

PART I Monitoring of programme of activities (PoA)

SECTION A. Description of PoA

A.1. General description of PoA

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The purpose of PoA is to generate energy by implementation of solar power projects and supply generated electricity to the connected grid. All Component Project Activity (CPAs) included in the PoA are implemented within the geographical boundary of India.

This POA includes 10 CPAs with a total planned capacity of 72.75 MW. This monitoring report covers CPA-010 with an installed capacity of 15 MW which are:

CPA Reference	CPA Title	Installed Cap, MW
6328-P1-0010-CP1	CPA - 010: 15 MW Solar PV Power Project, Singrauli, Madhya Pradesh, India	15

A.1.1. Corresponding generic component project activities (CPAs)

Title and reference number of the corresponding generic CPA	Version of the PoA-DD	Sectoral scopes	Applied methodologies and standardized baselines
CPA_DD_Generic_Solar PoA_2012_05_21	1.2	01	AMS-I.D. "Grid connected renewable electricity generation"; Version 17

A.1.2. CPAs included in the PoA

Title and UNFCCC reference number of the CPA	Version of the PoA-DD	Title and reference number of the corresponding generic CPA	Crediting period type and duration	Covered in this monitoring report? (yes/no)
CPA - 001: 5 MW Solar PV power project, Patan District, Gujarat, India 6328-P1-0001-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 15/07/2012 to 14/07/2019	No
CPA - 002: 5 MW Solar PV power project, Sabarkantha District, Gujarat, India 6328-P1-0002-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 31/01/2013 to 30/01/2020	No
CPA - 003: 5 MW Solar PV power project, Jodhpur District, Rajasthan, India 6328-P1-0004-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 01/05/2013 to 30/04/2020	No
CPA - 004: 6 MW Solar PV power project, Patan, Gujarat, India 6328-P1-0003-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 01/05/2013 to 30/04/2020	No
CPA - 005: 5 MW Solar PV power project, Kutch, Gujarat, India 6328-P1-0005-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 27/06/2013 to 26/06/2020	No
CPA - 006: 5 MW Solar PV power project, Surendranagar, Gujarat, India	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 09/07/2013 to 08/07/2020	No

Title and UNFCCC reference number of the CPA	Version of the PoA-DD	Title and reference number of the corresponding generic CPA	Crediting period type and duration	Covered in this monitoring report? (yes/no)
6328-P1-0006-CP1				
CPA - 007: 5 MW Solar PV power project, Bikaner, Rajasthan, India 6328-P1-0007-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 05/03/2014 to 04/03/2021	No
CPA - 008: 11.25 MW Solar PV Power Project, Rajgarh, Agar, Madhya Pradesh, India 6328-P1-0008-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 01/04/2015 to 31/03/2022	No
CPA - 009: 10.5 MW Solar PV Power Project, Agar and Sehore, Madhya Pradesh, India 6328-P1-0009-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 01/04/2015 to 31/03/2022	No
CPA - 010: 15 MW Solar PV Power Project, Singrauli, Madhya Pradesh, India 6328-P1-0010-CP1	1.2	CPA_DD_Generic_Solar PoA_2012_05_21	Renewable 01/08/2017 to 31/07/2024	Yes

A.2. Coordinating/managing entity

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Emergent Ventures India Pvt. Ltd.

SECTION B. Implementation of PoA**B.1. Description of implemented PoA**

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The CPA covered in this monitoring report are in operation. Details of implementation are available in section C. No sampling approach was applied in the current monitoring report.

B.2. Post-registration changes to PoA**B.2.1. Corrections**

No corrections have been made or are proposed to PoA information or parameters fixed at the registration or renewal of PoA as applicable from this monitoring period.

B.2.2. Inclusion of monitoring plan

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B.2.3. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

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No permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents are applied to the current monitoring period.

B.2.4. Changes to programme design

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No changes to programme design of the PoA are applicable during the current monitoring period.

B.2.5. Changes specific to afforestation or reforestation activities

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This is not an afforestation or reforestation programme. Hence this does not apply to the registered PoA.

PART II Monitoring of CPAs

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SECTION C. Implementation of CPAs

C.1. Description of implemented CPAs

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The CPA-010 is greenfield solar energy power plants and are connected to the grid. The renewable electricity thus generated avoids generation of equivalent electricity in the carbon intensive grid and reduces equivalent CO₂ emissions.

Information of the installed technologies, equipment and implementation status of the CPA is tabulated below.

Title and UNFCCC reference number of the CPA	Modules	Inverters	Installed capacity (MWp)	Commissioning date
CPA - 010: 15 MW Solar PV Power Project, Singrauli, Madhya Pradesh, India 6328-P1-0010-CP1	240Wp 62,640 Nos.	630kW 24 Nos.	15.0	31/12/2014

C.2. Location of CPAs

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Title and UNFCCC reference number of the CPA	Location	Geo-coordinates
CPA - 010: 15 MW Solar PV Power Project, Singrauli, Madhya Pradesh, India 6328-P1-0010-CP1	Village: Garda Tehsil/Town: Singrauli/Jayant District: Singrauli State: Madhya Pradesh	Lat: 24°07'08" N Long: 82°38'30" E

C.3. Post-registration changes to CPAs

C.3.1. Temporary deviations from the monitoring plans in the included CPA-DDs, applied methodologies, standardized baselines or other methodological regulatory documents

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There are no temporary deviations from the monitoring plans in the included CPA-DD or the applied methodologies for any CPA covered in the current monitoring period.

C.3.2. Corrections

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There are no corrections to project information or parameters fixed at the inclusion or renewal of crediting period of the CPA covered in the current monitoring period.

C.3.3. Changes to the start date of the crediting period

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There are no changes to the start date of the crediting period fixed at the inclusion of the CPA covered in this monitoring report

C.3.4. Inclusion of monitoring plan

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Not applicable in the current monitoring period.

C.3.5. Permanent changes to the included monitoring plans, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

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There are no permanent changes to the monitoring plan in the included CPA-DD, or permanent deviation of monitoring from the applied methodologies for the CPA covered in this monitoring report.

C.3.6. Changes to project design

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There are no changes to the project design of the CPA covered in this monitoring report.

C.3.7. Changes specific to afforestation or reforestation CPA

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This is not an afforestation or reforestation programme. Hence this does not apply to the registered CPA.

SECTION D. Description of monitoring system of CPA

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A uniform monitoring system is applied in this CPA and hence this is described here.

1.CPA 6328-P1-0010-CP10

CPA require monitoring of “**Net quantity of electricity export to the grid during the year**”. CME has established a well defined monitoring system to monitor and record data from each CPA as also laid out in each CPA-DD.

Net quantity of electricity export to the grid during the year

The net electricity (difference of total export and total import) export to the grid by the project activity is monitored by main meter installed at the interface point. The main meter is used for monitoring the quantity of electricity that is exported and imported between the grid company and the SSC-CPA implementing entity. The monthly electricity sale receipt mentioning the total export and total import is provided by the grid company (purchaser of the power) to the project owner, which is the basis of emission reduction calculation. One back-up meter is installed alongside the main meter.

1.Monitoring Objective

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

2.Metering System

Below table shows the metering system installed by the project owner for data management of quantity of electricity supplied to the grid:

Monitoring Parameter	Metering System	Status (Yes/ No)
Net electricity supplied to the grid by the SSC-CPA	Main Meter	Yes
	Check Meter	Yes

3. Monitoring Responsibility

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

Responsibility	Authorized / Assigned person
	CPA010
Recording of meter reading	Manager (EEMG), SSTPS
Maintaining log sheets	Manager (EEMG), SSTPS
Generation of daily and monthly generation report	Manager (EEMG), SSTPS
Data archiving and record keeping	Manager (EEMG), SSTPS
Training of the personnel involved in the monitoring of data	Manager (EEMG), SSTPS
Communication with PoA CME and DOE	GM (TS), SSTPS, NTPC Ltd.

4. QA/ QC procedure

The monitoring plan includes all the procedures, reports, data personnel appointed to ensure the monitoring activity. The project owner will have internal inspections to guarantee the implementation of the monitoring procedures.

The reading from energy meter will be taken jointly by representative of PGCIL and Project developer at the appointed date weekly. The energy injected into the grid shall be reflected in the monthly/weekly statement issued by Northern Region Power Committee (NRPC) which forms the basis of billing against which an 'Invoice' is issued by the project developer to the third party.

5. Crosschecking

The net electricity generated as stated in the monthly statement would be cross-checked by the invoice raised to third party.

6. Procedure for handling uncertainties

a) In the event of failure of meters (main meter & check meter)

In the event of failure of main meter, PGCIL personnel would be informed for prompt replacement of the failed meter with a calibrated meter. However, the failure will not have any impact on the billing or emission reduction calculation as the check meter reading will form the basis till the time faulty main meter is replaced by the calibrated meter.

In the event of failure of check meter, PGCIL personnel would be informed for prompt replacement of the failed meter with a calibrated meter. However, the failure will not have any impact on the billing and emission reduction as both are based on the main meter readings.

In case of failure of both main meter and check meter, both the meters shall be calibrated immediately. IE will not account any emission reduction during this period.

b) In the event of main and / or check meter exceeds the maximum permissible limit of error

If the main metering system and / or check metering system is found to be outside the acceptable limits of accuracy, PGCIL personnel would be informed for prompt repair / re-calibration / replacement as soon as possible.

7. Data Storage and Archiving

Readings from energy meter will be collected under the supervision of the Manager (EEMG), SSTPS. The data would be recorded and stored in logs as well as in electronic form. The records are checked periodically. The data will be kept at safe storage for verification of emission reductions generated from the SSC-CPA. All the data monitored under the monitoring plan will be kept for two years after the end of crediting period or till the last issuance of CERs, whichever occurs later.

8. Training

All employees responsible for operation, maintenance and monitoring are trained in accordance with the monitoring plan. The training programs include the on-site operation rules, monitoring requirements, safety codes and inspection specifications, etc.

SECTION E. Data and parameters

E.1. Data and parameters fixed ex ante

Data/Parameter	$EF_{grid\ OM, y}$
Unit	tCO ₂ eq/MWh
Description	Operating Margin emission factor of the national grid
Source of data	Version 12, May 2017 of Central Electricity Authority (CEA) CO ₂ Baseline Database for the Indian Power Sector
Value(s) applied	0.9843
Choice of data or measurement methods and procedures	The SSC-CPA owners used the latest operating margin emission factor database available on the CEA website and fix the value ex-ante.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	The Operating Margin emission factor value determined is fixed for the entire crediting period of the SSC-CPA.

Data/Parameter	$EF_{grid\ BM, y}$
Unit	tCO ₂ eq/MWh
Description	Build Margin emission factor of the national grid
Source of data	Version 12, May 2017 of Central Electricity Authority (CEA) CO ₂ Baseline Database for the Indian Power Sector
Value(s) applied	0.9082
Choice of data or measurement methods and procedures	The SSC-CPA owners used the latest build margin emission factor database available on the CEA website and fix the value ex-ante.
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	The Build Margin emission factor value determined is fixed ex-ante for the entire crediting period of the SSC-CPA.

Data/Parameter	$EF_{grid\ CM, y}$
Unit	tCO ₂ eq/MWh
Description	Combined Margin emission factor of the national grid
Source of data	Calculated from the Operating and the Build margin emission factor
Value(s) applied	0.9652

Choice of data or measurement methods and procedures	The procedure followed to calculate the Combined Margin emission factor is justified as per the "Tool to calculate emission factor for an electricity system, Version 5.0, EB 87, Annex 9".
Purpose of data/parameter	Calculation of baseline emissions
Additional comments	The Combine Margin emission factor value determined is fixed ex-ante for the entire crediting period of the SSC-CPA..

E.2. Data and parameters monitored

CPA 6328-P1-0010-CP1

Data/Parameter	EG _{BL,y}												
Unit	MWh												
Description	Net quantity of electricity export to the grid during the year y.												
Measured/calculated/default	Measured												
Source of data	Meter Reading Instrument (MRI)												
Value(s) of monitored parameter	69798												
Monitoring equipment	<table><tr><th>Purpose</th><th>Main</th><th>Check</th></tr><tr><td>Meter No</td><td>NP-8240-A</td><td>NP-8239-A</td></tr><tr><td>Meter make</td><td>L&T</td><td>L&T</td></tr><tr><td>Accuracy</td><td>0.2 S</td><td>0.2 S</td></tr></table>	Purpose	Main	Check	Meter No	NP-8240-A	NP-8239-A	Meter make	L&T	L&T	Accuracy	0.2 S	0.2 S
Purpose	Main	Check											
Meter No	NP-8240-A	NP-8239-A											
Meter make	L&T	L&T											
Accuracy	0.2 S	0.2 S											
Measuring/reading/recording frequency	Continuously and recorded monthly												
Calculation method (if applicable)	Net electricity supplied to the grid by the project activity in a given month = Export – Import												
QA/QC procedures	Data Type: Calculated as difference between total energy export and import from grid Calibration Frequency: PGCIL to maintain Energy Meter as per CEA guidelines Archiving Policy: Paper and / or electronic Cross-checking of the net delivered to the grid can be cross-checked with the monthly invoice.												
Purpose of data/parameter	Baseline emissions calculation												
Additional comments	The Monitored Data to be kept for a minimum of two years after the end of the crediting period of each SSC-CPA.												

E.3. Implementation of sampling plan

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This is not applicable as no sampling approach is applied to the current monitoring period.

SECTION F. Calculation of emission reductions or net anthropogenic removals

F.1. Calculation of baseline emissions or baseline net removals

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Baseline Emissions: (BE y)

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.

$$BE_y = EG_{BL,y} * EF_{CO_2, grid, y}$$

Where:

BE_y = Baseline Emissions in year y (t CO₂)

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

$EF_{CO_2, grid, y}$ = CO₂ emission factor of the grid in year y (t CO₂/MWh)

Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity ($EG_{PJ,y}$) is calculated as below.

CPA UNFCCC reference number	$EG_{BL,y}$ (MWh)	$EG_{BL,y} * EF_{grid,CM,y}$	BE_y (tCO ₂ e)
CPA 6328-P1-0010-CP1	69,798	69798* 0.9652	67,369

F.2. Calculation of project emissions or actual net removals

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Project emissions: (PE_y)

The SSC-CPA is the implementation of grid connected *solar power generation*, which is a renewable source of power, thus will have no project emissions i.e., PE_y = 0

F.3. Calculation of leakage emissions

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Leakage Emissions: (LE_y)

No leakage emissions are considered for the SSC-CPA since no energy generating equipment will be transferred from another activity and no existing equipment will be transferred to another activity i.e., (LE_y) = 0

F.4. Calculation of emission reductions or net anthropogenic removals

CPA UNFCCC reference number	Baseline GHG emissions or baseline net GHG removals (t CO ₂ e)	Project GHG emissions or actual net GHG removals (t CO ₂ e)	Leakage GHG emissions (t CO ₂ e)	GHG emission reductions or net anthropogenic GHG removals (t CO ₂ e)			
				Before 01/01/2013	From 01/01/2013 until 31/12/2020	From 01/01/2021	Total amount
CPA 6328-P1-0010-CP1	67,369	0	0	0	67,369	0	67,369
Total	67,369	0	0	0	67,369	0	67,369

F.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the included CPA-DDs

CPA UNFCCC reference number	Amount achieved during this monitoring period (t CO ₂ e)	Amount estimated ex ante for this monitoring period in the CPA-DD (t CO ₂ e)
CPA 6328-P1-0010-CP1	67,369	76,476
Total	67,369	76,476

F.5.1. Explanation of calculation of “amount estimated ex ante for this monitoring period in the CPA-DD”

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CPA UNFCCC reference number	Ex-ante emission for 365 days (t CO ₂ e)	Number of days in the current monitoring period (days)	Ex-ante estimate of emission reduction for the monitoring period (t CO ₂ e)
CPA 6328-P1-0010-CP1	22,349	1,249	76,476

F.6. Remarks on increase in achieved emission reductions

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CPA UNFCCC reference number	Emissions compared to Ex-ante estimate of emission reduction for the monitoring period (More/ Less)	Difference of achieved emission reductions from ex-ante estimate of emission reduction (%)
CPA 6328-P1-0010-CP1	Less	-11.9%

The achieved emission reductions from ex-ante estimate of emission reduction in the current monitoring period for CPA is lower.

F.7. Remarks on scale of small-scale CPAs

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CPA UNFCCC reference number	Project Capacity (MWp)	Scale
CPA 6328-P1-0010-CP1	15	Small

The CPA included in the current monitoring period are within the threshold limit of Type I.

Annexure 1: Meter and Calibration details

Main/Check	Main	Check	Remarks
Meter No	NP-8240-A	NP-8239-A	The calibration was delayed. However, the meters were found to be working within the permissible limit of error when calibrated. A corresponding adjustment to the electricity supplied has been applied for conservative estimate of emission reduction.
Meter make	L&T	L&T	
Accuracy	0.2S	0.2S	
Date of Calibration 1	28/01/2025	28/01/2025	
Valid till	27/01/2026	27/01/2026	

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Document information

Version	Date	Description
05.0	8 October 2021	Revision to: Ensure consistency with version 03.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN).
04.0	6 April 2021	Revision to: Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: - Ensure consistency with version 02.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN); - Add a section on remarks on the observance of the scale limit of small-scale CPAs during the crediting periods; - Add "changes specific to afforestation or reforestation activities/CPA" as a possible post-registration changes; - Clarify the reporting of net anthropogenic GHG removals for A/R PoAs between two commitment periods; - Make structural and editorial improvements.
02.0	7 June 2017	Revision to: - Ensure consistency with version 01.0 of the “CDM project standard for programmes of activities” (CDM-EB93-A07-STAN); - Make editorial improvements.
01.0	1 April 2015	Initial publication.

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