



**Verified Carbon
Standard**

BUNDLED SOLAR PHOTOVOLTAIC PROJECT BY ACME



Document Prepared by EKI Energy Services Limited



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1 PROJECT DETAILS

Monitoring Report: VCS Version 4.0

1.1 Summary Description of the Implementation Status of the Project

This grouped 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 is 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 supports the development of new grid-connected renewable energy power plants in India and 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.

All project activity instances within this grouped project activity consists of single solar renewable technology. Also, an individual project activity instance either be small-scale project activity instance (having methodology AMS I.D version 18) or large-scale project activity instance (having methodology ACM0002 version 19.0).

The electricity generated by renewable technology (solar) installed as part of the grouped project activity supplies either to the regional grid and/or supplied to the identified facility via regional grid through a contractual wheeling agreement for captive consumption there by displacing the consumption of electricity from the regional grid electricity distribution system. As of 31 December 2013, the Southern grid has also been synchronised with the NEWNE grid (Now unified INDIAN grid), hence forming one unified Indian Grid. Thus for this Project activity instances Indian Grid is applicable.

The objective of the grouped project activity is to develop a platform for reducing VCS Registration timelines and process costs for registration of individual projects under VCS. All the project instances i.e. renewable energy generation solar PV plants to be included in this grouped project from within India only. Hence the location and geographical boundary of the grouped project defined as India.

The respective plant is running smoothly with scheduled maintenance. There was no major breakdown occurred during the monitoring period

The total AC capacity of the project activity is 1,207.5 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 would be 2,078,589 tonnes of CO_{2e} and total GHG emission reductions for the chosen 10 year crediting period would be 20,785,890 tonnes of CO_{2e}. During the Current Monitoring Period from 01-February-2020 to 24-April-2021 (First and last date included) the project activity has contributed 2,546,833 tCO_{2e} GHG reductions. The commissioning dates of the respective SPVs are mentioned over section 3.1 *Implementation Status of the Project Activity*.

In this process there is no consumption of any fossil fuel and hence the project does not lead to any greenhouse gas emissions. Thus, the electricity generated through sustainable means without causing any negative impact on the environment.

1.2 Sectoral Scope and Project Type

The project activity falls under consideration of the grouped project activity. The project activity instances as part of the grouped project have the following parameters

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)

Project Type : I - Renewable Energy Projects

Project Category: For each project activity, instances apply only solar technology. However, each project activity instances is either small scale or large scale and not the combination of two.

For large scale project activities, below large scale methodology is applied

Methodology : ACM0002: Grid-connected electricity generation from renewable sources - Version 19.0¹

For small scale project activities, below small scale methodology is applied

AMS-I.D.” Grid Connected renewable electricity generation – Version 18.0²

The project activity under consideration is a grouped project activity.

1.3 Project Proponent

Organization name	ACME Cleantech Solutions 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

¹ <http://cdm.unfccc.int/UserManagement/FileStorage/58IAGB7SZUDEO2VN6LYM30K41HFPRQ>

² <http://cdm.unfccc.int/UserManagement/FileStorage/2P7FS6ZQAR84LG3NMKYUH50WI9ODBC>

ACME Cleantech Solutions Private Limited as a parent company of all project activity instances formed as different SPV (Special Purpose Vehicles) for solar projects and projects are developed by name of SPVs.

Monitoring Report: VCS Version 4.0

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultant
Contact person	Mr. Prakash Sahu
Title	Project Manager
Address	Office No 201, Plot No 48, Scheme 78, Vijay Nagar Part- II, Indore 452010, India
Telephone	+91-9589899649
Email	prakash@enkingint.org

1.5 Project Start Date

The first project activity instance of the grouped project under consideration was commissioned and power generation started on 10-February-2017. The project activity instance is SPV Sunworld Energy Pvt Ltd under ACME group. Hence the project start date is defined as follows:

Project start date: 10-February-2017

1.6 Project Crediting Period

Crediting Period Start date: 10-February-2017³

Crediting Period End date: 09-February-2027

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

1.7 Project Location

The details of the project locations are mentioned in the table below

Activity Instances	Village	District	State	Name of the SPVs	Latitude	Longitude
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³ Start date of crediting period is 10/02/2017, 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.

01	Jagathiyal	Karimnagar	Telangana	Sunworld Solar Power Pvt Ltd	18.57 N	78.86 E
	Siricilla	Karimnagar	Telangana	ACME Ranga Reddy Solar Power Pvt Ltd	18.30 N	78.88 E
	Annathsagar,	Medak	Telangana	ACME Medak Solar Energy Pvt Ltd	18.14 N	78.29 E
	Beeravelly	Adilabad	Telangana	ACME Nizamabad Solar Energy Pvt Ltd	19.13 N	78.24 E
	AnanthaSagar	Medak	Telangana	ACME PV Powertech Private Limited (Sadashivpet)	17.58 N	77.89 E
	Bhongir	Nalgonda	Telangana	ACME Solar Power Technology Private Limited	16.80 N	78.89 E
	Pavgada	Tumkur	Karnataka	Acme Rewari Solar Power Pvt Ltd	14.26 N	77.48 E
	Pavgada	Tumkur	Karnataka	Acme Kurukshetra Solar Energy Pvt Ltd	14.25 N	77.47 E
	Bhiwadi	Kadapa	Andhra Pradesh	ACME Bhiwadi Solar Power Pvt Ltd	14.11 N	78.45 E
	Hisar	Kadapa	Andhra Pradesh	ACME Hisar Solar Power Private Limited	14.11 N	78.78 E
	Karnal	Kadapa	Andhra Pradesh	ACME Karnal Solar Power Private Limited	14.02 N	78.44 E
	Chitaguppa	Kaithal	Karnataka	ACME Kaithal Solar Power Private Limited	17.73 N	77.21 E
	Amaravati	Raichur	Karnataka	ACME Babadham Solar Power Private Limited	15.9 N	76.9 E
	Bidi	Belagavi	Karnataka	ACME Koppal Solar Energy Private Limited	17.21 N	76.77 E
	Malchapur	Bidar	Karnataka	ACME Vijayapura Solar Energy Pvt Ltd	17.91 N	77.37 E
	Bhadla	Jodhpur	Rajasthan	ACME Rewa Solar Energy Pvt Ltd	27.46 N	71.99 E
	Bap, Bhadla	Jodhpur	Rajasthan	ACME Chittorgarh Solar Energy Pvt. Ltd	27.35 N	72.14 E
02	Kalvasirampur	Karimnagar	Telangana	ACME Karimnagar Solar Power Pvt Ltd	18.52 N	79.55 E
03	Manthini	Karimnagar	Telangana	Purvanchal Solar Power Pvt Ltd	18.69 N	79.62 E

04	Jangaon	Karimnagar	Telangana	Rewanchal Solar Power Pvt Ltd	17.80 N	79.15 E
05	Gudhur	Karimnagar	Telangana	Neemuch Solar Power Pvt Ltd	18.9 N	78.60 E
06	Nandipet	Karimnagar	Telangana	ACME Fazilka Power Pvt Ltd (Nandipet)	18.86 N	78.18 E
07	Lingampet Bayampally	Nizamabad	Telangana	ACME Narwana Solar Power Pvt Ltd (Lingampet)	18.86 N	78.18 E
08	Mallaram	Karimnagar	Telangana	ACME Warangal Solar Power Pvt Ltd	18.57 N	78.86 E
09	Kailashpuri , Gadarpur	Udham Singh Nagar	Uttarakha nd	Devishi Renewable Energy Pvt Ltd	29.04 N	79.22 E
10	Kailashpuri , Gadarpur	Udham Singh Nagar	Uttarakha nd	Devishi Solar Power Pvt Ltd	29.06 N	79.19 E
11	Ratanpura	Udham Singh Nagar	Uttarakha nd	Sunworld Energy Pvt Ltd	29.20 N	79.08 E
12	Kalwakurthy	Mehboobnagar	Telangana	Acme Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	16.69 N	78.42 E
13	Mothkur	Yadadri	Telangana	Acme Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)	17.43 N	79.28 E
14	Kalwakurthy	Mehboobnagar	Telangana	ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)	16.71 N	78.47 E
15	Kalwakurthy	Mehboobnagar	Telangana	ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	18.40 N	78.21 E
16	Nagaram	Peddapally	Telangana	ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)	18.69 N	79.63 E

The project locations have been shown in the map below:

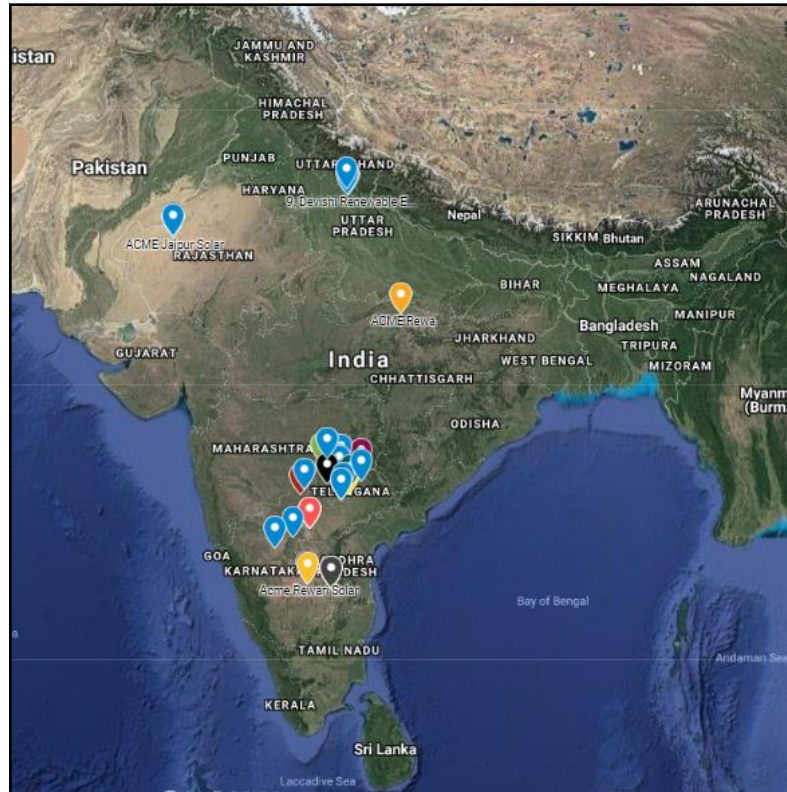


Figure 1. Satellite Project locations

Click [here](#) for Google Map of this Project activity.

1.8 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 19.0;
Reference	: CDM Methodology ⁴

The methodology refers to following CDM Tools:

- Tool for the demonstration and assessment of additionality⁵ (Version 07.0.0, EB 70, Annex 8)

⁴ <http://cdm.unfccc.int/UserManagement/FileStorage/58IAGB7SZUDEO2VN6LYM30K41HFPRQ>

⁵ <http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

- Tool to calculate the emission factor for an electricity system⁶ - (Version 07.0 EB 100, Annex 04)

The methodology for small scale project activity instances will be the approved methodology for small-scale CDM project activities. The details of the methodology are as follows:

Methodology : AMS I.D
Project Type : Type-I: Renewable Energy Projects
Title : Grid connected renewable electricity generation
Version No. : Version 18;
Reference : CDM Methodology⁷

The methodology refers to following CDM Tools:

- Tool to calculate the emission factor for an electricity system⁸ - (Version 07.0 EB 100, Annex 04)

1.9 Participation under other GHG Programs

Not Applicable, as the project activity is not registered with any other program.

The undertaking from PP has been submitted for no any double accounting for current monitoring period and project activity is not participated any other GHG program other than VCS.

1.10 Other Forms of Credit

The project activity is not availing any REC benefits and the same can be confirmed from publically available link of REC generators.

Web-link: https://www.recregistryindia.nic.in/index.php/publics/accredited_regens PP has also submitted undertaking for not availing other forms of environmental credit for the same crediting period under consideration.

1.11 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 helps in generating employment opportunities during the construction and operation phases. The project activity led to development in

⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

⁷ <https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK>

⁸ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

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 also help to reduce the demand supply gap in the state.

The project activity generates power using zero emissions solar energy based power generation, which helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, 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 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.

2 SAFEGUARDS

2.1 No Net Harm

The project activity does not involve any major construction activity. It primarily requires the installation of the solar PV panels, 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. As per section 3.4.3 *ENVIRONMENTAL IMPACTS FROM SOLAR FARMS*, the report clearly mentioned that solar PV project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same⁹.

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.

2.2 Local Stakeholder Consultation

As a part of continual improvement process, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project. It is appropriate publicly accessible location at which local stakeholders can provide their feedback on the project.

⁹ <https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

This location is also conducive to continuous and regular checks for stakeholder comments. For the global stakeholders, the suggestion and the grievance can be submitted to info@acme.in

Stakeholder meetings were organized at the time of registration of project activity in order to identify the major challenges around the area, stakeholders were invited well in advance through printed invitation, calls, meeting and a notice is placed around the local common areas. Various CSR activities around site are carried out. The stakeholder are also request to share their experiences and grievances on continuous basis. Registers is used to records the grievances and feedback.

During the current monitoring period, positive feedback is received regarding site operation. No any grievances received during the current monitoring period; therefore, no any mitigation measures are required. In case of grievances, the nature of probable resolution is discussed with the plant head office and implemented by the site incharge. The grievance copies have been submitted to VVB.

2.3 AFOLU-Specific Safeguards

Not applicable to this as this is not an AFOLU project activity.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity involves the installation of Solar Power Projects. The total capacity of the project is 1,207.5 MW. The project is promoted by ACME Cleantech Solution Private Limited with its different group SPVs. The project activity is using solar energy to generate direct current (DC) using photovoltaic modules that converts into alternating current by inverters. The project activity instances under grouped project activity is grid connected and install a new power plant (i.e. solar PV) at a site where no renewable power plant was operating prior to the implementation of the project activity (green-field plant). The generated electricity is being supplied to grid or uses grid network for captive or third-party sale.

The project activity instances are small scale project activities (with power generation capacity less than 15 MW) and large-scale project activities (with power generation capacity more than 15 MW). The Project activity follows AMS I.D. Version 18 or ACM0002 Version 19.0 based on scale of project activity instances.

The solar power generated from the Project is displacing the electricity generated from thermal power stations feeding into Indian grid and 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 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 (CO₂) only.

All project activity instances are photovoltaic (PV) plant/unit, the project activity instances would use solar energy to generate direct current from photovoltaic modules that converted into alternating current by inverters. The technical specifications of the plants are tabulated below:

ACME Karimnagar Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	255,260 Wp & 265 Wp Modules of make - Risen/Byd
No. of modules	74088
Total Number of Invertors	12
Transformer numbers and KVA ratings	3 x 5 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp,Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Purvanchal Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	255,260 Wp & 265 Wp Modules of make - Risen
No. of modules	75600
Total Number of Invertors	12
Transformer numbers and KVA ratings	3 x 5 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Rewanchal Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees

Solar photovoltaic module	260 Wp & 265 Wp Modules of make - Risen/Byd
No. of modules	62208
Total Number of Invertors	12
Transformer numbers and KVA ratings	3 x 5 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
Neemuch Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	260 Wp & 265 Wp Modules of make - Talesun
No. of modules	73824
Total Number of Invertors	12
Transformer numbers and KVA ratings	3 x 5 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Fazilka Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	255,260 Wp & 265 Wp Modules of make - Risen
No. of modules	74640
Total Number of Invertors	12
Transformer numbers and KVA ratings	3 x 5 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
Sun World Solar Power Pvt. Ltd	
Technical detail of the equipment	Remark

Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	260 Wp & 265 Wp Modules of make - Talesun/Byd/Yingli
No. of modules	133008, Installation WIP
Total Number of Invertors	24
Transformer numbers and KVA ratings	6 x 5 MVA & 1 Power trafo 25/30MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Ranga Reddy Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	260 Wp & 265 Wp Modules of make - Byd
No. of modules	141504
Total Number of Invertors	24
Transformer numbers and KVA ratings	6 x 5MVA & 1 x 30MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Medak Solar Energy Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	260,265 Wp & 270 Wp Modules of make - Talesun/BYD/GCL
No. of modules	220176
Total Number of Invertors	36
Transformer numbers and KVA ratings	9 x 5 MVA & 2 x 20/25 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Narwana Solar Power Pvt Ltd	

Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	255 Wp & 260 Wp Modules of make -Byd
No. of modules	74544
Total Number of Invertors	12
Transformer numbers and KVA ratings	3 x 5 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1.25 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Warangal Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	260,265 Wp & 270 Wp Modules of make - GCL
No. of modules	73056
Total Number of Invertors	12
Transformer numbers and KVA ratings	3 x 5 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V&360V AC, 1.25 MWp, Inverter make:-TBEA/Sungrow)
Technical & Operational Lifetime	25 years
ACME Nizamabad Solar Energy Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	260,265 Wp & 270 Wp Modules of make - Talesun/GCL
No. of modules	243816
Total Number of Invertors	20
Transformer numbers and KVA ratings	10 x 5 MVA & 2 x 25MVA
Central inverters of nominal AC power output, KVA rating , make etc	(360V AC, 2.5 MWp, Inverter make:-Sungrow)
Technical & Operational Lifetime	25 years

ACME PV Powertech Private Limited	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 25 degrees and 3 degrees
Solar photovoltaic module	265,270 Wp & 275 Wp Modules of make - Risen/Byd/GCL
No. of modules	234936 Installation WIP
Total Number of Invertors	20
Transformer numbers and KVA ratings	10 x 5 MVA & 2 x 20/25MVA
Central inverters of nominal AC power output, KVA rating , make etc	(360V AC,2.5 MWp, Inverter make:-Sungrow)
Technical & Operational Lifetime	25 years
Devishi Renewable Energy Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 20 degrees and 3 degrees
Solar photovoltaic module	255Wp & 260 Wp Modules of make -Byd
No. of modules	60144
Total Number of Invertors	12
Transformer numbers and KVA ratings	1 x 4.5 MVA & 2 x 4MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
Devishi Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 20 degrees and 3 degrees
Solar photovoltaic module	255Wp & 260 Wp Modules of make -Byd
No. of modules	60144
Total Number of Invertors	12
Transformer numbers and KVA ratings	1 x 4.5 MVA & 2 x 4 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years

Sunworld Energy Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 15 degrees and 3 degrees
Solar photovoltaic module	260Wp & 265 Wp Modules of make -Byd
No. of modules	58512
Total Number of Invertors	12
Transformer numbers and KVA ratings	1 x 4.5 MVA & 2 x 4MVA
Central inverters of nominal AC power output, KVA rating , make etc	(380V AC,1 MWp, Inverter make:-TBEA)
Technical & Operational Lifetime	25 years
ACME Solar Power Technology Private Ltd	
Technical detail of the equipment	Remark
Technology	Photovoltaic modules on Fixed Tilt at 15 degrees and 3 degrees
Solar photovoltaic module	265 Wp & 270 Wp Modules of make GCL/Yingli
No. of modules	216095 Installation WIP
Total Number of Invertors	20
Transformer numbers and KVA ratings	9 x 5MVA , 2 x 2.5MVA & 2 x 20/25 MVA
Central inverters of nominal AC power output, KVA rating , make etc	(360V AC,2.5 MWp, Inverter make:-Sungrow)
Technical & Operational Lifetime	25 years
ACME Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	
Technical detail of the equipment	Remark
Technology	Poly-SI
Solar photovoltaic module	Trina Solar (320Wp, 325Wp, 330Wp)
No. of modules	41880
Total Number of Invertors	08
Transformer numbers and KVA ratings	1 transformer 50KVA (Make-Powerware), 2 transformer 5000KVA (Make-AUM)
Central inverters of nominal AC power output, KVA rating , make etc	Make- Tbea, PV power- 3500KWp, Max DC voltage-1000V,

	MPPT volt. 550-950V, Rated AC power- 2500KW, Rated AC voltage- 380V,
Technical & Operational Lifetime	25 years
ACME Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Talesun & ZnShine- make (rated 325 W, 320 W and 315 Watts)
No. of modules	42120
Total Number of Invertors	04 Nos. (2500 kW*4)
Transformer numbers and KVA ratings	02 Nos., 5000 kVA each
Central inverters of nominal AC power output, KVA rating , make etc	2500 kW, TBEA- make
Technical & Operational Lifetime	25 years
ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	BYD-260W/265W
No. of modules	1) Jollywood: 18300 modules , 2) Trina :21200 TOTAL: 39500
Total Number of Invertors	52368 No's
Transformer numbers and KVA ratings	Make-Tbea, AC OutPut Power-1250KW
Central inverters of nominal AC power output, KVA rating , make etc	Sr.No's;20329,20330 Rating:33kv/380v
Technical & Operational Lifetime	25 years
ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	
Technical detail of the equipment	Remark
Technology	1) Jollywood :- Monocrystalline 2) Trina :- Polycrystalline
Solar photovoltaic module	1. JOLLYWOOD : 370 Wp :- Voc = 47.7V,Isc = 9.98A 2. TRINA : a. 320wp = Voc = 47.7V,Isc = 9.98A b. 325wp = Voc = 45.6V,Isc = 9.19A

	c. 330Wp = Voc = 45.5V, Isc = 9.15A
No. of modules	1) Jollywood: 18300 modules , 2) Trina :21200 TOTAL: 39500
Total Number of Invertors	8
Transformer numbers and KVA ratings	02 Numbers and 5000 KVA, 33KV/(380V*2)
Central inverters of nominal AC power output, KVA rating , make etc	MAKE : TBEA , Model : TC 1250KH-M , Rated output Power :1250 KW , Voltage : 380v AC , Currents :1899 Amps
Technical & Operational Lifetime	25 years
ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	BYD -250W, 260W and 265MW
No. of modules	51960
Total Number of Invertors	8
Transformer numbers and KVA ratings	2 No's , 5MVA, Make - AUM
Central inverters of nominal AC power output, KVA rating , make etc	1250KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Vijayapura Solar Energy Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	ZN shine, Resin, Trina solar (315Wp, 320Wp, 325Wp, 330Wp)
No. of modules	167600
Total Number of Invertors	32
Transformer numbers and KVA ratings	01 Nos. Power Transformer- 40000KVA 07 Nos. Inverter Transformer- 5000 KVA 02 Nos. Inverter Transformer- 2500 KVA
Central inverters of nominal AC power output, KVA rating , make etc	1250KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Bhiwadi Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Resin, ZN shine (315 Wp, 320 Wp, 325 Wp)

No. of modules	207600
Total Number of Invertors	20
Transformer numbers and KVA ratings	04 Nos. Inverter Transformer- 10000KVA 02 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating , make etc	2500KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Hisar Solar Power Private Limited	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Telsun, Resin, ZN shine, Adani (320 Wp, 325 Wp, 330 Wp)
No. of modules	206360
Total Number of Invertors	20
Transformer numbers and KVA ratings	04 Nos. Inverter Transformer- 10000KVA 02 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating , make etc	2500KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Babadham Solar Power Private Limited	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	ZN shine, Yngli, Resin, Trina solar (315Wp, 320Wp, 325Wp)
No. of modules	168240
Total Number of Invertors	32
Transformer numbers and KVA ratings	01 Nos. Power Transformer- 40000KVA 08 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating , make etc	1250KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Kaithal Solar Power Private Limited	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	ZN shine, Yngli, Trina solar (320Wp, 325Wp)
No. of modules	16731632
Total Number of Invertors	32
Transformer numbers and KVA ratings	01 Nos. Power Transformer- 40000KVA

	08 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating , make etc	1250KVA, TBEA
Technical & Operational Lifetime	25 years
Acme Rewari Solar Power Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Trina, Resin (320Wp, 325Wp, 330Wp)
No. of modules	207040
Total Number of Invertors	40
Transformer numbers and KVA ratings	02 Nos. Power Transformer- 25000KVA 10 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating , make etc	1250KVA, TBEA
Technical & Operational Lifetime	25 years
Acme Kurukshetra Solar Energy Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Trina, Resin (320Wp, 325Wp, 330Wp)
No. of modules	208520
Total Number of Invertors	40
Transformer numbers and KVA ratings	02 Nos. Power Transformer- 25000KVA 10 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating , make etc	1250KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Karnal Solar Power Private Limited	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Telsun, Resin, ZN shine, Adani (320 Wp, 325 Wp, 330 Wp)
No. of modules	206360
Total Number of Invertors	20
Transformer numbers and KVA ratings	04 Nos. Inverter Transformer- 10000KVA 02 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating , make etc	2500KVA, TBEA
Technical & Operational Lifetime	25 years

ACME Koppal Solar Energy Private Limited	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	ZN shine, Yngli, Resin, Trina solar (315Wp, 320Wp, 325Wp)
No. of modules	168240
Total Number of Invertors	32
Transformer numbers and KVA ratings	01 Nos. Power Transformer- 40000KVA 08 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating, make etc	1250KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Rewa Solar Energy Pvt Ltd	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Telsun, Resin, ZN shine, Adani (320 Wp, 325 Wp, 330 Wp)
No. of modules	400000
Total Number of Invertors	20
Transformer numbers and KVA ratings	04 Nos. Inverter Transformer- 10000KVA 02 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating, make etc	2500KVA, TBEA
Technical & Operational Lifetime	25 years
ACME Chittorgarh Solar Energy Pvt. Ltd	
Technical detail of the equipment	Remark
Technology	Polycrystalline
Solar photovoltaic module	Telsun, Resin, ZN shine, Adani (320 Wp, 325 Wp, 330 Wp)
No. of modules	400000
Total Number of Invertors	20
Transformer numbers and KVA ratings	04 Nos. Inverter Transformer- 10000KVA 02 Nos. Inverter Transformer - 5000 KVA
Central inverters of nominal AC power output, KVA rating, make etc	2500KVA, TBEA
Technical & Operational Lifetime	25 years

The commissioning dates of the respective SPVs are mentioned below:

Activity Instance	SPV Name	State	Capacity (MW)	Date of Commissioning
1	Sunworld Solar Power Pvt Ltd	Telangana	30	15-November-2017
	ACME Ranga Reddy Solar Power Pvt Ltd		30	02-June-2017
	ACME Medak Solar Energy Pvt Ltd		45	14-July-2017
	ACME Nizamabad Solar Energy Pvt Ltd		50	11-September-2017
	ACME PV Powertech Private Limited (Sadashivpet)		50	07-July-2017
	ACME Solar Power Technology Private Limited		50	05-February-2018
	ACME Rewari Solar Power Pvt Ltd	Karnataka	50	31-January-2018
	Acme Kurukshetra Solar Energy Pvt Ltd		50	31-January-2018
	ACME Bhiwadi Solar Power Pvt Ltd	AP	50	05-July-2018
	ACME Hisar Solar Power Private Limited		50	21-June-2018
	ACME Karnal Solar Power Private Limited		50	15-June-2018
	ACME Kaithal Solar Power Private Limited	Karnataka	40	24-January-2018
	ACME Babadham Solar Power Private Limited		40	22-January-2018
	ACME Koppal Solar Energy Private Limited		40	15-April-2018
	ACME Vijayapura Solar Energy Pvt Ltd		40	23-January-2018
	ACME Rewa Solar Energy Pvt Ltd	Rajasthan	100	24-September-2018
	ACME Chittorgarh Solar Energy Pvt. Ltd	Rajasthan	250	26-October-2019
2	ACME Karimnagar Solar Power Pvt Ltd	Telangana	15	02-March-2017
3	Purvanchal Solar Power Pvt Ltd		15	23-February-2017
4	Rewanchal Solar Power Pvt Ltd		15	24-March-2017
5	Neemuch Solar Power Pvt Ltd		15	25-March-2017
6	ACME Fazilka Power Pvt Ltd (Nandipet)		15	13-March-2017
7	ACME Narwana Solar Power Pvt Ltd (Lingampet)		15	24-February-2017
8	ACME Warangal Solar Power Pvt Ltd		15	03-March-2017
9	Devishi Renewable Energy Pvt Ltd	Uttarakhand	12.5	19-February-2017
10	Devishi Solar Power Pvt Ltd		12.5	19-February-2017
11	Sunworld Energy Pvt Ltd		12.5	10-February-2017
12	ACME Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	Telangana	10	26-September-2017
13	ACME Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)		10	17-Septemeber-2017
14	ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)		10	11-September-2017

15	ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	10	09-September-2017
16	ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)	10	12-September-2017
Total		1,207.5	

The respective project is running smoothly, there were no any instances occurred that would alter the GHG reductions, methodology applicability and monitoring procedure. The plant went for the schedule maintenance at regular intervals.

3.2 Deviations

2.3.1 Methodology Deviations

No methodology deviation is applied during the monitoring period.

2.3.2 Project Description Deviations

Deviation 1:

This deviation is a permanent monitoring deviation. The meter reading practice in India is upgrading to optimum level which based on robust technology and requires minimum human intervention. Currently in this monitoring period, the deviation is for Andhra Pradesh state project having SPV name ACME Bhiwadi Solar Power Pvt Ltd, ACME Hisar Solar Power Private Limited and ACME Karnal Solar Power Private Limited but not limited to further upgradation at another states of India.

The monitoring practice is updated (October 2018) and it's shifted to Deviation Settlement Mechanism (DSM) in order to more strengthen the national grid. The export and import values are omitted and no longer provided, only net export values are being provided for the invoicing to respective boards/government institutions. In DSM, PP have to forecast electrical energy generation in day time blocks (In India, 15 minutes each block, total 96 blocks) well in advance. The invoicing is done on the forecasted value. The actual generation deviation from the forecasted values is penalized, it depends upon the deviation magnitude. Therefore instead of export and import values, the net values is directly obtained (either by including deviation to the schedule values or directly considering the actual values from the SRPC report) for the emission reduction calculation. The approach doesn't alters the emission reduction and its calculations.

For Sothern Region, Total Energy schedule and the Actual values (which is the actual Net delivered) is maintained by the Southern Regional Power Committee (SRPC) Secretariat, Central Electricity Authority, Government of India. Regional Energy Account (monthly net export) for the every month in respect of Southern Region has been uploaded on the SRPC website, www.srpc.kar.nic.in. Since the document is provided by government nodal agency, therefore no any cross-checking is required.

The nature of deviation is permanent and already approved in the second verification.

Deviation 2:

Continuation of deviation 1, ACME Rewari Solar Power Pvt Ltd and ACME Kurukshetra Solar Energy Pvt Ltd, the Deviation Settlement Mechanism (DSM) is also applicable to mentioned SPVs. Therefore, instead of export and import values, the net values are directly obtained (either by including deviation to the schedule values or directly considering the actual values from the SRPC report) for the emission reduction calculation. The approach doesn't alter the emission reduction and its calculations. The nature of deviation is permanent.

Deviation 3:

The commissioning date of ACME Bhiwadi Solar Power Pvt Ltd is revised from 01-July-2018 to 05-July-2018. This was the typo error and the nature of deviation is permanent.

Deviation 4:

Mentioned SPVs geodic coordinates are corrected for better identification of over satellite. There has been no change in the design and specification of the SPVs:

Sunworld Solar Power Pvt Ltd	18.57 N	78.86 E
ACME PV Powertech Private Limited (Sadashivpet)	17.58 N	77.89 E
ACME Solar Power Technology Private Limited	16.80 N	78.89 E
ACME Bhiwadi Solar Power Pvt Ltd	14.11 N	78.45 E
ACME Hisar Solar Power Private Limited	14.11 N	78.78 E
ACME Karnal Solar Power Private Limited	14.02 N	78.44 E
ACME Babadham Solar Power Private Limited	15.9 N	76.9 E
ACME Koppal Solar Energy Private Limited	17.21 N	76.77 E
ACME Chittorgarh Solar Energy Pvt. Ltd	27.35 N	72.14 E
ACME Narwana Solar Power Pvt Ltd (Lingampet)	18.86 N	78.18 E
ACME Warangal Solar Power Pvt Ltd	18.57 N	78.86 E
Acme Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	16.69 N	78.42 E
Acme Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)	17.43 N	79.28 E
ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)	16.71 N	78.47 E
ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	18.40 N	78.21 E

3.3 Grouped Projects

The project is a grouped project activity. However, no any new instances added since first joint validation and verification. Therefore demonstration of new activity eligibility criteria is not required.

4 DATA AND PARAMETERS

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 13, June 2018 ¹⁰
Value applied	0.9726
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 07” as 3-year generation weighted average using data for the years 2014-2015, 2015-2016 & 2016-2017. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 13, 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	$EF_{grid,BM,y}$
Data unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 13, June 2018 ¹¹
Value applied	0.8723
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 07” as per the latest data available for the most recent year 2016-17. The data is obtained from “CO ₂ Baseline Database for Indian Power Sector” version 13, 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

¹⁰ https://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf

¹¹ https://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf

Source of data	Calculated from CEA database, Version 13, May 2017 ¹²
Value applied	0.9475
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 CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25% Calculated as per “Tool to calculate the emission factor for an electricity system, version 07.0.0”. The data is obtained from “CO₂ Baseline Database for Indian Power Sector” Version 13, June 2018, 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.

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 to be 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 are being 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.

¹² https://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver13.pdf

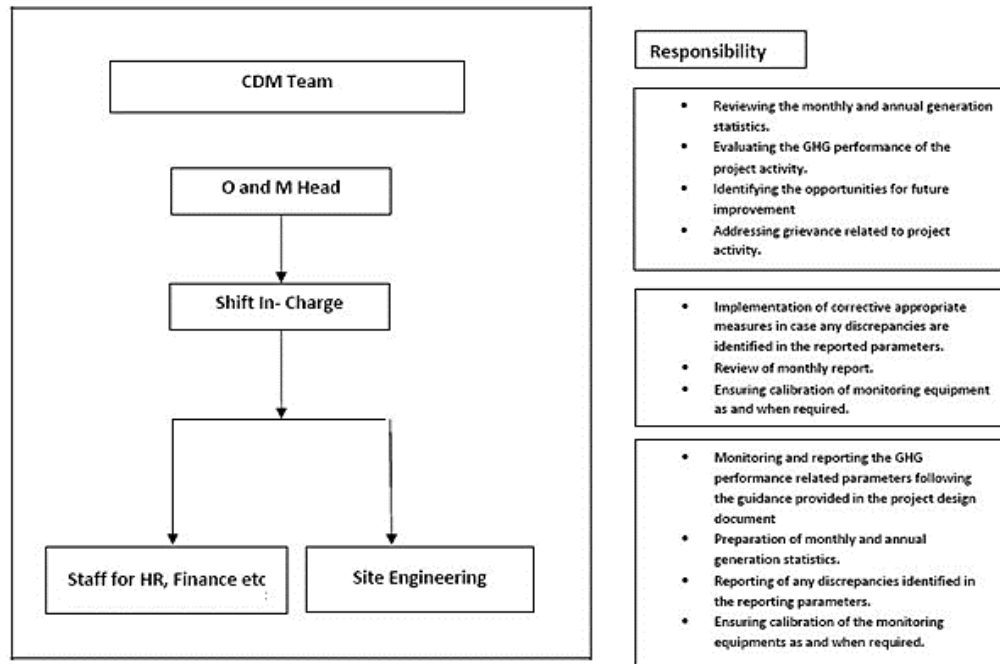
	Monthly meter readings are taken from the main and check meter installed at metering point and certified by the representatives of SEB Officials and the representatives of the project proponent
Frequency of monitoring/recording	Continuous monitoring, hourly measurement and at least monthly recording
Value monitored	26,87,979.42 MWh
Monitoring equipment	Monitoring: Bidirectional Tri vector meter is used Data type: Measured Type of meter: Static type meter (Main & Check). Both are Bidirectional meters. Class of meter: 0.2s. Calibration frequency: One in five years¹³ The meter details, make, calibration date, due date and respective accuracy class are mentioned in the APPENDIX 1: Calibration Records
QA/QC procedures to be applied	The calibration of all the meters is undertaken at required intervals (once is five years as per CEA notification) and faulty meters are duly replaced immediately. The meters accuracy class is 0.2s. The meter accuracy class and calibration interval is under purview of state electricity board and PP does 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 is being cross checked against the invoice raised by the PP towards the DISCOM.
Purpose of the data	Calculation of baseline emissions
Calculation method	Net electricity supplied to grid is 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, which can be cross checked from the invoice raised to DISCOM.
Comments	Data is being archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

¹³ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf

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 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 equipment for this project activity. The team comprises of the following members:



Data Measurement

The export and import energy values are measured continuously using above-mentioned Main and Check meters located at the substations. Readings of meters 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 are being 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 collected in the presence of the plant in-charge. Export and Import data 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 would 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

Monitoring Report: VCS Version 4.0

The project activity 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 are being trained. The plant helpers trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

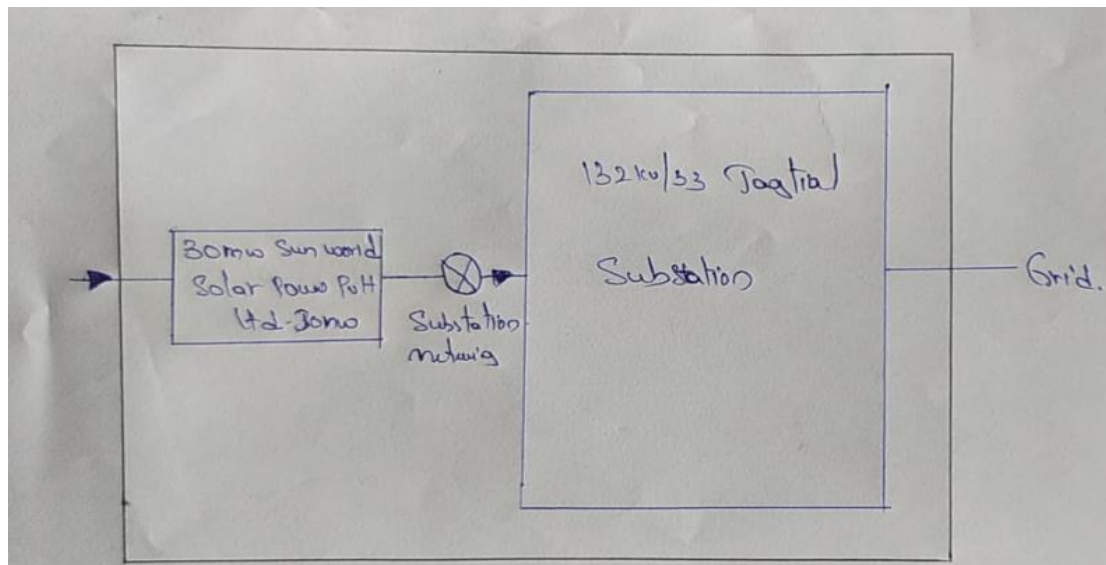


Figure 2 Line diagram of Sunworld Solar Power Pvt. Ltd.

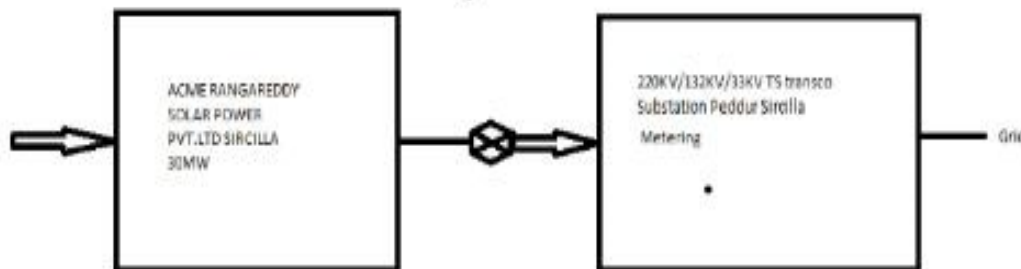


Figure 3 Line diagram of ACME Ranga Reddy Solar Power Pvt. Ltd.

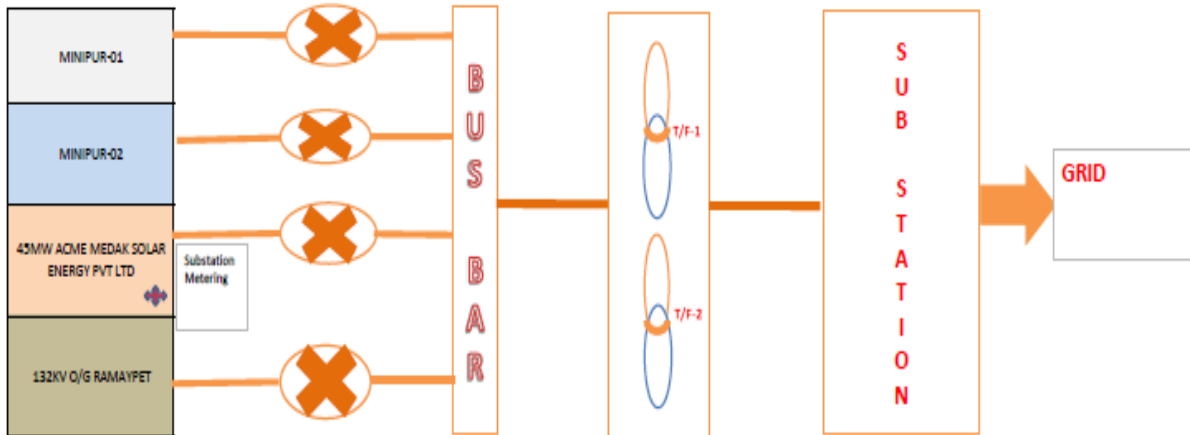


Figure 4 Line diagram of ACME Medak Solar Energy Pvt. Ltd.

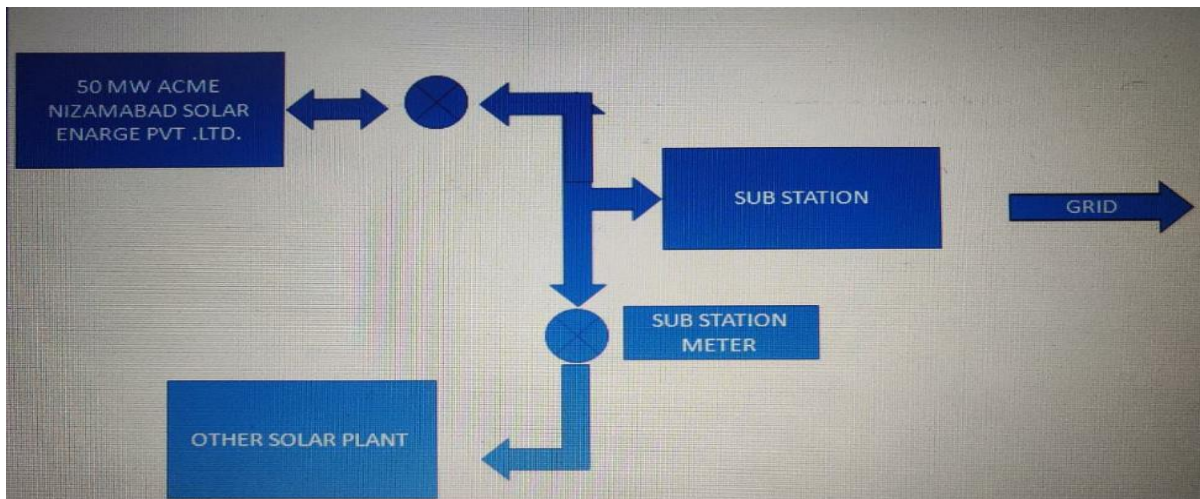


Figure 5 Line diagram of ACME Nizamabad Solar Energy Pvt. Ltd.

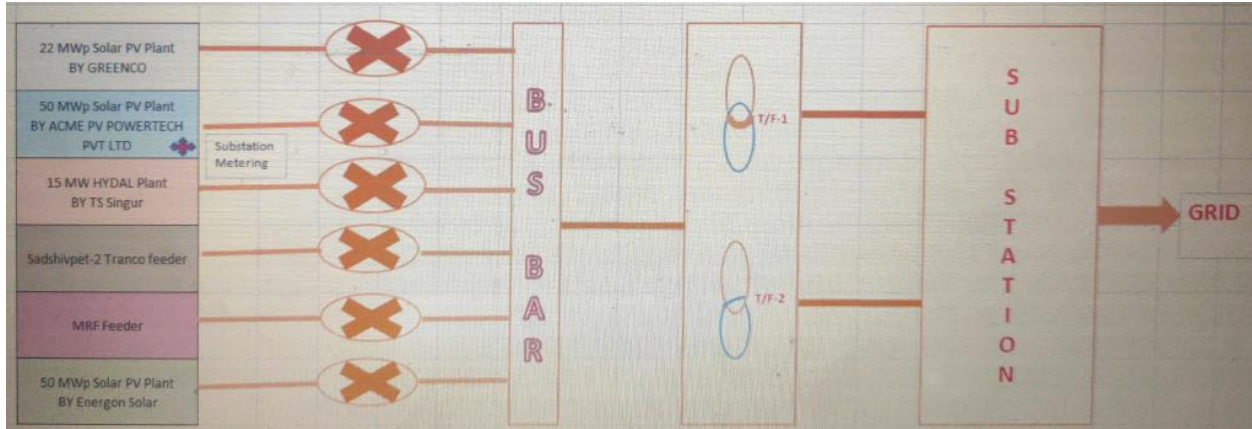


Figure 6 Line diagram of ACME PV Powertech Private Limited

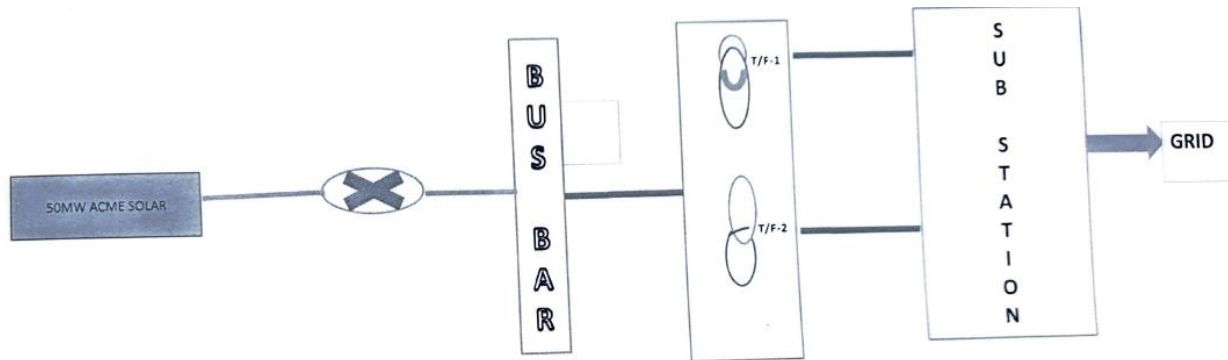


Figure 7 Line diagram of ACME Solar Power Technology Private Limited

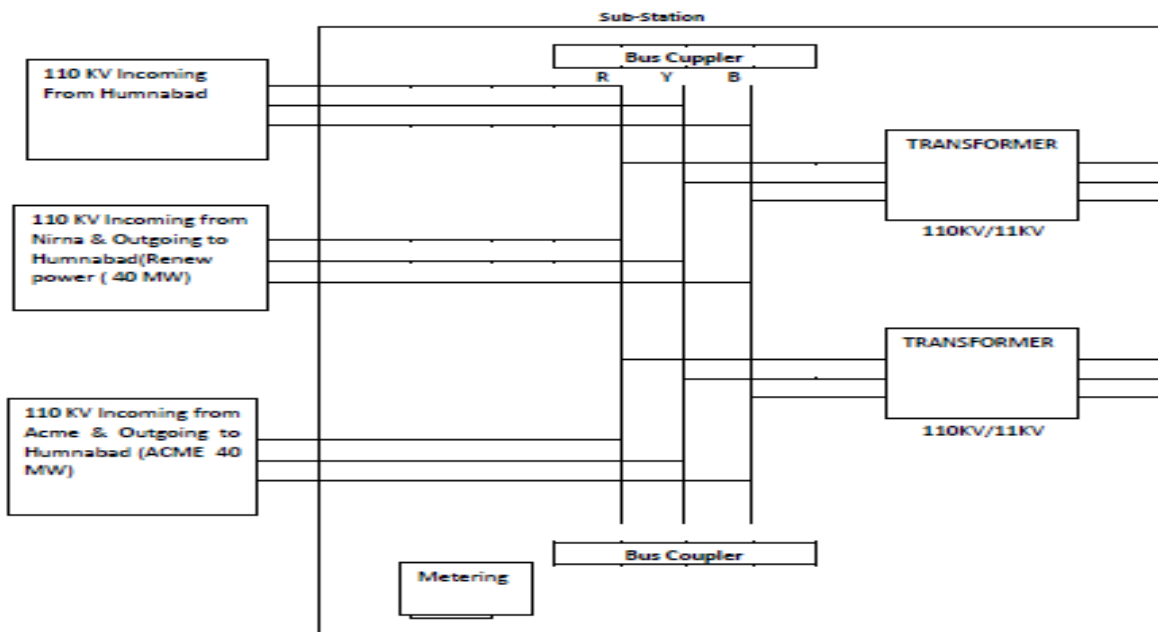


Figure 8 Line diagram of ACME Kaithal Solar Power Private Limited

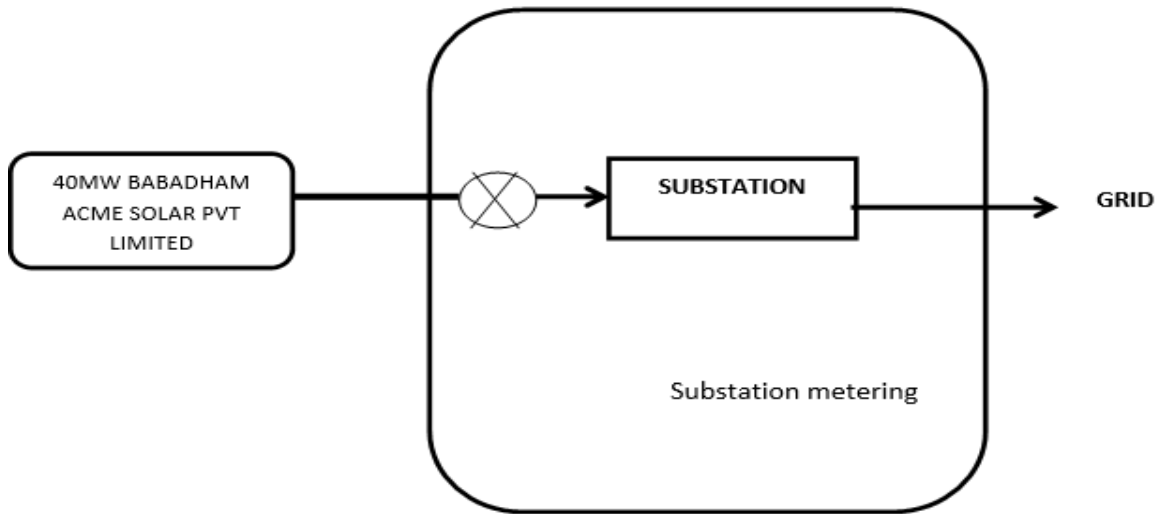


Figure 9 Line diagram of ACME Babadham Solar Power Private Limited

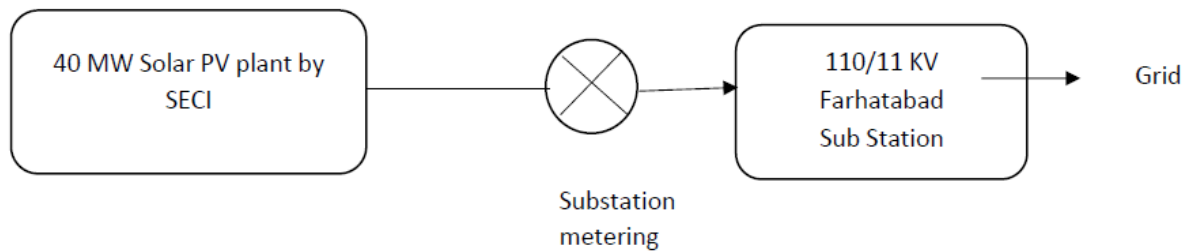


Figure 10 Line diagram of ACME Koppal Solar Energy Private Limited

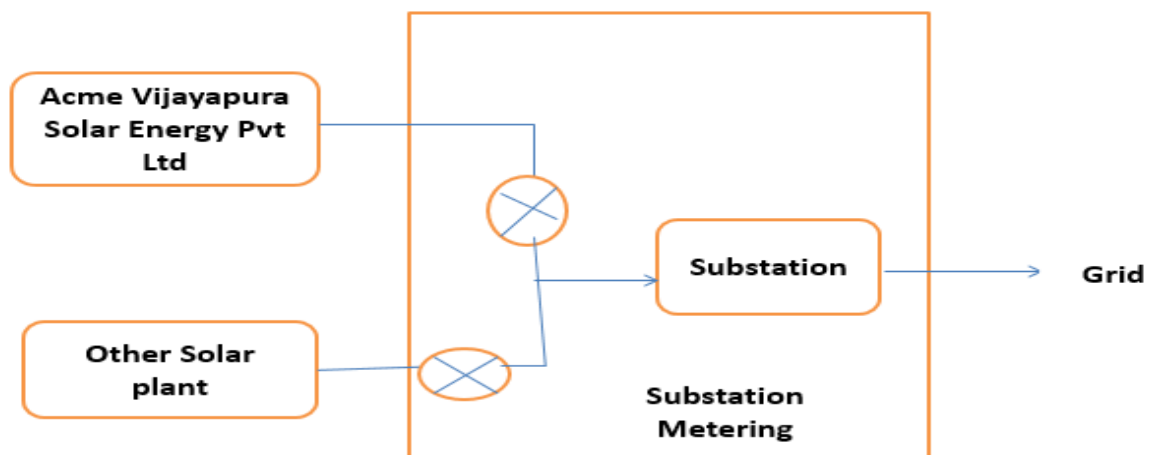


Figure 11 Line diagram of ACME Vijayapura Solar Energy Pvt. Ltd.

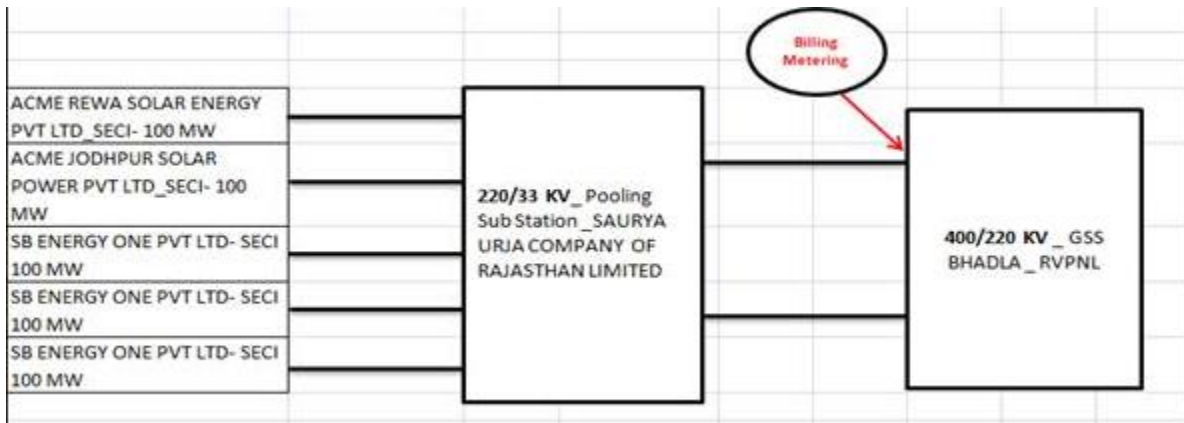


Figure 12 Line diagram of ACME Rewa Solar Energy Pvt. Ltd.

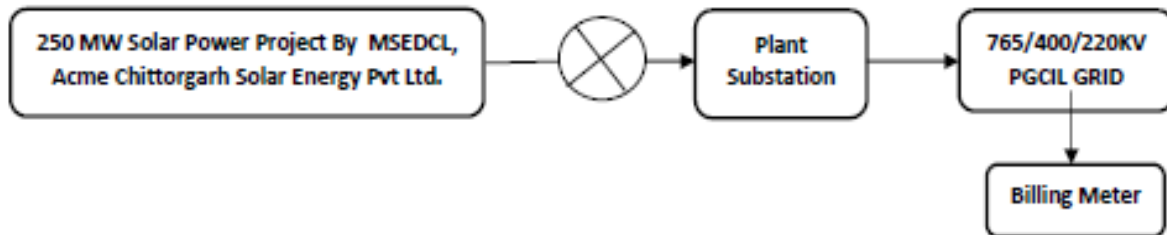


Figure 13 Line diagram of ACME Chittorgarh solar energy Pvt. Ltd.

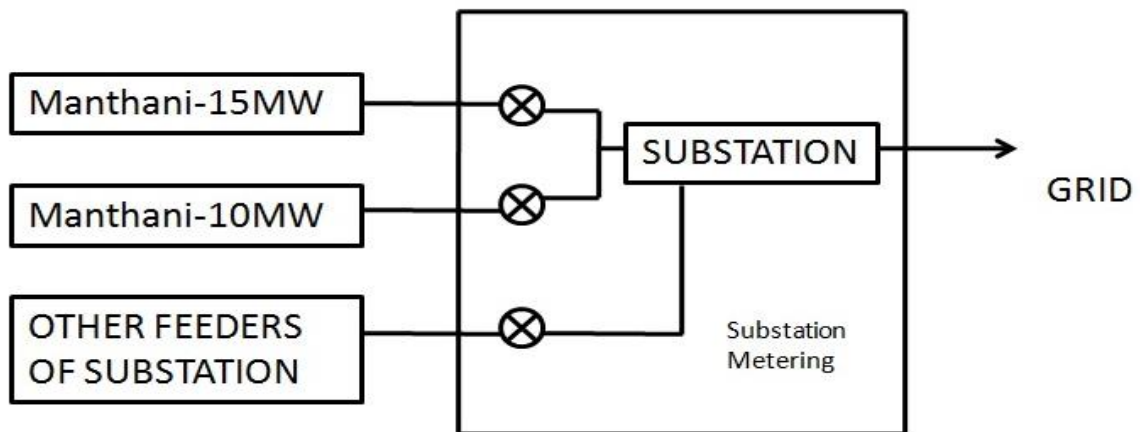


Figure 14 Line diagram of Purvanchal Solar Power Pvt. Ltd.

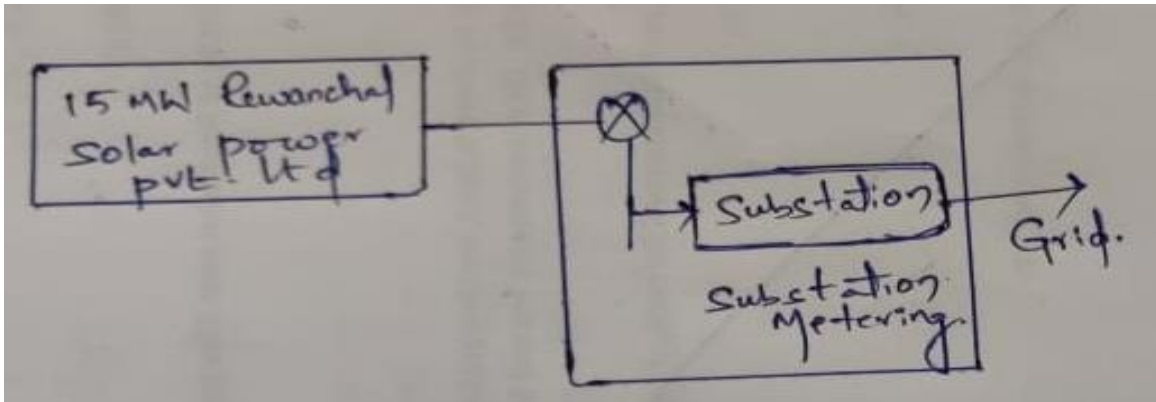


Figure 15 Line diagram of Rewanchal Solar Power Pvt. Ltd.

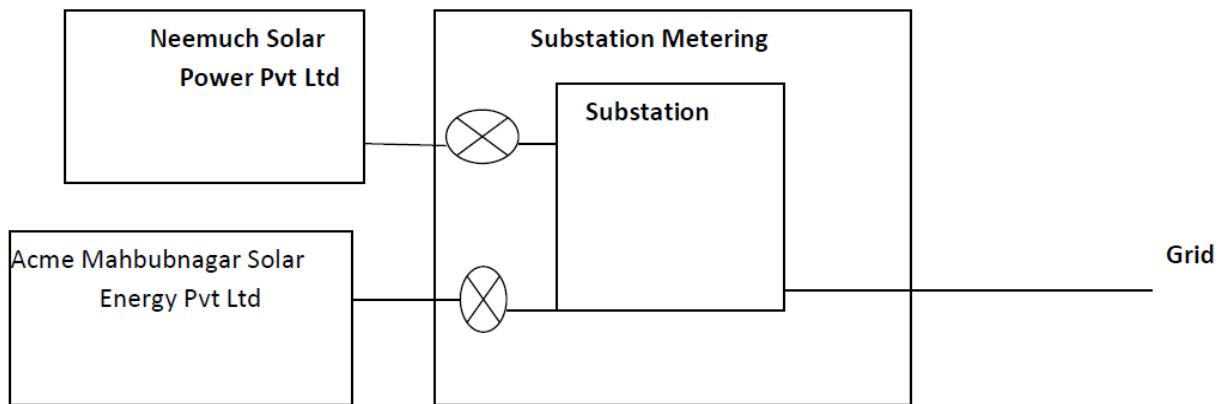


Figure 16 Line diagram of Neemuch Solar Power Pvt. Ltd.

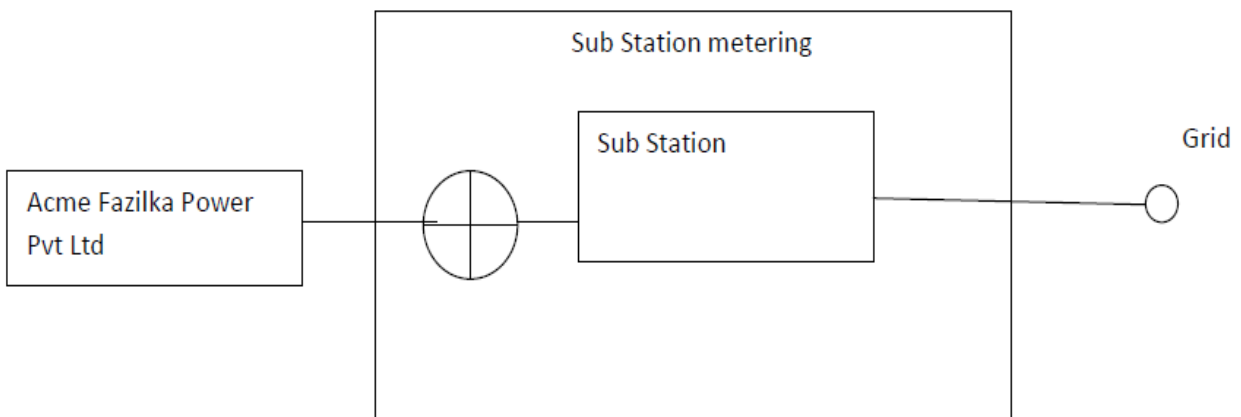


Figure 17 Line diagram of ACME Fazilka Power Pvt. Ltd.

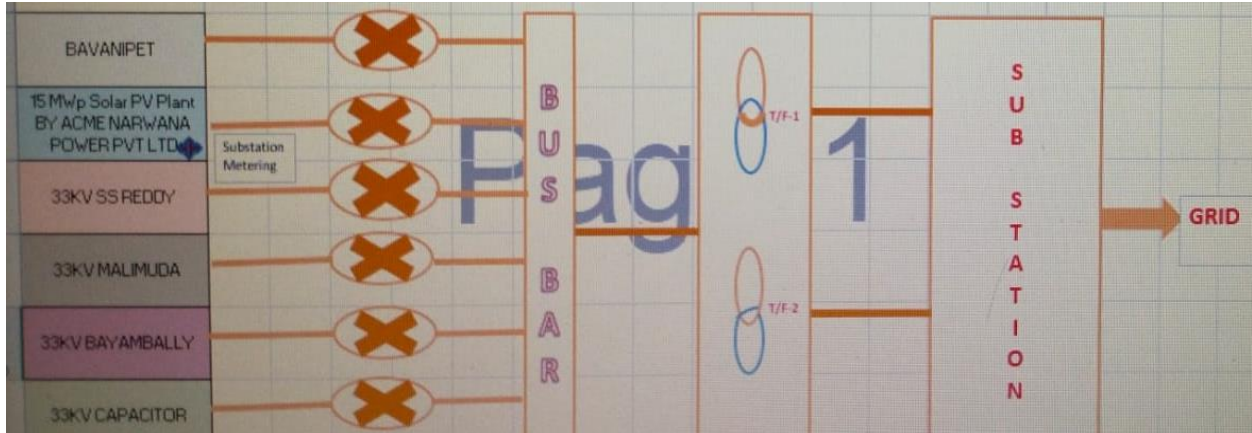


Figure 18 Line diagram of ACME Narwana Solar Power Pvt. Ltd.

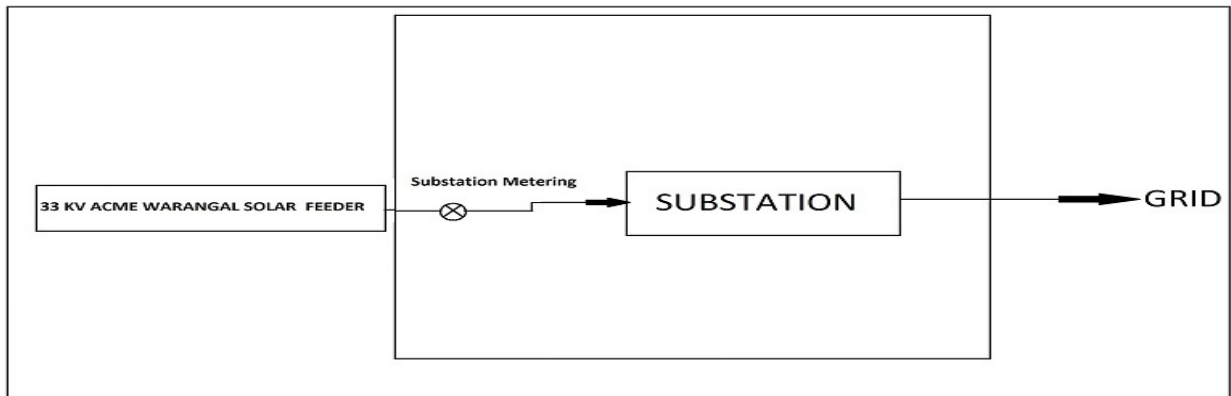


Figure 19 Line diagram of ACME Warangal Solar Power Pvt. Ltd.

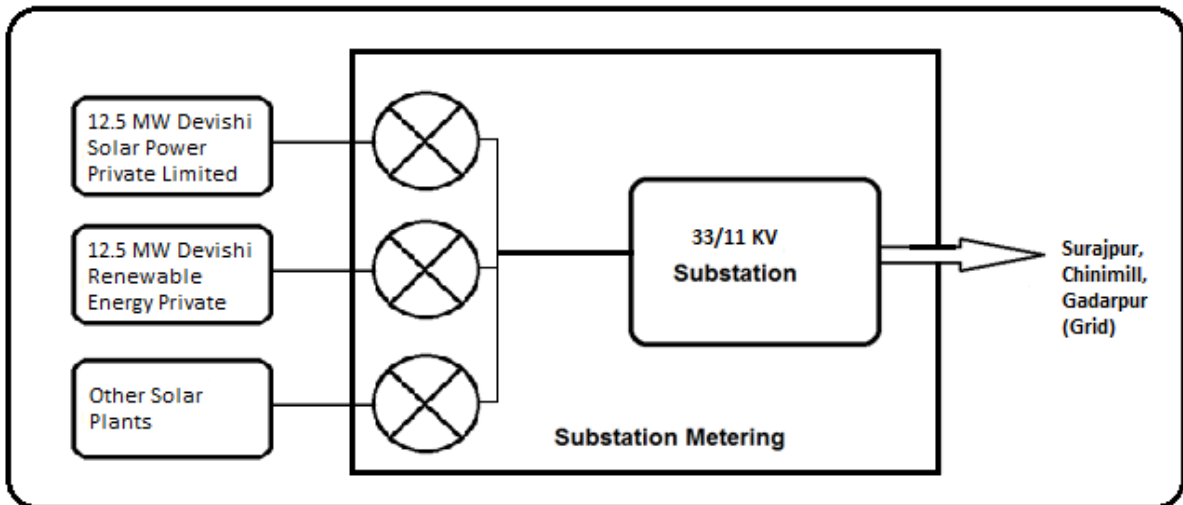


Figure 20 Line diagram of Devishi Renewable Energy Pvt. Ltd.

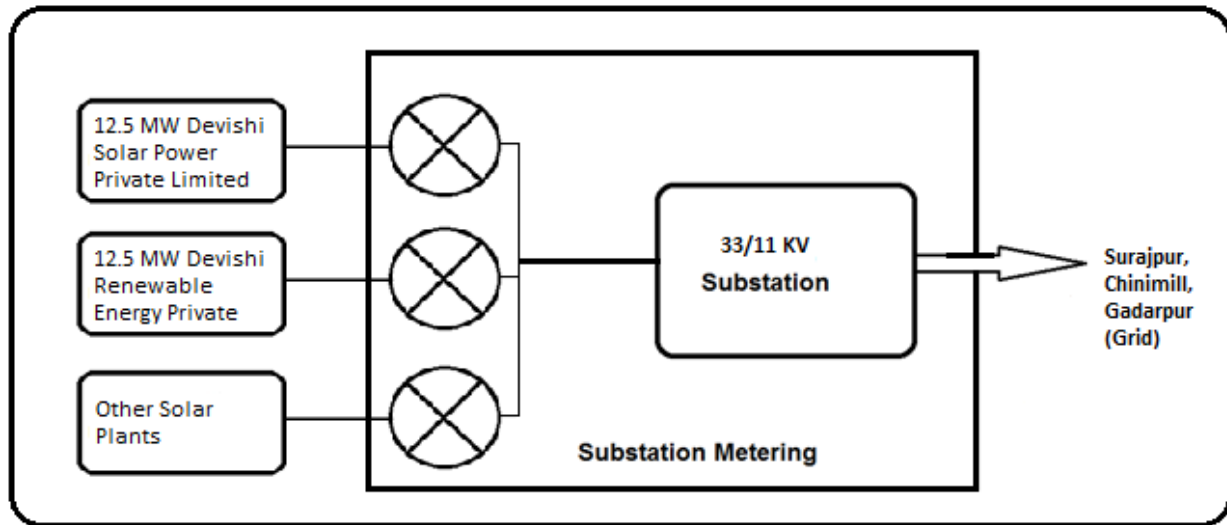


Figure 21 Line diagram of Devishi solar Pvt. Ltd.

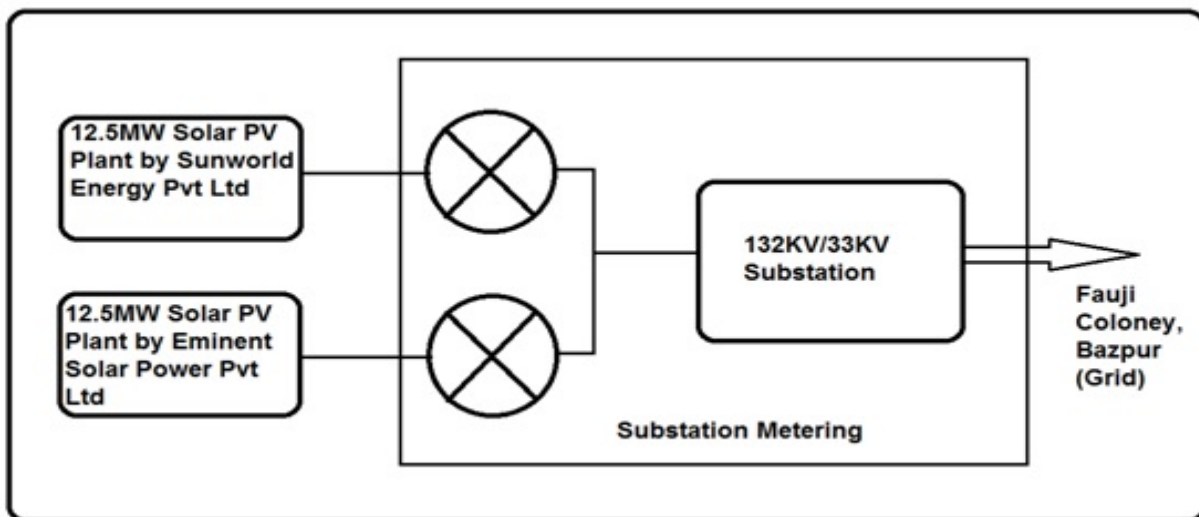


Figure 22 Line diagram of Sunworld Energy Pvt. Ltd.

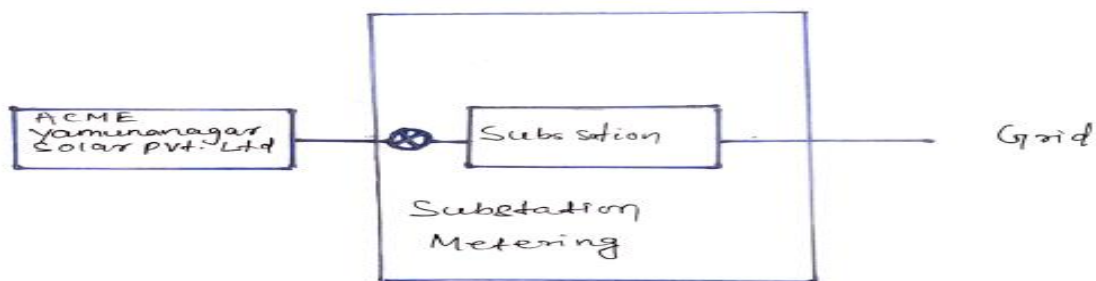


Figure 23 Line diagram of ACME Yamunanagar Solar Power Pvt. Ltd-1 (KOSGI)

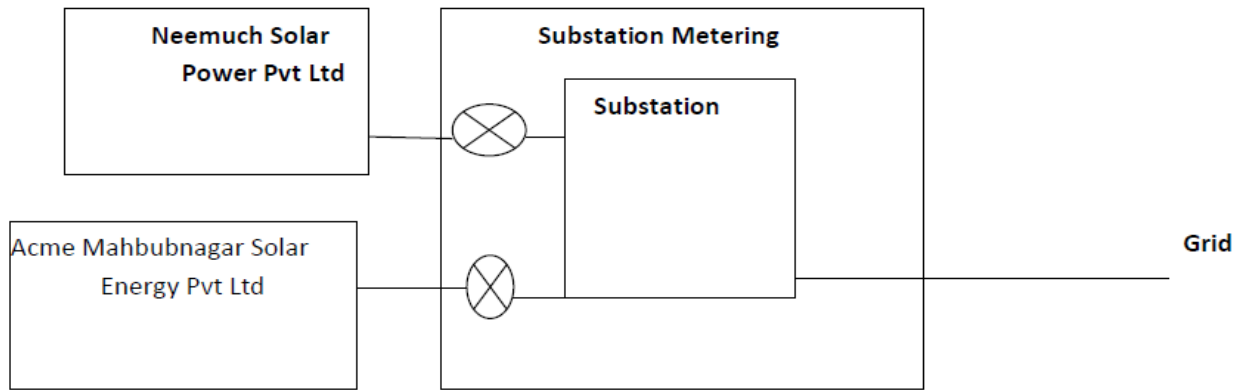


Figure 24 Line diagram of ACME Mahbubnagar Solar Energy Pvt. Ltd-2 (GODHUR)

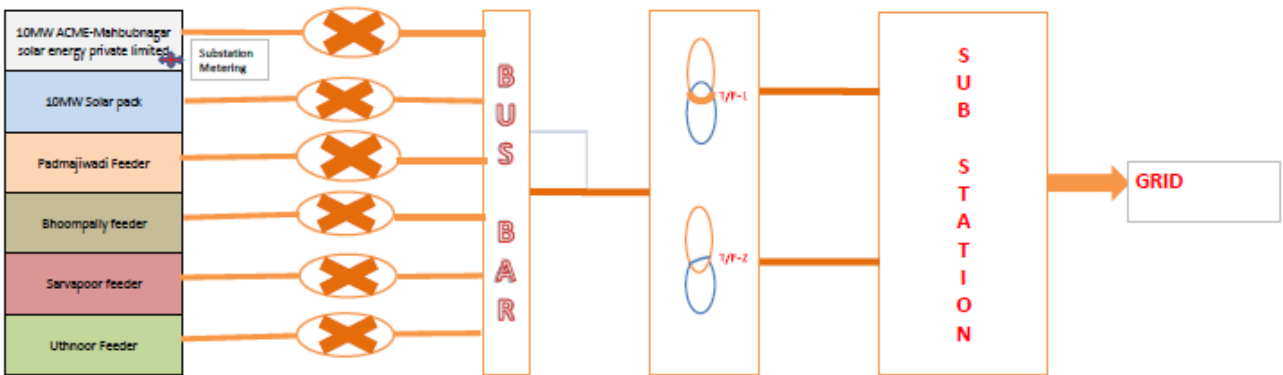


Figure 25 Line diagram of ACME Mahbubnagar Solar 3 (PADMAJIWADI)

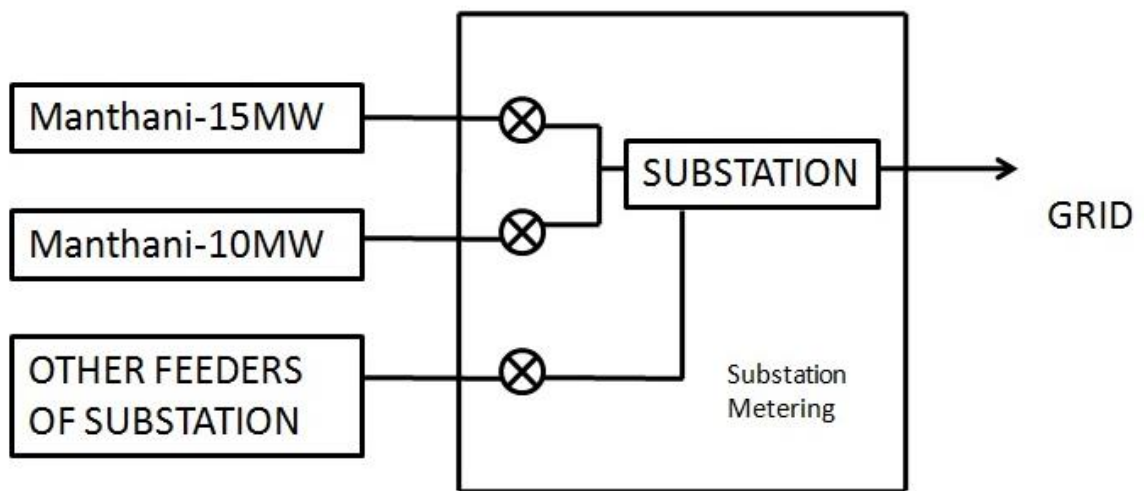


Figure 26 Line diagram of ACME Mahbubnagar Solar 1 (MANTHANI)

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

Monitoring Report: VCS Version 4.0

5.1 Baseline Emissions

The baseline emission calculation for the project activity instances is attributable to the CO₂ Emission that could have been produced by the fossil fuel based power plants in absence of the proposed project activity. Therefore, the amount electricity supplied to the Indian grid multiplied by the grid emission factor of Indian grid to calculate the baseline emissions reduced by the proposed project activity.

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

Where,

BE_y	=	Baseline Emissions in year y; tCO ₂ e
$EG_{\text{facility},y}$	=	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)
$EF_{\text{grid},CM,y}$	=	CO ₂ emission factor of the grid in year y; tCO ₂ e/MWh

Thus

$$\begin{aligned} BE_y &= 26,87,979.42 * 0.9475 \\ &= 2,546,833 \text{ tCO}_2\text{e (round down values)} \end{aligned}$$

Note that above value of emissions is summation of rounded down for each SPV, thus overall value is less than simply multiplication of $26,87,979.42 * 0.9475$.

5.2 Project Emissions

As per methodology AMD I.D. Version 18.0 and ACM0002 Version 19.0, for renewable energy projects, there is no any project emissions occurred.

Hence, $PE_y = 0$

5.3 Leakage

As per methodology AMD I.D. Version 18.0 and ACM0002 Version 19.0, for renewable energy projects, there is no any leakage emissions occurred.

Hence, $LE_y = 0$

5.4 Net GHG Emission Reductions and Removals

The Formula used to calculate the net emission reduction for the project activity is

$$ER_y = BE_y - PE_y - LE_y$$

Monitoring Report: VCS Version 4.0

Where,

ER_y = Emission Reduction in tCO₂/year

BE_y = Baseline emission in tCO₂/year

PE_y = Project emissions in tCO₂/year

LE_y = Leakage Emissions in tCO₂/year

For the project activity during the current monitoring period, as per section 5.1

$$BE_y = 2,546,833 \text{ tCO}_2\text{e}$$

$$PE_y = 0 \text{ tCO}_2\text{e}$$

$$LE_y = 0 \text{ tCO}_2\text{e}$$

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-February-2020 to 31-December-2020	1,927,444	0	0	1,927,444
01-January-2021 to 24-April-2021	619,389	0	0	619,389
Total	2,546,833	0	0	2,546,833

The achieved GHG emission is 0.40% is lower than the estimated value. Thus, the lower GHG emission is acceptable.

APPENDIX 1: CALIBRATION RECORDS

Since metering arrangement, monitoring practice, accuracy class, calibration interval is under control of state electricity board, the PP do not have any control on monitoring practice and calibration of meters.

The Energy Meters details used for commissioned project activity is tabulated below:

Project Instance Number	Name of the SPVs	Capacity (MW)	Main Meter Details	Check Meter Details	Calibration Date	Due date
1	Sunworld Solar Power Pvt Ltd	30	SL. No. APZ00191 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00192 Make: Secure Accuracy class: 0.2 s	17-December-2019	16-December-2024
	ACME Ranga Reddy Solar Power Pvt Ltd	30	SL. No. APZ00197 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00198 Make: Secure Accuracy class: 0.2 s	29-November-2019	28-November-2024
	ACME Medak Solar Energy Pvt Ltd	45	SL. No. APZ00188 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00189 Make: Secure Accuracy class: 0.2 s	14-July-2017	28-October-2025
					29-October-2020	
	ACME Nizamabad Solar Energy Pvt Ltd	50	SL. No. APZ00194 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00195 Make: Secure Accuracy class: 0.2 s	11-September-2017	20-March-2025
					21-March-2020	
	ACME PV Powertech Private Limited (Sadashivpet)	50	SL. No. APZ00200 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00201 Make: Secure Accuracy class: 0.2 s	07-July-2017	18-September-2025
					19-September-2020	
	ACME Solar Power	50	SL. No. APZ00185 Make: Secure	SL. No. APZ00186 Make: Secure	05-February-2018	08-November-2025

	Technology Private Limited		Accuracy class: 0.2 s	Accuracy class: 0.2 s	09-November-2020	
	ACME Rewari Solar Power Pvt Ltd	50	Monitoring Report: VCS Version 4.0 Line 1 (25 MW) SL. No. 17151088 Make: L&T Class: 0.2s Line 2 (25 MW) SL. No. 17151076 Make: L&T Class: 0.2s	Line 1 (25 MW) SL. No. 17151035 Make: L&T Class: 0.2s Line 2 (25 MW) SL. No. 17151090 Make: L&T Class: 0.2s	31-January-2018	30-January-2023
	ACME Kurukshetra Solar Energy Pvt Ltd	50	For RR No. KSPDCL-R2-A21 Main Meter-17125700 Accuracy Class-0.2s For RR No. KSPDCL-R2-A22 Main Meter-17151006 Accuracy Class-0.2s	For RR No. KSPDCL-R2-A21 Check Meter-17125702 Accuracy Class-0.2s For RR No. KSPDCL-R2-A21 Check Meter-17151039 Accuracy Class-0.2s	31-January-2018	30-January-2023
	ACME Bhiwadi Solar Power Pvt Ltd	50	SL. No. APZ00264 Make: Secure Accuracy Class: 0.2s	SL. No. APZ00265 Make: Secure Accuracy Class: 0.2s	01-July-2018	30-June-2023
	ACME Hisar Solar Power Private Limited	50	SL. No. APZ00226 Make: Secure Accuracy Class: 0.2s	SL. No. APZ00227 Make: Secure Accuracy Class: 0.2s	21-June-2018	20-June-2023

	ACME Karnal Solar Power Private Limited	50	SL. No. APZ00260 Make: Secure Accuracy Class: 0.2s	SL. No. APZ00261 Make: Secure Accuracy Class: 0.2s	15-June-2018	14-June-2023
	ACME Kaithal Solar Power Private Limited	40	SL. No. 17054932 Accuracy class: 0.2 s	SL. No. 17054938 Accuracy class: 0.2 s	03-March-2018	02-March-2023
	ACME Babadham Solar Power Private Limited	40	SL. No. 16113468 Accuracy class: 0.2 s	SL. No. 17069195 Accuracy class: 0.2 s	22-January-2018	17-August-2025
					18-August-2020	
	ACME Koppal Solar Energy Private Limited	40	SL. No. 17115504 Accuracy class: 0.2 s	SL. No. 17069212 Accuracy class: 0.2 s	15-April-2018	14-April-2023
	ACME Vijayapura Solar Energy Pvt Ltd	40	SL. No. 17054962 Accuracy class: 0.2 s	SL. No. 17054957 Accuracy class: 0.2 s	23-January-2018	08-June-2025
					09-June-2020	
2	ACME Rewa Solar Energy Pvt Ltd	100	SL. No. 18053541 Make: L&T Accuracy Class: 0.2s	SL. No. 18053542 Make: L&T Accuracy Class: 0.2s	24-September-2018	23-September-2023
	ACME Chittorgarh Solar Energy Pvt. Ltd	250	SL. No. 18053539 Make: L&T Accuracy Class: 0.2s	SL. No. 18053540 Make: L&T Accuracy Class: 0.2s	26-October-2019	25-October-2024
	ACME Karimnagar Solar Power Pvt Ltd	15	SL. No. APZ00131 Make: Secure Apex 150 Accuracy class: 0.2 s	SL. No. APZ00132 Make: Secure Apex 150 Accuracy class: 0.2 s	02-March-2017	08-January-2026
					09-January-2021	

3	Purvanchal Solar Power Pvt Ltd	15	SL. No. APZ00102 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00103 Make: Secure Accuracy class: 0.2 s	16-November-2019	15-November-2024
4	Rewanchal Solar Power Pvt Ltd	15	SL. No. APZ00106 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00107 Make: Secure Accuracy class: 0.2 s	24-March-2017 05-January-2021	04-January-2026
5	Neemuch Solar Power Pvt Ltd	15	SL. No. APZ00111 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00112 Make: Secure Accuracy class: 0.2 s	18-July-2019	17-July-2024
6	ACME Fazilka Power Pvt Ltd (Nandipet)	15	SL. No. APZ00116 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00117 Make: Secure Accuracy class: 0.2 s	21-June-2019	22-June-2024
7	ACME Narwana Solar Power Pvt Ltd (Lingampet)	15	SL. No. APZ00126 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00127 Make: Secure Accuracy class: 0.2 s	24-February-2017 23-July-2020	22-July-2025
8	ACME Warangal Solar Power Pvt Ltd	15	SL. No. APZ00121 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00122 Make: Secure Accuracy class: 0.2 s	13-December-2019	12-December-2024
9	Devishi Renewable Energy Pvt Ltd	13	SL. No. UKD02401 Make: Secure Accuracy class: 0.2 s	SL. No. UKD02402 Make: Secure Accuracy class: 0.2 s	01-November-2019	31-October-2024
10	Devishi Solar Power Pvt Ltd	13	SL. No. UKD02400 Make: Secure Accuracy class: 0.2 s	SL. No. UKD02399 Make: Secure Accuracy class: 0.2 s	01-November-2019	31-October-2024

11	Sunworld Energy Pvt Ltd	13	SL. No. UKD02407 Make: Secure Accuracy class: 0.2 s	SL. No. UKD02412 Make: Secure Accuracy class: 0.2 s	10-February-2017	09-February-2022
12	ACME Yamunanagar Solar Power Pvt Ltd-1 (KOSGI)	10	SL. No. APZ00321 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00322 Make: Secure Accuracy class: 0.2 s	29-May-2019	28-May-2024
13	ACME Yamunanagar Solar Power Pvt Ltd-2 (MOTHKUR)	10	SL. No. APZ00316 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00317 Make: Secure Accuracy class: 0.2 s	17-September-2017 24-August-2020	25-August-2025
14	ACME Mahbubnagar Solar Energy Pvt Ltd-2 (GODHUR)	10	SL. No. APZ00301 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00302 Make: Secure Accuracy class: 0.2 s	11-September-2017 16-March-2020	15-March-2025
15	ACME Mahbubnagar Solar Energy Pvt Ltd-3 (PADMAJIWADI)	10	SL. No. APZ00312 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00313 Make: Secure Accuracy class: 0.2 s	09-September-2017 27-July-2020	26-July-2025
16	ACME Mahbubnagar Solar Energy Pvt Ltd-1 (MANTHANI)	10	SL. No. APZ00306 Make: Secure Accuracy class: 0.2 s	SL. No. APZ00307 Make: Secure Accuracy class: 0.2 s	16-November-2019	15-November-2024