



**Verified Carbon
Standard**

BUNDLED SOLAR POWER PROJECT BY VECTOR GREEN SUNSHINE PRIVATE LIMITED AND POLEPALLY SOLAR PARKS PRIVATE LIMITED



Document Prepared by EKI Energy Services Limited

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Monitoring Period	23-March-2021 to 31-October-2022
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. Vector Green Sunshine Private Limited and Polepally Solar Parks Private Limited are the promoters of the present project activity. The project is a bundled project activity which involves installation of 20 MW solar project by Vector Green Sunshine Private Limited at Mansa district, Punjab, India and 25 MW solar power project by Polepally Solar Parks Private Limited at Mahabubnagar district, Telangana, India.

Over the 10 years of first crediting period, the project replaces anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 70,073 tCO_{2e} per year, thereon displacing 74,429 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by fossil fuel-based power plant.

The details of the project and the state of installation are mentioned in the table: -

Project Proponents Name	Capacity in MW	COD	Connection with Grid	State	Usage
Vector Green Sunshine Private Limited	20	24 March 2016	Indian Grid	Punjab	Sale to Grid
Polepally Solar Parks Private Limited	25	27 June 2016	Indian Grid	Telangana	Sale to Grid

During the Current Monitoring Period from 23-March-2021 to 31-October- 2022 (First and last date included), the project activity has supplied 116,875 MWh of net electricity, and thus contributing to the GHG reductions 112,818 tCO_{2e}.

1.2 Sectoral Scope and Project Type

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

Project Type : I - Renewable Energy Projects

Project Category : Grid-connected electricity generation from renewable sources
ACM0002- Version 17.0¹

The commissioned project is a solar power project and not an AFOLU project.

The project is not a grouped project activity.

¹ <https://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN>

1.3 Project Proponent

Organization name	Vector Green Sunshine Private Limited
Contact person	Mr Ajay Sunkari
Title	GM-Business Acquisition
Address	316-317, 'C' Wing, Kanakia Zillion, L.B.S. Road, BKC Annex, Kurla (W), Mumbai-400070
Telephone	+91-9820848924
Email	ajay.sunkari@vectorgreen.com

Organization name	Polepally Solar Parks Private Limited
Contact person	Mr Ajay Sunkari
Title	GM-Business Acquisition
Address	316-317, 'C' Wing, Kanakia Zillion, L.B.S. Road, BKC Annex, Kurla (W), Mumbai – 400 070
Telephone	+91-9820848924
Email	ajay.sunkari@vectorgreen.com

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultant
Contact person	Rahul Kulkarni
Title	Manager – Operations
Address	Office No. 201, EnKing Embassy, Plot No. 48, Scheme No. 78, Part II, Vijay Nagar INDORE – 452010, India.
Telephone	+91 9028885805
Email	rahul.kulkarni@enkingint.org registry@enkingint.org

1.5 Project Start Date

Start date of the project activity is the earliest date of interconnection with the grid i.e., 24-March-2016. This is the date of commissioning of 20 MW solar PV project activity by Vector Green Sunshine Private Limited.

1.6 Project Crediting Period

Crediting Period Start date: 24-March-2016

Crediting Period End date: 23-March-2026.

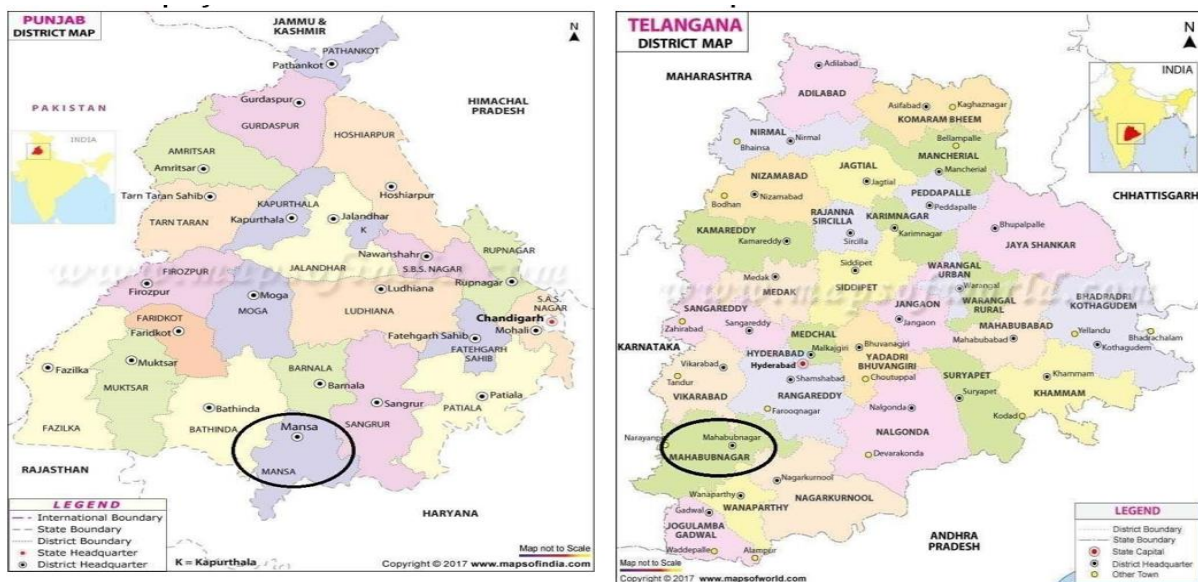
The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.7 Project Location

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

Project Proponents Name	Village	Tehsil /Mandal	District	State	Latitude(N)	Longitude (E)
Vector Green Sunshine Private Limited	Gammiwala	Boha	Mansa	Punjab	29° 47'52.47"	75° 31'16.63"
Polepally Solar Parks Private Limited	Ippaturu	Nawabpet	Mahabubnagar	Telangana	16° 53'20.0"	78° 04'57.8"

The project locations have been shown in the map below:



1.8 Title and Reference of Methodology

Title: Grid-connected electricity generation from renewable sources

Reference: The project activity meets the eligibility criteria of large-scale project as it is more than 15 MW

Methodology: ACM0002: Grid-connected electricity generation from renewable sources - Version 17.0²

Type I: Energy industries (renewable / non-renewable sources) Category: Approved Consolidated Methodology (ACM0002)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system³ - Version 06.0 (EB 97, Annex 07)
- Methodological Tool- Tool for the demonstration and assessment of additionality⁴ - Version 07.0.0 (EB 70, Annex 08).

1.9 Participation under other GHG Programs

Not applicable as it has not been registered in any other GHG mechanism.

1.10 Other Forms of Credit

² <http://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN>

³ <http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v6.pdf>

⁴ <http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

Include the following information, as applicable:

- Emission Trading Programs and Other Binding Limits: The PP has not applied this project in any Emission Trading Programs and other Binding Limits.
- Other Forms of Environmental Credit: The PP has not applied this project in any other form of environmental credits.

1.11 Sustainable Development Contribution

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. The project is a bundled project activity which involves installation of 20 MW solar project by Vector Green Sunshine Private Limited at Mansa district, Punjab, India and 25 MW solar power project by Polepally Solar Parks Private Limited at Mahabubnagar district, Telangana, India.

The Project activity is a new facility (Greenfield) and the electricity generated by the project is exported to the Indian electricity grid. The project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid.

Over the 10 years of first crediting period, the project replaces anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 70,073 tCO_{2e} per year, thereon displacing 74,429 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel-based power plant.

In a nutshell, the various contributions by the Project Proponent (PP) towards the SDGs has been given below: -

1. SDG 7 Affordable and Clean Energy⁵ : Since the project activity is a solar power project, it generates clean energy. The Project activity is a new facility (Greenfield) and the electricity generated by the project is exported to the Indian electricity grid. The project therefore displaces an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid.

2. SDG 13 Climate Action⁶: The main purpose of this project activity is to generate a clean form of electricity through renewable solar energy sources. The project activity involves installation of 20 MW solar project by Vector Green Sunshine Private Limited at Mansa district, Punjab, India and 25 MW solar power project by Polepally Solar Parks Private Limited at Mahabubnagar district, Telangana, India.

The project supplies clean electricity from the solar power plants to the Indian Grid, hence displacing the electricity generated from grid connected fossil fuel power plants and thereby avoiding the equivalent Carbon dioxide which is a greenhouse gas.

⁵ <https://sdgs.un.org/goals/goal7>

⁶ <https://sdgs.un.org/goals/goal13>

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 116,875 MWh renewable electricity has supplied to Indian grid during the reported period that helps to increase the renewable energy share in the energy mix	First Monitoring Period: 24-March-2016 to 31-January-2018 (Inclusive of both the dates) 134,699 MWh⁷ Second Monitoring Period: 01-February-2018 to 22-January-2020 (Inclusive of both the dates) 150,116 MWh⁸ Third Monitoring Period: 23-January-2020 to 22-March-2021 (Inclusive of both the dates) 91,106 MWh⁹ Current Monitoring Period: 23-March-2021 to 31-October-2022 (Inclusive of both the dates) 116,875 MWh Total: 492,796 MWh

⁷ <https://registry.terra.org/app/projectDetail/VCS/1745>

⁸ <https://registry.terra.org/app/projectDetail/VCS/1745>

⁹ <https://registry.terra.org/app/projectDetail/VCS/1745>

2)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to decrease	By supplying 116,875 MWh clean electricity to Indian grid, the project avoided release of 112,818 tCO ₂ e into the atmosphere during the reporting period.	First Monitoring Period: 24-March-2016 to 31-January-2018 (Inclusive of both the dates) 130,024 tCO₂e¹⁰ Second Monitoring Period: 01-February-2018 to 22-January-2020 (Inclusive of both the dates) 144,907 tCO₂e¹¹ Third Monitoring Period: 23-January-2020 to 22-March-2021 (Inclusive of both the dates) 87,943 tCO₂e¹² Current Monitoring Period: 23-March-2021 to 31-October-2022 (Inclusive of both the dates) 112,818 tCO₂e Total: 475,692 tCO₂e
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¹⁰ <https://registry.terra.org/app/projectDetail/VCS/1745>

¹¹ <https://registry.terra.org/app/projectDetail/VCS/1745>

¹² <https://registry.terra.org/app/projectDetail/VCS/1745>

2 SAFEGUARDS

2.1 No Net Harm

The project activity not involved 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 2013¹³. This report clearly mentioned that solar PV project activity operations do not result in direct air pollution, noise pollution.

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.

The project activity has no significant impact on the environment. Solar power projects are not included in the Schedule I of the EIA notification S.O.1533 (E) dated 14th September 2006¹⁴ and thus an EIA is not required. Ministry of Environment, Forest and Climate Change (MoEFCC) vide their OM J-11013/41/2006 - IA II (I) dated 13th May 2011, has re-affirmed this and exempted solar power plants from EIA and Environmental Consent requirement.

2.2 Local Stakeholder Consultation

Detailed local stakeholders’ consultation was conducted during the registration of the project – by identification of stakeholders, identification of local stakeholders, invitation of them, held meeting where project activity was explained in details and the PP also took due care of comments/suggestions of the local stakeholders.

The details of stakeholder meetings are as follows –

For 20 MW solar power project at Punjab.

Date of invitation – 12-May-2016

Date of Meeting – 20-May-2016

Location of Meeting - Project site, Punjab

For 25 MW solar power project at Telangana

Date of invitation – 16-August-2016

Date of Meeting – 22-August-2016

¹³ <http://164.100.94.214/sites/default/files/uploads/report-on-developmental-impacts-of-RE.pdf>

¹⁴ <http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>

Location of Meeting - Project site, Telangana

The process of local stakeholder consultation is continuous. During the current monitoring period, the project proponent has kept grievance register in plant site office and sought comments/grievances/suggestions from local stakeholders including local community, government agencies and NGOs. Besides, the PP has also kept provision for submitting comments/grievances/suggestions from local stakeholders through direct mail.

Site wise email IDs details are as follows –

VGSPPL (20 MW, Mansa district, Panjab) – uttam.mallick@vector-green.com

PSPPL (25 MW, Mahabubnagar district, Telangana) – ummanaboyina@vector-green.com

However, no major comments/grievances/suggestions have been received from the aforementioned stakeholders during the current monitoring period. PP has maintained this ongoing communication with local stakeholder consultation mechanism at site all the time.

2.3 AFOLU-Specific Safeguards

This section is not applicable because the project activity 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 PV project. The total capacity of the project is 45 MW of Solar PV plant located at Punjab and Telangana state in India. The project is promoted by Vector Green Sunshine Private Limited and Polepally Solar Parks Private Limited.

The project activity is a new facility (Greenfield) and the electricity generated by the Project is being exported to the Indian electricity grid. The project therefore displaces 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 entire 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.

During the Current Monitoring Period from 23-March-2021 to 31-October- 2022 (First and last date included), the project activity has supplied 116,875 MWh of net electricity, and thus contributing to the GHG reductions 112,818 tCO₂e.

The technical details of solar PV project are described in below table¹⁵–

The project activity aims to harness solar energy through installation of PV with total installed capacity of 45 MW. The technical specification of 20 MW plant interconnection with grid on 24-March-2016 by Vector Green Sunshine Private Limited are as follows:

Sl. No.	Technical details of the equipment	Comments
1.	Technology Used	Multi Crystalline
2.	Number of modules installed	310 Wp - 67,760
3.	Sources(s) of the modules installed	Renesolar
4.	Module tilt angle	13.5 degree to 22 degree
5.	Make & Number of Inverters	TMEIC- 23 Nos.
6.	Make & Number of Power Transformers	CG- 10 MVA, 2 Nos.
7.	Make & Number of Inverter Transformer	Esennar- 3MVA, 1.5 MVA, 750 MVA (Total 7 Nos.) 3 MVA – 5 Nos. 1.5 MVA – 1 No. 750 MVA – 1 No.
8.	HT Panel	ABB
9.	Make & Number of UPS	EMERSON, 8 Nos.

The technical specification of 25 MW plant interconnection with grid on 27-June-2016 by Polepally Solar Parks Private Limited are as follows:

Sl. No.	Technical details of the equipment	Comments
1.	Technology Used	Thin film
2.	Number of modules installed	290,430 95Wp = 29880 (FS-395-PLUS) 97.5Wp = 189180 (FS-397-PLUS) 100WP = 71370 (FS-3100-PLUS)
3.	Sources(s) of the modules installed	First Solar
4.	Module tilt angle	14 degrees (Fixed) with frameless technology ¹⁶
4.	Make & Number of Inverters	SMA- 30 Nos
5.	Make & Number of Power Transformers	Schneider Electric- 25/30 MVA, 1No.
6.	Make & Number of Inverter Transformer	Silchar Technologies- 1.8 MVA 15 Nos.
7.	HT Panel	Technocraft- 24 Nos.

¹⁵ Technical specification is mentioned as per Joint VCS PD & MR (Version 03 dated 21-March-2018)

¹⁶ The Frameless solar panel does not have any frame attached to them which results in lower embodied energy and retain its energy efficiency ratings.

8.	LT Panel	Arrow Engineers- 16 Nos.
9.	Make & Number of UPS	Delta, 3 Nos. (10KVA, 3KVA & 3KVA)

The project is running smoothly ever since commissioning with regular scheduled maintenance.

Sl. No.	Solar Module	Date of Commissioning
1	20 MW Solar PV	24-March-2016
2	25 MW Solar PV	27-June-2016

During this monitoring period, all sites under the project are operating normally, and no events happened, which may impact the GHG emission reductions or removals and monitoring.

During this monitoring period, no project proponents changed.

3.2 Deviations

2.1.1 Methodology Deviations

The project activity has been implemented as described in the VCS Joint PD & MR and there was no methodological deviation applied during the monitoring period.

2.1.2 Project Description Deviations

Project description taken during this monitoring period –

Deviation No. 01 - Billing meters located at switchyard for VGSPL (20 MW) project in Punjab, and not at substation end. The description has been updated in section 4.2 (QA/QC procedure) of revised MR (version 04). The nature of deviation is permanent.

Deviation No. 02 - In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the event that check meter fails it will also be repaired or replaced. In the event of failure of main & check meter at the same time, PP can use stand-by meter available at site for billing purpose. The description has been updated in section 4.3 of revised MR (Version 04). The nature of deviation is permanent.

3.3 Grouped Projects

The specified project is not a part of a grouped project.

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 12, May 2017 ¹⁷
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 05” 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.

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 ¹⁸
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 05” 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

¹⁷ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver12.pdf

¹⁸ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver12.pdf

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: $EF_{grid,CM,y} = EF_{grid,OM,y} * WOM + EF_{grid,BM,y} * WBM$ Where: $EF_{grid,BM,y}$ = Build margin CO2 emission factor in yearly (tCO2/MWh) $EF_{grid,OM,y}$ = Operating margin CO2 emission factor in year y (tCO2/MWh) WOM = Weighting of operating margin emissions factor (%) = 75% WBM = 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

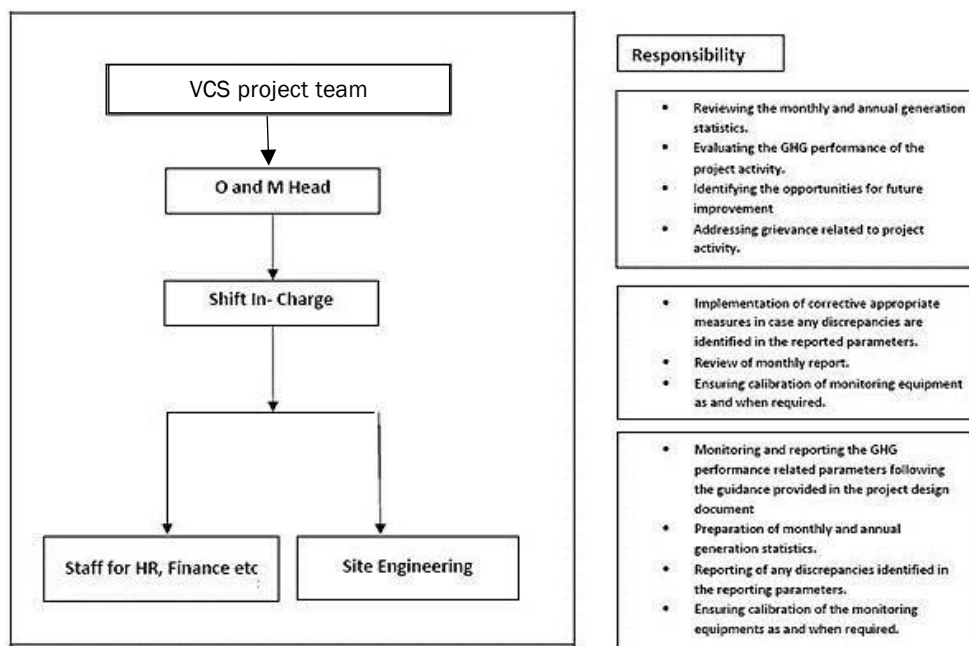
Data / Parameter	$EG_{PJ,y}$
Data unit	MWh
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh
Source of data	Monthly joint meter reading reports of respective state
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value is considered for ER calculations.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	116,875
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid. The billing meter used for project activity having following specification Monitoring: ABT cum Tri vector meter are used Data type: Measured Type of meter: Static type meter (Main, Check & Standby meter). Accuracy Class of meters: 0.2s

	The meter details are being mentioned in APPENDIX1: Meter Calibration Details
QA/QC procedures to be applied	The meters are approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years. The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines are applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter. The billing is raised based on substation meters for PSSPL (25 MW) project in Telangana and as billing meters located at switchyard for VGSPL (20 MW) project in Punjab. For detailed schedule of calibration please refer Appendix- 1. The Net electricity exported to the grid is cross checked against the invoice raised by the PP towards the DISCOM.
Purpose of the data	Calculation of baseline emissions
Calculation method	Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh
Comments	Data 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.

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is present for grid-connected solar power project being implemented. The monitoring plan, which is implemented by the project participant describes about the monitoring organization, 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 have been 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 to PP, invoices were raised. These invoices are used for cross checking the meter readings taken for the respective project activity.

Data Apportioning

In case of mismatch of date between the start date of the billing cycle and the start date of monitoring period the data is apportioned in line to the daily generation values for the said mismatch period.

The PP keeps complete and accurate records of operating log at the Power Plant. The data is archived electronically as well as in log books at the power plant and kept for two years after the end of the crediting period or the last issuance of VCU for this project activity, whichever occurs later. In case the dates of a particular monitoring period do not match with the dates of the billing cycle, the net electricity exported to the grid would be calculated apportioning the net electricity exported to grid, as recorded in the JMR, based on the number of days in the monitoring period and the number of days for which JMR was prepared.

Data collection and archiving

Readings from meters are collected in the presence of the plant in-charge. Export and Import data are 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 is 2 years after the end of crediting period or till the last issuance of VCU for the project activity whichever occurs later.

Emergency Preparedness

The project activity does 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.

In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced. In the event failure of main & check meter at same time, PP can use stand-by meter available at site for billing purpose.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per the approved consolidated Methodology ACM0002 (Version 17.0, EB 89, Annex 1) para 44 Baseline emissions include only CO₂ 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:

$$\begin{aligned} BE_y &= EG_{PJ,y} \times EF_{grid,CM,y} \\ &= 116,875 \text{ MWh} \times 0.9653 = 112,818 \text{ tCO}_2\text{e (round own value)} \end{aligned}$$

Where:

BE_y = Baseline emissions in year y (tCO₂/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 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 version 6.0 of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

5.2 Project Emissions

As per the approved consolidated Methodology ACM0002 (Version 17.0) para 36: “For most renewable energy power generation project activities, PE_y = 0.

5.3 Leakage

As per the approved consolidated Methodology ACM0002 (Version 17.0) section 5.6, 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. Hence, LE_y = 0.

5.4 Net GHG Emission Reductions and Removals

$$ER_y = BE_y - PE_y$$

BE_y = Baseline Emissions

PE_y = Project emissions

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:

$$ER_y = 112,818 \text{ tCO}_2\text{e} - 0 \text{ tCO}_2\text{e}$$

$$= 112,818 \text{ tCO}_2\text{e} \text{ (round down value)}$$

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)
Year 2021 (23-March-2021 to 31-December-2021)	53,332	0	0	53,332
Year 2022 (01-January-2022 to 31-	59,486	0	0	59,486

October-2022)				
Total	112,818	0	0	112,818

It is to be noted here that the estimated emission reduction to be achieved from the project activity for the current monitoring period is 112,884 tCO₂e, whereas actual emission reductions achieved are 112,818 tCO₂e, which is 0.06% lower than the estimated emission reductions.

The project witnessed decrease of 0.06% in emission reductions as compared to ex-ante emissions, which is due to natural phenomena and cannot be controlled by the Project Proponent.

APPENDIX 1: METER CALIBRATION DETAILS

Meter Calibration details of 25 MW solar project by Polepally Solar Parks Private Limited

Meter Details	Main Meter	Check Meter	Standby Meter
Sl. No.	XC510829	XC510830	APX00481
Make	Secure	Secure	Secure
Accuracy Class	0.2 s	0.2 s	0.2 s
Date of Meter Calibration	30-August-2019	30-August-2019	30-August-2019
Due date of Meter Calibration	29-August-2024	29-August-2024	29-August-2024

Meter Calibration details of 20 MW solar project by Vector Green Sunshine Private Limited

Meter Details	Main Meter	Check Meter	Grid Meter
Sl. No.	15191785	15191778	PBB 37438
Make	L&T	L&T	Secure
Accuracy Class	0.2 s	0.2 s	0.2 s
Date of Meter Calibration	08-January-2019	08-January-2019	08-January-2019
Due date of Meter Calibration	07-January-2024	07-January-2024	07-January-2024

APPENDIX II: MAJOR BREAKDOWN DETAILS

For PSPPL -25 MW

S No	Date	Duration	Remarks
1	07-April-2022	2.02	132KV LA (R-phase) flash over happened at Line Bay.
2	16-May-2022	5.98	Communication disturbed
3	29-June-2022	0.27	Communication disturbed
4	13-July-2022	0.25	Incomer failure at substation end
5	24-August-2022	9.75	String cable damage
6	24-September-2022	0.13	Incomer failure at substation end
7	20-October-2022	3.33	ILC-1 DP yard R-phase Jumper Failure
8	21-October-2022	2.17	Cable end termination kit failure
9	30-October-2022	2.58	Grid down due to GSS end bus maintenance

For VGSPL-20 MW

S No	Date	Duration	Remarks
1	01-April-2021	0.23	Inv-5,6,7 & 8 trip due to Over voltage
2	10-April-2021	0.78	Line Breaker Trip due to control ckt Unhealthy
3	25-May-2021	13.87	Tracker No.-14,27&28 Stop at 0° due to VFD Fault
4	04-October-2021	0.38	Inverter no. 3 Trip due to DC Ground fault
5	28-November-2021	10.42	Tracker No.-12 & 14 Stopped at 0° due to GOC Faulty

S No	Date	Duration	Remarks
6	17-December-2021	0.32	Inverter no. 18 Trip due to DC Ground fault
7	08-January-2022	0.30	Inverter no. 14 Trip due to DC Ground fault
8	21-February-2022	0.87	Problem in AC breaker
9	28-April-2022	0.25	INV-16 tripped due to Ground Fault
10	10-July-2022	14.10	Block 1 is not in operational due to Fire incident. Incident in SISS Room.
11	05-August-2022	5.22	Inv-5 SCB -1 String-10,11.
12	06-Septmber-2022	12.88	Tracker in breakdown due to shaft pin handle damaged