



150 MW SOLAR PROJECT IN KARNATAKA BY AVAADA SOLAR



Project title	150 MW Solar Project in Karnataka by Avaada Solar
Project ID	1914
Monitoring period	01-September-2021 to 31-March-2023 (including both the dates)
Original date of issue	25-April -2024
Most recent date of issue	13-December-2024
Version	06
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 solar energy source and to supply generated electricity to the Indian grid through Karnataka state grid via different ESKOM's of Karnataka as per the Power Purchase Agreement (PPA). The project activity has been commissioned in 3 phases, 1st phase of 50 MW commissioned on 20th Dec 2018, 2nd phase of 50 MW on 6th Feb 2019 and 3rd phase of 50 MW on 27th Feb 2019.

Over the 10 years of crediting period, the project will replace the anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 319,470 tCO₂e per year (proposed avg. value), thereby displacing 341,009 MWh/year (annualized avg.) amount of electricity from the generation-mix of power plants connected to the Indian electricity grid, which is mainly dominated by thermal/fossil fuel-based power plant. Total estimated GHG emission reductions for a period of 10 years of crediting period (renewal) is 3,194,705 tonnes of CO₂e.

The project is promoted by Avaada Solar Energy Private Limited.

Total emission reductions achieved in this monitoring period:

During the Current Monitoring Period from 01-September-2021 to 31-March-2023 (including both the dates) the project activity has supplied 510,339 MWh of electricity, and thus contributing to the GHG reductions 478,106 tCO₂e.

1.2 Audit History

The Audit history for this project activity is provided in the below table.

Audit Type	Period	Program	Validation/verification body name	Number of years/ months/ days
Joint Validation-Verification	20-December-2018 to 31-May-2019	VCS	EARTHHOOD SERVICES PRIVATE LIMITED	5 months and 12 days
Verification	01-June-2019 to 30-June-2020	VCS	LGAI TECHNOLOGICAL CENTER, S.A.	1 year and 01 month
Verification	01-July-2020 to 31-August-2021	VCS	LGAI TECHNOLOGICAL CENTER, S.A.	1 year 02 months

Verification	01-September-2021 to 31-March-2023 (On going)	VCS	VKU CERTIFICATION PRIVATE LIMITED	1 year 07 months
TOTAL	20-December-2018 to 31-March-2023	VCS	EARTHHOOD SERVICES PRIVATE LIMITED, LGAI TECHNOLOGICAL CENTER, S.A. and VKU CERTIFICATION PRIVATE LIMITED	4 Years 3 months 12 days

1.3 Sectoral Scope and Project Type

Sectoral scope ¹	1. Energy industries (renewable / non-renewable)
Project activity type	I - Renewable Energy Projects

The project activity is non-grouped and non-AFOLU project.

1.4 Project Proponent

Organization name	Avaada Solar Energy Private Limited
Contact person	Prashant Choubey
Title	Senior Vice President
Address	3 rd floor, PTI building, 4 Parliament Street, Delhi – 110001. India.
Telephone	+91-97113 02259
Email	prashant.choubey@avaada.com

1.5 Other Entities Involved in the Project

Organization name	Kosher Climate India Private Limited
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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>

Role in the project	Authorized representative
Contact person	Vamsi Krishna M
Title	Founder and Managing Director
Address	Zee Plaza, No.1678, Ground Floor, 27 th 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	20-December-2018.
Justification	As per Section 3.8 of VCS standard, version 4.7, the project start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or carbon dioxide removals. The project proponent commissioned its 1 st phase of project activity i.e., 50MW on 20-December-2018 and started to reduce GHG emission on this date. Hence, this date is considered as the Project Start Date.

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	20-December-2018 to 19-December-2028 (including both the dates)

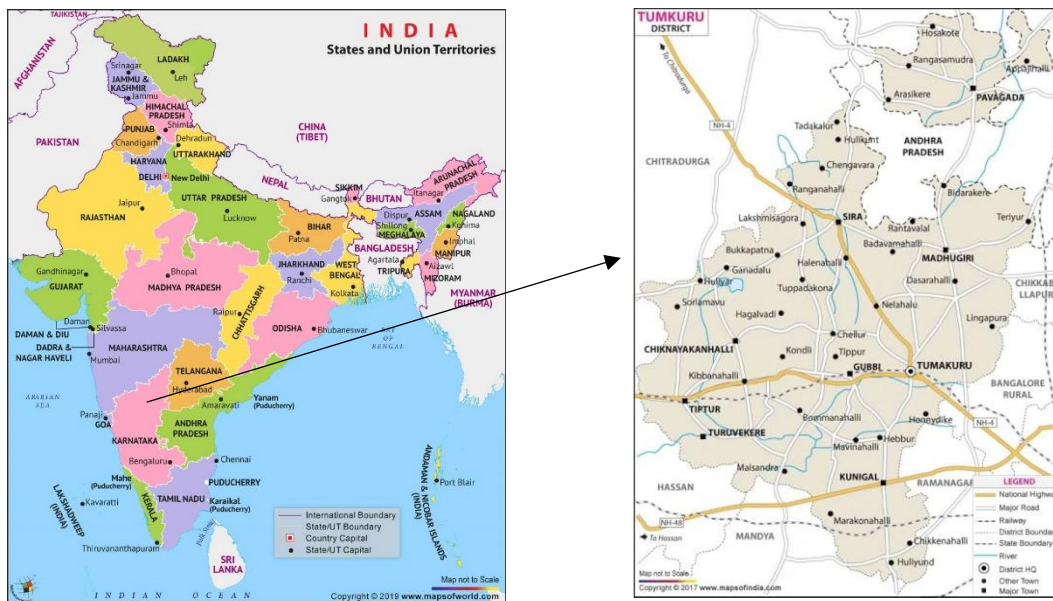
1.8 Project Location

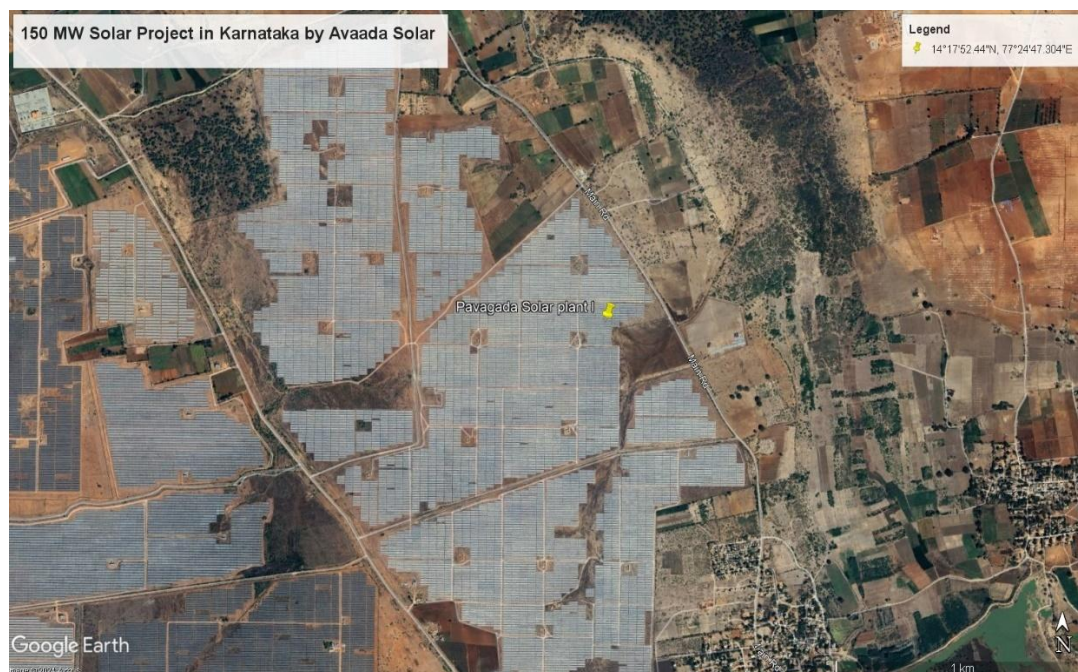
The 150 MW_{AC} solar PV Plant site is located at Pavagada Taluk, Tumkur district, in the Indian state of Karnataka. (Pavagada Solar Park Blocks-4,7, and 8). The project site is around 130 kms away from Bellary which is the nearest railway station. Nearest airport is at Bengaluru Airport, 155kms.

The geo-coordinates of the location are as follows:

Latitude: 14° 17'52.44"N (14.29790° N)

Longitude: 77° 24'47.304"E (77.41314° E).





1.9 Title and Reference of Methodology

The methodology and tools referred in this project activity has been mentioned below in the table.

Type (methodology, tool or module).	Reference ID	Title	Version
Methodology	ACM0002	ACM0002 Grid-connected electricity generation from renewable sources	19.0 ²
Tool	CDM Tool 01	Tool for the demonstration and assessment of additionality	7.0.0 ³
Tool	CDM Tool 07	Tool to calculate the emission factor for an electricity system	7.0 ⁴
Tool	CDM Tool 24	Common Practice Analysis	3.1 ⁵

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

³ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

⁴ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

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

Tool	CDM Tool 27	Investment analysis	9.0 ⁶
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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

The project is identified by the ID number GS11217 in Gold Standard. 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. The same has been verified in the previous verification.

1.11 Double Claiming, Other Forms of Credit and Supply Chain (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

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?

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

☐ Yes

☒ No

1.12 Sustainable Development Contributions

The project has been contributed to 03 SDGs which are SDG 4, 7, and 13.

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.

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

- Social well-being: The project activity helped in generating employment opportunities during the construction and operation phase. The project activity led to development in infrastructure in the region like development of roads and also promoted business with improved power generation.
- Economic well-being: The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits the project activity helped to reduce the demand supply gap in the state. The project activity generated power using zero emissions solar based power generation which reduced GHG emissions and specific pollutants like SO_x, NO_x and SPM associated with conventional thermal power generation facilities.
- Technological well-being: The successful operation of project activity led to promotion of solar based power generation and encouraged other entrepreneurs to participate in similar projects.
- Environmental well-being: Solar being a renewable source of energy, it reduced the dependent on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helped in avoiding significant amount of GHG emissions.

As per para 3.17.1 of the VCS standard (v4.7), the requirement prescribes that "The project proponent shall demonstrate how the project activities, or additional activities implemented by the project proponent, contribute to sustainable development, as defined by and tracked against the United Nations Sustainable Development Goals (SDGs). The project proponent must demonstrate that a project contributes to at least three SDGs by the end of the first monitoring period and in each subsequent monitoring period"

In continuation, the project has achieved SDGs during the current monitoring period which fulfils the requirement of minimum three SDG indicators. These contributions are separately reported in VERRA prescribed SDG Report and submitted to VERRA. Also, during the verification process supporting documents related to such SDG contributions were submitted to VVB; the summarized details of the contributions are provided under table1 below:-

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. Number of trainings conducted to employees	Implemented activities to increase	About 237 EHS trainings were conducted during this monitoring period.	Since project commissioning, 357 trainings were conducted on EHS. The project owner will conduct the EHS trainings for the employees over the lifetime of the project.																												
				<table><thead><tr><th>Month</th><th>Mock drill</th><th>Trainings</th><th>TOTAL</th></tr></thead><tbody><tr><td>September-2021</td><td>0</td><td>18</td><td>18</td></tr><tr><td>October-2021</td><td>0</td><td>4</td><td>4</td></tr><tr><td>November-2021</td><td>0</td><td>6</td><td>6</td></tr><tr><td>December-2021</td><td>0</td><td>20</td><td>20</td></tr></tbody></table>	Month	Mock drill	Trainings	TOTAL	September-2021	0	18	18	October-2021	0	4	4	November-2021	0	6	6	December-2021	0	20	20	<table><thead><tr><th>Monitoring period</th><th>Number of trainings</th></tr></thead><tbody><tr><td>MP1 - 20-December-2018 to 31-May-2019</td><td>-</td></tr><tr><td>MP2 - 01-June-2019 to 30-June-2020</td><td>-</td></tr><tr><td>MP3 - 01-July-2020 to 31-August-2021</td><td>120</td></tr></tbody></table>	Monitoring period	Number of trainings	MP1 - 20-December-2018 to 31-May-2019	-	MP2 - 01-June-2019 to 30-June-2020	-	MP3 - 01-July-2020 to 31-August-2021	120
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				January-2022	0	13	13	MP4 - 01-September-2021 to 31-March-2023	237
				February-2022	0	14	14		
				March-2022	0	0	0	TOTAL	357
				April-2022	16	10	26		
				May-2022	0	17	17		
				June-2022	4	4	8		
				July-2022	0	15	15		
				August-2022	0	19	19		
				September-2022	10	3	13		
				October-2022	4	7	11		
				November-2022	0	13	13		
				December-2022	0	1	1		

				<table><tr><td>January-2023</td><td>0</td><td>16</td><td>16</td></tr><tr><td>February-2023</td><td>0</td><td>12</td><td>12</td></tr><tr><td>March-2023</td><td>0</td><td>11</td><td>11</td></tr><tr><td>TOTAL</td><td>34</td><td>203</td><td>237</td></tr></table>	January-2023	0	16	16	February-2023	0	12	12	March-2023	0	11	11	TOTAL	34	203	237	
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March-2023	0	11	11																		
TOTAL	34	203	237																		
2)	7.2	7.2.1 Renewable energy share in the total final energy consumption.	Implemented activities to increase	About 510,339 MWh renewable electricity has supplied to Indian National grid during the current monitoring period that helps to increase the renewable energy share in the energy mix.	Since commissioning, about 1,315,012.18 MWh renewable electricity has been supplied to Indian grid till this monitoring that helps to increase the renewable energy share in the energy mix. <table><tr><th>Monitoring period</th><th>Electricity generation (MWh)</th></tr><tr><td>MP1 - 20-December-2018 to 31-May-2019</td><td>88,937</td></tr><tr><td>MP2 - 01-June-2019 to 30-June-2020</td><td>343,921.77</td></tr><tr><td>MP3 - 01-July-2020 to 31-August-2021</td><td>371,814.41</td></tr></table>	Monitoring period	Electricity generation (MWh)	MP1 - 20-December-2018 to 31-May-2019	88,937	MP2 - 01-June-2019 to 30-June-2020	343,921.77	MP3 - 01-July-2020 to 31-August-2021	371,814.41								
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					<table><tr><td>MP4 - 01-September-2021 to 31-March-2023</td><td>510,339.00</td></tr><tr><td>TOTAL</td><td>1,315,012.18</td></tr></table>	MP4 - 01-September-2021 to 31-March-2023	510,339.00	TOTAL	1,315,012.18								
MP4 - 01-September-2021 to 31-March-2023	510,339.00																
TOTAL	1,315,012.18																
3)	13. 0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By supplying 510,339 MWh of clean electricity to Indian grid, the project avoided release of 478,106 tCO2 into the atmosphere during the reporting period and contributed to the sustainable development goal 13.	Prevented the release of 1,231,953 tCO2 into the atmosphere since its commissioning. <table><tr><th>Monitoring period</th><th>Emission Reductions (tCO2e)</th></tr><tr><td>MP1 - 20-December-2018 to 31-May-2019</td><td>83,319</td></tr><tr><td>MP2 - 01-June-2019 to 30-June-2020</td><td>322,198</td></tr><tr><td>MP3 - 01-July-2020 to 31-August-2021</td><td>348,330</td></tr><tr><td>MP4 - 01-September-2021 to 31-March-2023</td><td>478,106.00</td></tr><tr><td>TOTAL</td><td>1,231,953.00</td></tr></table>	Monitoring period	Emission Reductions (tCO2e)	MP1 - 20-December-2018 to 31-May-2019	83,319	MP2 - 01-June-2019 to 30-June-2020	322,198	MP3 - 01-July-2020 to 31-August-2021	348,330	MP4 - 01-September-2021 to 31-March-2023	478,106.00	TOTAL	1,231,953.00
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TOTAL	1,231,953.00																

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 identification since validation. Therefore, this parameter is not applicable.
Legal or customary tenure/access rights	The project is built and owned by Avaada Solar Energy Private Limited. The legal and customary rights of the solar plant during and post implementation of the project activity lies with Avaada Solar 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 Solar 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. 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 activities 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 supply in the nearby area improves which directly and indirectly improves 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. There is a mechanism in place to engage the stakeholders, to address their grievances and resolve any potential conflict between the project proponent and local stakeholders. The PP provided contact information, including email addresses and phone numbers, to stakeholders at the LSC meeting, enabling them to share ideas and express grievances about the project in the future. This is the ongoing consultation
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	which has been followed for this monitoring period. Additionally, a grievance register has been set up to record comments from stakeholders. The project proponent is maintaining the grievance register at the project site and during this monitoring period, PP didn't receive any grievances.
Date(s) of stakeholder consultation	11-July-2019
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 register the complaints of the stakeholders. There was an active presence of the Project Proponent team in the project area. They have been worked closely with the community and other stakeholders to address any queries or grievances in relation to the project. Also assured that a grievance register was always made available at the project site to register their complaints if any in the register. For this monitoring period, there were no grievances registered.
Consultation records	A grievance register has been maintained at the site to register the complaints of the stakeholders.
Stakeholder input	The grievance received and the actions taken has been mentioned in the section 2.1.4.

2.1.3 Free, Prior, and Informed Consent

Consent	The legal and customary rights of the land during and post implementation of the project activity lies with Karnataka Solar Power Development Corporation Limited (KSPDCL). The land sub lease agreement was signed between Karnataka Solar Power Development Corporation Limited (KSPDCL) and Avaada Solar 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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	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

Grievances received	Resolution and outcome
Not applicable	Project Proponent maintained the grievance register at the project site and made it accessible to all the stakeholders to raise their concerns or complaints regarding the project. During the current monitoring period, no grievances were received.

2.1.5 Public Comments

Summary of comments received	Actions taken
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.	There were no comments received.

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 the project and project activities 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 PP made sure for the safety of women and girls through the Avaada Human Resource Management policy. 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 implemented the Avaada Human Resource Management policy 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 ⁷ , solar PV modules wastes should be stored at the site till 2034-2035 as per the CPCB guidelines. 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.
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2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	The organization has Human Resources Management Services policy in place to ensure there is no 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.
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 local residents, both men and women, are recruited to work for the project. During stakeholders' consultation process, comments were collected from the local people, including both men and women.

⁷ 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 Project Proponent emphasis on aligning the organizational practices with the human rights outlined in national and regional regulations. All customary rights to the land and its resources are held by Avaada Solar Energy Private Limited. The project respects protection of the rights of local communities and customary rights holders, aligning with applicable international human rights law, the United Nations Declaration.

2.3.3 Indigenous Peoples and Cultural Heritage

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

2.3.4 Property Rights

Disputes over rights to territories and resources	This project is installed on a land owned by KSPDCL. The land sub lease agreement was signed between Karnataka Solar Power Development Corporation Limited (KSPDCL) and Avaada Solar 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. As a result, the project site does not involve any territories or resources to which the stakeholders have customary rights or access.
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	Also, the project activity has been implemented with all necessary approvals and project proponent has conducted LSC during which all the necessary information regarding the project activity was explained to the stakeholders. Through this comprehensive process, the project not only obtained consent but also built a foundation of trust and cooperation with stakeholders, resulting in no ongoing or unresolved conflicts.
Respect for property rights	The legal and customary rights of the land during and post implementation of the project activity lies with the KSPDCL as mentioned in the land sub lease agreement.

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 pre-project scenario is the barren land and is not fit for agricultural purpose. There were no trees present at the site. Since the land is acquired by PP under the land-lease procedure, the appropriate compensation has been given to the vendor by Avaada.
Water consumption and stress	No risk identified	The water conservation measures such as utilization of water only for

		the purpose of panel cleaning. It involves very minimal amount of water consumption for the purpose of panel 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.

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

This section is not Applicable as this project does not introduce any species during this monitoring period.

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 power plant. The project activity has been commissioned in 3 phases in the Pavagada Solar Park in Karnataka. The 1st phase (50 MW) was commissioned on 20-Dec-2018, 2nd phase (50 MW) on 06-Feb-2019 and the 3rd phase (50 MW) on 27-Feb-2019. The energy generated from the 150 MW_{AC} solar PV plant is being evacuated at 33kV to the 220/33 kV Pooling Sub-station, which would be further evacuated to 400/220 kV GSS located about 1.5 km from the Pooling Sub Station.

Solar Power Project Technology Details:

The technology employed, converts solar energy to electrical energy. In solar power generation, energy of solar is converted into mechanical energy and subsequently into electrical energy. The technology is an environment friendly technology since there are no GHG emissions associated with the electricity generation. There is no transfer of technology involved in the project activity.

Technical Details:

Module Model	Renesola, LEAPTON and SUNTECH: JC330/325/320M		
Number of PV modules	Module Type	Module Wp	No. of modules
	ReneSola	320	61,920
	ReneSola	325	287,640
	ReneSola	330	104,580
	LEAPTON	330	51,660
	Suntech	325	140,040
	TOTAL		645,840
Maximum Power	330/325/320 Wp		
Module	Poly crystalline		
Orientation	12 deg.		
Inverter	ABB		
Rated capacity	2091 KW		
Model	PVS980-58-2091 kVA		
Number of inverters	72		
Transformer	Raychem		
Rated capacity	8.4 MVA		
Number of transformers	18		

Technical Lifetime of the SPV plant	25 years
Project capacity (AC)	150 MW
Project capacity (DC)	210.36 MWp

The project activity is in continuous operation since its commissioning. During the Current Monitoring Period from 01-September-2021 to 31-March-2023 (including both the dates) the project activity has supplied 510,339 MWh of electricity to the Indian grid and thus contributed to 478,106 tCO_{2e} emission reductions, which is 5.33 % lower than the estimated emission reductions of 505,025 tCO_{2e} for the current monitoring period. The PLF achieved during the current monitoring period is 24.56% which is lower by 5.35% w.r.t the estimated PLF of 25.95%. This is mainly due to the lesser sunshine hours in the project activity area during the current monitoring period. 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. There were some major shutdowns observed during the current monitoring period and the corresponding actions has been taken by PP. The total Breakdown duration occurred during the current monitoring period is 8.39 hours. The details of the same have been included in the Appendix 2.

There is no such incident reported during the current monitoring period which may impact the operation & capacity design of the project activity. Therefore, no events have happened that may impact the GHG emission reductions or removals and monitoring in this monitoring Period. However, there was some change in billing procedure during the previous monitoring period which was as per the requirement of the state utility applicable for all power producers across the state. PP doesn't have any control on such events or not under the direct purview of PP. However, such changes in the process did not have any impact on the project operation, design and emission reductions. The information has been reported under the section 3.2 below under project description deviation.

3.2 Deviations

3.2.1 Methodology Deviations

No methodology deviation is applied during this monitoring period.

3.2.2 Project Description Deviations

There is no change in project design related to install capacity, technology, specification, etc.

However, during the previous monitoring period (01-July-2020 to 31-August-2021) there was 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 effected from 20 Jan 2020 and remained 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 during previous monitoring period: As a part of earlier practice of monthly generation accounting, standard practice of monthly joint meter reading (JMRs) 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 – Transmission 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. Whereas, from Jan 2020, the SRPC has implemented 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 website (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 from the month of Jan 2020 (i.e., effectively from 20 Jan 2020). 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 during current monitoring period: While submitting for initial submission, Project Proponent decided to prepare the VCS PD with the geo-ordinates of 14 ° 18'35.07" N, 77 ° 24'21.38" E which is slightly far from the actual ordinates of the solar power plant. The same has been followed for the subsequent monitoring periods. For this current monitoring period, PP decided to change the co-ordinates to the actual ordinates which are 14 ° 17'52.44"N, 77 ° 24'47.304"E. The project location has been updated in Section 1.8 of the Monitoring Report, v3.3.

3.3 Grouped Projects

The project is not a grouped project. Thus, this section is not applicable.

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	Simple operating margin emission factor for Indian grid
Source of data	CO ₂ baseline database (version 14.0) published by Central Electricity Authority on June 2018 ⁸
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 TOOL07: "Tool to calculate the emission factor for an electricity system", version 07.0.0
Purpose of Data	Calculation of baseline emissions
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	EF _{grid,BM,y}
Data unit	tCO ₂ / MWh
Description	Simple build margin emission factor for Indian grid
Source of data	CO ₂ baseline database (version 14.0) published by Central Electricity Authority on June 2018
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 TOOL07: "Tool to calculate the emission factor for an electricity system", version 07.0.0
Purpose of Data	Calculation of baseline emissions
Comments	This parameter is fixed ex-ante for the entire crediting period.

⁸ https://cea.nic.in/wp-content/uploads/baseline/2020/07/database_14.zip

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO ₂ / MWh
Description	Combined margin emission factor for Indian grid
Source of data	CO ₂ baseline database (version 14.0) published by Central Electricity Authority on June 2018
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 the TOOL07: "Tool to calculate the emission factor for an electricity system", version 07.0.0
Purpose of Data	Calculation of baseline emissions
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/y
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)
Source of data	Monthly Regional Energy Account (REA) issued by SRPC ⁹
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 will be 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:

⁹ <https://www.srpc.kar.nic.in/html/xml-search/commercial.html#gsc.tab=0>

	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. Whereas, at the time of B-Form practice (i.e. till 19 January 2020), the Net electricity supplied to the grid by the project activity was calculated as a difference of electricity exported to the grid, electricity imported from the grid obtained from (B-Form) joint meter reading certificates/credit notes issued as per below equation: $EG_{PJ,y} = EG_{Export} - EG_{Import}$ 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. 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 will be 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 will be 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	510,339 MWh
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 readings of electricity will be continuously measured by metering instrument itself and monthly recorded via REA.

QA/QC procedures to be applied	This data will be directly used for calculation of emission reductions. Measurement results of electricity supplied to the grid and that delivered from the grid to the project will be crosschecked with records for sold electricity. The meter(s) will be calibrated once in 5 years in accordance with national standards and procedures.
Purpose of the data	For the calculation of baseline emissions.
Calculation method	N/A
Comments	1. Data will be archived electronically for a period of 2 years beyond the end of crediting period. 2. 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, drawable 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.

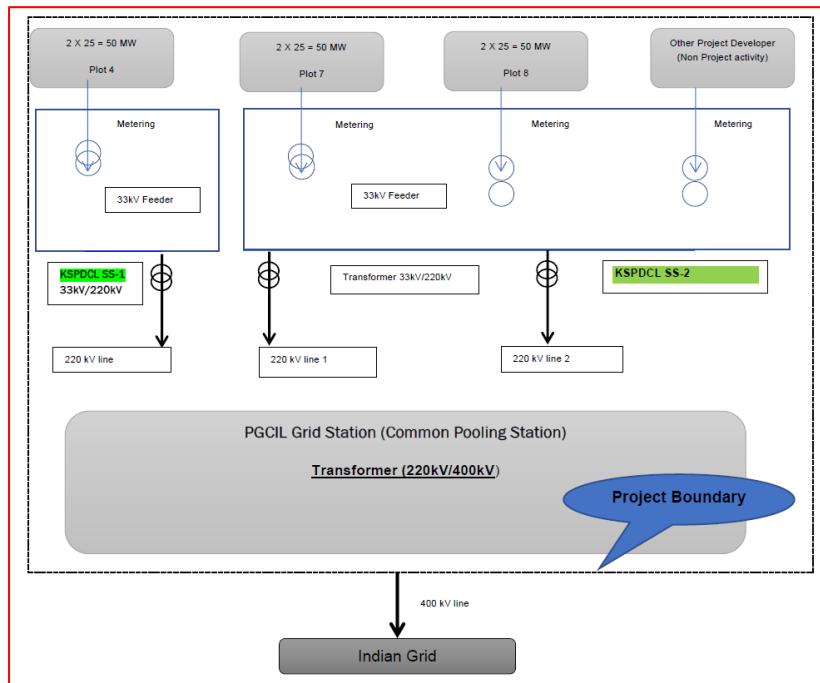
4.3 Monitoring Plan

The monitoring method specified in the methodology 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:



Monitoring Equipment Details:

All Energy Meters has been installed at 33kV feeder line.

The prescribed frequency of the meter calibration/test is once in 5 years.

The project developer “Avaada Solar Energy Private Limited” is having a dedicated metering arrangement on his 33kV/220kV line at KSPDCL SS-1 and SS-2 which is further connected to Pavagada (PGCIL grid substation) in Tumkur district as shown in the above project boundary diagram. The meters are approved, tested & sealed by the State Utility. The meters are solely in the custody of State Utility. The frequency of calibration is once in 5 years as prescribed in the registered PD. All the meters are of 0.2s accuracy class.

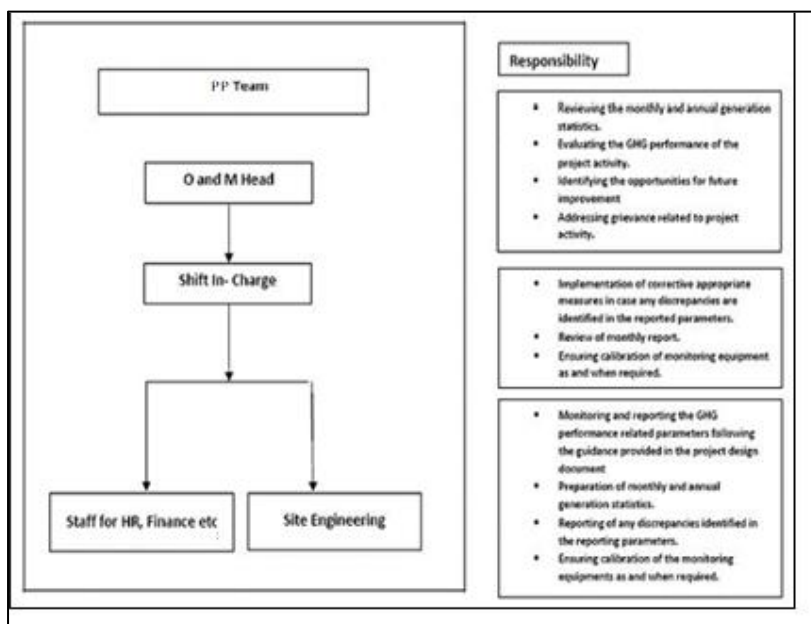
The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment's for this project activity. The team comprises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

Responsibilities of O & M Head: Overall functioning and maintenance of the project activity and overall responsibility of compliance with the Monitoring Plan.

Responsibilities of Plant In-charge: Responsibility for Maintains the data records, ensures completeness of data, and reliability of data. Regularly verifying the monthly energy generation date with energy sales receipt or installed meters reading for identification of any discrepancies in data collection and taking suitable action to rectify them.

Responsibilities of Shift In-charge:

- Responsibility for day-to-day data collection and maintains day to day log book for monitored data.
- Responsibility for monthly and annual report generation and quality assurance of the data/reports and preliminary check of data for any discrepancies.



Energy accounting:

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. Therefore, no separate monthly B-Forms are applicable from the month of Jan 2020 (i.e. effectively from 20 Jan 2020). 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, as demonstrated under the ex-post monitoring parameter under the section 4.2 above, the overall accounting procedure of monthly

units remains the same as the REA adopts algorithm-based software which accounts the net electricity injection, drawl and transmission losses for the monthly accounting, as follows:

Net Energy to be billed = [Export or net injection (kWh)] – [Import or drawl (kWh)] – [Transmission losses (kWh)]; hence the change in monthly statement generation practice (i.e. earlier B-form, currently REA statement) does not have any impact energy accounting for this project activity.

The aggregated net monthly electricity supplied/exported by the project activity (150MW Capacity) is monitored, measured & metered continuously at the 33kV/220kV KSPDCL substation 1 & substation 2 which forms the basis for the monthly energy units (i.e. REA statements). REA reports can be cross checked with the monthly invoices of sale.

In the absence or delay in the meter calibration appropriate guidelines will be applied appropriately to confirm the conservativeness of metering & monitored values.

The metering arrangement, accuracy class of meters, calibration frequency and apportioning approach is under control of state electricity board and project developer Avaada Solar (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. The details of calibration are as below:

Block 4	Main Meter	Check Meter	Stand by Meter
RR No: KSPDCL-SS1-A25 (Line 10)			
Meter Serial No.	LT-0827-A	LT-0843-A	LT-0821-A
Meter Make	L&T	L&T	L&T
Accuracy Class	0.2	0.2	0.2
Calibration Date/Installation Date	12/12/2019	12/12/2019	12/12/2019
Validity of Calibration (as per 5 years calibration frequency)	11/12/2024	11/12/2024	11/12/2024
RR No: KSPDCL-SS1-A26 (Line 09)			
Meter Serial No.	LT-0788-A	LT-0798-A	LT-0836-A
Meter Make	L&T	L&T	L&T
Accuracy Class	0.2	0.2	0.2
Calibration Date /Installation Date	13/12/2019	12/12/2019	12/12/2019
Validity of Calibration (as per 5 years calibration frequency)	12/12/2024	11/12/2024	11/12/2024

Block 7:			
RR No: KSPDCL-SS2-A33 (Line 09)			
Meter Serial No.	LT-0804-A	LT-0803-A	LT-0842-A
Meter Make	L&T	L&T	L&T
Accuracy Class	0.2	0.2	0.2
Calibration Date/Installation Date	12/12/2019	12/12/2019	13/12/2019
Validity of Calibration (as per 5 years calibration frequency)	11/12/2024	11/12/2024	12/12/2024
RR No: KSPDCL-SS2-A34 (Line 10)			
Meter Serial No.	LT-0801-A	LT-0807-A	LT-0825-A
Meter Make	L&T	L&T	L&T
Accuracy Class	0.2	0.2	0.2

Calibration Date/Installation Date	12/12/2019	12/12/2019	13/12/2019
Validity of Calibration (as per 5 years calibration frequency)	11/12/2024	11/12/2024	12/12/2024

Block 8:			
RR No: KSPDCL-SS2-A47 (Line 8)			
Meter Serial No.	LT-0814-A	LT-0831-A	LT-0810-A
Meter Make	L&T	L&T	L&T
Accuracy Class	0.2	0.2	0.2
Calibration Date/Installation Date	13/12/2019	13/12/2019	13/12/2019
Validity of Calibration (as per 5 years calibration frequency)	12/12/2024	12/12/2024	12/12/2024
RR No: KSPDCL-SS2-A48 (Line 7)			
Meter Serial No.	LT-0797-A	LT-0799-A	LT-0811-A
Meter Make	L&T	L&T	L&T
Accuracy Class	0.2	0.2	0.2
Calibration Date/Installation Date	13/12/2019	13/12/2019	13/12/2019
Validity of Calibration (as per 5 years calibration frequency)	12/12/2024	12/12/2024	12/12/2024

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 records will be cross-checked with the records of sold electricity to the third party. 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 will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

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 ESKOMs official only for the emergency as per PPA.

In case of failure of all the meters simultaneously (which is very unlikely and remote possibility), a decision will be taken by ASEPL, 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 site personnel are provided with proper training to meet the requirements of the operations and maintenance. This ultimately leads to creativity in problem solving. During the current monitoring period, all regular trainings were conducted and hence ensured standard requirements of the monitoring.

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:

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.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per para 42 of the approved consolidated methodology ACM0002 (Version 19.0),

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

Where,

$EG_{PJ,y}$ = 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).

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid-connected power generation in year y calculated using the methodological tool “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh) (i.e., 0.93684 tCO₂/MWh)

Net electricity Generation for the monitoring period:

Sl.No	Months	Net generation (MWh)
1	September-2021	26,670
2	October-2021	24,628
3	November-2021	17,812
4	December-2021	26,499
5	January-2022	29,408
6	February-2022	30,463
7	March-2022	32,273
8	April-2022	29,352
9	May-2022	26,991
10	June-2022	28,118
11	July-2022	22,612
12	August-2022	25,294
13	September-2022	25,060
14	October-2022	23,416
15	November-2022	22,255
16	December-2022	24,764
17	January-2023	31,693
18	February-2023	30,578
19	March-2023	32,453
TOTAL		510,339

Baseline emission reduction for the monitoring period:

Year	Net generation (MWh)	Emission factor(tCO ₂ /MWh)	Emission reductions (tCO ₂ e)
Sept-21 to Dec-21	95,609	0.93684	89,570
Jan-22 to Dec-22	320,006	0.93684	299,795
Jan-23 to Mar-23	94,724	0.93684	88,742
TOTAL	510,339	-	478,106

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 para 57 of the methodology ACM0002, emission reductions are calculated as:

$$ER_y = BE_y - PE_y$$

Where,

ER_y = Emission Reduction in tCO₂/year

BE_y = Baseline emission in tCO₂/year

PE_y = Project emissions in tCO₂/year

LE_y = Leakage Emissions in tCO₂/year

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU's (tCO ₂ e)	Removal VCU's (tCO ₂ e)	Total VCUs (tCO ₂ e)
2021 (01-September-2021 to 31-December)	89,570	0	0	89,570	0	89,570
2022 (01-January-2022 to 31-December-2022)	299,795	0	0	299,795	0	299,795
2023 (01-January-2023 to 31-March-2023)	88,742	0	0	88,742	0	88,742
Total (01-September-2021 – 31-March-2023)	478,106 (Round down values)	0	0	478,106 (Round down values)	0	478,106 (Round down values)

Comparison of estimated emission reduction with actual emission reduction:

Parameters	Vintage Period			Total
Start date of monitoring period	01-Sep-21	01-Jan-22	01-Jan-23	01-Sep-21
End date of Monitoring period	31-Dec-21	31-Dec-22	31-Mar-23	31-Mar-23
Total days of generation in the monitoring period	122	365	90	577
Estimated emission Reduction (tCO ₂ e)	106,782	319,470	78,773	505,025
Actual Emission Reduction (tCO ₂ e)	89,570	299,795	88,742	478,106
Difference in Emission reduction	-16.12%	-6.16%	12.65%	-5.33%

The percentage difference between actual GHG emission reduction and estimated GHG emission reduction on yearly basis has been mentioned below in the table.

Vintage period	Ex-ante estimated reductions/removals (tCO ₂ e)	Achieved reductions/removals (tCO ₂ e)	Percent difference	Explanation for the difference
2021 (01-September-2021 to 31-December-2021)	106,782	89,570	-16.12%	There is a decrease in emission reductions as compared to the ex-ante estimated value for the equivalent period. The marginal decrease of 16.12% ERs as compared to the ex-ante estimated, is mainly due to the lesser sunshine hours in the project activity area during the current monitoring period which is not in control of PP.
2022 (01-January-2022 to 31-December-2022)	319,470	299,795	-6.16%	There is a decrease in emission reductions as compared to the ex-ante estimated value for the equivalent period. The marginal decrease of 6.16% ERs as compared to the ex-ante estimated, is mainly due to the lesser sunshine hours in the project activity area during the current monitoring period which is not in control of PP.
2023 (01-January-2023 to 31-March-2023)	78,773	88,742	12.65%	There is an increase in emission reductions as compared to the ex-ante estimated value for the equivalent period. The marginal increase of 12.65% ERs as compared to the ex-ante estimated, is mainly due to the higher sunshine hours in the project activity area which is not in control of PP.

Total (01-September-2021 – 31-March-2023)	505,025	478,106	-5.33%	Hence, for the current monitoring period from 01-September-2021 to 31-March-2023 (including both the dates), there is an overall decrease in emission reductions by 5.33% as compared to the ex-ante estimated value for the equivalent period. The PLF achieved during the current monitoring period is 24.56% which is lower by 5.35% w.r.t the estimated PLF of 25.95%. This is mainly due to the overall lesser sunshine hours in the project activity area during the current monitoring period which is not in control of PP.
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APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

Not Applicable

APPENDIX 2: BREAKDOWN DETAILS

Date	BD Equipment	BD Start Time (Minutes: Seconds)	BD End Time (Minutes: Seconds)	Total BD Duration (Minutes: Seconds)	Reason for Breakdown	Action taken
30-06-2022	Plot-4 Feeder-10	13:15	13:50	17.5	Feeder-10 was down due to Over current Fault	Communicate and charge the line.
14-07-2022	Plot-4 Feeder-9	09:29	10:25	28	SS-1 &2 got tripped from PGCL due to isolator issue at PGCL end due to which all our feeders are down.	Communicate and charge the line.
14-07-2022	Plot-4 Feeder-10	09:29	10:25	28	SS-1 &2 got tripped from PGCL due to isolator issue at PGCL end due to which all our feeders are down.	Communicate and charge the line.
14-07-2022	Plot-7 Feeder-8	09:29	10:48	39.5	SS-1 &2 got tripped from PGCL due to isolator issue at PGCL end due to which all our feeders are down.	Communicate and charge the line.
14-07-2022	Plot-7 Feeder-9	09:29	10:48	39.5	SS-1 &2 got tripped from PGCL due to	Communicate and charge the line.

					isolator issue at PGCL end due to which all our feeders are down.	
14-07-2022	Plot-8 Feeder-9	09:29	10:48	39.5	SS-1 &2 got tripped from PGCL due to isolator issue at PGCL end due to which all our feeders are down.	Communicate and charge the line.
14-07-2022	Plot-8 Feeder-10	09:29	10:48	39.5	SS-1 &2 got tripped from PGCL due to isolator issue at PGCL end due to which all our feeders are down.	Communicate and charge the line.
14-07-2022	Plot-4 Feeder-9	11:57	12:20	11.5	Feeder-9 was down due to Over current Fault	Communicate and charge the line.
14-07-2022	Plot-4 Feeder-10	11:57	12:20	11.5	Feeder-10 was down due to Over current Fault	Communicate and charge the line.
30-08-2022	Plot-4 Feeder-10	11:55	12:15	10	Feeder-10 was down due to Over current Fault	Communicate and charge the line.
30-08-2022	Plot-7 Feeder-9	11:55	12:15	10	Feeder-9 was down due to Over current Fault	Communicate and charge the line.

12-11-2022	Plot-4 Feeder-9	09:45	10:40	27.5	SS-1 transformer tripped due to over current	Communicate and charge the line.
12-11-2022	Plot-4 Feeder-10	09:45	10:40	27.5	SS-1 transformer tripped due to over current	Communicate and charge the line.
23-11-2022	Plot-7 Feeder-7	10:17	11:30	36.5	Ss-2 POWER TRAFO TRIP	checked and restored by ss team
23-11-2022	Plot-7 Feeder-8	10:17	11:30	36.5	Ss-2 POWER TRAFO TRIP	checked and restored by ss team
23-11-2022	Plot-7 Feeder-9	10:17	11:30	36.5	Ss-2 POWER TRAFO TRIP	checked and restored by ss team
23-11-2022	Plot-8 Feeder-10	10:17	11:30	36.5	Ss-2 POWER TRAFO TRIP	checked and restored by ss team
15-01-2023	Plot-4 Feeder-10	12:18	12:32	7	SS-1 feeder trip on over current fault.	Communicate and charge the line.
27-01-2023	Plot-4 Feeder-10	12:09	12:30	10.5	SS-1 feeder trip on over current fault.	Communicate and charge the line.
26-02-2023	Plot-4 Feeder-9	13:35	14:44	10.5	SS-1 feeder trip on over current fault.	Communicate and charge the line.
TOTAL HOURS OF BD Duration				8.39		