CDM small-scale project activities bundling form
(Version 05.0)

BASIC INFORMATION	
Title of the bundle	Bundled Solar Power Project by Emami Power Limited
Number of project activities in the bundle	Two
Titles of the project activities in the bundle	3 MW solar power project at Tamilnadu 10 MW solar power project at Karnataka
Host Party	India
Bundle type *(Tick relevant boxes)*	☒ All project activities in the bundle apply the same set of methodologies and technology/measure: ☒ A single PDD covering all project activities in the bundle has been prepared ☐ Separate PDDs, each of which corresponding to each project activity in the bundle, have been prepared ☐ Different project activities in the bundle apply different set of methodologies and/or technologies/measures
Applied methodologies and standardized baselines	Methodology: AMS-I.D: Grid connected renewable electricity generation (Version 18, EB 18)
Sectoral scopes linked to the applied methodologies	Sectoral scope: 01, Energy industries (renewable/non-renewable)
Estimated amount of annual average GHG emission reductions by the bundle	21,633 tCO2e

SECTION A. Description of bundle

A.1. General description of project activities in bundle

Title of project activity	Small-scale project type (I, II or III)	Applied methodologies (UNFCCC methodology number)	Technologies/measures
3 MW solar power project at Tamilnadu	I	Methodology: AMS-I.D: Grid connected renewable electricity generation (Version 18, EB 18)	Solar power project
10 MW solar power project at Karnataka	I	Methodology: AMS-I.D: Grid connected renewable electricity generation (Version 18, EB 18)	Solar power project

A.2. Location of project activities in bundle

Title of project activity	Address	Geographic coordinates
3 MW solar power project at Tamilnadu	Village: Neralekunte & Dommathamari, Taluka: Pavagada District: Tumkur State: Karnataka	Latitude: 09^0 13'37.2'' N (9.227 N) Longitude: $78^0$19'27.6'' E (78.32433 E)
10 MW solar power project at Karnataka	Village: Perunali Taluka: Kamuthi District: Ramanathpuram State: Tamil Nadu	Latitude: 13^0 59' 33.04'' N (13.992511 N) Longitude: $77^0$21'56.79'' E (77.365775 E)

SECTION B. Application of selected methodologies and standardized baselines

B.1. Summary of ex ante estimates of emission reductions (total in the bundle)

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
Year 1	21,633	0	0	21,633
Year 2	21,633	0	0	21,633
Year 3	21,633	0	0	21,633
Year 4	21,633	0	0	21,633
Year 5	21,633	0	0	21,633
Year 6	21,633	0	0	21,633
Year 7	21,633	0	0	21,633
Total	151,431	0	0	151,431
Total number of crediting years	07			
Annual average over the crediting period	21,633	0	0	21,633

B.2. Establishment of baseline scenario

>> As per para 19 of the methodology AMS I.D. (Version 18, EB 81, Annex 24) "The baseline scenario is that 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 grid."

As the project activity displaced electricity from Integrated Indian grid, hence Integrated Indian grid connected power plants are considered for the project baseline.

As per para 22 of the methodology AMS I.D. (Version 18, EB 81, Annex 24), " Baseline emissions include only CO2 emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants."

BEy = EG PJ,y X EF grid, y

Where:

BEy = Baseline emissions in year y (t CO2)
EG PJ,y = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)
EF grid, y = Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (t CO2/MWh)

B.3. Monitoring plan

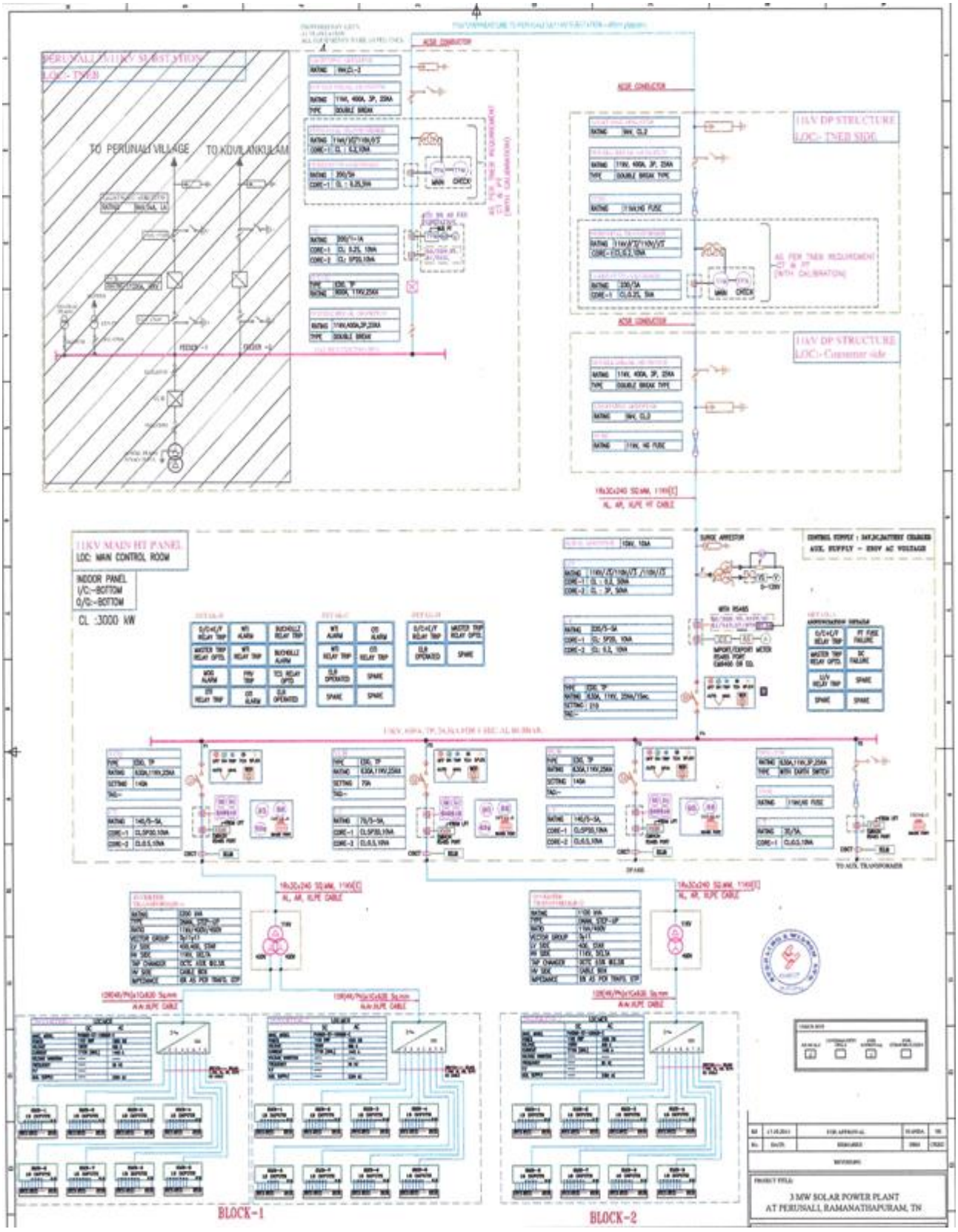
>> **Data and parameters to be monitored**

Data/Parameter	$EG_{PJ, facility, y}$ (Karnataka)
Data unit	MWh
Description	Quantity of net electricity supplied by project activity to grid in year y (i.e. Integrated Indian grid power distribution company for the state of Karnataka)
Source of data	Monthly electricity generation report (Form B) by state electricity utility
Value(s) applied	17,827
Measurement methods and procedures	Measurement methods and procedures will be as per the procedure mentioned in the power purchase agreement. Recording procedure: The export and import energy will be measured continuously using Main & Check meters. Export & Import readings of Main & Check meters (with accuracy class 0.2S) shall be taken in presence of officials of distribution licensee and PP's representative. Check meter reading will be considered when Main meter is found to be defective or stopped. The metering point of Emami Power Ltd. is connected to the Venkatapura substation (66/11 kV). $EG_{PJ,y} = EG\ (Export)_y - EG\ (Import)_y$
Monitoring frequency	Continuous monitoring, hourly measurement and monthly recording

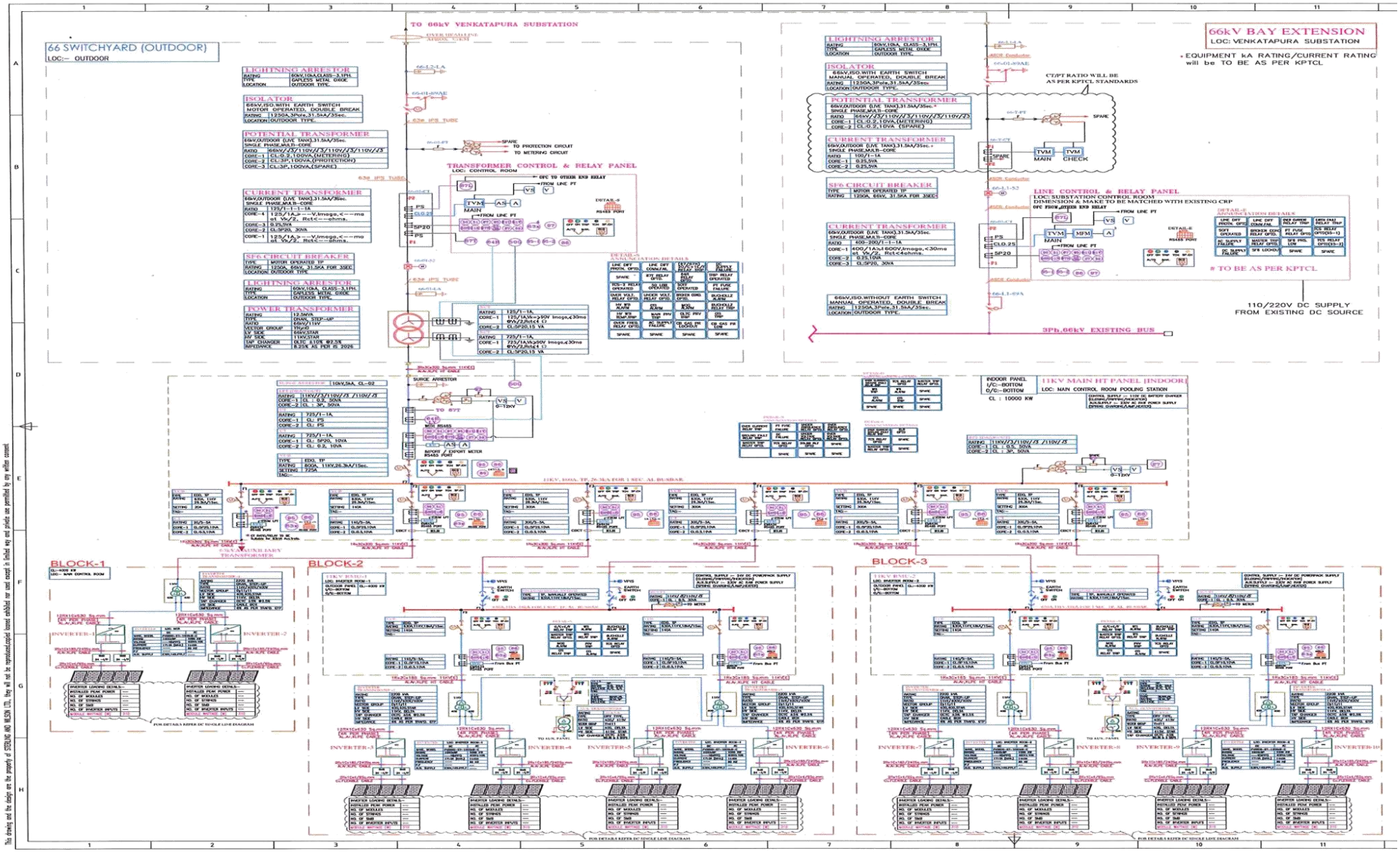
QA/QC procedures	The net electricity supplied to the grid can be cross checked with the invoice for sold electricity. Invoices are prepared as per clause no. 13.3 of the Power Purchase Agreement, "115% of energy provided by DISCOM for start-up power shall be deducted from the energy pumped into the grid by the developer for determine the amount payable by DISCOM". The energy meters will be tested / calibrated once in a year. The meters will be tested / calibrated using accredited mobile laboratory or at any accredited laboratory in the presence of state utility personnel & representative of PP.
Purpose of data	Calculation of baseline emission
Additional comment	Data will be archived in electronic form for two years after the end of crediting period or of the last issuance of CERs for this project activity, whichever occurs later.

Data/Parameter	$EG_{PJ, facility, y}$ (Tamilnadu)
Data unit	MWh
Description	Quantity of net electricity supplied by project activity to grid in year y (i.e. Integrated Indian grid power distribution company for the state of Tamilnadu)
Source of data	Monthly electricity generation report (Statement of solar power Generation) by state electricity utility (TANGEDCO)
Value(s) applied	5,140
Measurement methods and procedures	Measurement methods and procedures will be as per the procedure mentioned in the power purchase agreement. The export and import energy will be measured continuously using Main & Check meters (with accuracy class 0.2S). Export & Import readings of Main & Check meters shall be taken as per the procedures devised by the distribution licensee / STU. The Reading of main & check meter (both Export & Import readings) would be recorded in log book on monthly basis. Check meter reading will be considered when Main meter is found to be defective or stopped. The metering point of Emami Cement Ltd. is at project site. Solar Power plant is connected to the Perunali substation (33/11 kV) $EG_{PJ,y}$ = EG export – EG import
Monitoring frequency	Continuous monitoring, hourly measurement and monthly
QA/QC procedures	The net electricity supplied to the grid can be cross checked with the invoice for sold electricity. The energy meters will be tested / calibrated once in a year. The meters will be tested / calibrated using accredited mobile laboratory or at any accredited laboratory in the presence of state utility personnel & representative of PP.
Purpose of data	Calculation of baseline emission
Additional comment	Data will be archived in electronic form for two years after the end of crediting period or of the last issuance of CERs for this project activity, whichever occurs later.

The single line diagram of solar plant connected to Pernauli substation is below:



The Single line diagram of Karnataka 10 MW Solar power project is below:.


TO 66kV VENKATAPURA SUBSTATION
66 SWITCHYARD (OUTDOOR)
LOC:– OUTDOOR
LIGHTNING ARRESTOR
ISOLATOR
POTENTIAL TRANSFORMER
CURRENT TRANSFORMER
SF6 CIRCUIT BREAKER
POWER TRANSFORMER
TRANSFORMER CONTROL & RELAY PANEL
LOC: CONTROL ROOM
66kV BAY EXTENSION
LOC: VENKATAPURA SUBSTATION
EQUIPMENT kA RATING/CURRENT RATING will be TO BE AS PER KPTCL
CT/PT RATIO WILL BE AS PER KPTCL STANDARDS
LINE CONTROL & RELAY PANEL
LOC: SUBSTATION CONTROL ROOM
TO BE AS PER KPTCL
110/220V DC SUPPLY FROM EXISTING DC SOURCE
3Ph,66kV EXISTING BUS
11KV MAIN HT PANEL (INDOOR)
LOC: MAIN CONTROL ROOM POOLING STATION
BLOCK-1
BLOCK-2
BLOCK-3

SECTION C. Crediting period

C.1. Type of crediting period

>> Renewable (2 times renewable for 7 years each)

C.2. Start date of crediting period

>>01/04/2020

C.3. Duration of crediting period

>>07 years

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Document information

Version	*Date*	*Description*
05.0	6 July 2017	Revision to: • Add a row to indicate bundle type in the cover page; • Add a section on the establishment of baseline scenario; • Remove a row on project participants in the cover page and an appendix on contact information of project participants.
04.0	5 July 2017	Revision to: • Modify the elements in the cover page; • Remove the sections on Parties and project participants and the start and duration of bundle; • Change the symbol from F-CDM-SSC-BUN to CDM-SSC-BUN-FORM; • Make editorial improvement.
03.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the CDM small-scale project activities bundling form" (EB 66, Annex 23).
02.0	24 February 2006	EB 23, Annex 26
01.0		Initial adoption.

Version	*Date*	*Description*
05.0	6 July 2017	Revision to: • Add a row to indicate bundle type in the cover page; • Add a section on the establishment of baseline scenario; • Remove a row on project participants in the cover page and an appendix on contact information of project participants.

Decision Class: Regulatory
Document Type: Form
Business Function: Registration
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