

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



**NAME /TITLE OF THE PoA: First Solar PoA in India by SENES Consultants**



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**CLEAN DEVELOPMENT MECHANISM  
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD)  
Version 01**

**CONTENTS**

- A. General description of CDM programme activity (CPA)
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**Annexes**

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- Annex 2: Information regarding public funding
- Annex 3: Baseline information
- Annex 4: Monitoring plan

**NOTE:**

- (i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.
- (ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)<sup>1,2</sup> that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

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<sup>1</sup> The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

<sup>2</sup> At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

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**SECTION A. General description of small scale CDM programme activity (CPA)**

**A.1. Title of the small-scale CPA:**

>>

DDMMYYYY XXX Bundled CPA on Grid Connected Solar Power Project in India by XXX  
Version 03, Date 28/11/2011

**A.2. Description of the small-scale CPA:**

>>

The CPA constitutes of a Bundle of (number of individual plants) solar power generation units located in different states of India with following specifications:

Unique identification number (UIN) of the Power generation unit	State	Name of Operator	Capacity in MW
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**A.3. Entity/individual responsible for the small-scale CPA:**

>> The entity responsible for this small scale CPA is (CPA Entity name)

**A.4. Technical description of the small-scale CPA:**

**A.4.1. Identification of the small-scale CPA:**

>>

**A.4.1.1. Host Party:**

>> India

**A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):**

>>

The CPA constitutes of a Bundle of a (number of individual plants) solar power generation units located in different states of India. Lying entirely in the northern hemisphere, the mainland extends between latitudes 8° 4' and 37° 6' north, longitudes 68° 7' and 97° 25' east:

UIN	State	Village	District	Name of Operator	Capacity in MW	UIN location (Geographic Coordinate)
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**A.4.2. Duration of the small-scale CPA:**

**A.4.2.1. Starting date of the small-scale CPA:**

>>dd/mm/yyyy

**A.4.2.2. Expected operational lifetime of the small-scale CPA:**

>> CPA Lifetime

**A.4.3. Choice of the crediting period and related information:**

**Renewable crediting period:**

**A.4.3.1. Starting date of the crediting period:**

>>dd/mm/yyyy

**A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:**

>> 7 years

**A.4.4. Estimated amount of emission reductions over the chosen crediting period:**

>>

Year	Annual Estimation of emission reduction in tonnes of CO <sub>2</sub> e
Y1	
Y2	
Y3	
Y4	
Y5	
Y6	
Y7	
Total estimated reductions (tonnes of CO <sub>2</sub> e)	
Total number of crediting years	
Annual average over the crediting period of estimated reductions (tonnes of CO <sub>2</sub> e)	

**A.4.5. Public funding of the CPA:**

>> There is no public funding from Annex 1 Party involved in the PoA

**A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component**

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**Specific information on de-bundling for the CPA.**

Hence it is confirmed that the Solar Power generation unit proposed under this CPA is not a de – bundled component.

**A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:**

None of the Solar Power generation unit which forms a part of the CPA is registered as an individual CDM project activity or is part of another Registered PoA

**SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions**

**B.1. Title and reference of the Registered PoA to which small-scale CPA is added:**

>> First Solar POA in India by SENES Consultants

**B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :**

>>

<b>Eligibility criteria for inclusion of a <u>SSC-CPA</u> in the PoA</b>	<b>How the Eligibility criteria is fulfilled by the CPA</b>
1. Be a grid connected solar based renewable energy generation units.	
2. Be a newly built solar power plant.	
3. Have no energy generation equipment transferred from another activity and no existing equipment is transferred to another activity	
4. Ensure that the geographical boundary of each solar power generation unit under the SSC-CPA is uniquely defined with GPS coordinates and is within the boundary of PoA.	
5. Confirm that the power generation units / units under the CPA is not registered or being registered as a stand-alone CDM project outside of the PoA. This would be achieved through undertaking by project implementer.	
6. Confirm that if the new unit has both renewable and non-renewable components	

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(e.g., a solar/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component..	
7. Confirm that the start date of any CPA is not, prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-PoA-DD is first published for global stakeholder consultation <sup>3</sup>	
8. Confirm and fulfil the additionality criterion set in the PoA as defined in Section E.5.2 of the PoA-DD.	
9. Declaration that there is no ODA funding flowing into the individual CPA.	
10. In the event the power plant operator has an operating solar power plant within 1 km of boundary of the proposed plant then the combined capacity of all such plants put together by the same operator should not exceed 15 MW. At the time of inclusion of CPA, the managing entity would do a check within a radius of 1 km of power plant as part of the CPA to confirm the condition is met.	

**B.3. Assessment and demonstration of additionality of the small-scale CPA , as per eligibility criteria listed in the Registered PoA:**

Demonstration of Additionality has been conducted a POA level. This is in line with EB 47, paragraph 73 “Additionality is to be demonstrated either at the POA level or at CPA level”<sup>4</sup>.

Based on analysis as provided in section A.4.3. of the PoA each power generation unit has to satisfy the following criteria to be considered additional.

<b>S.no</b>	<b>Criteria</b>	<b>Benchmark</b>	<b>Rationale</b>
<b>1</b>	Scale	The installed capacity of the power generating unit should be less than or equal to 15 MW.	Additionality criterion is in accordance with the analysis done in PoA (as per Section A.4.3 and E.5.2 of PoA-DD) according to which projects upto a capacity of 15 MW

<sup>3</sup> [http://cdm.unfccc.int/EB/047/eb47\\_repan29.pdf](http://cdm.unfccc.int/EB/047/eb47_repan29.pdf)

<sup>4</sup> <http://cdm.unfccc.int/EB/047/eb47rep.pdf>

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			are additional.  The source of installed capacity to be checked while adding a CPA would be based on allotment letter or signed Power Purchase Agreement (PPA) by the respective state electricity board or any other similar agency.
--	--	--	---

All the power plants included in the CPA fulfil the criterion since the scale of power plants is as follows:

<b>Unique identification number (UIN) of the Power generation unit</b>	<b>Project Operator</b>	<b>Capacity (in MW)</b>	<b>Project fulfils the additionality criterion</b>
--	-------------------------	-------------------------	--

Thus the CPA is additional as evident from the above analysis.

**B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.**

>> The GHG emission sources included in or excluded from the project boundary are as follows:

	<b>Source</b>	<b>Gas</b>	<b>Included?</b>	<b>Justification/Explanation</b>
<b>Baseline</b>	Grid-connected electricity generation	CO <sub>2</sub>	Yes	In the baseline scenario the electricity would have been sourced from Indian grid which in turn would be connected to fossil fuel fired power plants which emit CO <sub>2</sub> .
		CH <sub>4</sub>	No	As per AMS-I.D Methane Emission is not to be accounted for, this is conservative.
		N <sub>2</sub> O	No	As per AMS-I.D nitrous oxide Emission is not to be accounted for, this is conservative.
<b>Project Activity</b>	Greenfield SPV energy conversion system	CO <sub>2</sub>	No	The project activity does not emit any emissions.
		CH <sub>4</sub>	No	No methane generation is expected to be emitted.
		N <sub>2</sub> O	No	No nitrous oxide generation is expected to be emitted.

All the power plants under this CPA are located in India as specified in section A.4.1.2

The system boundary in accordance with approved methodology is the physical, geographical site of the renewable generation source.

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**B.5. Emission reductions:**

**B.5.1. Data and parameters that are available at validation:**

>>

<b>Data / Parameter:</b>	EF <sub>y</sub>
Data unit:	t CO <sub>2</sub> /MWh
Description:	CO <sub>2</sub> emission factor for the regional grid system (Fixed Ex ante)
Source of data used:	CEA published grid emission factors
Value applied:	
Justification of the choice of data or description of measurement methods and procedures actually applied :	Central Electricity Authority (CEA) database, version 5 dated November 2009 values have been used for authenticity of the data, available publicly by Govt of India with a view to obtain uniformity of approach in the country towards a common objective.
Any comment:	

**B.5.2. Ex-ante calculation of emission reductions:**

>>

**Baseline Emissions**

According the AMS-I.D, version 16, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources.

The baseline emissions are the product of electrical energy baseline EG<sub>BL, y</sub> expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

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

Where

BE <sub>y</sub>	=	Baseline emissions in year y (tCO <sub>2</sub> ).
EG <sub>BL,y</sub>	=	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
EF <sub>CO2,grid,y</sub>	=	CO <sub>2</sub> emission factor of the grid in year y (tCO <sub>2</sub> /MWh)

**Calculation of Baseline Emission Factor**

As per paragraph 12 of AMS-I.D, version 16, the baseline emission factor for a grid system can be calculated as either any one of the following options in a transparent and conservative manner:

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a) Combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology “Tool to calculate the emission factor for an electricity system”, version 02.

OR

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

Calculations shall be based on data from an official source (where available) and made publicly available.

The project proponent has selected approach ‘a’ i.e. combined margin approach to calculate the emission factor for the grid with *ex-ante* approach.

According to the tool the baseline emission, project proponent shall apply the following seven steps;

- Step 1 Identify the relevant electric power system
- Step 2 Choose whether to include off-grid power plants in the project electricity system (optional)
- Step 3 Select a method to determine the operating margin (OM)
- Step 4 Calculating the operating margin emission factor according to the selected method.
- Step 5 Identify the group of power units to be included in the build margin (BM)
- Step 6 Calculate the build margin emission factor.
- Step 7 Calculate the combined margin (CM) emission factor.

Central Electricity Authority (CEA) (which is an official source of Ministry of Power, Government of India) have worked out baseline emission factor for various grids in India and made them publicly available i.e. “CO<sub>2</sub> Baseline Database version 5.0” at

[http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

The emission factor of the grid for the *ex-ante* approach is calculated in the following manner:

***Step 1 Identify the relevant electric power system***

The Indian electricity system is divided into two power grids, viz; North- East- West- North-East (NEWNE) and Southern grid. Since PoA is pan India and individual project can be located anywhere across India, emission factor has been calculated for both the grids. At this CPA level, the baseline Emission factor (including Imports) of NEWNE published by CEA is considered for calculation of Emission reductions due to displacement of electricity in accordance with the Baseline of “Tool to calculate the emission factor for an electricity system”, version 02.

**Geographical scope of the two electricity grids<sup>5</sup>**

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<sup>5</sup> [http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

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<b>NEWNE Grid</b>				<b>Southern Grid</b>
<b>Northern</b>	<b>Eastern</b>	<b>Western</b>	<b>North-Eastern</b>	<b>Southern</b>
Chandigarh	Bihar	Chhattisgarh	Arunachal	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Pradesh	Karnataka
Haryana	Orissa	Daman & Diu	Assam	Kerala
Himachal	West Bengal	Dadar & Nagar	Manipur	Tamil Nadu
Pradesh	Sikkim	Haveli	Meghalaya	Pondicherry
Jammu &	Andaman- Nicobar	Madhya Pradesh	Mizoram	Lakshadweep
Kashmir		Maharashtra	Nagaland	
Punjab		Goa	Tripura	
Rajasthan				
Uttar Pradesh				
Uttarakhand				

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

Project participants may choose between the following two options 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 has been selected for the programme of activity.

**Step 3 Select a method to determine the operating margin (OM)**

The calculation of the operating margin emission factor ( $EF_{grid,OM,y}$ ) is based on one of the following methods:

- Simple OM, or
- Simple adjusted OM, or
- Dispatch data analysis OM, or
- Average OM.

As per tool, any of the four methods can be used, however, the simple OM method (option a) can only be used if low cost/must run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production.

As observed in the CEA database, Version 5, less than 30% of grid energy is provided by the low cost/must-run power sources (hydro/ nuclear power)<sup>6</sup>, hence project proponent has chosen to calculate Simple OM. For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

<sup>6</sup> [http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

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- Ex ante option: If the *ex-ante* option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.
- Ex post option: If the *ex-post* option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring. If the data required to calculate the emission factor for year y is usually only available later than six months after the end of year y, alternatively the emission factor of the previous year y-1 may be used. If the data is usually only available 18 months after the end of year y, the emission factor of the year preceding the previous year y-2 may be used. The same data vintage (y, y-1 or y-2) should be used throughout all crediting periods.

The project proponent has chosen an *ex-ante* approach for the calculation using the full generation-weighted average for the most recent 3 years for which data are available at the time of PDD submission. The OM is calculated using 3 year data calculated by Central Electricity Authority (CEA) in their CO<sub>2</sub> baseline database Version 5.0, November 2009.

***Step 4: Calculation of the Operating Margin emission factor ( $EF_{OM,y}$ )***

**Simple OM method**

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>/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

The simple OM may be calculated:

- 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 B can only be used if:

- a) The necessary data for Option A is not available; and
- b) Only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and
- c) Off-grid power plants are not included in the calculation (i.e., if Option I has been chosen in Step 2).

For programme of activity, Option B has been used.

In the Simple OM method, the emission factor is calculated as generation weighted average emissions per electricity unit (tCO<sub>2</sub>/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants. The data vintage option selected is the ex-ante approach, where a 3 year

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average OM is calculated. The CEA baseline is derived using the following formulae to calculate simple OM.

$$EF_{\text{grid,OMsimple,y}} = \frac{\sum_i (FC_{i,y} \times NCV_{i,y} \times EF_{\text{CO2,i,y}})}{EG_y} \quad (2)$$

Where:

$EF_{\text{grid,OM simple, y}}$	Simple operating margin CO2 emission factor in year (tCO <sub>2</sub> /MWh)
$FC_{i,y}$	Amount of fossil fuel type i consumed by power plant/unit m year y (mass or unit volume unit)
$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{\text{co2,i,y}}$	CO <sub>2</sub> emission factor of fossil fuel type i in the year y (tCO <sub>2</sub> /GJ)
$EG_y$	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year y (MWh)
i	All fossil fuel types combusted in power plant/ unit m in year y
y	The relevant year as per the data vintage chosen in Step 3

The operating margin emission factor has been calculated using a 3 year data vintage from CEA database<sup>7</sup>:

<b>Simple Operating Margin (tCO<sub>2</sub>/MWh) (incl. Imports)</b>				<b>Average (tCO<sub>2</sub>/MWh)</b>
	2006-07	2007-08	2008-09	
NEWNE	1.008	1.000	1.007	1.005

**Step 5 Identify the group of power units to be included in the build margin (BM)**

As per the tool, the sample group of power units *m* used to calculate the build margin consists of either:

- (a) The set of five power units that have been built most recently, or
- (b) The set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently

Project participants should use the set of power units that comprises the larger annual generation. Accordingly, the CEA database calculates the build margin consists of the power plant capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently as this sample group comprises larger annual generation than the generation of the sample group *m* consisting of the five power plants that have been built most recently.

<sup>7</sup> [http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

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In terms of vintage of data, project participants can choose between one of the following two options:

- Option 1: For the first crediting period, calculate the build margin emission factor *ex ante* based on the most recent information available on units already built for sample group *m* at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.
- Option 2: For the first crediting period, the build margin emission factor shall be updated annually, *ex post*, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated *ex ante*, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 is chosen to calculate the build margin emission factor for the programme of activity. BM is calculated *ex-ante* based on the most recent information available at the time of submission of PDD and is fixed for the entire crediting period.

***Step 6: Calculation of the Build Margin Emission Factor  $EF_{BM,y}$***

The Build margin emission factor has been calculated *ex-ante* based on the most recent information available on plants already built for sample group *m* at the time of PDD submission. The sample group *m* consists of the power plant capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently as this sample group comprises larger annual generation than the generation of the sample group *m* consisting of the five power plants that have been built most recently.

The value for BM is taken from Central Electricity Authority (CEA) CO<sub>2</sub> baseline database Version 5.0, November 2009<sup>8</sup>

Build Margin (tCO <sub>2</sub> /MWh)	
	2009-10

***Step 7: Calculation of the combined margin emission factor***

The baseline emission factor  $EF_y$  is calculated as a combined margin (CM) consisting of combination of Operating Margin emission factor ( $EF_{OM,y}$ ) and the Build Margin emission factor ( $EF_{BM,y}$ ):

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<sup>8</sup> [http://www.cea.nic.in/reports/planning/cdm\\_co2/cdm\\_co2.htm](http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm)

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$$EF_{\text{grid,CM},y} = EF_{\text{grid,OM},y} \times w_{\text{OM}} + EF_{\text{grid,BM},y} \times w_{\text{BM}} \quad (3)$$

Where the weights  $w_{\text{OM}}$  and  $w_{\text{BM}}$  are 75% and 25% respectively, and  $EF_{\text{OM},y}$  and  $EF_{\text{BM},y}$  are calculated and are expressed in tCO<sub>2</sub>/MWh.

As per the “Tool to calculate emission factor for an electricity system, version 02”, for wind and solar projects, the default weights are as follows:  $w_{\text{OM}} = 0.75$  and  $w_{\text{BM}} = 0.25$  (owing to their intermittent and non-dispatchable nature).

**Combined Margin/ Grid Emission Factor**

Grid	Simple Operating Margin (tCO <sub>2</sub> /MWh)	Build Margin (tCO <sub>2</sub> /MWh)	Combined Margin (tCO <sub>2</sub> /MWh)

**Baseline Emissions:**

$$BE_y = EG_{\text{BL},y} * EF_{\text{CO}_2,\text{grid},y}$$

$$BE_y = \text{---} \text{ tCO}_2\text{e}$$

**Project emissions:**

**For SPV based electricity generation unit under this POA, there are no project emission**  
 $PE_y = 0$ .

**Leakage**

If the energy generating equipment is transferred from another activity, leakage is to be considered. Since the POA would promote establishment of ne SPV based power plant, leakage is 0.

$$LE_y = 0$$

**Emission reductions**

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

- $ER_y$  Emission reductions in year y (t CO<sub>2</sub>/y)
- $BE_y$  Baseline Emissions in year y (t CO<sub>2</sub>/y)
- $PE_y$  Project emissions in year y (t CO<sub>2</sub>/y)
- $LE_y$  Leakage emissions in year y (t CO<sub>2</sub>/y)

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Since  $PE_y = 0$  &  $LE_y = 0$

$ER_y = BE_y$

$ER_y =$  \_\_\_\_ tCO<sub>2</sub>e

**B.5.3. Summary of the ex-ante estimation of emission reductions:**

>>

Year	Estimation of project activity emissions (tonnes of CO <sub>2</sub> e)	Estimation of baseline emissions (tonnes of CO <sub>2</sub> e)	Estimation of leakage (tonnes of CO <sub>2</sub> e)	Estimation of overall emission reductions (tonnes of CO <sub>2</sub> e)
Y1	0		0	
Y2	0		0	
Y3	0		0	
Y4	0		0	
Y5	0		0	
Y6	0		0	
Y7	0		0	
<b>Total</b> (tonnes of CO <sub>2</sub> e)	0		0	

**B.6. Application of the monitoring methodology and description of the monitoring plan:**

**B.6.1. Description of the monitoring plan:**

>>

ABC will be the managing entity and would set the procedures verifying the CERs generated by the solar power projects annually and would coordinate with individual Operators for monitoring and verification of ERs achieved by each solar power plant. The operators will submit all data to ABC, required for the periodic audit and verification process that must be undertaken to confirm the achievement of the corresponding ERs. Monitoring would be carried out in following manner:

<b>Data / Parameter:</b>	EG <sub>v</sub>
Data unit:	MWh
Description:	Net Electricity supplied to the grid by the project
Source of data to be used:	
Value of data	To be specified in each CPA
Description of measurement methods and procedures to be applied:	

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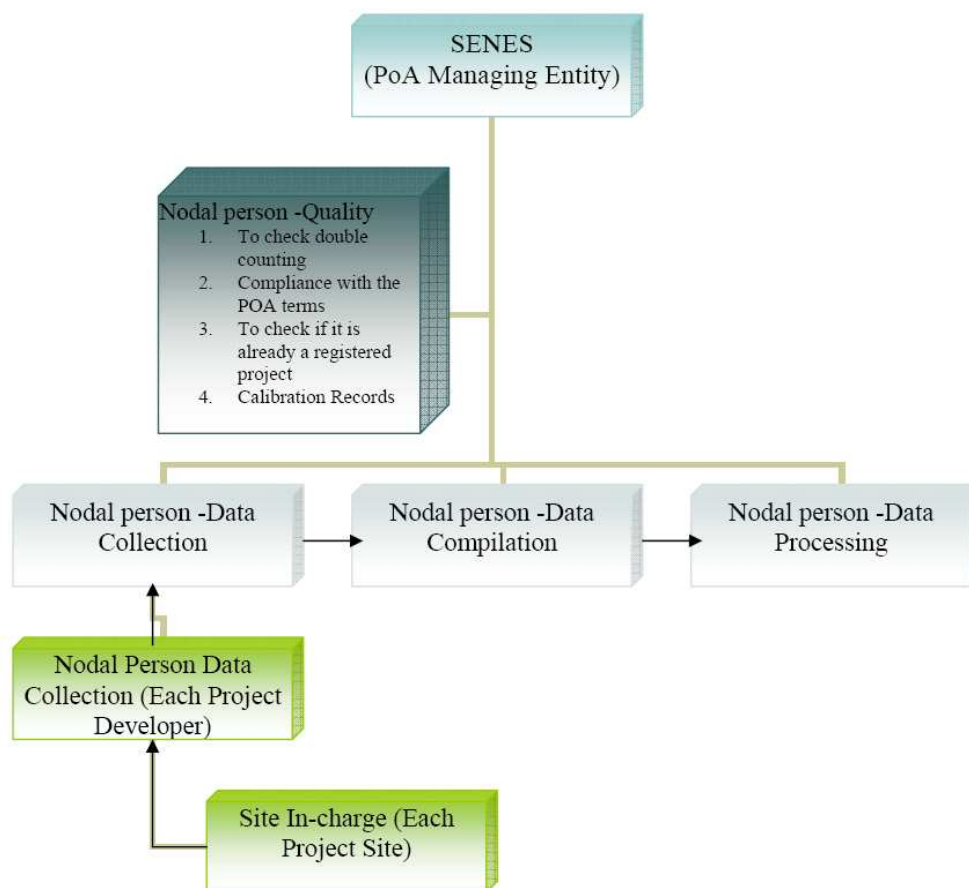
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QA/QC procedures to be applied:	
Any comment:	The data archived will be maintained for crediting period +2 years or last issuance for this project activity whichever is later. The data archiving will be done on both paper and electronically.

### **1. Monitoring Plan Objective and Organization**

The project operator will monitor the electricity delivered to the electricity grid by the respective power production unit. The data will be archived electronically and be stored for 2 years after the end of the crediting period of each CPA.

To ensure that the data is reliable and transparent, the project entity will also establish Quality Assurance and Quality Control (QA&QC) measures to effectively control and manage data reading, recording, auditing as well as archiving data and all relevant documents. The data will be monitored on a monthly basis and will be submitted to SENES on a monthly basis. The record keeping system will be following the hierarchy given below:



## **2. Responsibility**

The main roles and responsibilities of the parties involved is as described below:

### ***SENES- PoA Managing Entity***

- Acts as the entire PoA managing entity
- Development of small-scale Programme of Activities Design Document (SSC-PoA-DD)
- Registration of the SSC-PoA with UNFCCC CDM Executive Board
- Inclusion of SSC-CPAs to the SSC-PoA upon satisfaction of the eligibility criteria stipulated in the SSC-PoA-DD
- Managing and archiving the database of all the CPAs.
- Authorized entity for any official communication with the CDM-EB, DOE and Indian DNA
- Allocation of CERs to the SSC-CPA project operators according to their share in electricity generation and export during the monitoring period.



### *Operators*

- Periodic monitoring and reporting of data and information as per the monitoring plan.
- Maintaining records on-site as per the monitoring plan.
- Construction and implementation of projects
- Operation and maintenance of the projects
- Calibration of electricity meters on a regular basis as per State Electricity Board's mandatory requirement.

### **3. Monitoring Data and Reporting**

Data to be monitored is the electricity delivered to the electricity grid by the project. The electricity delivered will be monitored using a electricity meter at the point of connection with the grid. The entity responsible for monitoring as detailed in the CPA will provide SENES with meter readings for electricity delivered and calibration certificates of the electricity meter as per grid operator's instructions. SENES will subsequently provide the verifying DOE with the data from all CPAs.

### **4. Quality Assurance and Quality Control**

QA&QC procedures for recording, maintaining and archiving data shall be implemented as part of this CDM project activity.

The project entity will implement QA&QC measures to calibrate and ensure the accuracy of metering and safety aspects of the project operation. The metering devices will be calibrated and inspected properly and periodically, according to state electricity board's specifications and requirement, to ensure their accuracy in the readings.

- 5. Training and maintenance procedures:** EPC Contractors for each of the power plants would train the on-site staff of the power plant on operation and maintenance of the power plant. SENES (managing entity) would ensure training to on-site staff with respect to adherence to the Monitoring Plan of the project activity. Records of the training would be kept.

Internal audit of all the records of the plants will be carried out twice a year. During these audits all the data and parameters that need to be monitored as per the monitoring plan would be checked and shortcomings if any will be reported and addresses.

### **6. Data Storage and Archiving**

In order to facilitate auditors' reference and for any future requirement, relevant literature relating to the project such as, the project material and monitoring results will be indexed. All the data items monitored under the monitoring plan will be kept for 2 years after the end of crediting period or till the last issuance of CERs for this project activity, whichever occurs later. The data will be archived electronically and in hard copy and kept in storage separately by the managing entity.

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**C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:**

- ✓ Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

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

>>

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

>>

**SECTION D. Stakeholders' comments**

>>

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

- ✓ Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

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

>>

**D.3. Summary of the comments received:**

>>

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

>>

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**Annex 1**

**CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-  
SCALE CPA**

Organization:	
Street/P.O.Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

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Annex 2

**INFORMATION REGARDING PUBLIC FUNDING**

No public funding is involved.

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Annex 3

**BASELINE INFORMATION**

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Annex 4

MONITORING INFORMATION

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