



RENEWABLE SOLAR POWER PROJECT BY SHAPOORJI PALLONJI



Document Prepared by EKI Energy Services Limited

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Project Title	Renewable Solar Power Project by Shapoorji Pallonji
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CONTENTS

1	PROJECT DETAILS.....	4
1.1	Summary Description of the Implementation Status of the Project	4
1.2	Sectoral Scope and Project Type	5
1.3	Project Proponent	5
1.4	Other Entities Involved in the Project	6
1.5	Project Start Date	6
1.6	Project Crediting Period	6
1.7	Project Location	7
1.8	Title and Reference of Methodology	10
1.9	Participation under other GHG Programs.....	10
1.10	Other Forms of Credit.....	10
1.11	Sustainable Development Contributions	10
2	SAFEGUARDS	14
2.1	No Net Harm	14
2.2	Local Stakeholder Consultation	14
2.3	AFOLU-Specific Safeguards	14
3	IMPLEMENTATION STATUS	14
3.1	Implementation Status of the Project Activity	14
3.2	Deviations.....	17
3.3	Grouped Projects	18
4	DATA AND PARAMETERS.....	18
4.1	Data and Parameters Available at Validation	18
4.2	Data and Parameters Monitored.....	19
4.3	Monitoring Plan.....	22
5	QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS	26
5.1	Baseline Emissions	26
5.2	Project Emissions	26
5.3	Leakage.....	27
5.4	Net GHG Emission Reductions and Removals	27
	APPENDIX I: METER AND CALIBRATION DETAILS	29

APPENDIX II: BREAKDOWN DETAILS 31

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. The project is a bundled project activity which involves installation of 220 MW solar project in three states of India (Maharashtra, Tamilnadu & Karnataka) through SPVs. Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 432,770 tCO₂ per year, thereon displacing 461,967 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

The details of the SPVs for the project and their location of installation are mentioned in the table below:-

Sl. No.	Name of SPVs	Capacity (MW)	COD	Connection with Grid	State	Usage
1	Solar Edge Power and Energy Private Limited	50	26-April-2018	Indian Grid	Maharashtra	Sale to SECI
		50	08-April-2018			
		30	22-April-2018			
2	Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Capital Company Private Limited and Shapoorji Pallonji Suryaprakash Private Limited)	50	26-September-2018	Indian Grid	Tamil Nadu	Sale to Grid
3	Suryoday One Energy Private Limited	40	30- March - 2018	Indian Grid	Karnataka	Sale to Grid

During the current monitoring period from 01-January-2021 to 30-September-2021, the Project activity supplied 291,016.26 MWh of energy to the Indian grid. This resulted in emission reductions of 272,606 tCO₂e by its operation during the current monitoring period.

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

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

Project Type: I - Renewable Energy Projects

Project Category: Grid-connected electricity generation from renewable sources ACM0002-Version 19.0¹.

1.3 Project Proponent

Organization name	Solar Edge Power and Energy Private Limited
Contact person	Anupam Mathur
Title	Mr.
Address	10th Floor, Parinee Crescenzo, C-30, G Block, Bandra Kurla Complex, Bandra East, Mumbai 400 051
Telephone	+91-731-4289086
Email	anupam.mathur@virescent.co.in

Organization name	Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Capital Company Private Limited and Shapoorji Pallonji Suryaprakash Private Limited)
Contact person	Anupam Mathur
Title	Mr.
Address	10 th Floor, Parinee Crescenzo, C-30, G Block, Bandra Kurla Complex, Bandra East, Mumbai 400 051
Telephone	+91-731-4289086
Email	anupam.mathur@virescent.co.in

Organization name	Suryoday One Energy Private Limited
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¹ <https://cdm.unfccc.int/UserManagement/FileStorage/58IAGB7SZUDEO2VN6LYM30K41HFPRQ>

Contact person	Mr. Sunil Kulkarni
Title	Director
Address	41/44, Minoo Desai Marg, Colaba, Mumbai- 400005, India
Telephone	+9188793446297
Email	sunil.kulkarni@shapoorji.com

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultant
Contact person	Manish Dabkara
Title	CEO & MD
Address	EnKing Embassy, Office No 201, Plot 48, Scheme 78, Part 2, Vijay Nagar, Indore- 452010, Madhya Pradesh, India.
Telephone	+91-731-4289086
Email	manish@enkingint.org registry@enkingint.org

1.5 Project Start Date

As per the Commissioning Certificate issued by the state utility for Suryodaya One (Karnataka), the earliest commissioning date is 30-March-2018.

Hence the start date is considered as 30-March-2018.

1.6 Project Crediting Period

Crediting Period Start date: 30-March-2018

Crediting Period End date: 29-March-2028.

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

1.7 Project Location

Sl. No.	Name of SPVs	Capacity (MW)	Village	Taluka	District	State
1	Solar Edge Power and Energy Private Limited	50	Wadhawe, Hartale & Manpur	Muktainagar	Jalgaon	Maharashtra
		50	Parli	-	Beed	
		30	Parli	-	Beed	
2	Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Capital Company Private Limited and Shapoorji Pallonji Suryaprakash Private Limited)	50	Thenkarai	Vembakottai	Virudhunagar	Tamil Nadu
3	Suryoday One Energy Private Limited	40	Gokak Falls	Gokak	Belgavi	Karnataka

Sl. No.	Name of SPVs	Capacity (MW)	Latitude	Longitude
1	Solar Edge Power and Energy Private Limited	50	21° 01' 36.01"	75° 59' 6.82"
		50	18° 55' 21.06"	76° 21' 29.28"
		30	18° 55' 21.06"	76° 21' 29.28"
2	Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Capital Company Private Limited and Shapoorji	50	9° 33' 14.52"	77° 53' 03.25"

	Pallonji Suryaprakash Private Limited)			
3	Suryoday One Energy Private Limited	40	16° 10' 40.92"	74° 47' 22.56"

The project location have been highlighted in the maps shown below

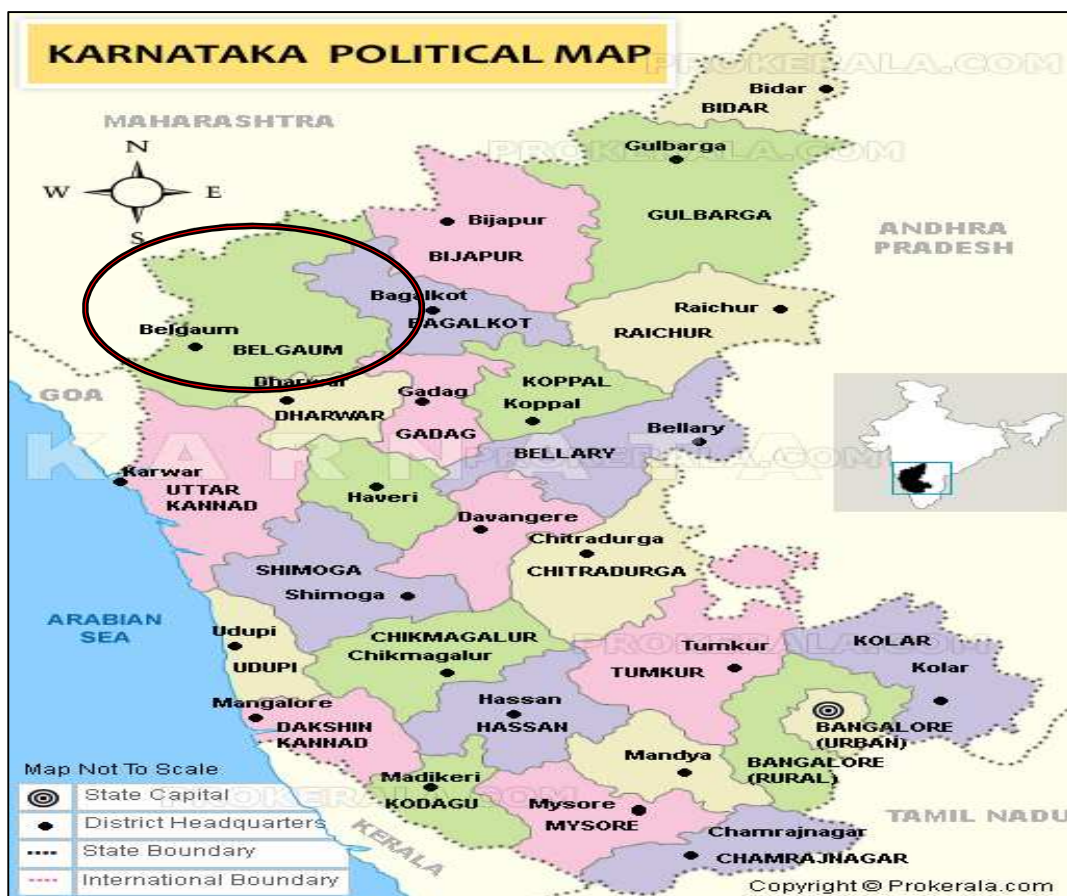
I. Tamil Nadu



II. Maharashtra



III. Karnataka



1.8 Title and Reference of Methodology

Title: Grid-connected electricity generation from renewable sources

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

Methodology: ACM0002: Grid-connected electricity generation from renewable sources - Version 19

Type I: Energy industries (renewable / non-renewable sources)

Category: Approved Consolidated Methodology (ACM0002)

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

- *Tool to calculate the emission factor for an electricity system - Version 07.0 (EB 100, Annex 04)*²
- *Methodological Tool- Tool for the demonstration and assessment of additionality - Version 07.0.0 (EB 70, Annex 08)*³

1.9 Participation under other GHG Programs

The Project does not intend to participate in any other GHG mechanism which includes GHG allowance trading. It does not generate any other form of GHG-related environmental credit apart from GHG emission reductions or removals claimed under the VCS Program.

1.10 Other Forms of Credit

The Project does not intend to generate any other form of GHG-related environmental credit apart from GHG emission reductions or removals claimed under the VCS Program.

1.11 Sustainable Development Contributions

The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source. The project is a bundled project activity which involves installation of 220 MW solar project in Tamil Nadu, Maharashtra and Karnataka states of India through SPVs.

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

² <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf>

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

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 432,077 tCO₂e per year, thereon displacing 461,967 MWh/year amount of electricity from the generation-mix of power plants connected to the Indian grid, which is mainly dominated by thermal/fossil fuel based power plant.

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

1. SDG 7 Affordable and Clean Energy⁴ : Since the project activity is a solar power project, it generates clean energy. The Project activity is a new facility (Greenfield) and the electricity generated by the project is exported to the Indian electricity grid. The project therefore displaces an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid.

2. SDG 8 Economic Growth⁵: The Project Proponent aims to provide employment to local men and women with decent compensation. PP has targeted to employ 20 persons by the year 2025 and minimum 1 person per annum after 2025.

3. SDG 13 Climate Action⁶: The main purpose of this project activity is to generate a clean form of electricity through renewable solar energy sources. The project activity involves total capacity of 220 MW solar power project which is installed in the state of Maharashtra, Karnataka and Tamil Nadu of India. The solar projects has been developed by the SPVs of Shapoorji Pallonji group, one of the green energy giants of India.

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

⁴ <https://sdgs.un.org/goals/goal7>

⁵ <https://sdgs.un.org/goals/goal8>

⁶ <https://sdgs.un.org/goals/goal13>

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 291,016.26 MWh renewable electricity was supplied to the Indian grid during the current monitoring period that helps to increase the renewable energy share in the energy mix.	First Monitoring Period: 08-April-2018 to 25-June-2019 (Inclusive of both the dates) 377,913.08 MWh Second Monitoring Period: 26-June-2019 to 31-December-2020 (Inclusive of both the dates) 588,695.26 MWh Current Monitoring Period: 01-January-2021 to 30-September-2021 (Inclusive of both the dates) 291,016.26 MWh Total: 1,257,624.6 MWh
2)	8.0	Employment of local men and women	Implemented activities to increase	The Project Proponent has targeted to employ 20 persons by the year 2025 and minimum 1 person per annum after 2025.	0

3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to decrease	By supplying 291,016.26 MWh clean electricity to Indian grid, the project avoided release of 272,606 tCO ₂ in to the atmosphere during the reporting period.	Previous Monitoring Period: 08-April-2018 to 25-June-2019 (Inclusive of both the dates) 354,005 tCO₂ Second Monitoring Period: 26-June-2019 to 31-December-2020 (Inclusive of both the dates) 551,445 tCO₂ Current Monitoring Period: 01-January-2021 to 30-September-2021 (Inclusive of both the dates) 272,606 tCO₂ Total: 1,178,056 tCO₂
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2 SAFEGUARDS

2.1 No Net Harm

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

2.2 Local Stakeholder Consultation

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

The process of local stakeholder consultation is continuous. During the current monitoring period, the project proponent has kept grievance register in plant site office and sought comments/grievances/suggestions from local stakeholders including local community, government agencies and NGOs. Besides, the PP has also kept provision for submitting comments/grievances/suggestions from local stakeholders through direct mail. However, no major comments/grievances/suggestions have been received from the aforementioned stakeholders during the current monitoring period and all such minor suggestions have been taken care of by the PP.

2.3 AFOLU-Specific Safeguards

Not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity involves electricity generation from 220 MW Solar PV Plant located in three different states of India i.e. Maharashtra, Tamilnadu & Karnataka. The electricity generated from the project activity is being exported to the Indian electricity grid.

The technical details of the Solar PV Project are described in the table below.

- a) The technical detail of 40 MW solar project by Suryoday One Energy Private Limited

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Number of modules and their capacity	No. of Modules- 164734 Model capacity- 340 Wp
3	Number of Inverters & Capacity	16 Inverters 2750 KW

The technical specification of 50 MW solar project by Solar Edge Power and Energy Private Limited

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Number of modules and their capacity	JA Solar Model capacity- 325 Wp
3	Number of Inverters & Capacity	25 Inverters 2000 KW

The technical specification of 50 MW solar project by Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Capital Company Private Limited and Shapoorji Pallonji Suryaprakash Private Limited).

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Number of modules and their capacity	No. of Modules- 164880 Model capacity- 325 Wp, 330 Wp
3	Number of Inverters & Capacity	25 Inverters 2000 KW

The technical specification of 30 MW solar project by Solar Edge Power and Energy Private Limited

Sl. No.	Technical details of the equipment	Description
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1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Number of modules and their capacity	Model capacity- 117.5 Wp (JA Solar), 325 Wp (First Solar)
3	Number of Inverters & Capacity	15 Inverters 2000 KW

The technical specification of 50 MW solar project by Solar Edge Power and Energy Private Limited

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Solar PV technology (Poly-Crystalline)
2	Number of modules and their capacity	JA Solar Model capacity- 325 Wp
3	Number of Inverters & Capacity	25 Inverters 2000 KW

Feeder Connectivity details of the solar plant have been mentioned below

Sl. No.	Name of SPVs	Capacity (MW)	Feeder Connectivity
1	Solar Edge Power and Energy Private Limited	50	132 KV Muktainagar
		50	132 KV GSS Pangri, Beed
		30	
2	Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Capital Company Private Limited and Shapoorji Pallonji Suryaprakash Private Limited)	50	110 KV, Nallamanaickenpatti
3	Suryoday One Energy Private Limited	40	110 KV Gokak Shindikur substation further connected to 220 kV R/S Ghataprabha.

The implementation status including net electricity generated in the project activity are as following:

Sl. No.	Name of the SPVs	State	Net electricity generated during the monitoring period (MWh)
1	Solar Edge Power and Energy	Maharashtra	179,643.18
2	Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Capital Company Private Limited and Shapoorji Pallonji Suryaprakash Private Limited)	Tamil Nadu	59,925.00
3	Suryoday One Energy Private Limited	Karnataka	51,448.08
TOTAL			291,016.26

3.2 Deviations

3.2.1 Methodology Deviations

There is no deviation from the applied methodology during the current monitoring period.

3.2.2 Project Description Deviations

Following Deviations approved in last verification:-

- There was a change in ownership of the SPVs located in Tamil Nadu and Maharashtra of the project activity. The details of the new owner has mentioned in Section 1.3 of previous Monitoring Report (version 03 dated 27-January-2022). The deviation was accepted and approved by VVB during last verification.
- In addition to that, the earliest Commissioning date of 40 MW installation Suryoday One Energy Private Limited at Karnataka is 30- March-2018. However, as per the approved VCS –PD, PP has taken 08-April-2018, which is the Commissioning date of installations at Maharashtra as the start date of the project activity. As earliest commissioning date is 30-March-2018, same is considered as project start date. The deviation was accepted and approved by VVB during last verification.

Deviation seeks during current verifications:-

- During this current monitoring period, at Karnataka Site (Suryoday One Energy Private Limited, 40 MW), PP has considered transmission losses at substation end as mentioned in

JMR as a conservative approach for emission reduction calculation. Emission reduction calculation is done considering transmission losses as a conservative approach.

3.3 Grouped Projects

Not applicable as this is not a grouped project or part of any grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018
Value applied	0.9610
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07” as 3-year generation weighted average using data for the years 2015-16, 2016-17 & 2017-18. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 14, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission.
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018
Value applied	0.8644
Justification of choice of data or description of measurement methods and procedures applied	Calculated as per “Tool to calculate the emission factor for an electricity system, version 07” as per the latest data available for the most recent year 2017-18. The data is obtained from “CO ₂ Baseline Database for Indian Power Sector” version 14, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

Data / Parameter	$EF_{grid,CM,y}$
Data unit	CO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 14, Dec 2018
Value applied	0.9368
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh) $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM} = Weighting of build margin emissions factor (%) = 25%
Purpose of Data	For the calculation of the Baseline Emission.
Comments	This parameter is fixed ex-ante for the entire crediting period.

4.2 Data and Parameters Monitored

For Karnataka Site

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 in MWh
Source of data	Monthly B-Forms
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value has been considered for ER calculations.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	51,448.08
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.
QA/QC procedures to be	The meters is approved, tested & sealed by the State Utility. The meters

applied	are in the custody of State Utility. The frequency of calibration is once in 5 years ⁷ . The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines have been applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter. The billing is raised based on substation meters.
Purpose of the data	Calculation of baseline emissions.
Calculation method	Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh – transmission losses at substation end
Comments	Data are being archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later.

For Maharashtra Site

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 in MWh
Source of data	Monthly B-Forms/Joint Meter Reading Reports
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value has been considered for ER calculations.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	179,643.18
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.
QA/QC procedures to be	The meters is approved, tested & sealed by the State Utility. The meters

⁷ [meter_reg.pdf\(cea.nic.in\)](http://meter_reg.pdf(cea.nic.in))

applied	are in the custody of State Utility. The frequency of calibration is once in 5 years ⁸ . The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines will be applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter. The billing is raised based on substation meters.
Purpose of the data	Calculation of baseline emissions
Calculation method	Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh
Comments	Data are being archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VERs for this project activity, whichever occurs later

For Tamil Nadu Site

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 in MWh
Source of data	Monthly B-Forms/Joint Meter Reading Reports
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value has been considered for ER calculations.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	59,925.00
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid.

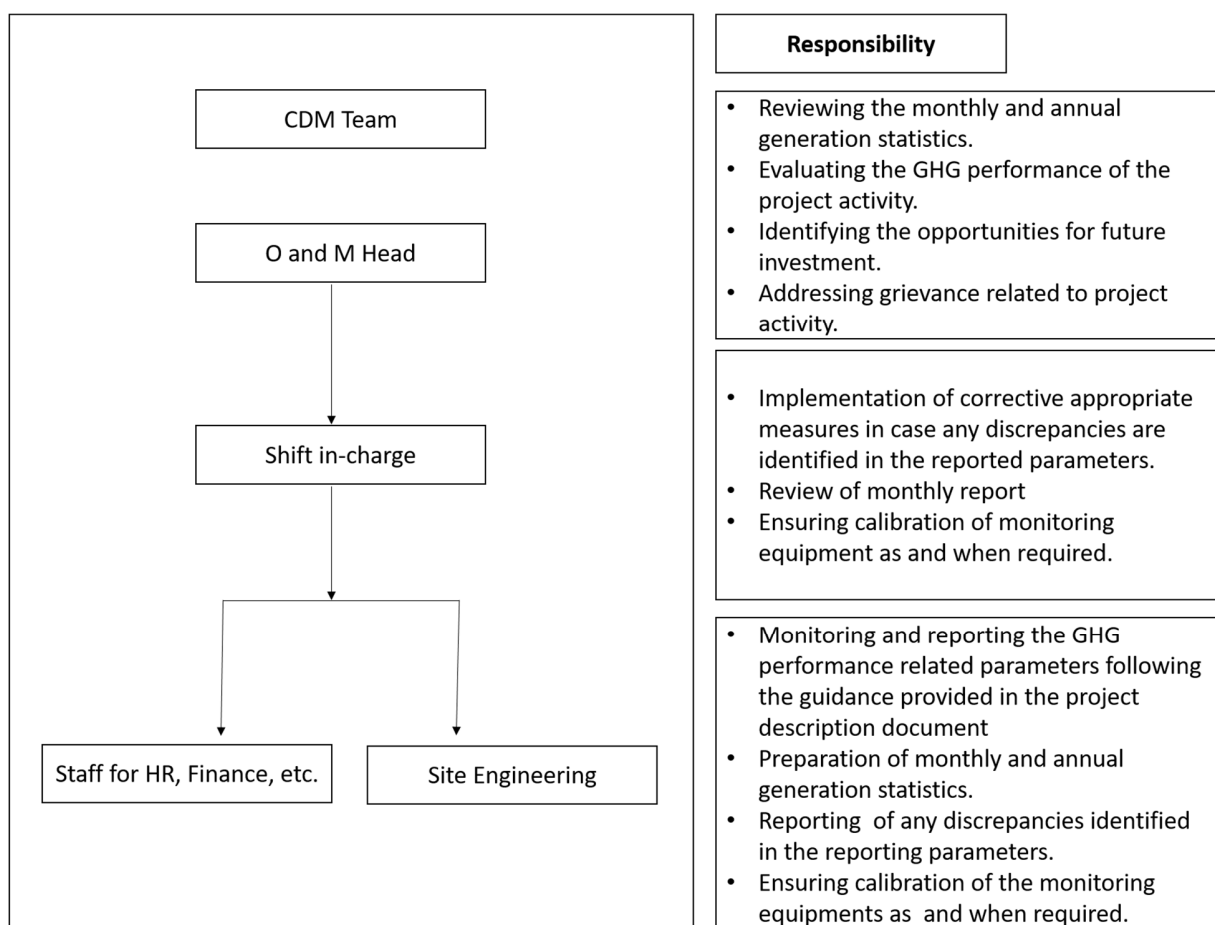
⁸ [meter_reg.pdf \(cea.nic.in\)](#)

QA/QC procedures to be applied	The meters is approved, tested & sealed by the State Utility. The meters are in the custody of State Utility. The frequency of calibration is once in 5 years ⁹ . The monthly electricity supplied/exported by the project activity in the JMR report is cross checked with the monthly invoices of sale. In the absence or delay in the meter calibration appropriate Guidelines has been applied appropriately to confirm the conservativeness of metering. The metering arrangement, accuracy class of meters, calibration frequency is under control of state electricity board and PP do not have any control on it. PP is getting value of net electricity supplied to grid and the same is considered the monitoring parameter. The billing is raised based on substation meters.
Purpose of the data	Calculation of baseline emissions
Calculation method	Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh
Comments	Monthly B-Forms

4.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is for grid-connected solar power project being implemented. The monitoring plan, which has been implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving. The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:

⁹ [meter_reg.pdf \(cea.nic.in\)](#)



Data Measurement

The export and import energy has been measured continuously using above mentioned Main and Check meters located at the substations. Readings of meters shall be taken on monthly basis by authorized officer of SEB in the presence of PP or representative of PP. Based on the Meter Reading Statement to PP, invoices has been raised. These invoices can be used for cross checking the meter readings taken for the respective project activity.

Data collection and archiving:

Readings from meters has been collected in the presence of the plant in-charge. Export and Import data would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

Emergency preparedness

The project activity will not result and has not resulted in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

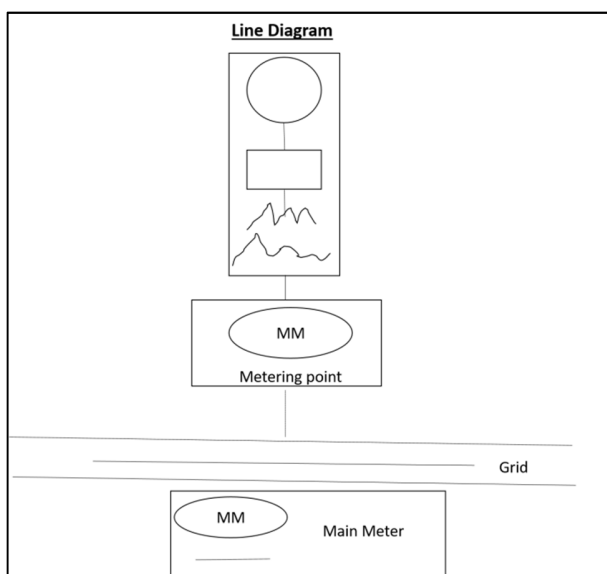
In the event that the main meter, which is used to record the net electricity exported by the project, is found to be faulty it will be repaired or replaced and the data from the check meter will be used in its place. In the unlikely event that the check meter fails it will also be repaired or replaced.

Personnel training

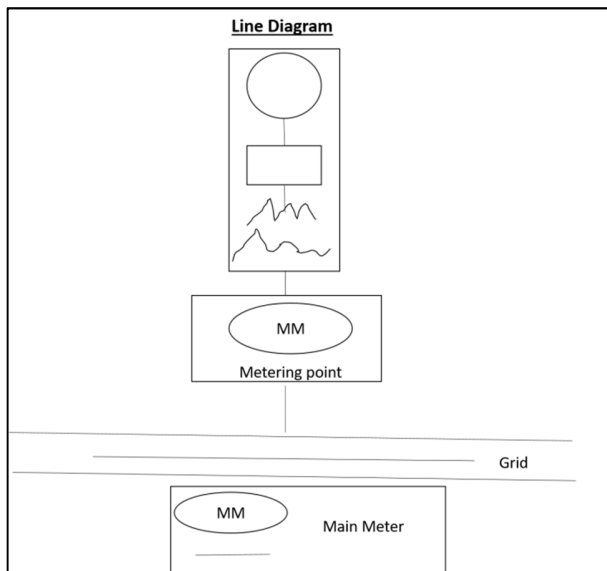
In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff have been trained. The plant helpers have been trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

Metering Arrangement Line diagram with metering arrangement for the solar project activity is shown below:

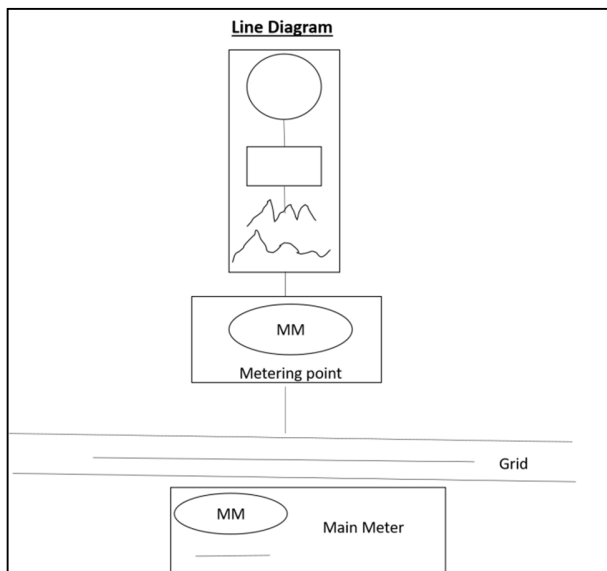
For Karnataka Site:



For Maharashtra Site:



For Tamil Nadu Site:



QA/QC procedures

The energy meters at the feeders are maintained and owned by state electricity board. Neither the project proponent nor the site personnel have any control over it. The records have been crosschecked with the records of sold electricity to state electricity board. The meters are calibrated by state electricity board at-least once in five years.

Apportioning

In case the dates of a particular monitoring period do not match with the dates of the billing cycle, the net electricity exported to the grid would be calculated from:

- Apportioning the net electricity exported to grid, as recorded in the consolidated Share Certificate / JMR Report / Credit Notes certified by the respective state DISCOM, based on the number of days in the monitoring period and the number of days for which Share Certificate / JMR Report / Credit Notes was prepared.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline Emissions: Baseline emissions due to the project activity are calculated as follow:

Baseline Emissions (BE_y) = Combined Margin CO₂ emission factor of the regional grid (Indian Grid) (EF_y) X Net electricity exported to the grid (EG_y)

$$\begin{aligned} \text{Hence, BE}_y &= 0.9368 * 291,016.26 \text{ MWh} \\ &= 272,606 \text{ tCO}_2\text{e (Rounded down value).} \end{aligned}$$

5.2 Project Emissions

As per the approved consolidated Methodology ACM0002 (Version 19.0) para 34: “For most renewable energy power generation project activities, PE_y = 0. However, some project activities may involve project emissions that can be significant. These emissions shall accounted for as project emissions by using the following equation:

$$\text{PE}_y = \text{PE FF}_y + \text{PE GP}_y + \text{PE HP}_y$$

Where:

PE_y = Project emissions in year y (t CO₂e/yr)

PE FF_y = Project emissions from fossil fuel consumption in year y (t CO₂e/yr)

PE GP_y = Project emissions from the operation of dry, flash, steam or binary geothermal power plants in year y (t CO₂e/yr)

PE HP_y = Project emissions from water reservoirs of hydro power plants in year y (t CO₂e/yr)

As the project activity is the installation of new grid connected Solar PV power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants and from water reservoirs of hydro power plants. Therefore, PE FFy , PE GP,y , PE HP,y are equal to zero and thus PEy = 0

5.3 Leakage

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

5.4 Net GHG Emission Reductions and Removals

Emission Reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ERy = Emission reductions in year y (t CO₂e/yr)

BEy = Baseline emissions in year y (t CO₂e/yr)

PEy = Project emissions in year y (t CO₂e/yr)

Hence, ERy = 272,606 – 0

Net GHG Emission Reductions and Removals = 272,606 tCO₂e

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
01-January-2021 to 30-September-2021	272,606	0	0	272,606
Total	272,606	0	0	272,606

As per registered Joint VCS-PD and MR, 432,770 tCO₂e is the amount of emission reductions achieved annually. Therefore, following unitary method, the amount of estimated ex ante for this monitoring period is identified. The total number of days in this monitoring period is 273.

$$= (432,770/365) * 273$$

= 322,502 tCO₂e

During the current monitoring period from 01-January-2021 to 30-September-2021, there has been decrease in actual emission reduction as compared to estimated emission reduction for the current monitoring period by 15.47%. This is mainly because of low PLF (unfavourable sun) which is a natural phenomenon and beyond the control of the Project Proponent.

APPENDIX I: METER AND CALIBRATION DETAILS

Meter and Calibration Details for 40 MW solar project by Suryoday One Energy Private Limited

Bay Number	Bay-01		Bay-02	
Meter Details	Main Meter	Check Meter	Main Meter	Check Meter
Meter Serial No.	18037240	18037249	18037252	18015450
Meter Maker	L & T	L & T	L & T	L & T
Accuracy Class	0.2s	0.2s	0.2s	0.2s
Date of Calibration	01-March-2018	01-March-2018	01-March-2018	01-March-2018
Due date of next calibration	28-February-2023	28-February-2023	28-February-2023	28-February-2023

Meter and Calibration Details for 50 MW solar project by Solar Edge Power & Energy Pvt. Ltd.

Meter Details	Main Meter	Check Meter
Meter Serials No.	Y0280008	Y0280009
Meter Maker	Secure	Secure
Accuracy Class	0.2s	0.2s
Date of Calibration	10-February-2018	10-February-2018
Due date of next calibration	09-August-2023	09-August-2023

Meter and Calibration Details for 80 MW solar project by Solar Edge Power & Energy Pvt. Ltd.

Meter Details	Main Meter	Check Meter
Meter Serials No.	0289013	02839014
Meter Maker	Elster	Elster

Accuracy Class	0.2s	0.2s
Date of Calibration	06-December-2017	06-December-2017
Due date of next calibration	05-December-2022	05-December-2022

Meter and Calibration Details for 50 MW solar project by Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Pvt. Ltd. and Shapoorji Pallonji Suryaprakash Pvt. Ltd.)

Meter Details	Main Meter	Check Meter
Meter Serials No.	17074152	17076761
Meter Maker	L & T	L & T
Accuracy Class	0.2s	0.2s
Date of Calibration	29-June-2018	29-June-2018
Due date of next calibration	28-June-2023	28-June-2023

APPENDIX II: BREAKDOWN DETAILS

The breakdown details of Maharashtra 50 MW project site by Solar Edge Power & Energy Pvt. Ltd. are listed below

Date	Breakdown Time	KWh	Breakdown Type
05-Jan-21	11:45	24103	Forced BD
07-Feb-21	11:05	179180	Scheduled BD
03-May-21	11:05	288113	Scheduled BD
27-July-21	10:50	811	Forced BD
25-Aug-21	11:38	4945	Forced BD
15-Sept.-21	12:11	4930	Forced BD

The breakdown details of Maharashtra 30 MW project site by Solar Edge Power & Energy Pvt. Ltd. are listed below

Date	Breakdown time	KWh affected	Breakdown Type
17-Jan-21	12:25	13850	Forced BD
11-Feb.-21	12:32	13330	Forced BD
17-April-21	12:30	13890	Forced BD
19-May-21	12:29	13170	Forced BD
05-Jun-21	12:54	2440	Forced BD
21-Jul-21	12:37	828	Forced BD
07-Sept.-21	12:48	4505	Forced BD

The major break down details of Karnataka 40 MW project site by Suryoday One are provided below:

Date	Breakdown Type	Breakdown Time	Total KWh affected
26-Feb-21	Forced BD	11:27	3439.45
18-March-21	Forced BD	5.58	3444.56
28-April-21	Grid Failure	0.09	46250
17-May-21	Forced BD	0.15	2407.8
28-June-21	Forced BD	0.39	3428.6
22-Jul-21	Forced BD	0.10	3298.4
05-September-19	Forced BD	0.48	2427.76

The major break down details of Tamil Nadu 50 MW project site by Terralight Rajapalayam Solar Private Limited (Previously known as Shapoorji Pallonji Infrastructure Pvt. Ltd and Shapoorji Pallonji Suryaprakash Pvt. Ltd.) are provided below:

Date	Scheduled outage(kWh)	Forced Outage (kwh)	Grid Outage (kWh)	Load Shedding (kWh)	Total (KWh)
Feb-21	225	4201	0	0	4425
March-21	0	2161	0	123077	125238
May-21	0	7276	0	280135	287411
June-21	6832	4593	0	69220	80645
August-21	0	24582	756307	18040	798929
Sept-21	799	595	0	0	1394