



KARNATAKA PAVAGADA II SOLAR PROJECT BY AVAADA (150 MW)



Document Prepared by: Kosher Climate India Private Limited

Project title	Karnataka Pavagada-II Solar Project by Avaada (150 MW)
Project ID	2017
Monitoring period	01-September-2021 to 31-March-2023 (inclusive of both dates)
Original date of issue	20-February-2024
Most recent date of issue	22-October-2024
Version	04
VCS Standard Version	4.7
Prepared by	Kosher Climate India Private Limited

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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 sources. The project activity involves installation of total of 150 MW_{AC} (3 X 50 MW) solar photovoltaic grid interactive power plants, has been commissioned in three different blocks in Pavagada Solar Park, in the state of Karnataka (India). Project activity is implemented and commissioned by the Special Purpose Vehicle “Avaada Solarise Energy Private Limited”.

The project activity has achieved full commissioning of the total capacity in three blocks (i.e. each block of capacity 50 MW). The first block (Block 39) was commissioned on 8th November 2019. Hence, the start date of the project is considered as per the COD of the first phase, which is 8th November 2019. The remaining capacity of the project had been commissioned in two phases (Block 40A and 22), on 21st November & 27th November 2019 respectively. The entire project activity is in continuous operation since commissioning.

The project is replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 305,870 tCO_{2e} per year, thereby displacing annual average of 326,493 MWh/year of electricity over the crediting period of 10 years from the generation-mix of power plants connected to the Indian electricity grid. Total estimated GHG emission reductions for a period of 10 years of the first crediting period shall be around 3,058,709 tCO_{2e}.

During the current monitoring period 01-September-2021 to 31-March-2023, inclusive both the dates) a total of 477,413 tCO_{2e} emission reductions have been achieved. The detailed calculations are submitted in the ER sheet.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	08-November-2019 to 07-November-2029 (inclusive of both dates)	VCS	Earthood Services Private Limited	10 Years (Renewable Twice)
Verification	08-November-2019 to 31-October-2020	VCS	LGAI Technological Center, S.A. (Applus+)	11 Months 24 days
Verification	01-November-2020 to 31-August-2021	VCS	LGAI Technological Center, S.A. (Applus+)	10 Months
Verification	01-September-2021 to 31-March-2023	VCS	VKU Certification Pvt. Ltd.	01 Year 07 Months

TOTAL	08-November-2019 to 31-March-2023	VCS		03 Years 04 Months 24 days
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1.3 Sectoral Scope and Project Type

Project is non-grouped and non-AFLOU project.

Sectoral scope ¹	Scope: 01 - Energy (renewable / non-renewable)
Project activity type	Type I – Renewable Energy Projects

1.4 Project Proponent

Organization name	Avaada Solarise Energy Private Limited
Contact person	Praveen Golash
Title	Senior GM
Address	3rd floor, PTI building, 4 Parliament Street, Delhi – 110 001. India.
Telephone	+91-97113 02259
Email	praveen.golash@avaada.com

1.5 Other Entities Involved in the Project

Organization name	Kosher Climate India Private Limited
Role in the project	Authorized representative
Contact person	Vamsi Krishna M
Title	Founder & Managing Director
Address	Zee Plaza, No.1678, Ground Floor, 27th Main Road, Sector 2, HSR Layout, Bengaluru, Karnataka 560102
Telephone	+91 9945343475
Email	vamsi@kosherclimate.com narendra@kosherclimate.com

1.6 Project Start Date

Project start date	08-November-2019
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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>

Justification	Start date of the project activity is the earliest date of interconnection with the grid i.e., 08-November-2019. This is the date of commissioning of first block (Block 39) 50 MW solar PV project activity by Avaada Solarise Energy Private Limited at total area of 13,000 acres in Pavagada, Karnataka. The details of the commissioning dates of the individual project activity are mentioned in the section 1.1 of this report.
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1.7 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed ☒ Other (10 years which can be renewed twice. As per paragraph 3.9.1 of VCS Standard, V4.7, the effective requirements have to be taken from the Appendix 3 Document history and effective dates. This Appendix states that Registered projects and projects that complete validation on or before 19 March 2020 remain eligible to apply the crediting period requirements under VCS Version 3. Hence the crediting period has been referred from VCS Standard, V3.7 which referred in the Project PD).
Start and end date of first or fixed crediting period	08-November-2019 to 07-November-2029 (inclusive of both the dates)

1.8 Project Location

The project activity has been implemented in three blocks in Pavagada Solar Park (B22, B39 and B40A), which is a solar park spread over a total area of 13,000 acres in Pavagada taluka, in Tumkur district, Karnataka, India.

The Geo coordinates for the project locations are as follows:

Latitude : 14°15'59" N

Longitude : 77°27'24" E

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
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Methodology	ACM0002	Grid-connected electricity generation from renewable sources	19.0 ²
Tool	07	Tool to calculate the emission factor for an electricity system	07.0 ³
Tool	01	Tool for the demonstration and assessment of additionality	07.0.0 ⁴
Tool	24	Common Practice Analysis	3.0 ⁵
Tool	27	Investment analysis	09.0 ⁶

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

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

☐ Yes ☒ No

PP had evaluated the possibility of the project under Gold Standard Mechanism due to its high sustainable contributions associated with the project, in this regard an initial account opening and listing process was initiated by PP however the same was not pursued further and only VCS is being considered for the project. Hence, project is not valid or involved under any other GHG Program.

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?

☐ Yes ☒ No

² <https://cdm.unfccc.int/UserManagement/FileStorage/58IAGB7SZUDEO2VN6LYM30K41HFPRQ>

³ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

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

⁵ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-24-v1.pdf>

⁶ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-27-v9.0.pdf>

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?

☐ 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

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

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 project contributes 04 SDGs which are SDG 4, 7, 8 and 13.

SDG 4 Quality Education: The project contributes SDG Target 4.3 "By 2030, ensure equal access for all women and men to affordable quality technical, vocational and tertiary education, including university" by the providing training required time to time for the employees.

SDG 7 Energy: The project contributes SDG Target 7.2 "By 2030, increase substantially the share of renewable energy in the global energy mix" by the utilization of solar power as a renewable energy source.

SDG 8 Economic Growth: The project creates short- and long-term employment opportunities for both men and women during construction and operation phases of the project, so it contributes to SDG Target 8.5 "By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities and equal pay for work of equal value".

SDG 13 Climate Change: The project produces clean renewable energy by diminishing CO₂ emissions. Therefore, it contributes SDG Target 13.2 "Integrate climate change measures into national policies, strategies and planning."

The project's quantifiable contributions to specific targets and indicators of the Sustainable Development Goals (SDGs) for the SD contributions reporting period is detailed in following table.

Table 1: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime	
1)	4.3	4.3.1. Hours of training imparted to employees	Implemented activities to increase	In this monitoring period, 130.4 hours of various trainings were given to the employees of this project activity on topics such as Covid-19 preventive measure, Snake bite safety training, Emergency escape plan, etc.	The trainings will be provided to the employees throughout the lifetime of the project activity and a total of 835.9 hours of training was conducted since the commissioning of the project activity.	
					Monitoring period	Number of hours of trainings provided
					08-November-2019 to 31-October-2020	284
					01-November-2020 to 31-August-2021	421.5
					01-September-2021 to 31-March-2023	130.4
					TOTAL: 08-November-2019 to 31-March-2023	835.9

2)	7.2	7.2.1. Renewable energy generated	Implemented activities to increase	The project activity includes a total capacity of 150 MW of solar plant in the state of Karnataka. The Project activity generated 509,601 MWh clean energy in this monitoring period.	The main purpose of this project activity is to generate clean electricity through renewable source of solar energy and to supply electricity to the Indian grid through Karnataka state grid by signing Power Purchase Agreement (PPA) with ‘Bangalore Electricity Supply Company Limited’ (BESCOM). The cumulative renewable energy generated till now are 1,067,400.5 MWh. <table><tr><th>Monitoring period</th><th>Total electricity generation (MWh)</th></tr><tr><td>08-November-2019 to 31-October-2020</td><td>288,748.12</td></tr><tr><td>01-November-2020 to 31-August-2021</td><td>269,051.38</td></tr><tr><td>01-September-2021 to 31-March-2023</td><td>509,601.00</td></tr><tr><td>TOTAL: 08-November-2019 to 31-March-2023</td><td>1,067,400.5</td></tr></table>	Monitoring period	Total electricity generation (MWh)	08-November-2019 to 31-October-2020	288,748.12	01-November-2020 to 31-August-2021	269,051.38	01-September-2021 to 31-March-2023	509,601.00	TOTAL: 08-November-2019 to 31-March-2023	1,067,400.5
Monitoring period	Total electricity generation (MWh)														
08-November-2019 to 31-October-2020	288,748.12														
01-November-2020 to 31-August-2021	269,051.38														
01-September-2021 to 31-March-2023	509,601.00														
TOTAL: 08-November-2019 to 31-March-2023	1,067,400.5														

3)	8.5	8.5.1. Number of jobs created	Implemented activities to increase	In the current monitoring period, a total of 5 full time employees were hired by the project management.	A total of 17 employment opportunities have been provided since the commissioning of the project activity under the permanent basis.	
					Monitoring period	Total number of jobs provided
					08-November-2019 to 31-October-2020	5
					01-November-2020 to 31-August-2021	7
					01-September-2021 to 31-March-2023	5
					TOTAL: 08-November-2019 to 31-March-2023	17
4)	8.8	8.8.1. Fatal and non-fatal occupational injuries occurred	Implemented activities to decrease	There have been no fatal and non-fatal occupational accidents	There have been no fatal and non-fatal occupational accidents. Training sessions are held for workers periodically to create awareness.	

5)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	Total GHG emission reductions or removals generated in this monitoring period are 477,413 tCO₂e	The cumulative GHG emission reduction achieved till now are 999,981 tCO₂e since the commissioning of the project activity.	
					Monitoring period	Total emission reductions (tCO ₂ e)
					08-November-2019 to 31-October-2020	270,510
					01-November-2020 to 31-August-2021	252,058
					01-September-2021 to 31-March-2023	477,413
					TOTAL: 08-November-2019 to 31-March-2023	999,981

1.13 Commercially Sensitive Information

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

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Stakeholder Identification	There is no change involved in the stakeholder diversity since validation. Therefore, this parameter is not applicable.
Legal or customary tenure/access rights	The project is built and owned by Avaada Solarise Energy Private Limited. The legal and customary rights of the solar plant during and post implementation of the project activity lies with Avaada Solarise Energy Private Limited. PP has acquired the land for this project under the land lease procedure. The land sub lease agreement was signed between Karnataka Solar Power Development Corporation Limited (KSPDCL) and Avaada Solarise Energy Private Limited. The land will be handed over to the KSPDCL after the lifetime of the project. Hence, KSPDCL has the legal ownership of the land. There are no identified disputes or conflicts over rights of the land and its resources. No concerns were received against the implementation of the project activity and confirms the consent and full support for the project implementation.
Stakeholder diversity and changes over time	Each community has its own cultural practices, customs, and beliefs, contributing to the overall cultural heritage and integrity of the region. The project anticipates no significant changes to the group's cultural integrity in the project region. Further, the project activity by contributing to the environmental, economic, and

	social benefits, play a crucial role in enabling local communities to remain located in the project area.
Expected changes in well-being	Environmental well-being: Solar power is one of the cleanest renewable energy powers and does not involve any fossil fuel. There are no GHG emissions. The impact on land, water, air and soil is negligible. Thus, the project activity contributes to environmental well-being without causing any negative impact on the surrounding environment. Economic well-being: The project activity generates permanent and temporary employment opportunity within the vicinity of the project. The electricity is being supplied to the grid as per PPA which indirectly helps in the increase of electricity in the country to enhance the economy and life style of the area.
Location of stakeholders	All community members, those who are directly or indirectly impacted by the project are mostly local people who reside near the project areas.
Location of resources	The location of territories and resources to which stakeholders have customary access is the nearby land in Tumkur District of Karnataka.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	A stakeholder engagement mechanism has been established to address concerns and resolve potential conflicts regarding the project between the project proponent and local stakeholders. Before the initial submission of PD, the project proponent conducted the LSC meeting about the project. The PP provided contact information, including email addresses and phone numbers, to stakeholders during the LSC meeting, enabling them to share ideas and express grievances about the project in the future. This is the ongoing consultation which has been followed for this monitoring period. Additionally, a grievance register has been set up to record comments from stakeholders. The site team logs all grievances received via email and mobile in the grievance register, ensuring prompt attention and resolution.
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Date(s) of stakeholder consultation	20-November-2019 ⁷
Communication of monitored results	During the LSC meeting conducted before the initial PD submission, the Project Proponent (PP) provided a dedicated email address as well as the phone number and physical address of PP to all stakeholders to facilitating open and accessible communication channels for future engagement. A grievance register is being maintained at the site to systematically record and address stakeholder concerns. The Project Proponent team has ensured an active presence in the project area, fostering collaborative relationships with the community and stakeholders. They have proactively addressed queries and grievances related to the project, ensuring prompt resolution. All registered grievances are addressed and resolved in a timely and efficient manner, demonstrating the Project Proponent's dedication to stakeholder engagement and conflict resolution.
Consultation records	A grievance register has been maintained at the site to register the complaints of the stakeholders.
Stakeholder input	All the comments have been addressed and resolved by the Project Proponent for the current monitoring period.

2.1.3 Free, Prior, and Informed Consent

Consent	The legal and customary rights of the solar plant during and post implementation of the project activity lies with Karnataka Solar Power Development Corporation Limited. The land sub lease agreement was signed between Karnataka Solar Power Development Corporation Limited (KSPDCL) and Avaada Solarise Energy Private Limited. The land will be handed over to the KSPDCL after the lifetime of the project. KSPDCL will have the legal ownership of the land.
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⁷ On this date, the LSC meeting was conducted before the initial submission of the PD.

	There are no identified disputes or conflicts over rights of the land and its resources. No concerns were received against the implementation of the project activity and confirms the consent and full support for the project implementation.
Outcome of FPIC	The legal and customary rights of the solar plant during and post implementation of the project activity lies with Karnataka Solar Power Development Corporation Limited (KSPDCL). The project proponent has not done encroachment and relocated people, and forced physical or economic displacement.

2.1.4 Grievance Redress Procedure

During the monitoring period, the Project Proponent (PP) has actively engaged in a grievance redress procedure, effectively addressing and resolving concerns raised by stakeholders. This includes matters related to benefit sharing, as well as other safeguard and stakeholder engagement requirements. All the grievances resolved during this monitoring period has been included in the table below.

Grievances received	Resolution and outcome
PP got the request to hire one security guard for site.	Site team discussed with Spider security services and appointed the security guard.
Local villager Gunappa requested PP to clean the module and cut the grass in the nearby site.	Site team discussed with Head Office and cleared the issue.

2.1.5 Public Comments

The project has been listed on VCS registry for a period of 30 days. This project was open for public comment from 20-November-2019 to 20-December-2019. However, no comment has been received during the public commencement period and outside of the public commencement period.

Summary of comments received	Actions taken
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No concerns received from the public comment period and local stakeholder consultation. The potential benefits of the project activity for the local stakeholders were acknowledged. Local stakeholders were totally in support for setting up of these kinds of projects in the region.

No comments received during this public commenting period.

2.2 Risks to Stakeholders and the Environment

	Risk identified	Mitigation or preventative measure taken
Risks to stakeholder participation	No risks identified	The project team has explained about the project to the stakeholders including project benefits, costs, risks, rights, laws and opportunities on employment generation. The stakeholders are voluntarily willing to participate in the project because of benefits like safeguarding the communities from environmental challenges and various other SDG benefits of the project.
Working conditions	No risks identified	The project has taken comprehensive measures to ensure providing safe and healthy working conditions for its employees.
Safety of women and girls	No risks identified	The project proponent has developed the policy on safeguarding women, children and other marginal or vulnerable groups for the Safety of minority and marginalized groups, including children. The organization does not tolerate harassment for any women employees which includes sexual, psychological or any other form of

		harassment that can be a form of discrimination.
Safety of minority and marginalized groups, including children	No risks identified	The project proponent has developed the policy which aimed at safeguarding women, children and other marginal or vulnerable groups.
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	No risks identified	As per the e-waste management rules, 2022 ⁸ , the solar PV modules wastes should be stored till 2034-2035. As per this guideline, the project proponent collecting and storing the solar PV modules wastes from the site in a most confined manner. Moreover, project did not involve in kind of pollution related to air, noise and water discharge.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	The organization has policies for Non-Discrimination and sexual harassment and would take appropriate steps for the prevention of such activities at workplace and put in place an appropriate mechanism of complaint/grievance redressal. There is no discrimination or sexual harassment has occurred.
Management experience	No new entity is now involved in project. Hence, this parameter is not applicable.
Gender equity in labor and work	The project abides the rules of equality accordingly and does not involve and is not complicit in any form of discrimination. Specific to gender equality, detailed enforcement rules are regulated in Women's Rights Protection Law to provide support and benefits to women. Qualified men are recruited to work for the project. During stakeholders' consultation process, comments were collected from the local people, including both men and women.

⁸ https://cpcb.nic.in/uploads/Projects/E-Waste/e-waste_rules_2022.pdf

	The project abides the rules of equality. Regarding the gender equality, detailed enforcement rules are regulated in Labor Law and Women's Rights Protection Law.
Human trafficking, forced labor, and child labor	The Project does not use victims of human trafficking, forced labor, and child labor. Human trafficking is a serious crime that is strictly regulated and combated in the Indian legal system. India has promulgated the "Labor Law" to protect the legitimate rights and interests of workers and prohibit forced labor. India has published protection laws on the minors. Employment regulations are described in this Law. The Project requires skilled employees to operate, maintain, and manage the solar power plant. Therefore, the project does not employ and is not complicit in any form of child labor. According to the Employee list, it could be confirmed that the Project does not employ any child labor.

2.3.2 Human Rights

The PP emphasis on aligning the organizational practices with the human rights outlined in national and regional regulations. The host country, India⁹ has ratified six out of the eight core/fundamental International Labour Organisation (ILO) Conventions. These are the Forced Labour Convention, 1930 (No. 29), Abolition of Forced Labour Convention, 1957 (No. 105), Equal Remuneration Convention, 1951 (No. 100), Discrimination (Employment and Occupation) Convention, 1958 (No. 111), Minimum Age Convention, 1973 (No. 138) and Worst Forms of Child Labour Convention, 1999 (No. 182).

2.3.3 Indigenous Peoples and Cultural Heritage

The project does not impact and protects cultural heritage as part of project activities.

2.3.4 Property Rights

Disputes over rights to territories and resources	N/A
Respect for property rights	The project respects all stakeholder property rights. Project proponent has acquired the land through land lease procedure. Under this land sub-lease agreement, PP got the legal ownership of land.

⁹ https://webapps.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:102691

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	Not Applicable
Benefit sharing during the monitoring period	Not Applicable

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure taken during the monitoring period
Impacts on biodiversity and ecosystems	No risk identified	The project does not have any impact on biodiversity and ecosystems.
Soil degradation and soil erosion	No risk identified	The operation of the solar power plant does not affect the soil and the solar panels help reducing the soil erosion by providing shade and further preventing the wind from carrying away top soil during the current monitoring period.
Water consumption and stress	No risk identified	The water conservation measures includes consumption of minimal water for the purpose of panel cleaning and by changing the frequency of module cleaning. No water stress is experienced in the location due to the project activity.
Usage of fertilizers	No risk identified	There is no usage of fertilizers involved in the project.

2.4.1 Rare, Threatened, and Endangered species

The project is not located in or adjacent to habitats for rare, threatened, or endangered species. Hence, not applicable.

2.4.2 Introduction of species

N/A.

2.4.3 Ecosystem conversion

As the project is not an ARR, ALM, WRC or ACoGS project, this section is not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity involves the installation of Solar PV project. The total installed capacity of the project is 150 MW of Solar PV plant located in Tumkur district of Karnataka State.

The project activity has been commissioned in 3 phases (block 22, 39 and 40A) in the Pavagada Solar Park in Karnataka. The 1st phase of 50 MW was commissioned on 08-November-2019, 2nd phase of 50 MW on 21-November-2019 and the 3rd phase of 50 MW on 27-November-2019. The energy generated from the 150 MW AC solar PV plant is being evacuated at 66 kV to the 220/ 66 kV Pooling Substation, which would be further evacuated to 400/220 kV GSS located about 1.5 km from the Pooling Sub Station.

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

Technical Details:

Plot 22 (50 MW)

Date of Commissioning	27- November- 2019
Location	Thirumani (V)
SS connected to	5 (KSPDCL T1)
PV Module	
Make or Supplier(s)	JA solar and Renesola
Maximum Power (Pmax)	325 wp, 330wp and 335wp
Number of modules	JA Solar (335 Wp) – 39,840 JA Solar (330 Wp) – 13,200 ReneSola (335 Wp) – 17,820 ReneSola (330 Wp) – 114,600 ReneSola (325 wp) – 26,700
DC capacity	70.167 MWp
Module technology	Polycrystalline Silicon photovoltaic modules
Orientation	12*6 = 72 cells, 12 Degree, Fixed Angle
Inverter	
Model / Make	SUNGROW 3125KW GRID CONNECTED PV INVERTER & SG3125HV-20
No. of Inverters	16
Rated AC output	3125 KW

Lifetime of the Inverters	25 YEARS
Transformer	
Manufacturer	Electrotherm
Rated Capacity	12.5 MVA
Number of transformers	4
Technical Lifetime of the SPV plant	25 YEARS

Plot 39 & 40A (50 X 2 MW)

Date of Commissioning:	Plot 39: 8- November-2019 Plot 40A: 21-November- 2019
Location Number:	Rayacharlu (V)
SS connected to:	8
PV Module	
Make or Supplier(s)	JA solar and Renesola
Maximum Power (Pmax)	325wp,330wp and 335wp
Number of modules	JA solar (325 wp) – 14,760 JA solar (330 wp) – 12,660 JA solar (335 wp) – 31,740 ReneSola (325 Wp) – 93,660 ReneSola (330 Wp) – 231,480 ReneSola (335 Wp) – 40,140
Module technology	Polycrystalline Silicon photovoltaic modules
Orientation	12*6 = 72 cells, 12 Degree, Fixed Angle
Inverter	
Model / Make	SINENG & 3125KW, Grid connected PV inverter, EP 3125-HA- UD
No. of Inverters	32
Rated AC output	3125 KW
Lifetime of the Inverters	25 YEARS
Transformer	
Manufacturer	Electrotherm
Rated capacity	12.5 MVA
Number of transformers	8
Technical Lifetime of the SPV plant	25 YEARS

The project resulted in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 3,058,709 tCO_{2e} in the crediting period, thereon displacing 326,493 MWh/ year of electricity from the grid over this crediting period.

The project activity has been in operation continuously since its commissioning. There have been no emergencies happened to the monitoring system. There are no events or situation that occurred during the monitoring period which may impact the applicability of the methodology.

The total duration of the major breakdown occurred during the current monitoring period i.e., from 01-September-2021 to 30- March-2023 (inclusive of both dates) is 6.78 hrs only. The breakdown details are provided in the Appendix 2 of this monitoring report.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation is applied during the monitoring period.

3.2.2 Project Description Deviations

There is no change in project design during this monitoring period related to installed capacity, technology, specification, etc.

However, during the previous monitoring periods there were permanent change in monthly energy accounting and bill generation practice as mandated by Southern Regional Power Committee (SRPC) under Central Electricity Authority, Ministry of Power India.

This change in billing practice has been affected for all projects in the region and shall remain as permanent practice for all upcoming months of monthly power accounting. Hence, this change has been considered as a permanent deviation to the project description.

Deviation:

As a part of earlier practice of monthly generation accounting, standard practice of monthly joint meter reading was adopted and monthly net electricity units were reflected in the form of a B-Form. However as per the current provision, the B-form reflects the net Energy Billed as "Net Energy - 15% Import - Tr Loss" in kWh. There is no separate import value shown in the B-form. Therefore, during the period "Export" value itself is the net energy billed for the month. Also, as per the new practice SPRC affected an online practice of monthly energy accounting, termed as "Regional Energy Account" (REA) (starting from the year 2020). In this new practice, the project wise monthly net energy units are calculated by authority and uploaded under 'Regional Energy Account' for that month on the SRPC web site (www.srpc.kar.nic.in) to enable downloading of the monthly net energy units by respective constituents. Therefore, no separate monthly B- Forms are applicable for the project. Also, the REA accounting statement provides calculated value of net energy to be billed by PP; hence no separate export, import & transmission losses values are reflected. The net energy units are directly considered by PP for issuing the invoice.

However, this change in procedure of monthly statement generation does not have any impact on any parameter of the project; also, no impact on emission reductions calculation and applicability of the methodology. Therefore, no further change in project description is applicable. However, the reference of REA practice has been included in the relevant sections of the MR as updated information with respect to this deviation reported.

Deviation: Furthermore, during the previous monitoring period there is a change in Standby meter has been identified for Plot No: 22, 39 & 40A as detailed in Section 4.3 of MR below.

However, this change of standby Meters does not have any impact on any parameter of the project; also, no impact on emission reductions calculation and applicability of the methodology.

Therefore, no further change in project description is applicable. The main meter & Check meter are used for the generation of Monthly Statement of energy delivered to the grid.

Deviation: During the initial submission of the Project Description (PD), the geo-coordinates mentioned in the PD were mismatching with the actual project location and the same coordinates were consistently employed in first Monitoring Report. However, for the second (current) Monitoring period, the project proponent intends to rectify this discrepancy by incorporating the precise project coordinates as shown below, accurately reflecting the actual project site. This deviation does not have any impact on any parameter of the project, emission reductions calculation and applicability of the methodology.

Geo-coordinates as per registered PD	Actual Geo-coordinates
Latitude: 14° 40' 0.012" N Longitude: 75° 49' 59.988" E	Latitude: 14° 15' 59" N Longitude: 77° 27' 24" E

3.3 Grouped Projects

This section is not applicable to the project activity as the project is not a grouped project activity.

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, CM, y}
Data unit	tCO ₂ e/MWh
Description	Combined margin emission factor for Indian grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system, version 07"
Source of data	CO ₂ baseline database (Version 14.0) published by CEA in December 2018 (http://www.cea.nic.in/tpeandce.html)
Value applied	0.93684

Justification of choice of data or description of measurement methods and procedures applied	This value is calculated using OM and BM values as per Version 7.0 of methodological tool07: tool to calculate the emission factor for an electricity system and using data base of CEA.
Purpose of data	For the calculation of Emission Factor of the grid
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	EF _{grid, OM, y}
Data unit	tCO ₂ e/MWh
Description	Simple operating margin emission factor for Indian grid
Source of data	CO ₂ baseline database (Version 14.0) published by CEA (in December2018); (http://www.cea.nic.in/tpeandce.html)
Value applied	0.9610
Justification of choice of data or description of measurement methods and procedures applied	This value is calculated by taking weighted average of Simple Operating Margin of recent three years for Indian grid as per the “Tool to calculate the emission factor for an electricity system”, version 07.0
Purpose of Data	For the calculation of Emission Factor of the grid
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	EF _{grid, BM, y}
Data unit	tCO ₂ e/MWh
Description	Simple build margin emission factor for Indian grid
Source of data	CO ₂ baseline database (Version 14.0) published by CEA (in December2018); (http://www.cea.nic.in/tpeandce.html)
Value applied	0.8644
Justification of choice of data or description of measurement methods and procedures applied	This value is calculated by taking weighted average of Simple build Margin of recent three years for Indian grid as per the “Tool to calculate the emission factor for an electricity system”, version 07.0
Purpose of Data	For the calculation of Emission Factor of the grid
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

Source of data	Monthly Regional Energy Account (REA) issued by SRPC (Please refer to the comment section below for more details)
Description of measurement methods and procedures to be applied	Data Type: Measured (published data) Monitoring equipment: Energy Meters are used for monitoring Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, issued by SRPC. Archiving Policy: Paper & Electronic Calibration frequency: Once in 5 years Electricity units are measured in kWh. However, for the calculation purpose electricity exported is converted in MWh. The Net electricity supplied to the grid by the project activity is calculated by SRPC and published in their official website as Regional Energy Account (REA). The monthly net energy units from REA are directly used for monthly billing purposes. Therefore, the value for “EG_{PJ,y}” is directly sourced from REA statement. The calculation method used for net energy calculation in REA by SRPC is based on the algorithm-based software which accounts the net electricity injection, drawl and transmission losses as follows: Net Energy to be billed = [Export or net injection (kWh)] – [Import or drawl (kWh)] – [Transmission losses (kWh)] However, Project developers do not have any access to this computation or the values, only the net units to be billed for a particular month is directly reflected in the REA statement. Thus, the measurement methods and procedures to be applied for this parameter is simplified with the practice of REA and this is the most reliable source of data as directly controlled by SRPC and based on which the bills are also generated. (This practice of accounting has been reported in the B-Forms and the REA statements) Regarding metering arrangement, the electricity exported to the grid by the project activity connected to the sub-station is measured by energy meters of accuracy class 0.2s. The electricity exported is measured continuously using Main & Check meters at the substation, whereas a standby meter is also installed at generation end as backup. The metering arrangement and details of the energy meters are included under the section 4.3 of the MR, Cross Checking: Quantity of net electricity supplied to the grid is being cross checked from the invoices raised by the project developer to the respective DISCOM. Also, the monthly net units in REA can be publicly cross checked from the SRPC official website: www.srpc.kar.nic.in
Frequency of monitoring/recording	Monthly

Value monitored	509,601
Monitoring equipment	The two parameters, import and export to the grid, are measured at the same location near the connection to the grid, through standard electricity metering instrument. The metering instruments are installed at the grid-connected point to measure the amount of electricity going from and to the grid. The kWh reading of electricity is continuously measured by metering instrument itself and monthly recorded via REA.
QA/QC procedures to be applied	This data is directly used for calculation of emission reductions. Measurement results of electricity supplied to the grid and that delivered from the grid to the project is being crosschecked with records for sold electricity. The meter(s) is calibrated once in 5 years in accordance with national standards and procedures.
Purpose of the data	The Data/Parameter is required to calculate the baseline emission.
Calculation method	N/A
Comments	1. Data will be archived electronically for a period of 2 years beyond the end of crediting period. 2. During the periodic verification, the value of this parameter will be submitted here for the cumulative capacity of 150 MWac for the total period; whereas ER sheet will provide month-wise data and calculation in line with the REA statement. 3. As mentioned above, prior to the implementation of REA practice, the monthly values are considered in line with the B-Form calculation practice. Whereas with the implementation of REA practice, the monthly generation statement only provides 'net electricity supplied by the project activity', whereas values for export, import, losses etc. are not separately published and same is not under the direct control of PP. However, as per the SRPC document available to public "Annexure- II: Technical Specification for Interface Energy Meters, Automated Meter Reading System and Meter Data Processing for Inter State Transmission System" (http://www.srpc.kar.nic.in/website/2021/meetings/special/rn_ts_amr_080421.pdf) it can be referred that REA practice accounts injection, drawl and transmission losses based on the algorithms incorporated in the Software module. Hence, accounting formula remains the same even after REA practice has been implemented.

4.3 Monitoring Plan

Aim of Monitoring

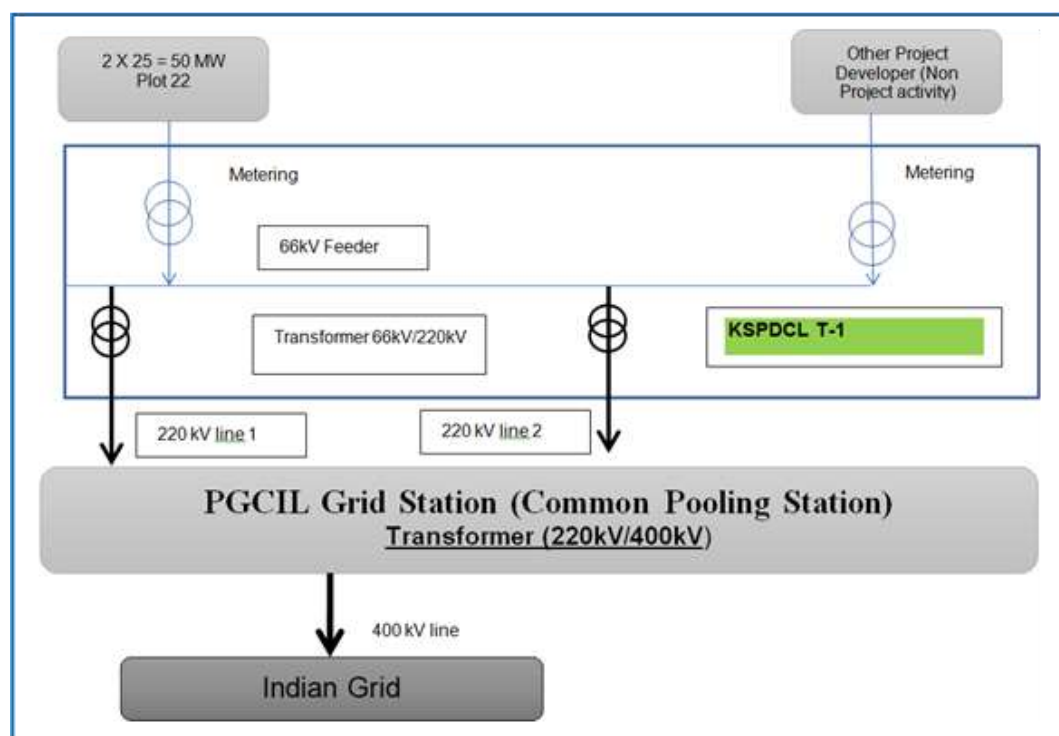
The monitoring method specified in the para 67 and 68 of methodology ACM0002, v19.0 requires that the project-monitoring plan to consist of monitoring of quantity of net electricity supplied to the grid in the year y. In order to monitor the mitigation of GHG due to the project activity, the total energy exported needs to be measured. The net energy supplied to grid by the project activity multiplied by emission factor for regional grid, would form the baseline for the project activity.

Since the baseline emission factor is based on an ex-ante determination, monitoring of this parameter is not required. The sole parameter for monitoring is the net electricity exported to the grid.

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

The monitoring layout and monitoring points under the project boundary:

For Block 22:



Monitoring Equipment Details: All Energy Meters have been installed at 66kV feeder line.

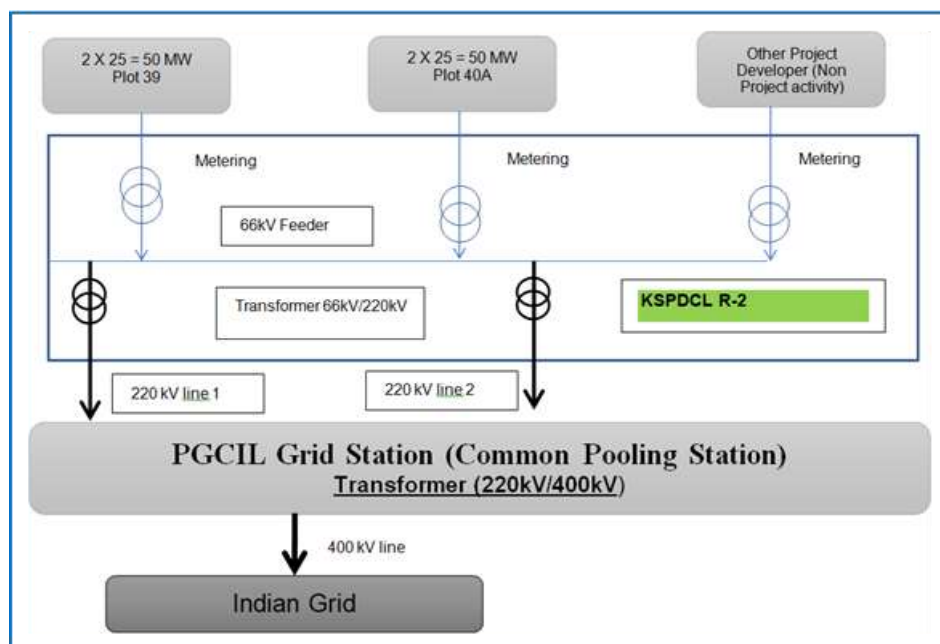
Block 22

RR No: KSPDCL-T1-A83 (Bay 612, Line 09) Feeder: 602	Main Meter	Check Meter	Standby ¹⁰ Meter
S. No	LT-0830-A	LT-0837-A	16094016
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Meter Calibration Date	17-August-2019	17-August-2019	25 Nov 2019
Due Date of Calibration (Once in 5 Years)			
Meter Replacement (if any)	NA	NA	Yes
New Meter Details:	-	-	
S. No			LT-0943-A
Make			L&T
Accuracy Class			0.2s
Calibration Date			10-Januray-2020
Due Date of Calibration (Once in 5 Years)			09-Januray-2025
RR No: KSPDCL-T1-A84 (Bay 613, Line 10) Feeder: 601	Main Meter	Check Meter	Stand by ¹¹ Meter
S. No	LT-0790-A	LT-0824-A	16093972
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date	23-August-2019	14-August-2019	25-November-2019
Due Date of Calibration (Once in 5 Years)			24- November-2024
Meter Replacement (if any)	NA	NA	Yes
New Meter Details:	-	-	
S. No			LT-0937-A
Make			L&T
Accuracy Class			0.2s
Calibration Date			10-January-2020
Due Date of Calibration (Once in 5 Years)			09-January-2025

¹⁰ The replacement of standby meter does not have any impact on generation or emission reduction since Main meter & Check meter are primarily responsible for the delivered electricity measurement & recording and standby meter are not used on monthly basis for REA statement. It is used as fail-safe backup arrangement in the event when both the Main & Check Meters are found faulty & nonfunctional.

¹¹ The replacement of standby meter does not have any impact on generation or emission reduction since Main meter & Check meter are primarily responsible for the delivered electricity measurement & recording and standby meter are not used on monthly basis for REA statement. It is used as fail-safe backup arrangement in the event when both the Main & Check Meters are found faulty & nonfunctional.

For Block 39 & 40A:



Monitoring Equipment Details: All Energy Meters have been installed at 66kV feeder line.

Block 39			
RR No: KSPDCL-R2-A73 (Line 03) Feeder – 604 (SS End)	Main Meter	Check Meter	Stand by ¹² Meter
S. No	LT-0780-A	LT-0786-A	17010111
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date	04-November-2019	04-November-2019	04-November-2019
Due Date of Calibration (Once in 5 Years)	03-November-2024	03-November-2024	03-November-2024
Meter Replacement (if any)	NA	NA	Yes
New Meter Details:	-	-	
S. No			LT-0931-A
Make			L&T
Accuracy Class			0.2s
Calibration Date			10-January-2020
Due Date of Calibration (Once in 5 Years)			09-January-2025
RR No: KSPDCL-R2-A74 (Line 04)	Main Meter	Check Meter	Stand by ¹³ Meter

¹² The replacement of standby meter does not have any impact on generation or emission reduction since Main meter & Check meter are primarily responsible for the delivered electricity measurement & recording and standby meter are not used on monthly basis for REA statement. It is used as fail-safe backup arrangement in the event when both the Main & Check Meters are found faulty & nonfunctional.

¹³ The replacement of standby meter does not have any impact on generation or emission reduction since Main meter & Check meter are primarily responsible for the delivered electricity measurement & recording and standby meter are not used on monthly basis for REA statement. It is used as fail-safe backup arrangement in the event when both the Main & Check Meters are found faulty & nonfunctional.

Feeder: 605 (SS End)			
S. No	LT-0787-A	LT-0789-A	17010150
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2s
Calibration Date	04-November-2019	04-November-2019	04-November-2019
Due Date of Calibration (Once in 5 Years)	03-November-2024	03-November-2024	03-November-2024
Meter Replacement (if any)	NA	NA	Yes
New Meter Details:	-	-	
S. No			LT-0932-A
Make			L&T
Accuracy Class			0.2s
Calibration Date			10-January-2020
Due Date of Calibration (Once in 5 Years)			09-January-2025
Block 40A			
RR No: KSPDCL-R2-A75 (Line 05): Feeder:606 (SS End)	Main Meter	Check Meter	Stand by Meter
S. No	LT-0806-A	LT-0791-A	17010143
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date	18-November-2019	18-November-2019	18-November-2019
Due Date of Calibration (Once in 5 Years)	17-November-2024	17-November-2024	17-November-2024
Meter Replacement (if any)	NA	NA	Yes
New Meter Details:	-	-	
S. No			LT-0933-A
Make			L&T
Accuracy Class			0.2s
Calibration Date			10-January-2020
Due Date of Calibration (Once in 5 Years)			09-January-2025
RR No: KSPDCL-R2-A76 (Line 6) Feeder:607 (SS End)	Main Meter	Check Meter	Stand by¹⁴ Meter
S. No	LT-0793-A	LT-0800-A	17010123
Make	L&T	L&T	L&T
Accuracy Class	0.2S	0.2S	0.2S
Calibration Date	18-November-2019	18-November-2019	18-November-2019
Due Date of Calibration (Once in 5 Years)	17-November-2024	17-November-2024	17-November-2024
Meter Replacement (if any)	NA	NA	Yes
New Meter Details:	-	-	
S. No			LT-0935-A
Make			L&T
Accuracy Class			0.2s
Calibration Date			10-January-2020

¹⁴ The replacement of standby meter does not have any impact on generation or emission reduction since Main meter & Check meter are primarily responsible for the delivered electricity measurement & recording and standby meter are not used on monthly bas is for REA statement. It is used as fail-safe backup arrangement in the event when both the Main & Check Meters are found faulty & nonfunctional.

Due Date of Calibration (Once in 5 Years)			09-January-2025
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Energy accounting: as per the provision of PGCIL, the B-form reflects the net Energy Billed as "Net Energy - 15% import - Tr Loss" in kWh. There is no separate import value shown in the B-form. Therefore, during the period "Export" value itself is the net energy billed for the month. This change of practice has been accounted in the ER sheet and properly demonstrated.

Additionally, from January 2020, the SRPC (Southern Regional Power Committee) has affected an online practice of monthly energy accounting, termed as "Regional Energy Account" (REA). In this new practice, the project wise monthly net energy units are calculated by authority and uploaded under 'Regional Energy Account' for that month on the SRPC web site (www.srpc.kar.nic.in) to enable downloading of the monthly net energy units by respective constituents. Also, the REA accounting statement provides calculated value of net energy to be billed by PP; hence no separate export, import & transmission losses values are reflected. The net energy units are directly considered by PP for issuing the invoice.

Metering Equipment:

As per PPA provisions, the metering point is at 66kV side of 220/66kV substation (as shown in the line diagrams above), where the power from the solar project is injected and at 220 kV side of 400/220 kV substation of CTU. i.e. Power-grid. For commercial settlement, PPA proposes interconnection point or delivery point shall mean the point at 220 kV side of 400/220 kV PGCL substation of CTU.

The aggregated net monthly electricity supplied/exported by the project activity (150MW Capacity) is monitored, measured & metered continuously at the 66kV/220V KSPDCL substation 1 & substation 2 which forms the basis for the monthly energy units (i.e. REA from). REA reports can be cross checked with the monthly invoices of sale.

Calibration of monitoring equipment:

The energy meters at the feeders are maintained and owned by DISCOM. Neither the project proponent nor the site personnel have any control over it. In line with the CEA order dated 17 Mar 2016 (para 18(b)), the meters are being calibrated by the authority at-least once in five years.

The metering arrangement, accuracy class of meters, calibration frequency and apportioning approach is under control of state electricity board and project developer (i.e. PP) does not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter.

QA/QC procedures:

The energy meters at the feeders are maintained and owned by Karnataka DISCOM. Neither the project proponent nor the site personnel have any control over it. The meters are calibrated by DISCOM at-least once in five years.

Data Archiving:

Monthly data shall be archived electronically and in paper form and stored for the entire crediting period and two years thereafter.

Emergency preparedness:

The project activity did 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 and stand by meter reading will be used by ESCOMs official only for the emergency as per PPA.

In case of failure of all the meters simultaneously, a decision will be taken by KSPDCL and DISCOM as per the clause mentioned in the PPA and a generation statement will be issued by DISCOM based on their specific procedure. The DISCOM statement will form the basis for considering the amount of electricity delivered to the grid in that particular situation.

Training and maintenance requirements:

Training on the machine is an essential pre-requisite, to ensure necessary safety of man and machine. Further, in order to maximize the output from the solar plants, it is extremely essential, that the engineers and technicians understand the equipment(s) and keep them in good health. In order to ensure, that O&M team is deft at handling technical snags, the necessity of ensuring that they are capable of handling mounts and structures with absolute ease and comfort has been established. Each and every site personnel is provided with proper training to meet the requirements of the Operations and maintenance. This ultimately leads to creativity in problem solving.

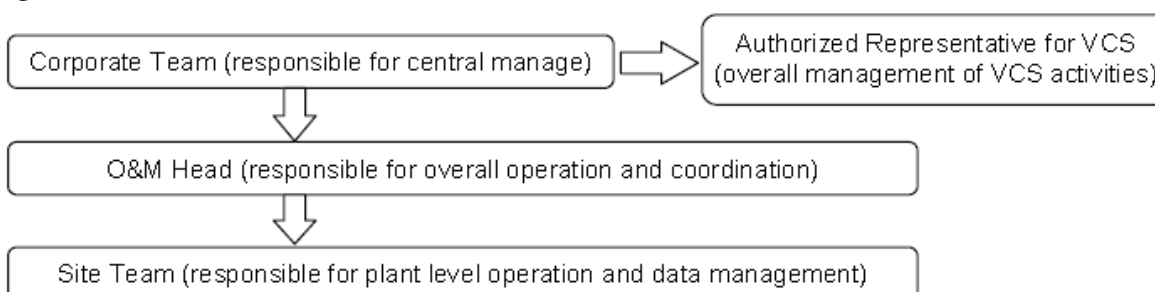
Personnel training:

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the project staff will be trained as per project requirements.

Apportioning:

The B-forms were the source of net energy data which are calculated value by utility; and thereafter SRPC does the calculation for monthly power for each generator and releases through REA which is the source of net energy and monthly billing; hence no separate apportioning is required. However, in case of mismatch of date between the start date of the billing cycle and the start date of monitoring period in VCS, the data will be apportioned in line to the daily generation values for the said mismatch period.

Organization Structure:



This is the current organizational structure which helped PP achieving effective operation & management of the VCS project activity.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per procedure established in the registered PD:

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

Where,

$EF_{grid,CM,y}$: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂e/MWh) (i.e., 0.93684 tCO₂e/MWh)

$EG_{PJ,y}$: 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)

BE_y : Baseline emissions in year y (tCO₂e/yr)

Here,

Net Electricity Generation Details:

Months	Net Electricity Generation (MWh)
September-2021	25,708.204
October-2021	24,650.352
November-2021	17,274.106
December-2021	26,407.790
January-2022	28,886.766
February-2022	29,964.478
March-2022	31,706.577
April-2022	29,472.005
May-2022	26,532.404
June-2022	27,450.682
July-2022	21,877.925
August-2022	24,678.772
September-2022	25,170.361
October-2022	25,788.209
November-2022	23,129.288

December-2022	25,112.605
January-2023	31,719.316
Febrary-2023	30,864.164
March-2023	33,207.677
Total	509,601

Baseline emission reduction for the monitoring period:

Vintage Period	Net Generation (MWh)	Emission Factor (tCO₂/MWh)	Baseline emissions (tCO₂e)
01-September-2021 to 31-December-2021	94,040	0.93684	88,100
01-January-2022 to 31-December-2022	319,770	0.93684	299,573
01-January-2023 to 31-March-2023	95,791	0.93684	89,740
Total	509,601	-	477,413

Therefore,

$$BE_y = 509,601 \times 0.93684 = 477,413 \text{ tCO}_2\text{e}$$

5.2 Project Emissions

Not Applicable, since emissions from the project activity is zero as per ACM0002 methodology.

Hence, $PE_y = 0$

5.3 Leakage Emissions

Not Applicable, since leakage emissions from the project activity is zero as per ACM0002 methodology.

Hence, $LE_y = 0$.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

As per the applied methodology, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where,

ER_y = Emission Reduction in tCO₂e/year

BE_y = Baseline emission in tCO₂e/year

PE_y = Project emissions in tCO₂e/year

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU (tCO ₂ e)	Removal VCU (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-September-2021 to 31-December-2021	88,100	0	0	88,100	0	88,100
01-January-2022 to 31-December-2022	299,573	0	0	299,573	0	299,573
01-January-2023 to 31-March-2023	89,740	0	0	89,740	0	89,740
Total	477,413	0	0	477,413		477,413

Comparison of estimated emission reduction with actual:

Parameters	Vintage Period			Total
Start date of monitoring period	01-September-21	01-January-22	01-January-23	01-September-21
End date of Monitoring period	31-December-21	31-December-22	31-March-22	31-March-23
Total days of generation in the monitoring period	122	365	90	577
Estimated emission Reduction (tCO ₂ e)	102,236	305,870	75,420	483,526
Actual Emission Reduction (tCO ₂ e)	88,100	299,573	89,740	477,413
Difference in Emission reduction	-13.83%	-2.06%	18.99%	-4.32%

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-September-2021 to 31-December-2021	102,236	88,100	-13.83%	There is a marginal decrease of 13.83% ER as compared to the ex-ante estimated, which is mainly due to the marginally lower generated against the estimated value. The generation of

				electricity depends upon many other climatic conditions, and the availability of sunlight is not within the control of the Project participant.
01-January-2022 to 31-December-2022	305,870	299,573	-2.06%	There is a marginal decrease of 2.06% ER as compared to the ex-ante estimated, which is mainly due to the marginally lower generated against the estimated value. The generation of electricity depends upon many other climatic conditions, and the availability of sunlight is not within the control of the Project participant.
01-January-2023 to 31-March-2023	75,420	89,740	18.99%	There is a marginal increase of 18.99% ER as compared to the ex-ante estimated, which is mainly due to the marginally higher generated against the estimated value. The generation of electricity depends upon many other climatic conditions, and the availability of sunlight is not within the control of the Project participant.
Total	483,526	477,413	-1.26%	The achieved GHG emissions are -1.26% lesser as compared to the estimated values in the registered VCS PD. The generation of electricity depends upon many other climatic conditions, and the availability of sunlight is not within the control of the Project participant.

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

Not Applicable

APPENDIX 2: BREAKDOWN DETAILS

Date	Plot	BD Start Time (minutes:seconds)	BD End Time (minutes:seconds)	Total BD Duration (minutes:seconds)	Reason for Breakdown	Action Taken
10-07-2022	Plot-39	06:29	07:25	56.00	P40A feeder 601 tripped due to 150MVA power Transformer tripped at SS end, power transformer Tripped on earth fault at SS end and restored	checked and restored by ss team
28-07-2022	Plot-39	14:00	14:22	22.00	Plot 39 grid was down due to 220kV bay tripped on EF at SS end	checked and restored by ss team
28-07-2022	Plot-40	14:00	14:22	22.00	Plot 40A grid was down due to 220KV bay tripped on EF at SS end	checked and restored by ss team
31-05-2023	Plot-40	10:17	10:49	32.00	P40A feeder 601 tripped due to 150MVA power Transformer tripped at SS end, power transformer Tripped on O/C	checked and restored by ss team

					at SS end and restored	
12-11-2023	Plot-40	10:38	11:13	35.00	P40A feeder 601 tripped due to Over Current Fault & Earth Fault at SS end	checked and restored by ss team
15-02-2024	Plot-22	19:00	23:00	240.00	Feeder-4 Isolator Spark appeared and Nut bolts Melted during morning generation hours	Checked and found Nut bolts melted due to side contact. They were found loose, replaced by new nut bolts; and Isolator Alignment done by site team
TOTAL HOURS OF BREAKDOWN				6.78		