool 32: Positive list of technologies" The positive list comprises of:</p> <p>(a) The following grid-connected renewable electricity generation technologies:</p> <p>(i) Solar photovoltaic technologies</p> <p>(ii) Solar thermal electricity generation including concentrating solar Power (CSP);</p> <p>(iii) Off-shore wind technologies;</p> <p>(iv) Marine technologies wave; technologies</p> <p>(v) Marine tidal technologies</p> <p>(vi) Building-integrated wind turbines or household rooftop wind turbines of a size up to 100 kW.</p> <p>(vii) Biomass internal gasification combined cycle (BIGCC).</p> <p>Since the renewable technologies included in the PoA involves solar photovoltaic technologies and Off- shore wind technologies in which the capacity of the aggregate project is less than or equal to 15 MW, the proposed PoA is automatically defined to be additional in accordance with para 11 of " Demonstration of additionality of small- scale project activities", Version 09, Annex 4, EB 105.</p>	
7	The PoA-specific requirements, including any conditions related to undertaking local stakeholder consultation and environmental impact analysis	A Local stakeholder consultation meeting shall be conducted for each of the CPA included in the PoA to gauge the opinions and comments of the stakeholders in the	Minutes of the Meeting, Newspaper Advertisement, Invitation Letters and the Attendance record of the Local stakeholder consultation process, Photographs.

		<p>immediate project area. The use of solar energy and off-shore wind technology for power generation will reduce the adverse environmental and social impacts associated with the use of fossil fuels for electricity generation.</p> <p>The Environmental Impact Analysis will be done in conformity with prevailing legislation of the Host Country (India).</p>	<p>Latest regulations from the Ministry of Environment and Forest covering the Rules and Requirements of Solar PV Power Plants and Off-Shore Wind Power Plants on Environmental Impact Assessment will be followed.</p>
8	<p>Conditions to provide an affirmation that funding from Annex I Parties, if any, does not result in a diversion of official development assistance;</p>	<p>The SSC CPA not receive any public funding from the parties listed in the Annex I. Also the SSC CPA will not involve diversion of the Official Development Assistance (ODA)</p>	<p>Declaration from CPA implementer that the CPA has not received funding from Annex I parties. Also the Declaration from the CPA implementer that the CPA will not involve diversion of the Official Development Assistance (ODA). Confirmation in the CPA-DD regarding no involvement of public funding or ODA from Annex I Parties.</p>
9	<p>If the generic CPA is small-scale or microscale, conditions to ensure that CPAs that will be included meet the small-scale or microscale thresholds and remain within those thresholds throughout the crediting period of the CPAs. However, if the generic CPA consists solely of units that qualify as "microscale CDM units" as defined in the "Methodological tool: Demonstration of additionality of microscale project activities", these conditions are not required;</p>	<p>The component project activity (CPA) which will constitute the grid connected Solar PV Power Plants and/or off-shore wind power plants will be limited to small scale projects with the installed capacity less than or equal to 15MW</p> <p>Only projects applying new solar PV Power and Off-shore wind power equipments are eligible for inclusion. The Solar PV Power Plants and Off-shore wind power plants installed as part of SSC CPA will be connected to the National Electricity Grid</p>	<p>Feasibility Study Report, Third Party PLF report or the Purchase Orders/Work Order /contract with party providing equipment/construction/operation services will be supported. The connection of the CPA to the grid can be verified using the Power Purchase Agreement or the Approval from the relevant local authority or Purchase Orders/Work Order /contract with party providing equipment / construction / operation services</p> <p>Feasibility study report Purchase Orders /Work Order / contract with party providing equipment/construction/operation services proving that the CPA involve new solar PV Power and Off-shore wind power equipments. The power plants installed as part of CPA will supply electricity to a national grid which can be verified through the Feasibility study report or Investment decision of the CPA Implementer</p>
11	<p>If the generic CPA is small-scale or microscale, conditions for the debundling check based on the "Methodological tool: Assessment of debundling for small-scale project activities". However, if the generic CPA consists solely of units that qualify as "microscale CDM units", these conditions are not required.</p>	<p>The CPA meets the debundling check as specified in "Guidelines on Assessment of Debundling for SSC Project Activities" Part II. Guidance for Determining the Occurrence of Debundling under a Programme of Activities (PoA) "For the purposes of registration of a Programme of Activities (PoA), a proposed small-scale CPA of a PoA shall be deemed to be a de-</p>	<p>Debundling check carried out in line with the latest version of the Guidelines on assessment of debundling for SSC project activities. The analysis will be cross checked with the Undertaking from the CPA Implementer, GPS coordinates, Analysis of projects in the CDM pipeline, Contract for the technology.</p>

		<p>bundled component of a large scale activity if there is already an activity, which satisfies both conditions (a) and (b) below:</p> <p>(a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same technology/measure, and;</p> <p>(b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point."</p>	
12	To assess the Plant Load Factor.	The Plant load factor for each CPA will be assessed in accordance with the latest guidance on the "Guidelines for the reporting and validation of plant load factors"	Assessment of the Plant Load Factor (PLF) in accordance with the latest version of the "Guidelines for the reporting and validation of plant load factors", EB 48 , version 01 The following document shall be provided: (a)Application to banks and/or equity financiers for project financing (b) Application to government for project activity implementation approval (c) Study by a third party contracted by the project participants (e.g. an engineering company).
12	Target group (e.g. domestic/commercial /industrial, rural/urban, grid connected/off-grid) and distribution mechanisms (e.g. direct installation);	The target group will be only the grid connected wind power projects under the PoA.	The connection of the CPA to the grid can be verified using the Power Purchase Agreement or the Approval from the relevant local authority to make sure that the power generated from the CPA(s) is injected only to the Indian national grid system.
13	Sampling	If the generic CPA applies sampling for the determination of parameter values for calculating GHG emission reductions or net anthropogenic GHG removals, conditions related to sampling requirements for the PoA in accordance with the "Standard: Sampling and surveys for CDM project activities and programme of activities"	Sampling is not applicable.  Each CPA assigned with unique number.

At the renewal of a PoA, the CME shall update the eligibility criteria as per the latest revised applicable methodologies.

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

<b>Coordinating/managing entity and/or project participants</b>	<input checked="" type="checkbox"/> Coordinating/managing entity <input type="checkbox"/> Project participant
<b>Organization name</b>	Core CarbonX Solutions Private Limited
<b>Country</b>	India
<b>Address</b>	5R, Block-A, #6-3-668/9, Kanthi Shikara Complex, Punjagutta, Hyderabad-500082, Telangana, India
<b>Telephone</b>	040-23410367, +91-9908387772
<b>Fax</b>	040-23400367
<b>E-mail</b>	<a href="mailto:nmohanty@corecarbonx.com">nmohanty@corecarbonx.com</a> and <a href="mailto:info@corecarbonx.com">info@corecarbonx.com</a>
<b>Website</b>	<a href="http://www.corecarbonx.com">www.corecarbonx.com</a>
<b>Contact person</b>	Niroj Kumar Mohanty

## Appendix 2. Affirmation regarding public funding

The PoA will not receive any public funding from the parties listed in the Annex I. Also the PoA will not involve diversion of the Official Development Assistance (ODA)

## Appendix 3. Applicability of methodologies and standardized baselines

Type: Type I – Renewable Energy Projects

Methodology: AMS I.D. - Grid connected renewable electricity generation

Version: Version 18

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

Please refer section I.6 in Part II and III

## Appendix 5. Further background information on monitoring plan

Please refer section I.7.6.in Part II and III

## Appendix 6. Summary report of comments received from local stakeholders

Please refer section F.4.

## Appendix 7. Summary of post-registration changes

NA

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**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
09.0	31 May 2019	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with version 02.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN);</li> <li>• Make editorial improvements.</li> </ul>
08.1	28 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Remove a duplicated instruction;</li> <li>• Make editorial improvement.</li> </ul>
08.0	7 June 2017	Revision to: <ul style="list-style-type: none"> <li>• Improve consistency with the “CDM project standard for programmes of activities” and with the PDD and CPA-DD forms;</li> <li>• Make editorial improvement.</li> </ul>
07.0	25 May 2017	Revision to: <ul style="list-style-type: none"> <li>• Ensure consistency with the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN) (version 01.0);</li> <li>• Incorporate the “Programme design document form for small-scale CDM programmes of activities” (CDM-SSC-PoA-DD-FORM);</li> <li>• Make editorial improvement.</li> </ul>
06.0	15 April 2016	Revision to ensure consistency with the “Standard: Applicability of sectoral scopes” (CDM-EB88-A04-STAN) (version 01.0).
05.0	9 March 2015	Revision to: <ul style="list-style-type: none"> <li>• Include provisions related to choice of start date of PoA;</li> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to local stakeholder consultation;</li> <li>• Add exception for generic CPA where technology is under positive lists;</li> <li>• Make editorial improvement.</li> </ul>
04.1	5 August 2014	Editorial revision to correct the document information table.

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	25 June 2014	<p>Revision to:</p> <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the project design document form for CDM programme of activities (these instructions supersede the Guideline: Completing the programme design document form for CDM programme of activities (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the PoA in B.4 and Appendix 1;</li> <li>• Add general instructions on post-registration changes in paragraphs 2 and 3 of general instructions and Appendix 6;</li> <li>• Change the reference number from F-CDM-PoA-DD to CDM-PoA-DD-FORM;</li> <li>• Make editorial improvement.</li> </ul>
03.0	3 December 2012	<p>EB 70</p> <p>Revision to reflect changes to the <i>Guideline: Completing the programme design document form for CDM programmes of activities</i> (EB 70, Annex 6).</p>
02.0	13 March 2012	<p>EB 66</p> <p>Revision required to ensure consistency with the "Guidelines for completing the programme design document form for CDM programmes of activities" (EB 66, annex 12).</p>
01.0	27 July 2007	<p>EB 33, Annex 41</p> <p>Initial publication.</p>
<p>Decision Class: Regulatory  Document Type: Form  Business Function: Registration  Keywords: programme of activities, project design document</p>		