BUNDLED SOLAR PHOTOVOLTAIC PROJECT BY ACME

Document Prepared By ACME Cleantech Solutions Private Limited

Project Title	Bundled Solar Photovoltaic Project by ACME
Version	01
Date of Issue	17-March-2018
Monitoring Period	23-February-2017 to 28-February-2018
Prepared By	Mr. Anurag Jain
Contact	Manager EHS, Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India

Table of Contents

1 PROJECT DETAILS

1.1 Summary Description of the Project and its Implementation Status

The proposed project activity is a step towards supporting the implementation and installation of grid connected renewable solar energy power plants in India. The implementation of project activity ensures energy security, diversification of the grid generation mix and sustainable growth of the electricity generation sector in India. The main goal of project activity is to implement renewable energy projects in the country and the significant importance of revenues from sale of Verified Carbon Units (VCUs) to achieve this goal forms the basis of the implementation of this project activity. The project activity is a voluntary action and each SPV will be the Project Proponent for their project activity. ACME Cleantech Solutions Private Limited as a parent company formed different SPV (Special Purpose Vehicles) for solar projects and projects are developed by name of SPVs. There are no mandatory laws or regulations existing in India requiring PP or any other party to develop a programme for renewable generation plants.

The project activity will support the development of new grid-connected renewable energy power plants in India and will cover the solar energy technologies. It seeks to enable investment in large scale grid connected plants that export their generated output to the regional / national electricity grid in India.

The details of the project activity bundle have been mentioned below.

Sl. No.	Project Site	State	Name of the SPVs	Capacity (MW)
1	Kalvasrirampur, Karimnagar	Telangana	ACME Karimnagar Solar Power Pvt Ltd	15
2	Manthini, Karimnagar		Purvanchal Solar Power Pvt Ltd	15
3	Jangaon, Karimnagar		Rewanchal Solar Power Pvt Ltd	15
4	Gudhur, Karimnagar		Neemuch Solar Power Pvt Ltd	15
5	Nandipet, Karimnagar		ACME Fazilka Power Pvt Ltd (Nandipet)	15
6	Jagathiyal, Karimnagar		Sunworld Solar Power Pvt Ltd	30
7	Siricilla, Karimnagar		ACME Ranga Reddy Solar Power Pvt Ltd	30
8	Annathsagar, Medak		ACME Medak Solar Energy Pvt Ltd	45
9	Lingampet Bayampally, Nizamabad		ACME Narwana Solar Power Pvt Ltd (Lingampet)	15
10	Mallaram, Karimnagar		ACME Warangal Solar Power Pvt Ltd	15
11	Beeravelly, Adilabad		ACME Nizamabad Solar Energy Pvt Ltd	50

12	AnanthaSagar, Medak		ACME PV Powertech Private Limited (Sadashivpet)	50
13	Bhongir, Nalgonda		ACME Solar Power Technology Private Limited	50
14	Kailashpuri, Gadarpur, Udham Singh Nagar	Uttarakhand	Devishi Renewable Energy Pvt Ltd	13
15	Kailashpuri, Gadarpur, Udham Singh Nagar		Devishi Solar Power Pvt Ltd	13
16	Ratanpura, Udham Singh Nagar		Sunworld Energy Pvt Ltd	13
17	Pavgada, Tumkur	Karnataka	Acme Rewari Solar Power Pvt Ltd	50
18	Pavgada, Tumkur		Acme Kurukshetra Solar Energy Pvt Ltd	50
19	Bhiwadi, Kadapa	Andhra Pradesh	ACME Bhiwadi Solar Power Pvt Ltd	50
20	Hisar, Kadapa		ACME Hisar Solar Power Private Limited	50
21	Karnal, Kadapa		ACME Karnal Solar Power Private Limited	50
22	Chitaguppa, Kaithal	Karnataka	ACME Kaithal Solar Power Private Limited	40
23	Amaravati, Raichur		ACME Babadham Solar Power Private Limited	40
24	Bidi, Belagavi		ACME Koppal Solar Energy Private Limited	40
25	Malchapur, Bidar		ACME Vijayapura Solar Energy Pvt Ltd	40
26	Kalwakurthy, Mehboobnagar	Telangana	Acme Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	10
27	Mothkur, Yadadri		Acme Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)	10
28	Kalwakurthy, Mehboobnagar		ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)	10
29	Kalwakurthy, Mehboobnagar		ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	10
30	Nagaram, Peddapally		ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)	10
31	Gurh, Rewa	Madhya Pradesh	ACME Jaipur Solar Power Pvt Ltd	250
32	Bhadla, Jodhpur	Rajasthan	ACME Rewa Solar Energy Pvt Ltd	100
Total				**1,208**

The total capacity of the project activity is 1208 MW and the power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. Hence, it results in reduction of GHG emissions. GHG emission reductions from the project activity

will be 2,233,472 tonnes of CO_2 and total GHG emission reductions for the chosen 10 year crediting period will be 22,334,720 tonnes of CO_2.

In this process there is no consumption of any fossil fuel and hence the project does not lead to any greenhouse gas emissions. Thus, electricity would be generated through sustainable means without causing any negative impact on the environment. In the Pre- project scenario the equivalent amount of electricity delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected fossil fuel based power plants and by the addition of new generation sources.

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

Sectoral Scope: 01 - Energy industries (renewable / non-renewable sources)
Project Type : I - Renewable Energy Projects
Methodology : ACM0002: Grid-connected electricity generation from renewable sources - Version 17.0[1]

The project activity under consideration is not a grouped project activity.

1.3 Project Proponent

Organization name	ACME Karimnagar Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	Purvanchal Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	Rewanchal Solar Power Pvt Ltd
Contact person	Anurag Jain

[1] http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN

Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	Neemuch Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Fazilka Power Pvt Ltd (Nandipet)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	Sunworld Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Ranga Reddy Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Medak Solar Energy Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Narwana Solar Power Pvt Ltd (Lingampet)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Warangal Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Nizamabad Solar Energy Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME PV Powertech Private Limited (Sadashivpet)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India

Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Solar Power Technology Private Limited
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	Devishi Renewable Energy Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	Devishi Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	Sunworld Energy Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Rewari Solar Power Pvt Ltd

Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Kurukshetra Solar Energy Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Bhiwadi Solar Power Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Hisar Solar Power Private Limited
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Karnal Solar Power Private Limited
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Kaithal Solar Power Private Limited
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Babadham Solar Power Private Limited
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Koppal Solar Energy Private Limited
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Vijayapura Solar Energy Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India

Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Jaipur Solar Power Pvt Ltd

Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

Organization name	ACME Rewa Solar Energy Pvt Ltd
Contact person	Anurag Jain
Title	Manager EHS
Address	Plot No.152, Sector – 44, Gurugram -122 002, Haryana, India
Telephone	+91 95898 99649
Email	info@acme.in

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Ltd.
Role in the project	Project Consultancy
Contact person	Mr. Prakash Kr. Sahu
Title	Project Manager
Address	Office No 201, Plot No 48, Scheme 78, Part 2, Vijay Nagar, Indore-452010, Madhya Pradesh
Telephone	+91 9931158863
Email	prakash@enkingint.org

1.5 Project Start Date

Project Start Date: 23-February-2017

The project start date is the date on which first Solar Plant was commissioned under the Project Activity i.e. Purvanchal Solar Power Pvt Ltd at Manthini Village, Karimnagar district of Telangana state.

The commissioning details are mentioned in Section 1.8.

1.6 Project Crediting Period

Crediting Period Start date: 23-February-2017[2]

Crediting Period End date: 22-February-2027

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.7 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	
Large project	✓

Year	Estimated GHG emission reductions or removals (tCO_2e)
Year 1	2,233,472
Year 2	2,233,472
Year 3	2,233,472
Year 4	2,233,472
Year 5	2,233,472
Year 6	2,233,472
Year 7	2,233,472
Year 8	2,233,472
Year 9	2,233,472
Year 10	2,233,472
Total estimated ERs	22,334,720
Total number of crediting years	10
Average annual ERs	2,233,472

1.8 Description of the Project Activity

The proposed project activity involves the installation of Solar Power Projects. The total capacity of the project is 1,208 MW. The project is promoted by **ACME Cleantech Solution Private Limited with different SPVs**. Details of the installation of project in respective state is as follows:-

Sl. No.	Name of the SPVs	Capacity (MW)	State	Date of Commissioning

[2] Start date of crediting period is 23/02/2017, as on this day 1st set of Solar PV Plant associated to the one of the bundle starts its commercial operations. Accordingly end date of the crediting period is also been revised.

1	ACME Karimnagar Solar Power Pvt Ltd	15	Telangana	02-03-17
2	Purvanchal Solar Power Pvt Ltd	15		23-02-17
3	Rewanchal Solar Power Pvt Ltd	15		09-08-17
4	Neemuch Solar Power Pvt Ltd	15		25-03-17
5	ACME Fazilka Power Pvt Ltd (Nandipet)	15		25-03-17
6	Sunworld Solar Power Pvt Ltd	30		16-11-17
7	ACME Ranga Reddy Solar Power Pvt Ltd	30		06-07-17
8	ACME Medak Solar Energy Pvt Ltd	45		Yet to be commissioned
9	ACME Narwana Solar Power Pvt Ltd (Lingampet)	15		23-03-17
10	ACME Warangal Solar Power Pvt Ltd	15		11-03-17
11	ACME Nizamabad Solar Energy Pvt Ltd	50		15-09-17
12	ACME PV Powertech Private Limited (Sadashivpet)	50		14-08-17
13	ACME Solar Power Technology Private Limited	50		Yet to be commissioned
14	Devishi Renewable Energy Pvt Ltd	13	Uttarakhand	Yet to be commissioned
15	Devishi Solar Power Pvt Ltd	13		Yet to be commissioned
16	Sunworld Energy Pvt Ltd	13		Yet to be commissioned
17	Acme Rewari Solar Power Pvt Ltd	50	Karnataka	Yet to be commissioned
18	Acme Kurukshetra Solar Energy Pvt Ltd	50		Yet to be commissioned
19	ACME Bhiwadi Solar Power Pvt Ltd	50	AP	Yet to be commissioned
20	ACME Hisar Solar Power Private Limited	50		Yet to be commissioned
21	ACME Karnal Solar Power Private Limited	50		Yet to be commissioned
22	ACME Kaithal Solar Power Private Limited	40	Karnataka	Yet to be commissioned
23	ACME Babadham Solar Power Private Limited	40		Yet to be commissioned

24	ACME Koppal Solar Energy Private Limited	40		Yet to be commissioned
25	ACME Vijayapura Solar Energy Pvt Ltd	40		Yet to be commissioned
26	Acme Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	10	Telangana	Yet to be commissioned
27	Acme Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)	10		Yet to be commissioned
28	ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)	10		Yet to be commissioned
29	ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	10		Yet to be commissioned
30	ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)	10		Yet to be commissioned
31	ACME Jaipur Solar Power Pvt Ltd	250	Madhya Pradesh	Yet to be commissioned
32	ACME Rewa Solar Energy Pvt Ltd	100	Rajasthan	Yet to be commissioned
Total		**1208**		

The Project activity is a new facility (Greenfield) and the electricity generated by the Project will be exported to the Indian Grid. The Project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the Project.

In the Pre- project scenario the equivalent amount of electricity, either fetched (under captive cases) or delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected fossil fuel based power plants and by the addition of new generation sources.

Emission Reductions from anthropogenic sources:

The solar power generated from the Project will be displacing the electricity generated from thermal power stations feeding into Indian grid and will be replacing the usage of diesel generators for meeting the power demand during shortage periods. Since, the solar power is Green House Gas (GHG) emissions free, the power generated will prevent the anthropogenic GHG emissions generated by the fossil fuel based thermal power stations comprising coal, diesel, furnace oil and gas. The estimation of GHG reductions by this project is limited to carbon dioxide (CO_2) only.

1.9 Project Location

The project activity is located in the Indian states of Telangana, Uttarakhand, Karnataka, Andhra Pradesh, Madhya Pradesh and Rajasthan.

Sl. No.	Village	District	State	Name of the SPVs	Latitude	Longitude
1	Kalvasrirampur	Karimnagar	Telangana	ACME Karimnagar Solar Power Pvt Ltd	18.5 N	79.5 E
2	Manthini	Karimnagar		Purvanchal Solar Power Pvt Ltd	18.65 N	79.7 E
3	Jangaon	Karimnagar		Rewanchal Solar Power Pvt Ltd	17.7 N	79.2 E
4	Gudhur	Karimnagar		Neemuch Solar Power Pvt Ltd	18.9 N	78.60 E
5	Nandipet	Karimnagar		ACME Fazilka Power Pvt Ltd (Nandipet)	18.9 N	78.1 E
6	Jagathiyal	Karimnagar		Sunworld Solar Power Pvt Ltd	18.8 N	78.9 E
7	Siricilla	Karimnagar		ACME Ranga Reddy Solar Power Pvt Ltd	18.4 N	78.8 E
8	Annathsagar,	Medak		ACME Medak Solar Energy Pvt Ltd	18.1 N	78.3 E
9	Lingampet Bayampally	Nizamabad		ACME Narwana Solar Power Pvt Ltd (Lingampet)	18.24 N	78.13 E
10	Mallaram	Karimnagar		ACME Warangal Solar Power Pvt Ltd	18.02 N	79.28 E
11	Beeravelly	Adilabad		ACME Nizamabad Solar Energy Pvt Ltd	19.1 N	78.3 E
12	AnanthaSagar	Medak		ACME PV Powertech Private Limited (Sadashivpet)	17.62 N	77.95 E
13	Bhongir	Nalgonda		ACME Solar Power Technology Private Limited	17.50 N	78.88 E
14	Kailashpuri, Gadarpur	Udham Singh Nagar	Uttarakhand	Devishi Renewable Energy Pvt Ltd	29 N	79.2 E
15	Kailashpuri, Gadarpur	Udham Singh Nagar		Devishi Solar Power Pvt Ltd	29 N	79.2 E
16	Ratanpura	Udham Singh Nagar		Sunworld Energy Pvt Ltd	29.2 N	79.1 E
17	Pavgada	Tumkur	Karnataka	Acme Rewari Solar Power Pvt Ltd	14.2 N	77.5 E
18	Pavgada	Tumkur		Acme Kurukshetra Solar Energy Pvt Ltd	14.2 N	77.5 E
19	Bhiwadi	Kadapa	AP	ACME Bhiwadi Solar Power Pvt Ltd	14.0 N	78.50 E
20	Hisar	Kadapa		ACME Hisar Solar Power Private Limited	14.0 N	78.50 E
21	Karnal	Kadapa		ACME Karnal Solar Power Private Limited	14.0 N	78.50 E
22	Chitaguppa	Kaithal	Karnataka	ACME Kaithal Solar Power Private Limited	17.7 N	77.2 E

23	Amaravati	Raichur		ACME Babadham Solar Power Private Limited	16.0 N	76.9 E
24	Bidi	Belagavi		ACME Koppal Solar Energy Private Limited	15.5 N	74.6 E
25	Malchapur	Bidar		ACME Vijayapura Solar Energy Pvt Ltd	17.9 N	77.4 E
26	Kalwakurthy	Mehboobnagar	Telangana	Acme Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	16.4 N	77.6 E
27	Mothkur	Yadadri		Acme Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)	16.4 N	77.6 E
28	Kalwakurthy	Mehboobnagar		ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)	16.4 N	77.6 E
29	Kalwakurthy	Mehboobnagar		ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	16.4 N	77.6 E
30	Nagaram	Peddapally		ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)	18.69 N	79.63 E
31	Gurh	Rewa	Madhya Pradesh	ACME Jaipur Solar Power Pvt Ltd	24.49 N	81.55 E
32	Bhadla	Jodhpur	Rajasthan	ACME Rewa Solar Energy Pvt Ltd	27.46 N	71.97 E

Click here for interactive Project activity Google Map.

Figure 1. Project Geo Location

Figure 2. Andhra Pradesh

Figure 3. Karnataka

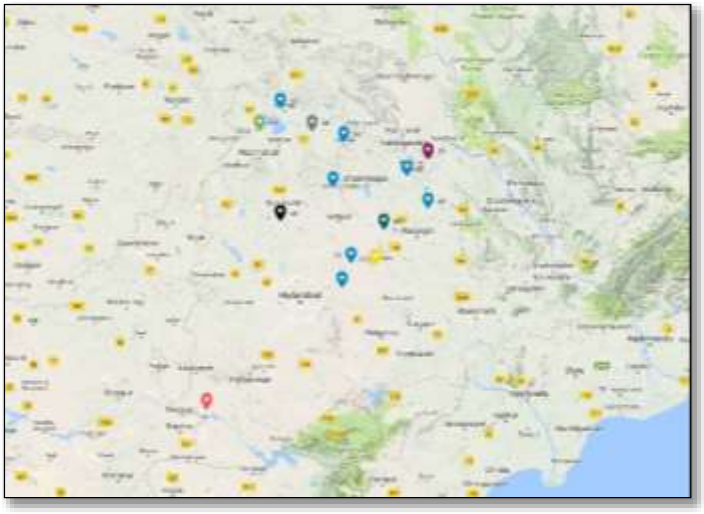


Figure 4. Telangana

Figure 5. Uttarakhand

1.10 Conditions Prior to Project Initiation

The project is a Greenfield solar power project and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. Prior to the initiation of the project activity, the equivalent amount of electricity would have been drawn from grid connected or new power plants, in Indian Grid. The grid is predominantly coal based and therefore is a major source of carbon dioxide emissions in India. The main emission in the pre project scenario is the power plants connected to the Indian Grid, and main GHG involved is CO_2. The baseline identified in section 2.4 is same as the pre-project scenario.

1.11 Compliance with Laws, Statutes and Other Regulatory Frameworks

The Project has received necessary approvals for development and commissioning for each PV Plant from the state Nodal agencies and is in compliance to the local laws and regulations.

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

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using solar energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage solar power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

1.12 Ownership and Other Programs

1.12.1 Project Ownership

The renewable energy technology installed at site of each of the project activity as part of the proposed project activity are under ownership of respective SPV/Project Proponent. These SPVs are a part of ACME Cleantech Solutions Private Limited. The Power Purchase Agreement (PPA) for the project activity and commissioning certificate for project activity are the supporting documents to demonstrate the project ownership.

This demonstrates the right of use according to clause 3.11.1 (3) of VCS Standard (v3.6) – "a project ownership arising by virtue of a statutory, property or contractual right in the plant, equipment or process that generates GHG emission reductions and/or removals".

1.12.2 Emissions Trading Programs and Other Binding Limits

Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

1.12.3 Other Forms of Environmental Credit

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

1.12.4 Participation under Other GHG Programs

Not applied for any other GHG programs.

1.12.5 Projects Rejected by Other GHG Programs

The Project is not rejected by other GHG programs.

1.13 Additional Information Relevant to the Project

Eligibility Criteria

This is not a grouped project activity. Thus, this section is not applicable for this project.

Leakage Management

Not applicable to the project activity.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Sustainable Development

Contribution to sustainable development:

Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

- **Social well-being:** The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to development in infrastructure in the region like development of roads and also may promote business with improved power generation.

- **Economic well-being:** The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity will also help to reduce the demand supply gap in the state.

  The project activity will generate power using zero emissions solar based power generation which helps to reduce GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities.

- **Technological well-being:** The successful operation of project activity would lead to promotion of solar based power generation and would encourage other entrepreneurs to participate in similar projects

- **Environmental well-being**: Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions.

Further Information

Not Applicable.

2 APPLICATION OF METHODOLOGY

2.1 Title and Reference of Methodology

The methodology for the project activity is approved methodology for large-scale CDM project activities. The details of the methodology are as follows:

Methodology: ACM0002
Project Type: Type-I: Renewable Energy Projects
Title: Grid-connected electricity generation from renewable sources
Version No.: Version 17;
Reference: CDM Methodology**:**
https://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN

The methodology refers to following CDM Tools:

- Tool for the demonstration and assessment of additionality (Version 07.0.0) (http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf)

- Tool to calculate the emission factor for an electricity system - Version 6.0, EB 97, Annex 7 (http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v6.pdf/history_view)

2.2 Applicability of Methodology

The project activity under the project activity will meets the applicability conditions of the approved consolidated baseline and monitoring methodology ACM0002, Version 17.0, Sectoral Scope 1, as described below:

Applicability Criterion	Project Case
This methodology is applicable to grid-connected renewable power generation project activities that: • install a Greenfield power plant; • involve a capacity addition to (an) existing plant(s); • involve a retrofit of (an) existing operating plants/units; • involve a rehabilitation of (an) existing plant(s)/unit(s) or • involve a replacement of (an) existing plant(s)/unit(s).	The project activity is a Renewable Energy Project i.e. Solar Power Project which falls under applicability criteria option 1 (a) i.e., "Install a Greenfield power plant". Hence the project activity meets the given applicability criterion.
The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	The proposed project activity are installation of a new grid connected solar renewable energy power plant and hence this condition is met.
In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;	The proposed project activity does not involve any capacity additions, retrofits or replacements and therefore this condition is not applicable.
In case of hydro power plants, one of the following conditions shall apply: • The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or • The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density calculated using equation (3), is greater than 4 W/m^2; or • The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m^2.	The proposed project activity under project activity is a grid connected solar renewable energy power project. This condition is applicable only for hydro power plants and not applicable for solar projects. Hence this criteria is not applicable.
The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for	The proposed project activity under project activity is a grid connected solar renewable

any of the reservoirs, calculated using equation (3), is lower than or equal to 4 W/m^2, all of the following conditions shall apply: • The power density calculated using the total installed capacity of the integrated project, as per equation (4), is greater than 4 W/m^2; • Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; • Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be; ✓ Lower than or equal to 15 MW; and ✓ Less than 10 per cent of the total installed capacity of integrated hydro power project.	energy power project. This condition is applicable only for hydro power plants and not applicable for solar projects.
In the case of integrated hydro power projects, project proponent shall: • Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or • Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum five years prior to implementation of CDM project activity.	The proposed project activity is a grid connected solar renewable energy power project. This condition is applicable only for hydro power plants and not applicable for solar projects.
Methodology is not applicable to the following • Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; • Biomass fired power plants/units	The proposed project activity is the installation of a new grid connected solar renewable energy power project and does not involve switching from fossil fuel to renewable energy and hence this criterion is not relevant to the project activity. This project activity does not involve any biomass based power plants and hence this criterion is not applicable to the project activity.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The proposed project activity is a new grid connected solar renewable energy power plant and not a retrofits, replacement or capacity additions and therefore this criterion is not applicable to the project activity.
Applicability conditions of "Tool to calculate the emission factor for an electricity system"	

This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	This condition is applicable. OM, BM and CM are estimated using the tool for calculating baseline emissions.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	The project activity is located in India, a non-Annex I country. Therefore, this criterion is not applicable for the project activity.
Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	Each project activity is grid connected renewable energy project and CO_2 emission factor is not considered for biofuels.

Tool to calculate the emission factor for an electricity system[3] - Version 06.0 (EB 97, Annex 07)

Applicability Criterion	**Project Case**
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	The project is a grid connected Greenfield solar power project and thus the tool is applicable.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total	Steps involved in calculation of Emission Factor is included in section B.6.3 of the PDD as per the requirement of the tool

[3] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v6.pdf

Applicability Criterion	Project Case
electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	Project is located in non-Annex I country and hence the tool is applicable
Under this tool, the value applied to the CO2 emission factor of biofuels is zero.	The project is a solar project and there is no involvement of biofuels.

- Methodological Tool- Tool for the demonstration and assessment of additionality- Version 07.0.0 (EB 70, Annex 08)

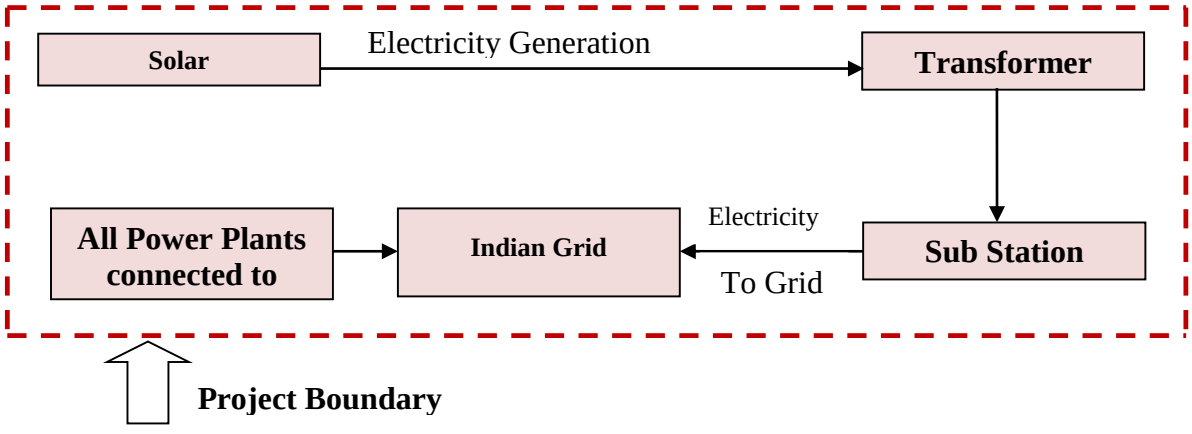
  Applicability Criteria has been demonstrated in section on additionality below.

The project activity qualifies as Type I during every year of the crediting period in accordance with applicable provisions for project activity eligibility as discussed above. Also the total installed capacity of project activity is 1,208 MW which is applicable as per large scale project activities methodology ACM0002: Grid-connected electricity generation from renewable sources Version 17.0. The project capacity will be always remain the same and hence the project activity will always be large scale project activities throughout the crediting period and thereafter.

2.3 Project Boundary

As per ACM0002 version 17 - "The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".

The project boundary includes the solar project, sub-stations, grid and all power plants connected to grid. The proposed project activity will evacuate power to the Indian grid. Therefore the entire Indian grid and all connected power plants have been considered in the project boundary for the proposed VCS project activity.



The GHG emission sources considered for the project boundary and their explanations are as follows:

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
		Other	No	No CO_2 emissions are emitted from the project
Project	Greenfield Solar Power Project Activity.	CO_2	No	No CO_2 emissions are emitted from the project
		CH_4	No	Project activity does not emit CH_4
		N_2O	No	Project activity does not emit N_2O
		Other	No	Project activity does not emit other forms of GHG emissions

2.4 Baseline Scenario

As per the applicable methodology, a Greenfield power plant is defined as "a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity".

As per para 23 of ACM0002 version 17.0; *"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, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".*

Hence, the baseline for the project activity is the equivalent amount of power from the INDIAN grid.

The combined margin ($EF_{grid,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) (having weightage 75%) and build margin (BM) (having weightage 25%). Calculations for this combined margin must be based on data from an official source of CEA database (where available) and made publically available.

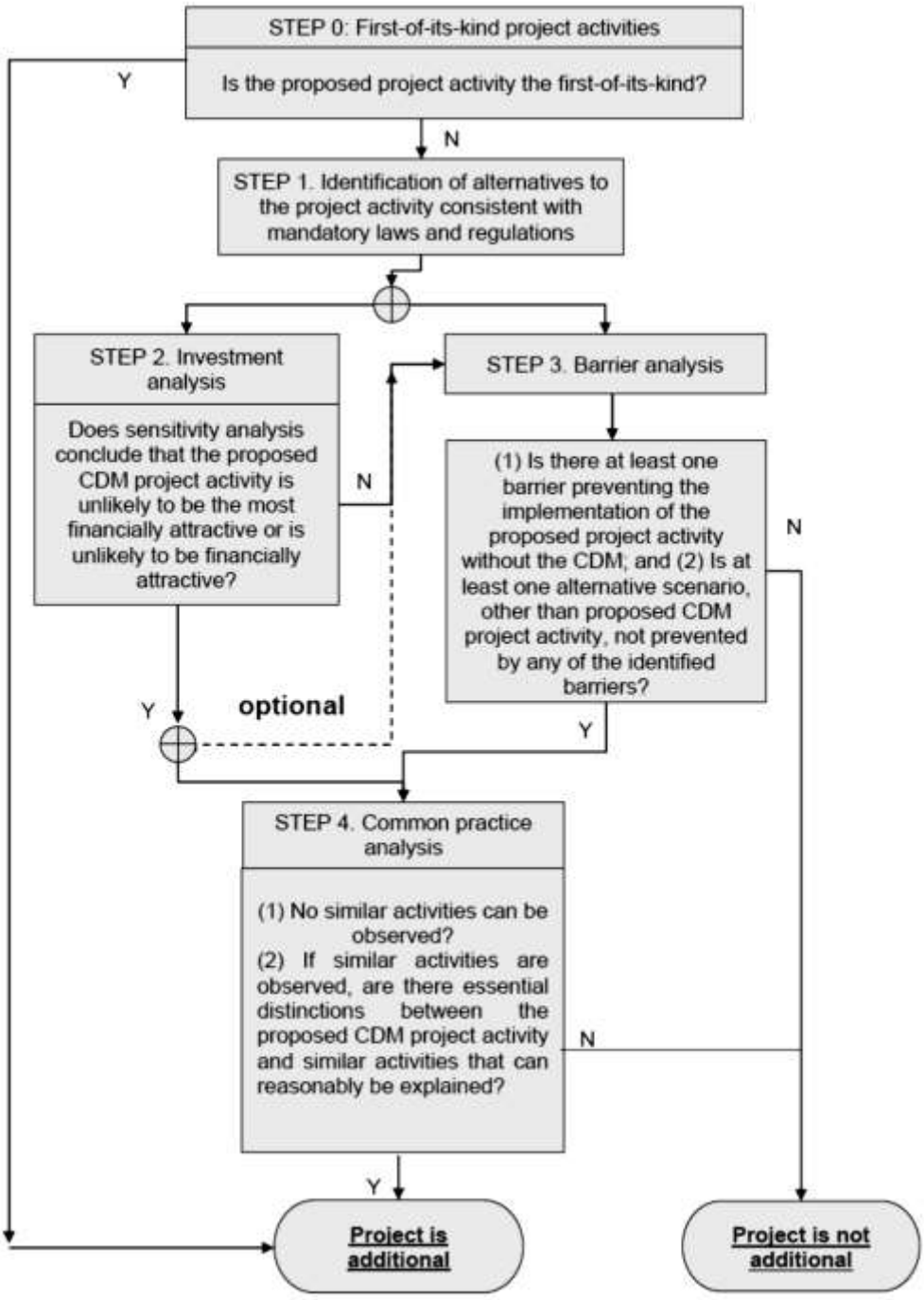
The combined margin of the INDIAN National Grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,y}$	0.9653 tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO_2 Emission Database, Version 12.0, May 2017 published by Central Electricity Authority (CEA), Government of India[4]
$EF_{grid,OM,y}$	0.9843 tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system in year y	Calculated as the last 3 year (2013-14, 2014-15, 2015-16) generation-weighted average, sourced from Baseline CO_2 Emission Database, Version 12.0, May 2017 published by Central Electricity Authority (CEA), Government of India[4]
$EF_{grid,BM,y}$	0.9083 tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system in year y	Baseline CO_2 Emission Database, Version 12.0, May 2017 published by Central Electricity Authority (CEA), Government of India[4]

2.5 Additionality

The present VCS project generates power using solar energy which is a renewable, zero emission source of energy. Baseline considerations for the project are based on approved consolidated baseline methodology ACM0002 (Version 17.0). The methodology requires the project investor to determine the additionality based on "Methodological Tool- Tool for the demonstration and assessment of additionality", Version 7.0.0. The step-wise approach to establish additionality of the project activity has been followed, details of which are provided in the following paragraphs:

[4] http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf



In line with VCS Standard version 3.7, the additionality of the Project activity is ascertained in line with the applicable guidance from the UNFCCC. The demonstration of additionality for the proposed Project activity is being carried out in accordance with the additionality tool provided by the UNFCCC i.e. “Tool for demonstration and assessment of Additionality” Version 07.0.0,. The tool provides a step-wise approach to demonstrate additionality which is displayed below:

Step 0: Demonstration whether the proposed project activity is the first-of-its-kind

The proposed project activity is not the first-of-its-kind. Hence not applicable.

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a: Define alternatives to the project activity:

Identify realistic and credible alternative(s) available to the project participants or similar project developers that provide outputs or services comparable with the proposed VCS project activity.

The purpose of the project activity is to generate electrical power using solar energy and feed the electricity generated to the grid. Hence, the following alternatives are considered:

Alternative 1: The proposed project activity not undertaken as a VCS project activity.

The PP could proceed with the implementation of the project without Carbon credit benefits. The electricity produced from the renewable energy project would have been sold to the grid. This is in compliance with all applicable legal and regulatory requirements and can be a part of the baseline. However, the Project activity is not feasible without revenues from sale of Carbon Credits. This argument has been discussed in step 2 of the Additionality section.

Alternative 2: No proposed project activity and equivalent amount of energy would have been produced by the grid electricity system through its currently running power plants and by new capacity addition to the grid i.e. Continuation of the present situation.

The PP would have continued without investment in Project activity with usual business activities. The grid would continue with the fossil fuel based power projects and this would result in GHG emissions. Hence, the new capacity add-on from a fossil fuel based power plant is appropriate, realistic & credible baseline alternative for the project activity.

Outcome of Sub-step 1a: All the realistic alternatives for the project activity have been enlisted above.

Thus though two alternatives are mentioned above as per step of additionality tool, the first alternative is not possible as project activity is not viable without carbon credit benefits and second alternative is the baseline scenario for the project activity as per methodology as mentioned in section 2.4 of joint VCS PD & MR.

It is to be noted that being the green field project activity, “the baseline scenario is 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, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”.

Sub-step 1b: Consistency with mandatory laws and regulations:

The alternative(s) shall be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air

pollution. (This sub-step does not consider national and local policies that do not have legally-binding status.).

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

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using solar energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage solar power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

Outcome of Sub-step 1b: Hence, both the alternatives enlisted above are found to comply with the mandatory laws and regulations taking into account the enforcement of the legislations in the region or country and EB decisions on national and/or sectoral policies and regulations. However, Alternative 2 has been selected as the appropriate baseline alternative for this project activity.

Step 2: Investment analysis

Determine whether the proposed project activity is economically or financially less attractive than at least one other alternative, identified in step 1, without the revenue from the sale of emission reductions credits. To conduct the investment analysis, use the following sub-steps:

Sub-step 2a: Determine appropriate analysis method

The Project activity envisages to export the power to Indian grid and the revenues from the sale would be generated in accordance with the terms and tariffs established in the Power Purchase Agreement (PPA). Thus, simple cost analysis (Option I) cannot be used as the analysis method as the sale of the units of generated electricity shall result in a revenue stream during the operations of the Project activity.

In the absence of the project activity grid electricity would have been the obvious choice for the Project which requires no investment. Hence investment comparison analysis (Option II) is also not appropriate for the project activity.

After eliminating Option I and Option II, the use of Benchmark analysis (Option III) is the method of analysis that has been selected as the most suitable method. This method determines the attractiveness of the project activity for the investors, as well as provides a measure of the viability of the investment to generate revenues during its operation, as compared with other avenues and investment options. Hence, the Benchmark analysis method is to be employed for analysis of the said project.

Sub-step 2b (Option III): Apply benchmark analysis

The investment analysis using Benchmark analysis approach (Option III) has been chosen. Further, this method illustrates the evaluation of the Project by the PP before the decision to undertake the project was taken and management approval granted.

Choice of Financial Indicator:

According to the "Tool for demonstration and assessment of Additionality", *the financial indicator can be based either on (1) project IRR or (2) equity IRR. There is no general preference between the approaches (1) or (2). The benchmark chosen for analysis shall be fully consistent with the choice of approach.* Therefore in accordance with the guidance, the relevant financial indicator for project activity has been chosen as post tax equity IRR.

Choice of Benchmark:

As per Investment Analysis tool, Required/expected returns on equity are appropriate benchmarks for an equity IRR. The Equity IRR is considered as the financial indicator and the benchmarks used is cost of equity. Hence the benchmarks used are applicable to the project activity and the type of IRR calculation presented

At the time of decision made of project activity, Version 06 of methodological tool "Investment Analysis" (EB 85 Annex 12) was the latest available tool to PP, hence PP has considered the same tool for default value of return on equity. The default value of Return on Equity for Group-1 projects in India is 11.10%.

As per paragraph 7 of Appendix A of the above mentioned document, "In situations where an investment analysis is carried out in nominal terms, project participants can convert the real term values provided in the table below to nominal values by adding the inflation rate. The inflation rate shall be obtained from the **inflation forecast of the central bank of the host country for the duration of the crediting period**. If this information is not available, the target inflation rate of the central bank shall be used. If this information is also not available, then the average forecasted inflation rate for the host country published by the IMF (International Monetary Fund World Economic Outlook) or the World Bank for the next five years after the start of the project activity shall be used".

Default Value Benchmark:

As per para 20 of EB 85, Annex 12 the cost of equity is determined by selecting the values provided in the Appendix, i.e. Default values for cost of equity (expected return on equity) is presented below:

Appendix in EB 85, Annex 12 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = **11.10%**

The Required return on equity (benchmark) was computed in the following manner:

Nominal Benchmark[5] = {(1+Real Benchmark)*(1+Inflation rate)}-1

[5] As per Fisher Equation, https://en.wikipedia.org/wiki/Fisher_equation

Where:
- Default value for Real Benchmark = 11.10% (as per Appendix of EB 85, Annex 12)

- Inflation Rate forecast for by Reserve Bank of India (RBI) (i.e. Central Bank of India) for India & in case where RBI Inflation forecast was not available Average Inflation rate forecast for India has been sourced from IMF web site.

Benchmark estimation:

Appendix in EB 85, Annex 12 specifies default value of expected return on equity in real terms for Energy Industries (Group 1) in India = **11.10%**

Inflation Forecast for India as per RBI website is considered for benchmark calculation.
Since RBI publishes the inflation forecast for 5 years and 10 years, PP has considered the maximum 10 year inflation considering the renewable crediting period of total 30 years.
ACME Cleantech Solution Private Limited has decided to implement the projects considered under this bundle on 12/09/2016, thus benchmark is determined based on this decision made date. Since the decision making date, default value for India as per UNFCCC guidelines and Inflation forecast as per RBI for 10 years are same therefore the benchmark calculation are same

Benchmark Calculations	Value	Sources Link or Title	Document Date
Default Value for India as per UNFCCC guidelines	**11.10%**	EB 85 Annex 12, Version 06 of methodological tool "Investment Analysis" Table 1 Appendix	24-Jul-15
Inflation forecast (WPI Mean) as per RBI for 10 Yrs	**3.90%**	Table A.9: Annual Average Percentage Change[6]	09-Aug-16
Benchmark (with 10 Yrs Forecast)	**15.32%**		

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III):

The Post tax Equity IRR is evaluated for the entire lifetime of the project activity, i.e. 25 years. It is calculated based on the cash outflows from and cash inflows into the project activity.
The IRR and Benchmark analysis are calculated in excel spreadsheet and same will be submitted to DOE during validation of project activity.

Based on result of IRR excel spreadsheets, equity IRR is less than Benchmark.

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark). Thus it can be easily concluded that project activity is additional & is not business as usual scenario.

Sub-step 2d: Sensitivity Analysis

[6] https://www.rbi.org.in/Scripts/PublicationsView.aspx?id=17119

Addressing Guidance of EB 85, Annex 12, following factors has been subjected to sensitivity analysis:
1. PLF
2. O&M Cost
3. Project Cost
4. Tariff

The rationale of sensitivity is, "The ultimate objective of the sensitivity analysis is to determine the likelihood of the occurrence of a scenario other than the scenario presented, in order to provide a cross-check on the suitability of the assumptions used in the development of the investment analysis."

The results of sensitivity analysis show that even with a variation of +10% & -10% in project cost, O&M cost, PLF and Tariff Rate Equity IRR is significantly lower than the benchmark. And it is evident from the results given above; the project remains additional even under the most favourable conditions.

Probability to breach the benchmark:
Sensitivity Parameter 1 : PLF
PLF considered in financials for is as per Third Party PLF report in line with **"Guidelines for the reporting and validation of Plant load factors" stated in EB48 Annex11 option 3(b)**. Hence, variation in PLF of more than 10% is unlikely to happen as the PLF has been reported as per the Third Party Report based on long term data.
Sensitivity Parameter 2 : O&M
The sensitivity analysis reveals that O&M will breach the benchmark at negative values and is hypothetical case. Since the O&M cost is subject to escalation (as evidence by the O&M agreement) and also subject to inflationary pressure, any reduction in the O&M costs is highly unlikely. Hence, the reduction in the O&M cost is highly unlikely.
Sensitivity Parameter 3 : Project Cost
Project Cost for financial analysis is considered from DPR of the project activity, being available at the time of investment making decision to go ahead with the project activity. The actual project cost is lower than the DPR cost. Since the Purchase Order cost is firm, there is no possibility of project cost going below this level. However, Sensitivity is carried out for threshold level below which benchmark is not breached.
Sensitivity Parameter 4 : Tariff Rate
The tariff is determined by PPA which is fixed for entire lifetime of the project activity. Hence, there is no probability to get variation for the same. However, Sensitivity is carried out for +/-10% even then the benchmark is not breached.

Outcome of Step 2:

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark Equity IRR) for any of the investor. Thus it can be easily concluded that project activity is additional & is not business as usual scenario.

Step 3: Barrier analysis

Barrier analysis has not been used.

Step 4: Common practice analysis

For the concerned project activity, the Common Practice Analysis has been carried out.

ACME Cleantech Solutions Private Limited as a parent company formed different SPV (Special Purpose Vehicles) for solar projects and projects are developed by name of SPVs. Thus common practise analysis has been carried out for whole bundled project capacity.

The project activity involves generation of electricity from Solar energy. The project activity is located in the state of Andhra Pradesh, Telangana, Uttarakhand, Karnataka, Madhya Pradesh, Rajasthan in India and the policy applicable for the Solar power projects is regulated by State Electricity regulation Commission (SERC) of the respective state. The policies/tariff for each state is regulated by State Electricity Regulatory Commissions of respective states and they differ for respective states. The project implemented in different states are claimed as different since the policies and regulations differ in each state. Hence Andhra Pradesh, Telangana, Madhya Pradesh, Karnataka, Uttarakhand, Rajasthan state is considered as Geographical area for the project activity.

Stepwise approach for common practice analysis has been carried out as per Methodological tool "Common Practice", version 03.1 EB84, Annex 7:

Step (1): Calculate applicable capacity or output range as +/-50% of the total design capacity or output of the proposed project activity.

Range	Capacity	Unit
+50%	1812	MW
Capacity of the proposed project activity	1208	MW
-50%	604	MW

Step (2): Identify similar projects (both CDM and non-CDM) which fulfil all of the following conditions:

(a) The projects are located in the applicable geographical area;

(b) The projects apply the same measure as the proposed project activity;

(c) The projects use the same energy source/fuel and feedstock as the proposed project activity, if a technology switch measure is implemented by the proposed project activity;

(d) The plants in which the projects are implemented produce goods or services with comparable quality, properties and applications areas (e.g. clinker) as the proposed project plant;

(e) The capacity or output of the projects is within the applicable capacity or output range calculated in Step 1;

(f) The projects started commercial operation before the project design document (CDM-PDD) is published for global stakeholder consultation or before the start date of proposed project activity, whichever is earlier for the proposed project activity.

Identification of the similar projects (CDM and non-CDM) is carried out as per sub-steps of Step (2) as follows:

a) As the projects are located in Rajasthan, Andhra Pradesh, Madhya Pradesh, Uttarakhand, Karnataka and Telangana state of India, therefore, projects in the geographical area of Rajasthan, Andhra Pradesh, Madhya Pradesh, Uttarakhand, Karnataka and Telangana have been chosen for analysis. The project activity involves generation of electricity from solar energy. The project activity

is located in the different states in India and the policy applicable for the solar projects is regulated by respective state policy. The policies/tariff for each state is regulated by State Electricity Regulatory Commissions of respective states and they differ for respective states. The project implemented in different states are claimed as different since the policies and regulations differ in each state. Each state have different policies regarding renewable energy, hence Rajasthan, Uttarakhand, Andhra Pradesh, Madhya Pradesh, Karnataka and Telangana state is considered as geographical region for common practise analysis.

b) The project activity is a green-field solar power project and uses measure (b) "Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies". Therefore, projects applying same measure (b) are candidates for similar projects.

c) The energy source used by the project activity is solar energy. Hence, only solar PV projects have been considered for analysis.

d) The project activity produces electricity; therefore, all power plants that produce electricity are candidates for similar projects.

e) The capacity range of the projects is within the applicable capacity range from 604 MW to 1812 MW.

f) The start date of the project activity is 23-02-2017. Therefore projects, which have started commercial operation before 23-02-2017, have been considered for analysis.

Numbers of Similar projects identified, which fulfil above-mentioned condition are
N_{Solar} = 0

Above conclusion are based on publically available data by Ministry of New & Renewable Energy, Government of India for State wise commissioning status of grid connected Solar PV Power Projects is as on 30/11/2015 and for all project activity instances, the start date is before 30/11/2015 [7] and this is a conservative approach. The start date of respective project activity instance is mentioned in CPA analysis excel sheet.

Step (3): Within the projects identified in Step 2, identify those that are neither registered CDM project activities, project activities submitted for registration, nor project activities undergoing validation. Note their number N_{all}.

CDM project activities, which have got registered or are under validation have been excluded in this step. The list of the Solar PV projects identified is provided to the DOE.

N_{all} = 0

Step (4): Within similar projects identified in Step 3, identify those that apply technologies that are different to the technology applied in the proposed project activity. Note their number N_{diff}.

As per the tool on Common Practice, the project activities have been separated from the different technologies on the basis two criteria:

[7] http://mnre.gov.in/file-manager/UserFiles/state-wise-commissioned-grid-connected-solar-power-projects.htm

1. Size of Installation – Since project activity is large scale project, small and micro scale projects are considered as different technology project. Based on this criteria, there are no any different technology project out of similar identified projects.
2. Investment climate on the date of the investment decision – For proposed project activity, there are no any different technology project considered out of similar identified projects.

Hence, projects where either of the conditions is satisfied those projects are counted for calculating N_{diff} projects.

N_{diff} = 0

Step (5): Calculate factor $F=1-N_{diff}/N_{all}$ representing the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that deliver the same output or capacity as the proposed project activity.

Calculate $F=1-N_{diff}/N_{all}$
$F = 1-(0/0) = 0$

As per methodological tool "common practise" version 03.1, the proposed project activity is a "common practice" within a sector in the applicable geographical area if the factor F is greater than 0.2 and Nall-Ndiff is greater than 3.

Thus if both conditions are fulfilled, then project activity will be a common practise otherwise, the project activity is treated as not a common practise.

Outcome of Common Practise analysis:

As,
i. F = 0; is less than 0.2
ii. $N_{all}-N_{diff}$ = 0; is not greater than 3

The project activity does not satisfy any of the above condition. Hence, project activity is not a common practice.

Thus, the proposed project activity is not a "common practice" within a sector in the applicable geographical area.

The above discussions show that Solar PV power development of such magnitude is not a common practice and the project activity is not financially attractive; hence the project activity is additional.

2.6 Methodology Deviations

Not Applicable

3 ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

3.1 Baseline Emissions

As per the approved consolidated Methodology ACM0002 (Version 17.0, EB 89, Annex 1) para 44: Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired 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. The baseline emissions are to be calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$

Where:

BE_y = Baseline emissions in year y (tCO_2/yr)

$EG_{PJ,y}$ = 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/yr)

$EF_{grid,CM,y}$ = 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" (tCO_2/MWh)

As per methodology, combined grid emission factor as per the "Tool to calculate the emission factor for an electricity system" version 06 is calculated as below.

CO_2 Baseline Database for the Indian Power Sector, Version 12, May 2017[8] published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per Methodological tool: Tool to calculate the emission factor for an electricity system (Version 06.0, EB 97, Annex 7), following six steps have been followed:

(a) **Step 1:** Identify the relevant electricity systems;

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

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

(d) **Step 4:** Calculate the operating margin emission factor according to the selected method;

(e) **Step 5:** Calculate the build margin (BM) emission factor;

(f) **Step 6:** Calculate the combined margin (CM) emission factor.

Step 1: Identify the relevant electricity systems

As described in tool "For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems". It also states that "If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used". Keeping this into consideration, the Central Electricity Authority (CEA), Government of India has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern.

However since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO2 Baseline Database. As of 31 December 2013, the Southern grid has also been synchronised with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

[8] http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

Table: Geographical Scope of Indian Electricity Grid

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	**Andhra Pradesh**
Delhi	Jharkhand	Gujarat	Assam	**Karnataka**
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	**Madhya Pradesh**	Mizoram	Puducherry
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Lakshadweep
Rajasthan		Goa	Tripura	**Telangana**
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.

The Project Participant has chosen only grid power plants in the calculation.

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, which are described under Step 4:

(a) Simple OM; or

(b) Simple adjusted OM; or

(c) Dispatch data analysis OM; or

(d) Average OM.

The data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for calculating operating margin emission factor depends on generation of electricity from low-cost/ must-run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, wind, low cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2011-12	2012-13	2013-14	2014-15	2015-16
India	19.6%	16.9%	18.6%	16.8%	15.1%

Data Source: Central Electricity Authority (CEA) database Version 12, May'2017[9]

[9] http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50 % of the total generation. Thus the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

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:

(a) **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.

OR

(b) **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.

PP has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PD to the DOE for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

Step 4: Calculate the operating margin emission factor ($EF_{grid,OMSimple,y}$) according to the selected method

The operating margin emission factor has been calculated using a 3 year data vintage:

Net Generation in Operating Margin (GWh) (incl. Imports)			
	2013-14	2014-15	2015-16
INDIAN Grid	7,25,037	8,10,011	8,71,740

Simple Operating Margin (tCO_2/MWh) (incl. Imports)			
	2013-14	2014-15	2015-16
INDIAN Grid	1.00	0.99	0.96

Weighted Generation Operating Margin	
INDIAN Grid	**0.9843**

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: “Tool to calculate the emission factor for an electricity system” (Version 06.0, EB 97, Annex 7) para 73:

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

(a) **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 PD 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.

(b) **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 as described above is chosen by PP to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PD and is fixed for the entire crediting period.

Build Margin (tCO_2/MWh) (not adjusted for imports)	
	2015-16
INDIAN Grid	**0.9083**

Step 6: Calculate the combined margin (CM) emission factor ($EF_{grid,CM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 06.0, EB 97, Annex 7) para 82:

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

(a) Weighted average CM; or

(b) Simplified CM.

PP has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.
The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$$

Where:
$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year y (t CO_2/MWh)
$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year y (t CO_2/MWh)
W_{OM} = Weighting of operating margin emissions factor (per cent)
W_{BM} = Weighting of build margin emissions factor (per cent)

The following default values should be used for W_{OM} and W_{BM}:

Wind and solar power generation project activities: W_{OM}= 0.75 and W_{BM}= 0.25 (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods. Since project activity is of solar PV power generation, the above weightage has been considered for OM and BM.

Therefore, $EF_{grid,CM,y}$ = 0.9843*0.75 + 0.9083*0.25
= 0.9653 t CO_2/MWh

Baseline emission factor (EF_y):

The baseline emission factor is calculated using the combined margin approach as described in Step 6 above:

Therefore, $EF_y = EF_{grid,CM,y} = 0.9653\ tCO_2/MWh$.

$BE_y = 2,313,773 \times 0.9653 = 2,233,472\ tCO_2$

3.2 Project Emissions

As per the approved consolidated Methodology ACM0002 (Version 17.0, EB 89, Annex 1) para 36: "For most renewable energy power generation project activities, PEy = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:
PE_y = Project emissions in year y (t CO_2e/yr)
$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO_2/yr)
$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO_2e/yr)
$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO_2e/yr)

As the project activity is the installation of a new grid-connected solar Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

3.3 Leakage

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

3.4 Estimated Net GHG Emission Reductions and Removals

Reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y	=	Emission reductions in year *y* (t CO_2e/yr)
BE_y	=	Baseline emissions in year *y* (t CO_2/yr)
PE_y	=	Project emissions in year *y* (t CO_2e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:
$ER_y = BE_y - PE_y$

Year	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
Year 1	2,233,472	0	0	2,233,472
Year 2	2,233,472	0	0	2,233,472
Year 3	2,233,472	0	0	2,233,472
Year 4	2,233,472	0	0	2,233,472
Year 5	2,233,472	0	0	2,233,472
Year 6	2,233,472	0	0	2,233,472
Year 7	2,233,472	0	0	2,233,472
Year 8	2,233,472	0	0	2,233,472
Year 9	2,233,472	0	0	2,233,472
Year 10	2,233,472	0	0	2,233,472
Total	22,334,720	0	0	22,334,720

4 MONITORING

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO_2/MWh
Description	Operating Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017[10]
Value applied	0.9843
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 06" as 3-year generation weighted average using data for the years 2013-14, 2014-15 & 2015-16. The data are obtained from "CO_2 Baseline Database for Indian Power Sector" version 12, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

[10] http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver12.pdf

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Build Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017[10]
Value applied	0.9083
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per "Tool to calculate the emission factor for an electricity system, version 06" as per the latest data available for the most recent year 2015-16. The data is obtained from "CO_2 Baseline Database for Indian Power Sector" version 12, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	Combined Margin CO_2 emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017[10]
Value applied	0.9653
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$= Build margin CO_2 emission factor in year *y* (tCO_2/MWh) $EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year *y* (tCO_2/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

4.2 Data and Parameters Monitored

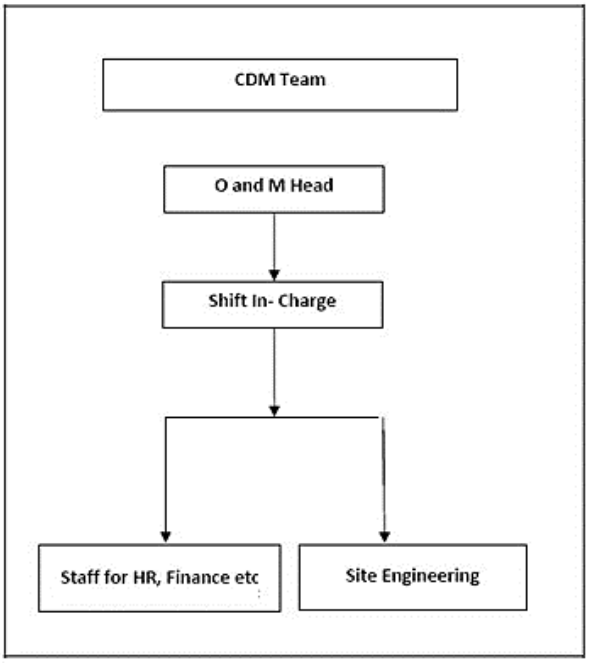
Data / Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project (Solar) plant/unit to the grid in year y
Source of data	Credit note/ JMR/Form B reports/ monthly generation report from respective state electricity board/DISCOM

Description of measurement methods and procedures applied	The value of net electricity generation supplied to the grid as per Monthly electricity form B /Credit Note or Joint Meter Reading Report forms the basis for calculation of the emission reductions; which can be cross checked from the invoice raised to DISCOM. Net electricity supplied to grid will be calculated as the difference of the measured values of "export" and "import" of electricity through the dedicated SEB energy meter installed at the delivery point. Monthly meter readings are taken from the main and check meter installed at metering point and certified by the representatives of SEB Officials and the representatives of the project proponent for apportioning procedure refer section 4.3
Frequency of monitoring/recording	Continuous monitoring, hourly measurement and at least monthly recording
Value applied:	2,313,773 MWh
Monitoring equipment	Monitoring: Bidirectional Tri vector meter will be used Data type: Measured Type of meter: Static type meter (Main & Check). Both are Bidirectional meters. Class of meter: 0.2s.
QA/QC procedures applied	The calibration of all the meters will be undertaken at required intervals (once is five years as per CEA notification) and faulty meters will be duly replaced immediately. The meters will be of accuracy class 0.2. The meter accuracy class and calibration interval is under purview of state electricity board and PP do not have any control on it. It is also noted that apportioning procedure is under control of state electricity board and PP do not have any control on it. The available parameter to PP is the net electricity supplied to grid and same parameter is mentioned as monitoring parameter The Net electricity exported to the grid will be cross checked against the invoice raised by the PP towards the DISCOM
Purpose of data	Calculation of Baseline emissions
Calculation method	-
Comments	The data would be archived electronically and maintained for the entire crediting period plus two years.

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected solar power project. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipments for this project activity. The team comprises of the following members:



Responsibility
• Reviewing the monthly and annual generation statistics. • Evaluating the GHG performance of the project activity. • Identifying the opportunities for future improvement • Addressing grievance related to project activity.
• Implementation of corrective appropriate measures in case any discrepancies are identified in the reported parameters. • Review of monthly report. • Ensuring calibration of monitoring equipment as and when required.
• Monitoring and reporting the GHG performance related parameters following the guidance provided in the project design document • Preparation of monthly and annual generation statistics. • Reporting of any discrepancies identified in the reporting parameters. • Ensuring calibration of the monitoring equipments as and when required.

Data Measurement

The export and import energy will be measured continuously using above mentioned Main and Check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement, invoices will be raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data collection and archiving

Readings from meters will be collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

Emergency preparedness

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

5 SAFEGUARDS

5.1 No Net Harm

The project activity does not involve any major construction activity. It primarily requires the installation of the WTGs, interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013. This report clearly mentioned that solar project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same[11].

Thus there are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity.

5.2 Environmental Impact

The project activity has no significant impact on the environment. Solar projects are not included in the Schedule I of the EIA notification S.O.1533 (E) dated 14th September 2006[12] and thus an EIA is not required.

5.3 Local Stakeholder Consultation

Not applicable now, will be updated.

5.4 Public Comments

Not applicable now, will be updated.

6 ACHIEVED GHG EMISSION REDUCTIONS AND REMOVALS

6.1 Data and Parameters Monitored

Not applicable now, will be updated.

6.2 Baseline Emissions

Not applicable now, will be updated.

6.3 Project Emissions

Not applicable now, will be updated.

6.4 Leakage

[11] http://mnre.gov.in/file-manager/UserFiles/report-on-developmental-impacts-of-RE.pdf

[12] http://envfor.nic.in/legis/eia/so1533.pdf

Not applicable now, will be updated.

6.5 Net GHG Emission Reductions and Removals

Not applicable now, will be updated.