



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

Project title	Bundled Solar Power Project by Vector Green Sunshine Private Limited and Polepally Solar Parks Private Limited
Project ID	1745
Monitoring period	01-May-2024 to 28-February-2025 (both days included)
Original date of issue	20-March-2025
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Version	03
VCS Standard Version	4.7
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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 tCO₂e 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 Proponent's 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 01-May-2024 to 28-February-2025 (first and last date included), the project activity has supplied 60,262 MWh of net electricity, and thus contributing to the GHG reductions 58,171 tCO₂e.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Joint Validation and Verification	24-March-2016 to 31-January-2018	VCS	LGAI Technological Center, S.A. (Applus+ Certification)	1 year 10 months

Verification	01-February-2018 to 22-January-2020	VCS	Earthood Services Private Limited	11 months 22 days
Verification	23-January-2020 to 22-March-2021	VCS	Earthood Services Private Limited	1 year 2 months
Verification	23-March-2021 to 31-October-2022	VCS	VKU Certification Pvt. Ltd.	1 year 7 months
Verification	01-November-2022 to 30-April-2024	VCS	LGAI Technological Center, S.A. (Applus+Certification)	1 year 6 months
Verification	01-May-2024 to 28-February-2025	VCS	Ecolance Private Limited	1 year 2 months
Total	24-March-2016 to 30-April-2024	-	-	8 years 2 months 22 days

1.3 Sectoral Scope and Project Type

Sectoral scope ¹	01-Energy Industries (Renewable/non-renewable)
Project activity type	Renewable energy projects
The project activity is not a grouped project.	
Sectoral scope	Not applicable as it is not a AFOLU project.
AFOLU project category ²	Not applicable as it is not a AFOLU project.
Project activity type	Not applicable as it is not a AFOLU project.

¹ Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

² See Appendix 1 of the VCS Standard

1.4 Project Proponent

Organization name	Polepally Solar Parks Private Limited
Contact person	Mr. Rajeev Kumar Singh
Title	Manager-Carbon Team
Address	316-317, 'C' Wing, Kanakia Zillion, L.B.S. Road, BKC Annex, Kurla (W), Mumbai-400070
Telephone	+91-9789183888
Email	Rajeevkumar.Singh@sembcorp.com

Organization name	Vector Green Sunshine Private Limited
Contact person	Mr. Rajeev Kumar Singh
Title	Manager-Carbon Team
Address	316-317, 'C' Wing, Kanakia Zillion, L.B.S. Road, BKC Annex, Kurla (W), Mumbai-400070
Telephone	+91-9789183888
Email	Rajeevkumar.Singh@sembcorp.com

1.5 Other Entities Involved in the Project

Organization name	NA
Role in the project	NA
Contact person	NA
Title	NA
Address	NA
Telephone	NA
Email	NA

1.6 Project Start Date

Project start date	24-March-2016
Justification	This is the date of commissioning of 20 MW solar PV Project activity by Vector Green Sunshine Private Limited

1.7 Project Crediting Period

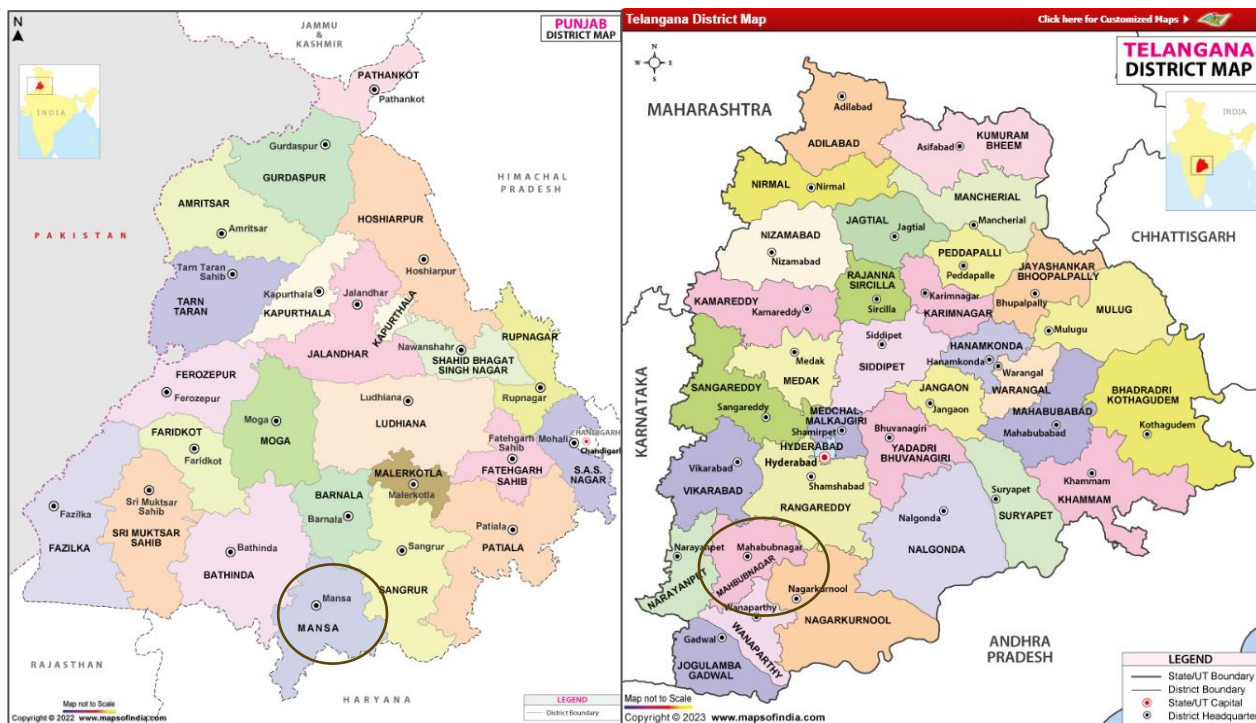
Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed ☒ Other (The crediting period is for 10 years and it can be renewed 2 times. This is as per the registered PD, section 1.6.)
Start and end date of first or fixed crediting period	24-March-2016 to 23-March-2026(both days included)

1.8 Project Location

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

Project Proponent's 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:



1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002	Grid-connected electricity generation from renewable sources	17.0
Tool	07	Tool to calculate the emission factor for an electricity system ³	06.0
Tool	01	Tool for the demonstration and assessment of additionality ⁴	07.0.0

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

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

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

If yes:

Has the project proponent(s) or authorized representative posted a public statement on their website saying, “Carbon credits may be issued through the Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities].”

☐ Yes

☒ No

1.12 Sustainable Development Contributions

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 tCO₂e 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.

During the current monitoring period 01-May-2024 to 28-February-2025 (inclusive of both dates) 60,262 MWh electricity has supplied to Indian 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

⁵ <https://sdgs.un.org/goals/goal7>

⁶ <https://sdgs.un.org/goals/goal13>

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.

By supplying 60,262 MWh clean electricity to Indian grid, the project avoided release of 58,171 tCO_{2e} into the atmosphere during the current monitoring period: 01-May-2024 to 28-February-2025 (inclusive of both dates).

3. SDG 8 Employment and decent work: The implementation of the project activity has led to increase in the employment and skill upliftment in the surrounding areas. The current monitoring period has employed 57 people for the project activity and 12 trainings were conducted.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
Sequential row number	SDG Target number	Number and text of SDG indicator or, if no official SDG indicator is applicable, user-defined indicator	Indicate the project's contribution to the SDG Indicator (implemented activities to increase or decrease)	Brief description of the quantifiable impact of the project's activities related to the SDG indicator, during the monitoring period.	Brief description of the cumulative quantifiable impact of the project's activities related to the SDG indicator, over the project lifetime.

1)	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 60,262 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 MWh. Third Monitoring Period: 23-January-2020 to 22-March-2021 (Inclusive of both the dates) 91,106 MWh. Fourth Monitoring Period: 23-March-2021 to 31-October-2022 (Inclusive of both the dates) 116,875 MWh. Fifth Monitoring Period: 01-November-2022 to 30-April-2024 (inclusive of both dates) 112,648 MWh Current Monitoring Period: 01-May-2024 to 28-February-2025 (inclusive of both dates): 60,262 MWh Total: 665,706 MWh
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⁷ <https://registry.terra.org/app/projectDetail/VCS/1745>

2)	8.6	8.6.1-Proportion of youth (aged 15-24 year) not in education, employment or training.	Implemented activities to increase	57 people are employed for the project and 12 trainings were provided during the current monitoring period.	Currently 57 people are working in the project activity. Total number of trainings provided up to current project activity is 50.
3)	13.2	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to decrease	By supplying 60,262 MWh clean electricity to Indian grid, the project avoided release of 58,171 tCO _{2e} into the atmosphere during the reporting period.	First Monitoring Period: 24-March-2016 to 31-January-2018 (Inclusive of both the dates) 130,024 tCO_{2e} Second Monitoring Period: 01-February 2018 to 22-January-2020 (Inclusive of both the dates) 144,907 tCO_{2e} Third Monitoring Period: 23-January-2020 to 22-March-2021 (Inclusive of both the dates) 87,943 tCO_{2e} Fourth Monitoring Period: 23-March-2021 to 31-October-2022 (Inclusive of both the dates) 112,818 tCO_{2e} Fifth Monitoring Period: 01-November-2022 to 30-April-2024 (inclusive of both dates) 108,739 tCO_{2e}. Current Monitoring Period: 01-May-2024 to 28-February-2025 (inclusive of both dates): 58,171 tCO_{2e}. Total: 642,602 tCO_{2e}

1.13 Commercially Sensitive Information

There is no commercial sensitive information related the project activity. All information is provided in the public version of the project documents.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	Villagers located near the project area are identified as the main stakeholders of the project activity. They are identified by the CSR committee of the company in discussion with the Gram Panchayat and the Block level Government officers. As the villagers are in the vicinity of the project activity, they would be likely be the most impacted by the implementation of the project.
Legal or customary tenure/access rights	The land on which the Solar Panels are installed is owned by the Project Proponent which has project lifetime of 25 years.
Stakeholder diversity and changes over time	The project owner has conducted and stakeholder meeting during the start of registration process of this project under the VCS mechanism. In this stakeholder meeting, diverse stakeholders such as local villagers (villages nearby the project site), state utility officials, NGOs were invited. The project owner has explained the various benefits and advantages of this project including the economic impact on the local area. Over the period of the year, the nature of the stakeholders has not changed.

	Project	Date of Meeting	Location of meeting
	20 MW solar power at Punjab	20-May-2016	Project site, Punjab
	25 MW solar power at Telangana	22-August-2016	Project site, Telangana
Expected changes in well-being	Over the course of the project implementation, there has been considerable and positive impact on the livelihood of the local people. The project activity has generated employment to the local people, development of new skills for the locals by providing trainings and exposing to various awareness programs.		
Location of stakeholders	The main stakeholders of this project are: - State utility which includes transmission and distribution companies which have offices at local (block level) and as well as State Capital. - Villagers/local citizens- they are located near the project area. The project has positive impact on the local people as it has generated employment (temporary/permanent) opportunities for them. Local Vendors: they are located near the vicinity of the project site. During the installation phase, they get business opportunities which is beneficial economically.		
Location of resources	The land on which the Solar Panels are installed belongs to the project owner. The locations of all Solar Panels are provided in Section 1.8.		

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	For on-going consultation, the project proponent has kept grievance register in plant site office and sought comments/grievances from the local stakeholders. The representative of PP addresses the grievances if any to the
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	stakeholders and communicates them on regular basis. PP has also kept provision for submitting comments/grievances from local stakeholder through direct emails. Below are the details: - Company Website: www.sembcorpindia.com—Green Infra Wind Energy Private Limited - Email: sgil.grievance@sembcorp.com During the current monitoring period, no negative comments were received from the local stakeholders.									
Date(s) of stakeholder consultation	Local stakeholder consultation was conducted during the registration of the project. The Project Proponent had conducted local stakeholder’s consultation at three different project sites. <table><tr><th>Project</th><th>Date of Meeting</th><th>Location of meeting</th></tr><tr><td>20 MW solar power at Punjab</td><td>20-May-2016</td><td>Project site, Punjab</td></tr><tr><td>25 MW solar power at Telangana</td><td>22-August-2016</td><td>Project site, Telangana</td></tr></table>	Project	Date of Meeting	Location of meeting	20 MW solar power at Punjab	20-May-2016	Project site, Punjab	25 MW solar power at Telangana	22-August-2016	Project site, Telangana
Project	Date of Meeting	Location of meeting								
20 MW solar power at Punjab	20-May-2016	Project site, Punjab								
25 MW solar power at Telangana	22-August-2016	Project site, Telangana								
Communication of monitored results	The main outcomes and benefits of the project activity like the total power generated, the employment opportunities and economic development of the villages near the project site was explained to all the stakeholders through meetings. It was further communicated to all stakeholder through emails and Minutes of Meeting document was also sent.									
Consultation records	The consultation with stakeholders was documented in the forms of Minutes of Meeting consisting outcome of the consultation process and the same has been shared with the stakeholders.									
Stakeholder input	During the stakeholder’s consultation process, the below inputs were received for the project: 1. Does the project provide employment opportunities or economic development of the area?									

	PP response: Yes, the project will provide economic development of the area and employment opportunities to the local people. 2. How the project activity will benefit the villages around the project site and their residents? PP response: The project activity will benefit the villagers by providing employment opportunities to local or nearby people like module cleaning, hiring of vehicles and various social activities shall help to uplift the standard of living.
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2.1.3 Free, Prior, and Informed Consent

Consent	The project area legally belongs to the Project Proponent and no conflicts have arisen related to the rights of the project, the project location or any other disagreements with any stakeholders.
Outcome of FPIC	The project site belongs to the Project Proponent and it has a legal document of its rights over the Land. In the process, there has no displacement or relocation of the local villages. Since the start of the project activity there have been many positive economic impacts which has greatly contributed to the upliftment of the region.

2.1.4 Grievance Redress Procedure

Grievances received	Resolution and outcome
No grievances received during the monitoring period.	There is a grievance register which is kept at the project site. Any stakeholder who has comments/complaints can contact as per the details mentioned. The Project representative would address the complaints on immediate basis.

2.1.5 Public Comments

Summary of comments received	Actions taken
No negative comments have been received	Since the commissioning, there has been no change in the project design and therefore any updates were not necessary.

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

This section and its subsequent sub-sections are not applicable.⁸

2.2.2 Risk assessment

This section and its subsequent sub-sections are not applicable.⁹

	Risk identified	Mitigation or preventative measure(s) taken
Natural and human-induced risks to stakeholders' wellbeing		
Risks to stakeholder participation		
Working conditions		
Safety of women and girls		
Safety of minority and marginalized groups, including children		

⁸According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

⁹According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)		
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2.3 Respect for Human Rights and Equity

This section and its subsequent sub-sections are not applicable.¹⁰

2.3.1 Labor and Work

This section and its subsequent sub-sections are not applicable.¹¹

	Risks identified ¹²	Mitigation or preventative measure(s) taken
Discrimination		
Sexual harassment		
Gender equity in labor and work		
Forced labor		
Child labor		
Human trafficking		

2.3.2 Human Rights

Not Applicable

¹⁰According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

¹¹According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

¹² The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

2.3.3 Indigenous Peoples and Cultural Heritage

This section and its subsequent sub-sections are not applicable.¹³

2.3.4 Property Rights

Not Applicable

2.3.5 Benefit Sharing

This section and its subsequent sub-sections are not applicable.¹⁴

Summary of the benefit sharing plan	
Benefit sharing during the monitoring period	

2.4 Ecosystem Health

This section and subsequent sub-sections are not applicable.¹⁵

	Risk identified	Mitigation or preventative measure(s) taken during the monitoring period
Impacts on biodiversity and ecosystems		
Soil degradation and soil erosion		
Water consumption and stress		

¹³According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

¹⁴According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

¹⁵ According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

2.4.1 Rare, Threatened, and Endangered species

This section and subsequent sub-sections are not applicable.¹⁶

Species or habitat	
Areas needed for habitat connectivity	

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species		
Areas for habitat connectivity		

2.4.2 Introduction of species

Species introduced	Classification	Justification for use	Adverse effects and mitigation
N/A	N/A	N/A	N/A

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
N/A	N/A

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	NA	NA

2.4.3 Ecosystem conversion

It is not applicable.

¹⁶ According to April 2024 Overview of VCS Program Updates and Effective dates, this section is not applicable yet. It is effective for all project requests submitted to Verra Registry on or after 01 January 2025.

	Risks identified	Mitigation or preventative measure(s) taken
Ecosystem conversion	NA	NA

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 01-May-2024 to 28-February-2025 (First and last date included), the project activity has supplied 60,262 MWh of net electricity, and thus contributing to the GHG reductions 58,171 tCO_{2e}.

The technical details of solar PV project are described in below table¹⁷

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 of the modules installed	Renesolar
4.	Module tilt angle	13.5 degree to 22 degree

¹⁷ Technical specification is mentioned as per Joint VCS PD & MR (Version 03 dated 21-March-2018)

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.)
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 95 Wp = 29880 (FS-395-PLUS) 97.5 Wp=189180 (FS_397-PLUS) 100Wp= 71370 (FS-3100-PLUS)
3.	Sources of the modules installed	First Solar
4.	Module tilt angle	14 degrees (fixed) with frameless technology ¹⁸
5.	Make & Number of Inverters	SMA- 30 Nos.
6.	Make & Number of Power Transformers	Schneider Electric-25/30 MVA, 1 No.
7.	Make & Number of Inverter Transformer	Silchar Technologies – 1.8 MVA 15 Nos.
8.	HT Panel	Technocraft-24 Nos.

The project is operational and running efficiently since commissioning with regular scheduled maintenance.

Sl.No.	Solar Project	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.

¹⁸ The Frameless solar panel does not have any frame attached to them which results in lower embodied energy and retain its energy efficiency ratings.

This monitoring period onwards, EKI Energy Services Limited is no longer part of the project activity as confirmed by the Project Proponent.

3.2 Deviations

3.2.1 Methodology Deviations

No methodological deviation is applied during the current monitoring period.

3.2.2 Project Description Deviations

During the current monitoring period, no project description deviation was taken.

Project description deviation was taken during the previous monitoring period (23-March-2021 to 31-October-2022) –

Deviation No. 01 - Billing meters located at switchyard for VGSPL (20 MW) project in Punjab, and not at substation end. The nature of deviation is permanent and does not affect the additionality and baseline scenario of the project activity.

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 the 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 nature of deviation is permanent and does not affect the additionality and baseline scenario of the project activity.

3.3 Grouped Projects

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

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes

☒ No

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
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 ¹⁹
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

¹⁹ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver12.pdf

Source of data	Calculated from CEA database, Version 12, May 2017
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: $EF_{grid,CM,y} = EF_{grid,OM,y} \cdot W_{OM} + EF_{grid,BM,y} \cdot W_{BM}$ 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%
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	60,262 <table border="1"> <thead> <tr> <th>Year</th><th>Net Electricity generated MWh</th></tr> </thead> <tbody> <tr> <td>01-May-2024 to 31-Dec-2024</td><td>47,353</td></tr> <tr> <td>01-Jan-2025 to 28-Feb-2025</td><td>12,909</td></tr> <tr> <td>Total</td><td>60,262</td></tr> </tbody> </table>	Year	Net Electricity generated MWh	01-May-2024 to 31-Dec-2024	47,353	01-Jan-2025 to 28-Feb-2025	12,909	Total	60,262
Year	Net Electricity generated MWh								
01-May-2024 to 31-Dec-2024	47,353								
01-Jan-2025 to 28-Feb-2025	12,909								
Total	60,262								

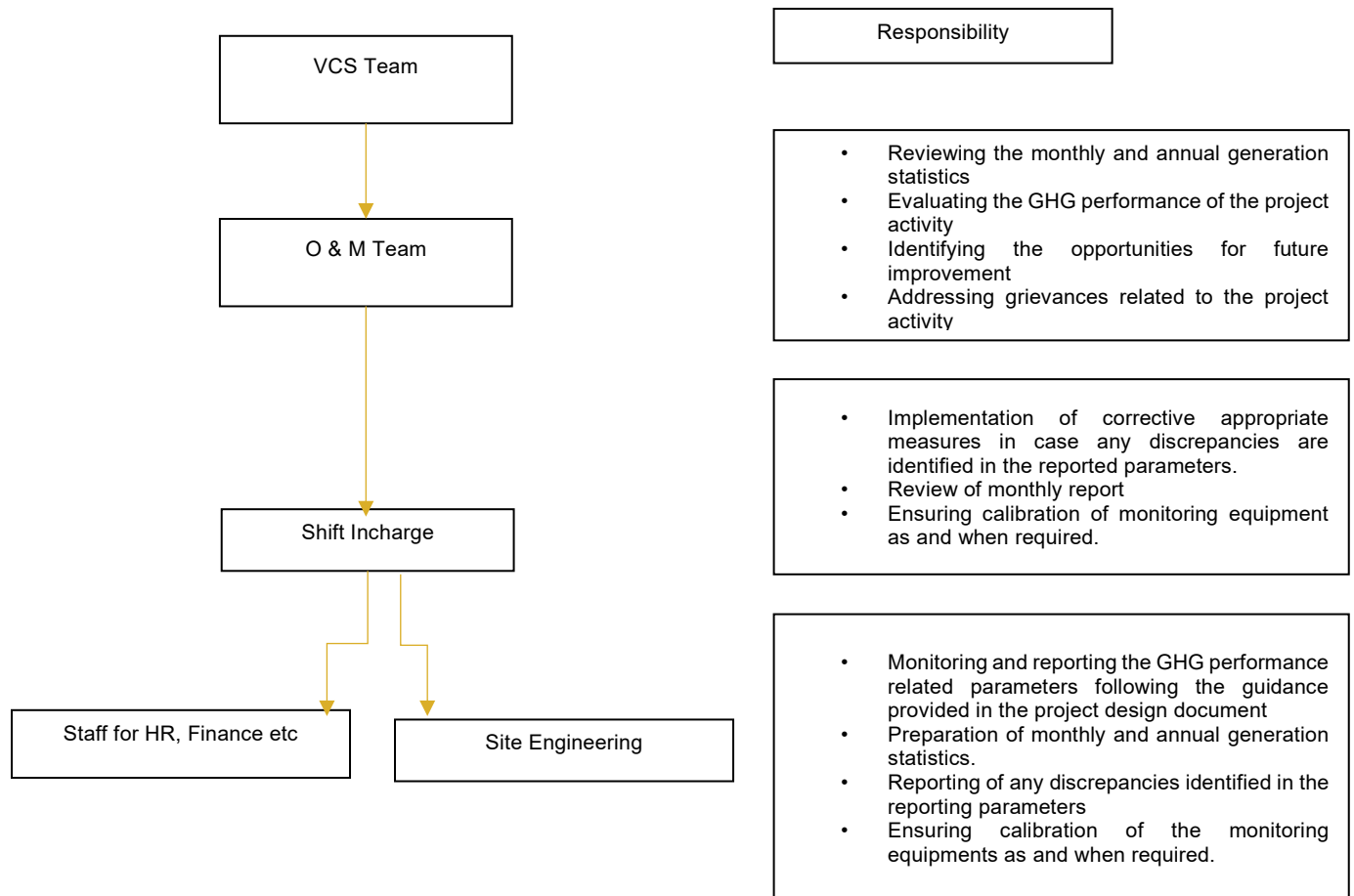
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid. The billing meter used for project activity having following specification Monitoring: ABT cum Tri vector meter 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 years²⁰. 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.
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.

²⁰ https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for VCS project activities and is present for grid-connected solar power project being implemented. The monitoring plan, which is implemented by the Project Proponent 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 Proponent. 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 VCUs 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 VCUs for the project activity whichever occurs later.

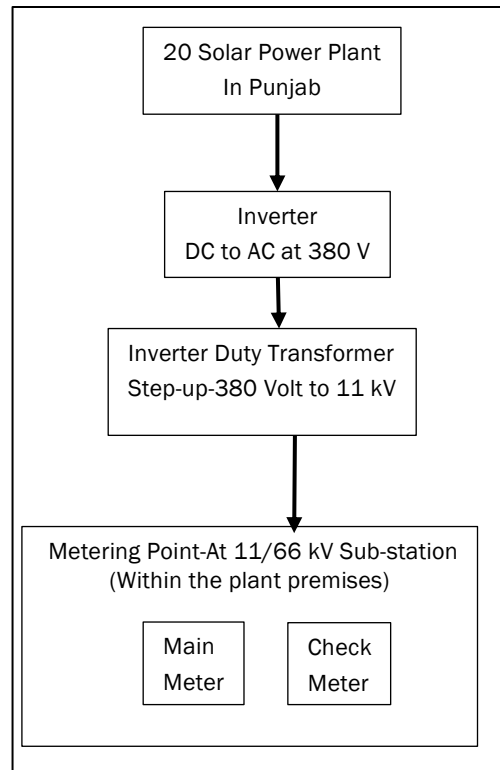
Emergency Preparedness

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.

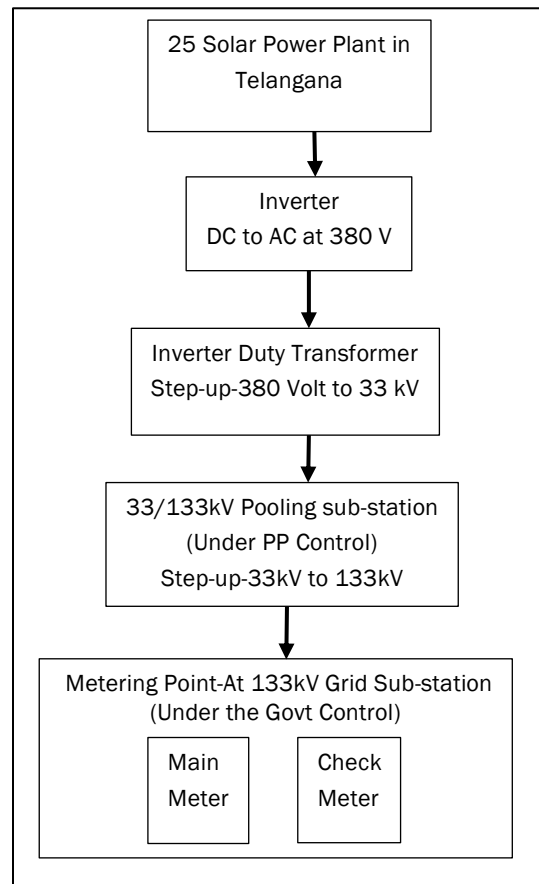
In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced.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

Metering Arrangement

Line diagram with metering arrangement for the project activity is shown below:
Power Evacuation arrangement at 20 MW solar power plant at Punjab Site:



Power Evacuation arrangement at 25 MW solar power plant in Telangana



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:

$$\begin{aligned} BE_y &= EG_{PJ,y} \times EF_{grid,CM,y} \\ &= 60,262 \text{ MWh} \times 0.9653 \\ &= 58,171 \text{ tCO}_{2e} \text{ (round down value)} \end{aligned}$$

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 Emissions

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 GHG Emission Reductions and Carbon Dioxide Removals

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCUs (tCO ₂ e)	Removal VCUs (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-May-2024 to 31-Dec-2024	45,710	0	0	45,710	0	45,710
01-Jan-2025 to 28-February-2025	12,461	0	0	12,461	0	12,461
Total	58,171	0	0	58,171	0	58,171

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-May-2024 to 31-Dec-2024	47,035	45,710		As per the registered PD estimated annual emission reduction from the project activity is 58,362 tCO ₂ e, whereas actual emission reductions achieved during the current monitoring period is 58,171 tCO ₂ e, which is 0.33% decrease than the estimated annual emission reductions. The generation of electricity depends on the climatic conditions which are not in the control of the Project Proponent It is to be noted that due to higher generation in the current monitoring period, there is no impact on the additionality of the project activity. Hence, the decrease is acceptable.
01-Jan-2025 to 28-February-2025	11,327	12,461		
Total	58,362	58,171		

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

The below section is not applicable.

Section	Information	Justification
N/A	N/A	N/A

APPENDIX 2: METER CALIBRATION DETAILS

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

For old meters: XC510829, XC510830 and APX00481, the calibration date is 22nd October 2021, and these were valid up to 21st October 2026. These meters were replaced with new meters on 20th June 2024.

The calibration of the old meters was valid in May 2024 which falls under the monitoring period, 1st May 2024 to 28th February 2025.

Meter Details	Main Meter	Check Meter	Standy Meter
Sl. No.	XC510829	XC510830	APX00481
Make	Secure	Secure	Secure
Accuracy Class	0.2s	0.2s	0.2s
Date of Meter Calibration	22 October 2021	22 October 2021	22 October 2021
Due Date of Meter Calibration	21 October 2026	21 October 2026	21 October 2026

Meter Details	Main Meter	Check Meter	Standby Meter
Sl. No.	0024007901	0024007902	0024007905
Make	Schneider Electric India	Schneider Electric India	Schneider Electric India
Accuracy Class	0.2s	0.2s	0.2s
Date of Meter Calibration	20-06-2024	20-06-2024	20-06-2024
Due Date of Meter Calibration	19-06-2029	19-06-2029	19-06-2029

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

The old check meter, with serial number “15191778” has been replaced with two meters – PST00103 (Check Meter) and PST00449 (Standby Meter) on 11th April 2023.

Meter Details	Main Meter	Check Meter	Standby Meter
Sl. No.	15191785	PST00103	PST00449
Make	L&T	Secure	Secure
Accuracy Class	0.2s	0.2s	0.2s
Previous Calibration	28-09-2022 to 27-09-2027	11-04-2023	11-04-2023
Recent Calibration	03-08-2024		
Due Date of Meter Calibration	02-08-2029	10-04-2028	10-04-2028