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

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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)[1,2] 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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[1] The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

[2] 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).

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

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

>>
GRT Energy Small Scale Solar PV (PoA)- CPA- XXX [indicate number]
Version: 04
Date: dd/mm/yyyy

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

>>
The proposed small-scale CDM Programme Activity (hereafter referred as CPA) consists of a solar PV installation of X MW under the GRT Energy Small Scale Solar PV (PoA) (hereafter referred as the PoA). The installation of the CPA would include installation of solar photo-voltaic (PV) panels, connection to the national electricity grid, and installation of monitoring equipment.

The proposed CPA is a voluntary initiative taken by the Coordinating / Managing Entity (CME) of the PoA, GRT Energy Co.,Ltd., which is a Thai company (hereafter referred to as the CME).

There are no mandatory laws that requires the installation of the Solar PV systems in Thailand, although is being promoted through various mechanisms. Therefore, CPA-XXX is a voluntary action of the CPA implementer, [name(s)].

The installation will take place through ground or rooftop-mounting of solar PV panels and connecting them to the provincial grid run by the Provincial Electricity Authority (PEA) in Thailand. Monitoring equipments will also be installed with the solar PV system in order to monitor the electricity fed to the grid. The installation of the CPA will be undertaken by the CPA implementer, XXX [name(s)], with the condition that the CPA owner ascribes all the rights to CERs to the CME which is managing the programme.

The SSC-CPA is expected to displace the fossil fuel generated electricity in the grid by the feeding the electricity generated by the solar-PV system, into the grid reducing the Greenhouse Gas (GHG) emissions generated by burning fossil fuel for electricity generation. The proposed SSC-CPA is expected to reduce GHG emissions XXXXXX tCO_2 per year.

The CPA fulfils the national sustainable development criteria determined by the Thailand Greenhouse Gas Office (TGO).

A.3. Entity/individual responsible for the small-scale CPA:

>>

XXX

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

[Technical Specification for CPA-XXX]

[Connection to the grid]

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

A.4.1.1. Host Party:

>>
Thailand

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

- XXX[municipality, locality], in Thailand
- Geographical coordinates: XXX

[Insert the figure(s) of geographical location]

A.4.2 Duration of the small-scale CPA:

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

>>
The starting date of the CPA is dd/mm/yyyy, which is the date on which the Engineering, Procurement and Construction (EPC) contract/ Panel Supply Contract will be/ was signed which represents the first significant real action to developing the CPA.

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

>>
25 years[3]

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

[Fixed crediting period/Renewable crediting period]

Note: The duration of crediting period of any SSC-CPA shall be limited to the end date of the PoA regardless of when the SSC-CPA was added.

A.4.3.1. Starting date of the crediting period:

>>

[3] [To be specified in CPA-DD specific]

The starting date of the crediting period of the CPA is dd/mm/yyyy, which is the date when the CPA will begin generating electricity.

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

>>

[Seven years twice renewable/10 years fixed, limited to the end date of the POA]

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

>>

[Renewable or Fixed] crediting period of [seven or ten] years is adopted by the CPA-XXX. It is expected that the CPA-XXX will generate greenhouse has emission reductions of XXX tCO_2 over this crediting period. The table below shows the estimated annual emission reductions.

Table 1: Estimated amount of emission reductions

Year	Estimation of annual emission reductions in tonnes of CO_2e
20XX	
20XX	
20XX	
20XX	
20XX	
20XX	
20XX	
Total estimated reductions (tonnes of CO_2e)	
Total number of crediting years	**7**
Annual average of the estimated reductions over the crediting period (tCO_2e)	

[OR]

Year	Estimation of annual emission reductions in tonnes of CO_2e
20XX	
20XX	
20XX	
20XX	
20XX	

20XX	
20XX	
20XX	
20XX	
20XX	
Total estimated reductions (tonnes of CO_2e)	
Total number of crediting years	**10**
Annual average of the estimated reductions over the crediting period (tCO_2e)	

A.4.5. Public funding of the CPA:

>>
[Confirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance.]

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

>>
According to EB 54, Annex 13, *"Guidance For Determining The Occurrence Of De-bundling Under A Programme Of Activities (PoA)"* :

1. *"For the purposes of registration of a Programme of Activities (PoA)[4] a proposed small-scale CPA of a PoA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity[5], which:"*

   (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 sectoral scope, and;*

   [Substantiation: Proper justification to be provided]

   (b) *"The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point."*

   [Substantiation: Proper justification to be provided]

[4] Only those POAs need to be considered in determining de-bundling that are: (i) in the same geographical area; and (ii) use the same methodology; as the POA to which proposed CPA is being added

[5] Which may be a (i) registered small-scale CPA of a PoA, (ii) an application to register another small-scale CPA of a PoA or (iii) another registered CDM project activity

Outcome:
[XXXX]

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

>>

Table 2: Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA

S.No	Undertakings	Status (Yes/No)
1	The SSC-CPA has not been and will not be registered as a single CDM project activity or as part of another SSC-CPA of a different proposed PoA.	[XX]
2	The SSC-CPA is identified by a Serial Number	[XX]
3	The site of the SSC-CPA is identified by its unique geographic coordinates.	[XX]

Furthermore, by using the precise geographic coordinates of the SSC-CPA and comparing it with a Thai solar database of registered CDM project activities and registered PoAs to be maintained by the CME, it can be demonstrated that the SSC-CPA is neither registered as an individual CDM project activity nor 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:

>>
GRT Energy Small Scale Solar PV (PoA) in Thailand registered under the reference no XXX

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

>>
The SSC-CPA meets the eligibility criteria for inclusion of a SSC-CPA in the PoA as listed in section A.4.2.2 of the PoA-DD.

Table 3: Eligibility criteria for the inclusion of CPAs

S.No	Eligibility Criteria for the inclusion of CPAs	Status (Yes/No)	Required Evidence/Supporting documents
a	The SSC-CPA should have its project site located in Thailand and the electricity generated shall be fed to the Thai National Grid.	[Yes/No]	Power purchase agreements (PPA)
b	The SSC-CPA shall be uniquely identified and defined by way of the unique identifying numbers (serial numbers) and GPS coordinates attached to each Solar PV installation, to ensure that all CPAs under this PoA are neither registered as an individual CDM project activity nor included in another registered PoA.	[Yes/No]	Feasibility Study Report/ site GPS coordinates
c	The SSC-CPA shall generate electricity using solar photo-voltaic (PV) technology (including but not limited to thin film and crystalline technology). The technology should comply with national regulatory standards of Thailand[6]	[Yes/No]	Feasibility Study Report (FSR)/Panel specification sheet/ Project technical design documentation
d	Confirmation that the start date of a CPA is not, or will not be, 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.	[Yes/No]	EPC contract or panel supply contract will be used as evidence of starting date of a CPA. Only CPAs for which the EPC contract or panel supply contract is

[6] SD_24-INTERCONNECTIONCODE_PEA_EN[1], para-5, page-6

			signed after 25th January 2012 can be included in the PoA. (a)
e	The SSC-CPA shall comply with the applicability criteria of the methodology *AMS.I.D- Grid connected renewable electricity generation, version - 17.0.* The SSC-CPA shall comply with each of the criterion below, as applicable : • Shall not be a combined heat and power (co-generation) system • Capacity limits: the CPA in aggregate shall not exceed 15 MW installed capacity. This applies for Greenfield as well as capacity addition projects. o For CPAs that are Greenfield projects, the installed capacity of the CPA shall not exceed 15 MW throughout the CPA's crediting period. o For CPAs involving capacity additions, the added capacity of the units in the CPA shall not exceed 15 MW- throughout the CPA's crediting and should be physically distinct[7] from the existing units.	[Yes/No]	FSR and EPC/panel supply contract/purchase order specifying the installed capacity and confirming that the proposed project is not a combined heat and power project.
f	The SSC-CPA should comply with the requirements stated in the generic CPA-DD for the following: • Stakeholder consultation • Assessment of environmental impacts if any and as required by national regulations	[Yes/No]	For Stakeholder consultation: Minutes of the meeting For Environmental Impacts: GPS coordinates of the CPA site location cross-checked against the list of designated

[7] 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".

			watershed protected areas[8]; Land Title Deed; Environmental Impact Assessment Report or equivalent if required by national regulations
g	The SSC-CPA shall undergo a de-bundling check as follows: A proposed small-scale CPA of a PoA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity which satisfies both conditions (a) and (b) below: 1. Has the same activity implementer as the proposed small scale CPA or has a coordinating managing entity, which also manages a large scale PoA of the same technology/measure, and; 2. The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point. However, if the total size of such a CPA combined with a registered small-scale CPA of a PoA does not exceed an installed capacity of 15MW, then the proposed SSC CPA is not considered to be a debundled component of a large-scale activity.	[Yes/No]	CPA-CME contract confirming that SSC-CPA is not a debundled component of any other large scale project activity; check against Thai Solar Database
h	Conditions to provide an affirmation that funding from Annex I parties, if any, do not result in a diversion of official development assistance.	[Yes/No]	CPA-CME contract confirming that no ODA has been diverted
i	All the SSC-CPA owners shall formally/legally own the land/ rooftops, on which the SSC-CPA is going to be installed, or rent the land/ rooftops from the legal owners.	[Yes/No]	Land or rooftop lease/ownership agreements
j	The SSC-CPA owners shall have a business license or should have been legally registered to conduct business in Thailand.	[Yes/No]	Company business license
k	Contractual provisions should be in place to ensure that those operating the CPA are aware of, and have agreed,	[Yes/No]	CPA-CME contract

[8] SD_38-watershed-list and SD_42-watershed-area-map

	that their activity is being subscribed to the PoA.		
1	Project activities that involve the transfer of equipment such as panels or inverters from other existing operational projects shall not be eligible for inclusion in this PoA.	[Yes/No]	Statement in the CPA-CME contract

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

A SSC-CPA is automatically additional since it meets the eligibility criteria for the inclusion of the CPA in the PoA, as per section A.4.2.2 of the PoA-DD.

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.

>>

Table 4: Emission sources within the project boundary

Source		Gas	Included?	Justification / Explanation
Baseline	CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project activity	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam	CO_2	No	N.A.
		CH_4	No	N.A.
		N_2O	No	N.A.
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	CO_2	No	N.A.
		CH_4	No	N.A.
		N_2O	No	N.A.
	For hydro power plants, emissions of CH_4 from the reservoir	CO_2	No	N.A.
		CH_4	No	N.A.
		N_2O	No	N.A.

The current CPA is located in [location of CPA].The coordinates of the sites are 15”0'0.9N and 100”41'42.17E, which fall inside the geographical boundary of the PoA, i.e. Thailand.

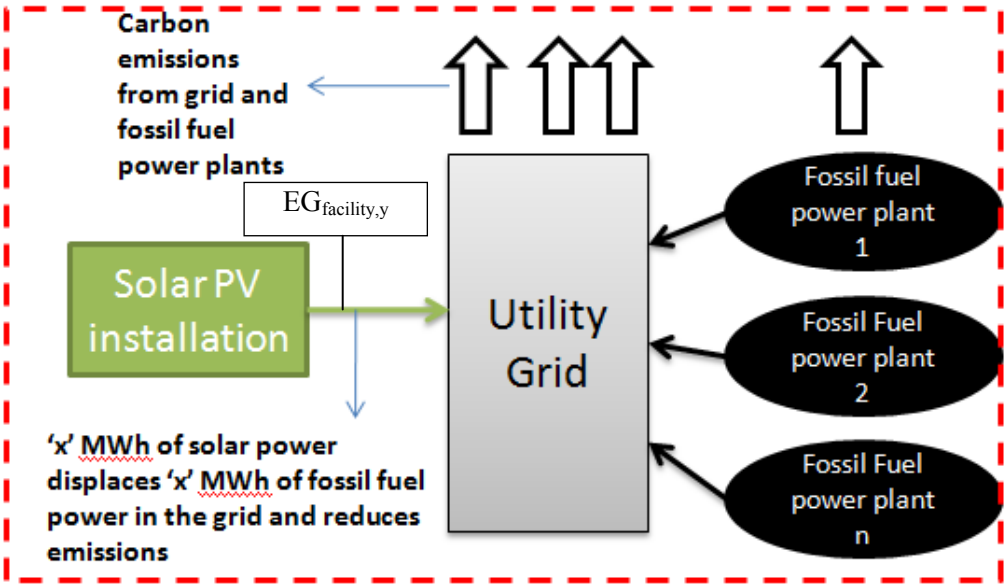

Figure 1: Project boundary for the SSC-CPA

B.5. Emission reductions:

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

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Data / Parameter:	**IC_y**
Data unit:	MW
Description:	Total Installed Capacity
Source of data used:	Power purchase agreement and/or Feasibility Study Report and/or Technical design documentation, and/or EPC contract.
Value applied:	<XXX>
Justification of the choice of data or description of measurement methods and procedures actually applied :	The value reflects the expected capacity to be installed at the power plant according to the plant design parameters.
Any comment:	Actual installed capacity might be slightly different than planned at the time of inclusion. CPA Owners are obliged to notify the CME of the actual installed capacity and also any changes to the installed capacity.

Data / Parameter:	**$EF_{CO2,grid,y}$** ($EF_{grid,CM,y}$)

Data unit:	tCO_2/MWh
Description:	Combined Margin Grid Emission factor
Source of data used:	Thailand Greenhouse Gas Management Organisation (TGO)- Host Designated National Authority (DNA)
Value applied:	0.5554[9]
Justification of the choice of data or description of measurement methods and procedures actually applied :	This is the data published by the Thai DNA, Thailand Greenhouse Gas Management (TGO). The calculation is also in line with the latest version of *"Tool to calculate the emission factor for an electricity system."*This is the most authentic data available about Thailand's grid emission factor currently.
Any comment:	Note that $EF_{CO2,grid,y}$ is the parameter notation taken from Equation (1) of the Methodology, while $EF_{grid,CM,y}$ is the equivalent notation for the same parameter used in the "Tool to calculate the emission factor of an electricity system"

In cases of capacity expansion:

Data / Parameter:	$\sigma_{historical}$
Data unit:	MWh/yr
Description:	Standard deviation of the annual average historical net electricity generation delivered to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity.
Source of data used:	Historical records of electricity generation and sale to grid of existing plant, such as plant log-books and/or electricity sales receipts, as appropriate for each CPA.
Value applied:	To be specified in the CPA-DD (specific)
Justification of the choice of data or description of measurement methods and procedures actually applied :	Calculated from data used to establish $EG_{historical}$ Parameter to be calculated as the standard deviation of the annual generation data used to calculate $EG_{historical}$ for retrofit or replacement project activities.
Any comment:	$\sigma=\sqrt{\sum(x - x')^2/n}$; where x' is the mean, n is the number of data points, x is the data value and σ is the standard deviation.

Data / Parameter:	$EG_{historical}$
Data unit:	MWh
Description:	Annual average historical net electricity generation by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity (MWh)
Source of data used:	Historical records of electricity generation and sale to grid of existing plant, such as plant log-books and/or electricity sales receipts, as appropriate for each CPA.

[9] SD_6-GEFREPORT_EN,table 10

Value applied:	To be specified in the CPA-DD
Justification of the choice of data or description of measurement methods and procedures actually applied :	Average of historical net electrical energy levels delivered by the existing facility, spanning all data from the most recent available year (or month, week or other time period) to the time at which the facility was constructed, retrofit, or modified in a manner that significantly affected output (i.e. by 5% or more), shall be used. To determine $EG_{historical}$, project participants may choose between the following two historical periods (This allows some flexibility; the use of the longer time period may result in a lower standard deviation and the use of the shorter period may allow a better reflection of the (technical) circumstances observed during the more recent years). (a) The three last calendar years (five calendar years for hydro project) prior to the implementation of the project activity; or (b) The time period from the calendar year following *DATEhist*, up to the last calendar year prior to the implementation of the project, as long as this time span includes at least three calendar years (five calendar years for hydro project), where *DATEhist* is latest point in time between: (i) The commercial commissioning of the plant/unit; (ii) If applicable: the last capacity addition to the plant/unit; or (iii) If applicable: the last retrofit of the plant/unit
Any comment:	-

Data / Parameter:	**$DATE_{BaselineRetrofit}$**
Data unit:	Date
Description:	Point in time when the existing equipment would need to be replaced in the absence of the project activity (date)
Source of data used:	Date of end of technical lifetime of existing baseline equipment as per manufacturer's specifications.
Value applied:	To be specified in the CPA-DD
Justification of the choice of data or description of measurement methods and procedures actually applied :	Solar panels have a relatively standardized technical lifetime and this lifetime is not influenced by the need for regular or specific maintenance of the panels; as such, the manufacturer's specifications provide an independent, consistent and reliable estimate.
Any comment:	To be assessed in more detail at the CPA level if required.

Data / Parameter:	**$EF_{grid,BM,y}$**
Data unit:	tCO_2/MWh
Description:	Build margin Grid Emission factor
Source of data used:	Thailand DNA (TGO)
Value applied:	0.4231

Justification of the choice of data or description of measurement methods and procedures actually applied :	This is the data publish by the Thai DNA, Thailand Greenhouse Gas Management (TGO). The calculations are also in line with the latest version of *"Tool to calculate the emission factor for an electricity system."* This is the most authentic data available about Thailand's grid emission factor currently.
Any comment:	-

Data / Parameter:	$\mathbf{EF_{grid,OM,y}}$
Data unit:	tCO_2/MWh
Description:	Operating margin Grid Emission factor
Source of data used:	Thailand DNA (TGO)
Value applied:	0.5996
Justification of the choice of data or description of measurement methods and procedures actually applied :	This is the data publish by the Thai DNA, Thailand Greenhouse Gas Management (TGO). The calculation is also in line with the latest version of *"Tool to calculate the emission factor for an electricity system."* This is the most authentic data available about Thailand's grid emission factor currently.
Any comment:	-

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

>>

Baseline Emissions:

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.

$$BE_y = EG_{BL,y} * EF_{CO2,grid,y}$$

Where:

BE_y Baseline Emissions in year y (tCO_2)

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

$EF_{co2,grid,y}$ CO_2emission factor of the grid in year y (t-CO_2/MWh)

For capacity addition:

Power generation can vary significantly from year to year, due to natural variations in the availability of solar source, the use of few historical years to establish the baseline electricity generation can therefore involve a significant uncertainty. The methodology AMS.I.D, version 17, EB 61 addresses this uncertainty by adjusting the historical electricity generation by its standard deviation. This ensures that the baseline electricity generation is established in a conservative manner and that the calculated emission reductions are attributable to the project activity. Without this adjustment, the calculated emission reductions could mainly depend on the natural variability observed during the historical period rather than the effects of the project activity.

1. According to AMS.I.D, version 17, EB 61, The baseline emissions for capacity additions($BE_{retrofit,CO_2,y}$) are thus calculated as follows:

$$BE_{retrofit,CO2,y} = [EG_{BL,retrofit,y}] * \mathrm{EF}_{\mathrm{CO2}} \quad \textbf{(1)}$$

Where:

$$EG_{BL,retrofit,y} = \mathrm{EG}_{\mathrm{PJ,\,facility,y}} - (\mathrm{EG}_{\mathrm{historical}} + \sigma_{\mathrm{historical}}) \quad \textbf{(2)}$$

$$EG_{BL,retrofit,y} = 0 \; on/after \; DATE_{BaselineRretrofit} \quad \textbf{(3)}$$

<u>Where:</u>

$EG_{BL,retrofit,y}$	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year *y* (MWh)
$\mathrm{EG}_{\mathrm{PJ,\,facility,y}}$	Quantity of net electricity supplied to the grid by the project plant/unit in year *y* (MWh)
$\mathrm{EG}_{\mathrm{historical}}$	Annual average historical net electricity generation by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity (MWh)
	Average of historical net electrical energy levels delivered by the existing facility, spanning all data from the most recent available year (or month, week or other time period) to the time at which the facility was constructed, retrofit, or modified in a manner that significantly affected output (i.e. by 5% or more), shall be used.

	To determine $EG_{historical}$, project participants may choose between the following two historical periods (This allows some flexibility; the use of the longer time period may result in a lower standard deviation and the use of the shorter period may allow a better reflection of the (technical) circumstances observed during the more recent years). (a) The three last calendar years (five calendar years for hydro project) prior to the implementation of the project activity; or (b) The time period from the calendar year following *DATEhist*, up to the last calendar year prior to the implementation of the project, as long as this time span includes at least three calendar years (five calendar years for hydro project), where *DATEhist* is latest point in time between: (i) The commercial commissioning of the plant/unit; (ii) If applicable: the last capacity addition to the plant/unit; or (iii) If applicable: the last retrofit of the plant/unit
$\sigma_{historical}$	Standard deviation of the annual average historical net electricity supplied to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity (MWh)
$DATE_{BaselineRretrofit}$	Point in time when the existing equipment would need to be replaced in the absence of the project activity (date)

CO_2 Emission Factor of the grid:

Refer to section E.6.2 of the PoA-DD.

Project Emissions:

According to the methodology AMS I.D version 17, the project emissions for a solar PV installation is zero, $PE_y = 0$.

Leakage:

The energy equipment of a solar PV installation is not transferred from another project activity, so the leakage is considered to be zero. $LE_y = 0$

Emission Reductions:

$ER_y = BE_y – PE_y - LE_y$

Where:

ER_y	Emission reductions in year *y* (tCO_2/y)
BE_y	Baseline Emissions in year *y* (tCO_2/y)
PE_y	Project emissions in year *y* (tCO_2/y)
LE_y	Leakage emissions in year *y* (tCO_2/y)

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

>>

Table 5: Summary of emissions for SSC-CPA-XXX

Year	Estimation of project activity emissions (tonnes of CO_2 e)	Estimation of baseline emissions (tonnes of CO_2 e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of overall emission reductions (tonnes of CO_2 e)
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Total (tonnes of CO_2 e)	0		0	

OR

Year	Estimation of project activity emissions (tonnes of CO_2 e)	Estimation of baseline emissions (tonnes of CO_2 e)	Estimation of leakage (tonnes of CO_2 e)	Estimation of overall emission reductions (tonnes of CO_2 e)
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	

Year 20XX	0		0	
Year 20XX	0		0	
Year 20XX	0		0	
Total (tonnes of CO_2 e)	0		0	

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

B.6.1. Description of the monitoring plan:

>>

Data / Parameter:	$EG_{facility,y}$
Data unit:	MWh/y
Description:	Quantity of net electricity supplied to the grid in year y
Source of data to be used:	Measured by electricity meters
Value of data applied for the purpose of calculating expected emission reductions in section B.5	To be specified in each CPA-DD
Description of measurement methods and procedures to be applied:	Continuous monitoring, hourly measurement and at least monthly recording. The net electricity supplied to a grid is the difference between the measured quantities of the grid electricity export ($EG_{exp,y}$) and the import ($EG_{imp,y}$): $EG_{BL,y} = EG_{exp,y} - EG_{imp,y}$
QA/QC procedures to be applied:	Meters will be calibrated at appropriate intervals according to the PEA standards (i.e. national standards[10]). Measurement results shall be cross checked with records for sold/purchased electricity.
Any comment:	"$EG_{facility,y}$" is the monitoring parameter used to monitor quantity of net electricity supplied to the grid in the year y, as per Table 1: Parameters for monitoring during the crediting period, S.No 5, page 11/16 of AMS.I.D, version 17. $EG_{facility,y}$ is equivalent to $EG_{BL,y}$ from AMS I.D Equation (1) and is also equivalent to $EG_{PJ,facility,y}$ in the case of capacity additions, as per Equation (3).

[10] SD_24-INTERCONNECTIONCODE_PEA_EN[1], Para-6, Page-7

	This data will be archived up to 2 years after the completion of crediting period or last issuance whichever is later.

Monitoring Plan Objective

The objective of the monitoring plan is to assure the complete, consistent,clear, and accurate monitoring of data and calculation of the CPA emission reductions during the whole crediting period. The SSC-CPA implementing entity is responsible for the implementation of the monitoring plan.

Monitoring Parameter

The electricity consumption ($EG_{imp)}$ and the electricity fed into the grid (EG_{exp}) are to be monitored continuously and recorded at least monthly. Meters will be calibrated as per manufacturer's specification.

QA & QC

The meter data will be compared with the monthly electricity bill/receipts and thus would be verified.

Monitoring Responsibility

The SSC-CPA implementing entity will appoint personnel responsible for supervising, verifying and recording data for clear and accurate monitoring and calculation of project emission emission reductions during the whole crediting period. The assigned responsibilities and the authorized persons to accomplish the same are given in Table 8 below:

Table 6: Monitoring Responsibility

Responsibility	Authorized/Assigned person
Record of meter reading	XXX
Maintaining of Log sheets	XXX
Generation of daily and monthly generation report	XXX
Data archiving and record keeping	XXX
Training of the personnel involved in the monitoring of data	XXX
Calibration of meters	XXX
Communication with PoA CME and DOE	XXX

Data Storage and Archiving

Readings from the energy meter will be collected under the supervision of the *Technician*. The data would be recorded and stored in logs as well as in electronic form. All the data monitored under the monitoring

plan will be kept for two years after the end of the crediting period or till the last issuance of CERs, whichever occurs later.

Training

All employees responsible for operation, maintenance and monitoring related to the estimation of CERs will be trained by the CME in accordance with the monitoring plan.

SECTION C. Environmental analysis

>>

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

As defined in the PoA DD, the environmental analysis is undertaken at the CPA level since the impact of each CPA varies according to the location, size and applied technology type of each CPA. Therefore, assessment of environmental impacts at CPA level is deemed the most appropriate choice.

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

>>

[In Thailand, a solar power plant only requires an EIA if it is located within one of the designated protected watershed areas of Thailand. This is because, except for projects in these areas, solar power projects are not expected to have any significant negative environmental impacts. In almost all cases, an EIA will not be required and there will be no significant negative environmental impacts of the project and in such cases there will be no documentation of the analysis of environmental impacts required in the CPA-DD specific].

Table 7: EIA requirement for SSC-CPA in Thailand

S.No	EIA Requirement Condition	Yes/No	Check
1	Does the location of the potential CPA fall into any one of the 25 designated watersheds of Thailand[11]?	[Yes/No]	Watershed area list; GPS coordinates of the site

[In cases where an EIA is required, a summary of significant potential environmental impacts and how they will be mitigated/ managed shall be documented in the CPA-DD specific].

[In cases where an EIA is not required, a CPA Owner may decide to undertake a formal assessment of potential environmental impacts, such as an Initial Environmental Evaluation (IEE). In such cases, a summary of significant potential environmental impacts and how they will be mitigated/ managed may be documented in the CPA-DD specific. However, this is optional and not obligatory].

[11] http://water.rid.go.th/hyd/basin/25basin.htm

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:

>> As the power plant site is not located within a designated watershed area, the current SSC-CPA [does not/does] require an EIA.

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.

As the PoA is implemented across several geographical locations within Thailand, the CME finds it appropriate to conduct the local stakeholder consultation at the SSC-CPA level. By conducting the local stakeholder consultation at the SSC-CPA level, it will be possible to address the views and comments of the stakeholder's specific to the site in a better way than at the PoA level.

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

>>

[Date, time and venue of the Stakeholder meeting.]

[Categories of invitees/attendees of the meeting]

[Description of the meeting]

The comments/doubts raised during the stakeholder consultation are summarised below in Section D.3.

D.3. Summary of the comments received:

>>

Table 8: Summary of comments received

Q.No	Name of the Person	Designation	Question raised?

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

>>

Table 9: Account on comments taken

Q.No	Answers (due account taken)

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:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

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