



Gold Standard[®]
for the Global Goals

Climate Security & Sustainable Development

TEMPLATE

MONITORING REPORT

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VERSION v.1.1

RELATED SUPPORT- TEMPLATE GUIDE Monitoring Report v. 1.1

This document contains the following Sections

Key Project Information

SECTION A - Description of project

SECTION B - Implementation of project

SECTION C- Description of monitoring system applied by the project

SECTION D - Data and parameters

SECTION E- Calculation of SDG Impacts

SECTION F- Safeguards Reporting

SECTION G - Stakeholder inputs and legal disputes

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS7080
Title of the project (s) covered by monitoring report	72 MWac Ramnad Solar Power Project
Version number of the PDD / VPA-DD (s) applicable to this monitoring report	05
Version number of the monitoring report	05
Completion date of the monitoring report	07/06/2022
Date of project design certification	26/10/2020
Date of Last Annual Report	NA
Monitoring period number	01
Duration of this monitoring period	26/10/2018 to 31/12/2020(both days included)
Project Representative	Ramnad Solar Power Limited
Host Country	India
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	ACM0002: Grid-connected electricity generation from renewable sources - Version 20.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 7: Affordable and Clean Energy	MWh of renewable energy generated	261,563	MWh
SDG 8: Decent Work and Economic Growth	Trainings	13	Training
	Employees	11	Employees
	Income (INR)	2,18,39,000	INR
SDG 13: Climate Action	Emission Reduction	246,366	VERs

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERs
26/10/2018	31/12/2018	18,188
27/12/2018	31/12/2019	118,822
01/01/2020	31/12/2020	109,356

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

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The main purpose of this project activity is to generate clean form of electricity through renewable solar energy source for sale of electricity to the grid. Ramnad Solar Power Limited (RSPL) is the promoter of the proposed project activity.

The project activity involves installation of 72 MWAC (corresponding to 86.40 MWp) solar power project. The project is installed in the same project boundary at Village: O. Karisalkulam, Tehsil: Kamuthi, District: Ramanthapuram State: Tamil Nadu.

The electricity generated from project activity will be sold under the Power Purchase Agreement (PPA), signed with Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) wholly owned by the Government of Tamil Nadu. The electricity generated from the project activity will be evacuated through 110 kV sub-station located at Kamuthi for consumption in the Indian Electricity Grid.

The project has replaced anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 110,317 tCO₂e per annum, thereon displacing 117,122 MWh/year 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.

The project activity is the installation of a new grid-connected renewable power plant/unit and this is not a CPA that has been excluded from a registered CDM POA as a result of erroneous inclusion of CPAs. The land for this project activity was private land which has been purchased by the project developer.

The details of the project are mentioned in the table:

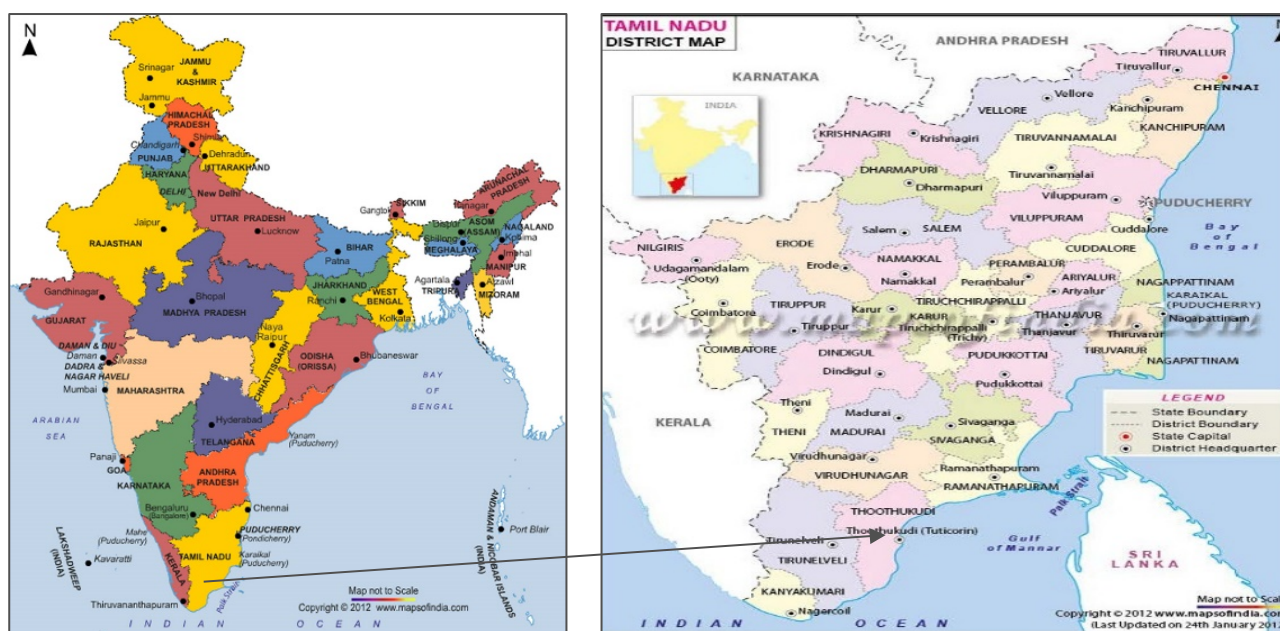
Capacity in MW	72
State	Tamil Nadu
Grid	TANGEDCO
Types of Solar PV Modules	Poly-crystalline
Board decision date	04/06/2015
Purchase order date (project start date)	13/06/2015
PPA	04/07/2015
Commissioning Date	08/02/2016

PDD for global stakeholder consultation	03/10/2015
Local stakeholder consultation	10/06/2015
letter of approval from the Host party India	15/04/2019
SFR date	25/05/2019

A.2. Location of project

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The Project is located at Village: O. Karisalkulam, Tehsil: Kamuthi, District: Ramanthpuram State: Tamil Nadu. The site is well connected by state highway state highway (SH) 47 up to Arrupukottai and further national highway NH48 connects to Madurai. The nearest commercial city remains Madurai, which is approximately 90km from the Project site location. Nearest railway station is at Tiruchuli which is 25km from the site and Madurai is the closest airport approximately 90km from the site. The project coordinates are 9°19'26.90"N and 78°23'40.62"E.



A.3. Reference of applied methodology

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Title : Grid-connected electricity generation from renewable sources.

References : Approved Large Scale Consolidated Methodology: ACM0002 “Grid-connected electricity generation from renewable sources” (Version 20.0, EB 105 Annex 3)

ACM0002 draws upon the following tools which have been used in the PDD:

- Methodological Tool: Tool to calculate the emission factor for an electricity system - Version 07.0
- Methodological Tool: Tool for the demonstration and assessment of additionality - Version 07.0.0, EB 70 Annex 8

A.4. Crediting period of project

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Type	Renewable
GS crediting period	26/10/2018 to 25/10/2023
Length of Crediting period	5years Which will be renewed twice totalling to 15 years(5+5+5)
Current Monitoring Period	26/10/2018 ¹ to 31/12/2020(Both Date included)

This is to declare that “the project developer will not issue both a CER and a Gold Standard VER for the same vintage from a project that is registered with Gold Standard.”

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

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The project activity aims to harness solar energy through installation of PV with total installed capacity of 72 MWac (corresponding to 86.4MWp). The solar PV power plant has solar PV modules, inverters, transformers and other protection system and supporting components.

Technical Specifications

Solar PV modules:

¹ as per 10.2.1 of GHG Emissions Reduction & Sequestration Product Requirements v.2.1

“The start date of Crediting Period is the date of start of operation (start of planting for A/R Projects) or a maximum of two years (three years for A/R & AGR) prior to the date of Project Design Certification, whichever occurs later.”

Module Supplier	Module Model	Capacity (p)	Number	Total Capacity (MWp)
Hanwha	Poly C-Si	310	104740	32.4694
Hanwha	Poly C-Si	315	33120	10.4328
Trina	Poly C-Si	310	56800	17.608
Trina	Poly C-Si	315	23180	7.3017
SunTech	Poly C-Si	310	30080	9.3248
SunTech	Poly C-Si	315	28160	8.8704

A. Inverters:

S.No.	Make		
1.	Manufacturer	ABB	Hitachi
2.	Model	PVS800	NPi201
3.	Rated Capacity	1000 KW	1250 KW
4.	No. of Inverters	12	48
5	Rated Input Voltage(Max.Input Voltage)	380 V	350 V

B. Transformers

S.No.	Make			
1.	Manufacturer	ABB	Schneider	Schneider
3.	Capacity	40/45 MVA	4 MVA	5 MVA
4.	No.of Transformers	2	3	12
5.	Voltage Ratio	33/110 KV	0.380/33 KV	0.350/33 KV

C. Metering Equipment Details

S.No.	Make	Solar Plant End
1.	Manufacturer	Secure Make
2.	Type	ABT meters
3.	Accuracy Level	0.2s
4.	Total no of meter	3*2 = 6

B.1.1 Forward Action Requests

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No FAR raised

B.2. Post-Design Certification changes

> >

Not Applicable

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

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Not Applicable

B.2.2. Corrections

> >

Not Applicable

B.2.3. Changes to start date of crediting period

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Not Applicable

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

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Not Applicable

B.2.5. Changes to project design of approved project

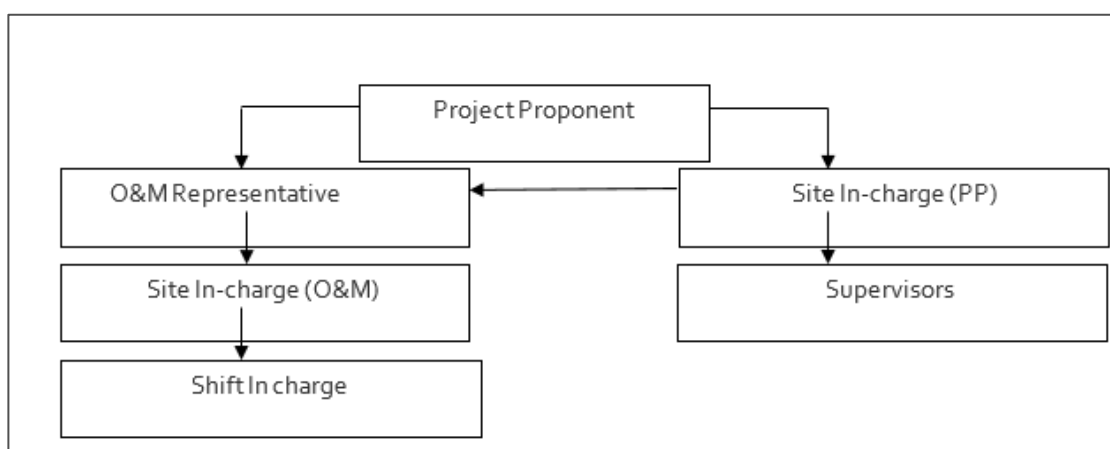
> >

Not Applicable

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

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The monitoring plan is developed in accordance with the modalities and procedures for project activities and for grid-connected solar power project/ unit being in Tamil Nadu, India. The monitoring plan, 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.



Responsibilities of Site In charge (PP):

Overall functioning and maintenance of the project activity, the Site In charge shall coordinate with the O&M operator as well as the site supervisors.

Responsibilities of O&M Representative:

Co-ordination between Site in charge of the O&M operator as well as the project participant and further report to PP head office.

Responsibilities of Site In-charge (O&M Operator):

Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge:

Responsibility for day to day data collection and maintains day to day monitored data.

QA/QC procedures:

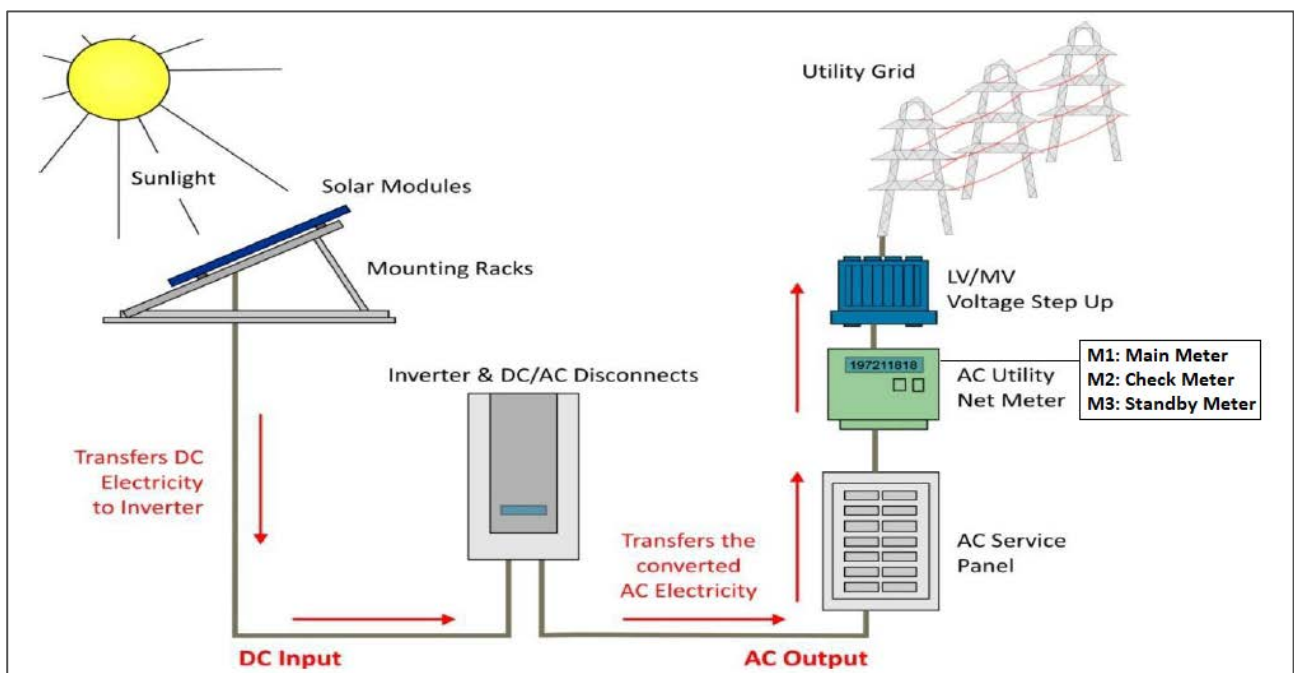
The energy meters at the feeders are maintained and owned by Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO). Neither the project proponent nor the site personnel have any control over it. The records Are cross-

checked with the records of sold electricity TANGEDCO. The meters are calibrated by TANGEDCO at-least once in five years.

Data Measurement

Projects activity comprises of installation of 6 Energy meters installed at the at project site, 3 Energy meters (1 main meter and 1 check meter, 1 standby meter) under control of PP and 3 Energy meters (1 main meter, 1 check meter, 1 standby meter) sealed and under control of TANGEDCO used for joint metering installed at interconnection point of the Grid at project site.

The export and import energy are measured continuously using above mentioned Main & Check meters. Export & Import readings of Main & Check meters installed at the project site shall be taken on monthly basis by authorized officer of TANGEDCO in the presence of PP or representative of PP. The meter reading will be taken jointly and signed by the representatives of the TANGEDCO and project investors. Based on the readings, invoices will be raised by project investors. These invoices can be used for cross checking the meter readings taken for the project activity. It is to be noted though PP or PP representative is available during meter reading, the calculations of net electricity supplied to grid is completely under purview of TANGEDCO officer and PP do not have any control on it. Also accuracy class of meters and calibration frequency is under purview of TANGEDCO officer and PP do not have any control on it. PP get the monthly generation report from where net electricity supplied to grid is obtained and used for emission reduction calculations.



Data collection and archiving

Export & Import readings from the meters are collected under the supervision of the authorized representatives of PP. The net electricity supplied to grid would be calculated based on export & import readings. Export and Import data would be recorded and stored in electronic&/or Paper format. The records are checked periodically by the Head (Operations) and discussed thoroughly with the O&M Team. The period of storage of the monitored data will be 2years after the end of crediting period or till the last issuance of GS CERs for the project activity whichever occurs later.

Mismatch in Monitoring Period and the Billing Period

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

$$D = (A/B)*C$$

Where,

A = Difference of number of days which are not matching of billing period and monitoring period.

B = Number of days of the billing period/ month which was not matched with the monitoring period.

C = Net Electricity supplied to the grid for that given billing period/ month.

The calculated value after apportioning would be used for calculation of emission reductions during that period.

The current monitoring period starts from 26/10/2018 to 31/12/2020

Therefore, following the above-mentioned apportioning procedure:

For the month October,2018 apportioning has been carried out.The billing duration is for October is from 27/09/2018 to 27/10/2018

A	Difference of number of days which are not matching for november	2
B	Number of days of November	31
C	Net Electricity supplied to the grid for November	8964000

the net electricity exported to the grid is calculated from:

$$D = (A/B)*C$$

Export

$$= (2/31) * 8964000$$

$$= 578,322 \text{ KWh}$$

Similarly, for Import

$$= (2/31) * 68000$$

$$= 4,387 \text{ KWh}$$

Hence net energy is 573,935 KWh

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 unlikely event of failure of all Main, Check as well as Standby meter installed at Substation, where all the faulty meters are required to be repaired or replaced simultaneously, the export & import readings from Main, Check & Standby Meters installed at the inter-connection point at the project site will be used for monitoring of net electricity exported to the grid.

Personnel training

In order to ensure a proper functioning of the project activity and a proper monitoring of emission reductions, the staff (CDM team) are trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

>> **Relevant SDG Indicator 13:** Take urgent action to combat climate change and its impacts

Data / parameter:	EF _{OM, y}
Unit	tCO ₂ e/MWh
Description	Operating Margin Emission Factor of INDIAN Grid

Source of data	Calculated from CEA database, Version 15, December 2019 ²
Value(s) applied)	0.9622
Choice of data or measurement methods and procedures	Calculated as per “Tool to calculate the emission factor for an electricity system,” as 3-year generation weighted average using data for the years 2016-17, 2017-18 & 2018-19. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 15.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Data / parameter:	EF _{BM, y}
Unit	tCO ₂ e/MWh
Description	Build Margin Emission Factor of INDIAN Grid
Source of data	Calculated from CEA database, Version 15, December 2019
Value(s) applied)	0.8811
Choice of data or measurement methods and procedures	Calculated as per “Tool to calculate the emission factor for an electricity system,”. The data are obtained from “CO ₂ Baseline Database for Indian Power Sector” version 15.0, published by the Central Electricity Authority, Ministry of Power, Government of India.
Purpose of data	The data is used to calculate baseline emission reductions.
Additional comments	This parameter is fixed ex-ante for the entire crediting period.

Data / parameter:	EF _{CM, y}
Unit	tCO ₂ e/MWh
Description	Combined Margin Emission Factor of INDIAN Grid
Source of data	Calculated from CEA database, Version 15, December 2019
Value(s) applied)	0.9419
Choice of data or measurement methods and procedures	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	The data is used to calculate baseline emission reductions.
Additional comments	-

²<http://cea.nic.in/tpeandce.html>

D.2 Data and parameters monitored

>> **Relevant SDG Indicator 7.2:** By 2030, increase substantially the share of renewable energy in the global energy mix

Relevant SDG Indicator	SDG 7.2.1 : Affordable and Clean Energy
Data / Parameter	EG _{PJ,y}
Unit	MWh
Description	Quantity of net electricity supplied to the grid
Source of data	Generation statement provided by TANGEDCO every month.
Value(s) applied	261,563MWh
Measurement methods and procedures	Data Type: Measured Monitoring equipment: Energy Meters of accuracy class 0.2s Recording Frequency: Continuous monitoring and Monthly recording from Energy Meters, Summarized Annually. Archiving Policy: Paper &/or Electronic Calibration frequency: Once in 5 years as per CEA guidelines³ Electricity exported/imported to the grid is 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 as a difference of electricity exported to the grid and electricity imported from the grid obtained from Monthly Meter reading reports provided by TANGEDCO as per below equation: $EG_{PJ,y} = EG_{Export} - EG_{Import}$ Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) do the calculation and the PP has no say in the calculation. Based on the Monthly generation Statement issued by TANGEDCO the project shall raise the invoice. The electricity exported to the grid by the project activity connected to the sub- station is measured by electronic trivector meters of accuracy class 0.2s. The electricity exported will be measured continuously using Main & Check meters.

³ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2166.pdf

	Authorized officer of TANGEDCO in the presence of PP or representative of PP. shall take export readings of Main & Check meters on monthly basis.																												
	Projects activity comprises of installation of 6 Energy meters installed at the at project site, 3 Energy meters (1 main meter and 1 check meter, 1 standby meter) under control of PP and 3 Energy meters (1 main meter, 1 check meter, 1 standby meter) sealed and under control of TANGEDCO used for joint metering installed at interconnection point of the Grid at project site.																												
	<table><tr><th colspan="3">Meter & Calibration Details:</th><th></th></tr><tr><th>Details</th><th>Main Meter</th><th>Check Meter</th><th>Standby meter</th></tr><tr><td>Meter Number</td><td>TNW01979</td><td>TNW01987</td><td>TNE81539</td></tr><tr><td>Make</td><td>Secure</td><td>Secure</td><td>Secure</td></tr><tr><td>Accuracy</td><td>0.2s</td><td>0.2s</td><td>0.2s</td></tr><tr><td>Last Calibration</td><td>20/07/2018</td><td>27/08/2018</td><td>27/08/2018</td></tr><tr><td>Calibration frequency</td><td colspan="3">Once in 5 years as per CEA guidelines</td></tr></table>	Meter & Calibration Details:				Details	Main Meter	Check Meter	Standby meter	Meter Number	TNW01979	TNW01987	TNE81539	Make	Secure	Secure	Secure	Accuracy	0.2s	0.2s	0.2s	Last Calibration	20/07/2018	27/08/2018	27/08/2018	Calibration frequency	Once in 5 years as per CEA guidelines		
	Meter & Calibration Details:																												
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	Make	Secure	Secure	Secure																									
	Accuracy	0.2s	0.2s	0.2s																									
	Last Calibration	20/07/2018	27/08/2018	27/08/2018																									
	Calibration frequency	Once in 5 years as per CEA guidelines																											
Cross Checking:																													
Quantity of net electricity supplied to the grid will be cross-checked from the Invoices/ Monthly Bill raised by the Project Participant to Ramnad Electricity Distribution Circle, TANGEDCO.																													
Monitoring frequency	Monthly																												
QA / QC procedures	Calibration of all the meters will be undertaken once every five years and faulty meters will be duly replaced immediately. The meters will be of accuracy class 0.2s.																												
Purpose of data	The Data/Parameter is required to calculate the baseline emission																												
Additional comment	Data will be archived electronically for a period of 2 years beyond the end of crediting period.																												

Relevant SDG Indicator 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

Relevant SDG Indicator	SDG 8.5.1: Decent Work and Economic Growth
Data / Parameter	- Quantitative employment, - Quality of employment - Income generation

Unit	• Number(Trainings) • Number (employees) • INR (salary)																																																				
Description	• Number of Trainings provided to employees & O&M staff • Number of project employees with Number of male/female, permanent/temporary, age and person with disabilities. • Salary given to the employees of the project. The income to all the unskilled workers are made on day-to-day basis with the minimum being Rs. 350 per day. Annual records of income paid to all the employees would be available.																																																				
Source of data	Training Records (HSE & HR) & Employee feedback forms Salary Slip of the project employees.																																																				
Value(s) applied	Minimum of 1 training would be carried out annually. Some of the trainings & workshops that are given to the respective O&M staffs of the project. The training programmes help in making the workforce efficient and skilled at their job. This not only helps the company but adds to growth of individual employees. Thus, the project has a positive impact on the parameter. <table><tr><th>S No.</th><th>Name of training</th><th>No. of participants</th><th>Date of training</th></tr><tr><td>1</td><td>LSSR & Defensive Training</td><td>15</td><td>26/06/2019</td></tr><tr><td>2</td><td>Electrical & LOTO training</td><td>06</td><td>16/06/2019</td></tr><tr><td>3</td><td>Fire Safety</td><td>11</td><td>25/07/2019</td></tr><tr><td>4</td><td>Module cleaning</td><td>08</td><td>23/07/2019</td></tr><tr><td>5</td><td>On site safety</td><td>12</td><td>22/07/2019</td></tr><tr><td>6</td><td>Personal Protective Equipment</td><td>15</td><td>24/07/2019</td></tr><tr><td>7</td><td>Hazardous chemicals workplace safety awareness</td><td>16</td><td>26/08/2019</td></tr><tr><td>8</td><td>Workplace at height</td><td>13</td><td>27/07/2019</td></tr><tr><td>9</td><td>Fire Safety Training</td><td>15</td><td>22/07/2019</td></tr><tr><td>10</td><td>Incident Communication training</td><td>09</td><td>30/07/2019</td></tr><tr><td>11</td><td>Safety training</td><td>08</td><td>20/10/2020</td></tr><tr><td>12</td><td>PPE training</td><td>07</td><td>07/11/2020</td></tr></table>	S No.	Name of training	No. of participants	Date of training	1	LSSR & Defensive Training	15	26/06/2019	2	Electrical & LOTO training	06	16/06/2019	3	Fire Safety	11	25/07/2019	4	Module cleaning	08	23/07/2019	5	On site safety	12	22/07/2019	6	Personal Protective Equipment	15	24/07/2019	7	Hazardous chemicals workplace safety awareness	16	26/08/2019	8	Workplace at height	13	27/07/2019	9	Fire Safety Training	15	22/07/2019	10	Incident Communication training	09	30/07/2019	11	Safety training	08	20/10/2020	12	PPE training	07	07/11/2020
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	<table><tr><td>13</td><td>Training on incident reporting</td><td>04</td><td>10/12/2020</td></tr></table>	13	Training on incident reporting	04	10/12/2020				
	13	Training on incident reporting	04	10/12/2020					
	The total number of O&M staffs employed for the operation & maintenance of the project activity are around11.								
	<table><tr><td>year</td><td>No. of employees</td></tr><tr><td>2018</td><td>11</td></tr><tr><td>2019</td><td>11</td></tr><tr><td>2020</td><td>11</td></tr></table>	year	No. of employees	2018	11	2019	11	2020	11
	year	No. of employees							
	2018	11							
2019	11								
2020	11								
Total expenses for the O&M during the monitoring period is 2,18,39,000 INR									
Measurement methods and procedures	• Training Attendance sheets and records. • Employment Records • Salary slip of the employees								
Monitoring frequency	Annually								
QA / QC procedures	The number of persons employed would be mentioned in the plant register, which can be crossed checked with daily attendance register. Salary slip can be checked for earnings of female and male employees								
Purpose of data	Continuation of regular trainings/workshops for employees & O&M staffs								
Additional comment	-								

Relevant SDG Indicator 13: Take urgent action to combat climate change and its impacts

Relevant SDG Indicator	SDG13.2.1 : Climate Action
Data / Parameter	Air quality
Unit	tCO ₂
Description	Reduction in CO ₂ emission reduction due to implementation of project activity
Source of data	Calculated as per "Tool to calculate the emission factor for an electricity system,". The data are obtained from "CO ₂ Baseline

	Database for Indian Power Sector" version 15.0, published by the Central Electricity Authority, Ministry of Power, and Government of India.
Value(s) applied	246,366tCO ₂ emission reductions estimated per annum
Measurement methods and procedures	Calculated from CEA database and Energy Generation
Monitoring frequency	Calibration and Testing of Meters will be done by the accredited agency as per norms. Once in 5 years as per CEA guidelines ⁴
QA / QC procedures	A check meter is also installed near to the export meter to cross check the electricity exported to the grid. The check meter reading would also be used in case of failure of export meter
Purpose of data	Calculation of baseline emissions
Additional comment	-

D.3. Comparison of monitored parameters with last monitoring period

Data / Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
Total days in Monitoring period	798	-
EG _{facility,y}	261,563	-
Emissions Reductions in tCO ₂	246,366	-
Quantitative employment, Quality of employment and income generation.	13Trainings 11 Employees 2,18,39,000 INR	-

D.4. Implementation of sampling plan

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⁴ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf, page 12

No sampling process is involved, hence not applicable. The details of sampling any of carried out during the course of verification will be included.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

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In the baseline, there were no Social Development activities taking place; whereas baseline Emissions for electricity supplied by project activity, BE_y is calculated as:

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

Where,

BE_y = Baseline emissions in year y (tCO_2/yr)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr).

$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh).

Thus, the estimated baseline situation of each SDG outcome are summarised as follows;

Item	Baseline value
SDG 7: Affordable and Clean Energy	No Activities in the baseline
SDG 8: Decent Work and Economic Growth	No Activities in the baseline
SDG 13: Climate Action	Emission of 246,366 tCO_2

E.2. Calculation of project value or estimation of project situation of each SDG Impact

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The following SDGs will be impacted every year.

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all	<u>Method:</u> Monitored through energy meter. Net electricity will be calculated by DISCOM and O&M operator on monthly basis and provided in the share certificate. The JMR is basically a statement showing energy generated by the project for a particular month. The export represents the energy generated by the project activity and import represents the energy consumed by the project activity. The net generation is calculated as a difference between export and import .
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	The electricity exported and imported to the grid by the project activity connected to the substation is measured by electronic trivector meters of accuracy class 0.2s using Main & Checkmeters. Export and import readings of Main & Checkmeters is taken on monthly basis by authorized officer of TANGEDCO in the presence of PP or representative of PP. The calculation is done by Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and the PP has no say in the calculation. Based on the Monthly generation Statement issued by TANGEDCO, the project shall raise the invoice. <u>Frequency:</u> Monthly <u>QA/QC procedures:</u> Net electricity supplied to the grid by the project activity will be crosschecked with invoices submitted to EB. The meter(s) shall be calibrated on a regular basis. <u>Purpose:</u> To measure the electricity produced and supplied to the grid SDG.
SDG 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	<u>Method:</u> Ongoing data collection and storage under HSE records & HR Records. <u>Frequency:</u> Annually <u>Purpose:</u> To identify and record the number of trainings provided to the employees as well as employment generated due to project activity.
SDG 13: Take urgent action to combat climate change and its impacts	<u>Method:</u> Monitored through energy meter. Net electricity will be calculated by DISCOM and O&M operator on monthly basis and provided in the share certificate. Further, the emission factor is calculated using Tool to calculate the emission factor for an electricity system,". The data is obtained from "CO₂ Baseline Database for Indian Power Sector" version 15.0, published by the Central Electricity Authority, Ministry of Power, and Government of India. In addition to this, in order to reduce dust emissions during the construction phase, the following dust suppression measures stipulated and implemented: • Spraying water and covering material trucks' body to minimize dust; • Reuse of water for sprinkling of unpaved roads. • Imposition of speed controls for vehicles and unpaved site roads; • Well-maintained diesel-powered mechanical equipment to avoid black smoke emissions; • Shutdown of diesel-powered mechanical equipment or trucks inside the worksites when they are not in operation. • During the operational phase (monitoring period), the scope of dust emission is none to minimal. Vehicles are run under controlled speed to avoid any dust generation. <u>Frequency:</u> Every monitoring period <u>Purpose:</u> To calculate emissions avoided due to the project activity

E.3. Calculation of leakage

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No leakage emissions are applicable.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
7	MWh of renewable energy generated	0	261,563	261,563
8	SDG 8: Decent Work and Economic Growth	0	13Trainings 11 Employees 2,18,39,000 INR	13Trainings 11Employees 2,18,39,000INR
13	Emission Reduction	246,366	0	246,366

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ⁵ achieved during this monitoring period
7	117,122 MWh/Year (365 days) 256,064 MWh for the Monitoring period (798 days)	261,563MWh
8	1 training/year 10 employees Minimum wage Rs 350/Day	13Trainings 11 Employees 2,18,39,000 INR
13	110,317 tCO ₂ /Year (365 days) 241,186 tCO ₂ for the monitoring period (798 days)	246,366 tCO ₂

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

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⁵ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

SDG -13

It is to be noted here that as per the PDD the estimated emission reduction to be achieved from the project activity for the current monitoring period is

$$= 110,317 * 798 \text{ (days)}/365$$

$$= 241,186 \text{ tCO}_2\text{e}$$

Whereas actual emission reductions achieved are 246,366tCO₂e, which is approximately 2% Higher than the estimated emission reductions.

SDG -08

It is to be noted here that as per the PDD the estimated electricity generation to be achieved from the project activity for the current monitoring period is

$$= 117,122 * 798 \text{ (days)}/365$$

$$= 256,064 \text{ tCO}_2\text{e}$$

Whereas actual emission reductions achieved are 261,563 MWh which is approximately 2% Higher than the estimated value

SDG -07

As per the registered PDD 1 training per year and at least 10 employees should be employed. For this monitoring period there were 13 trainings and 11 employees.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

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The actual achieved emission reduction for this monitoring period is 2 % higher than estimated value in the PDD and is within the sensitivity range which does not breach even with the increase of 10% in line with the registered PDD.

SECTION F. SAFEGUARDS REPORTING

>>No safeguarding principles were added to the monitoring plan in the registered PDD. Therefore, the relative success and failures, or improvements to proposed mitigation measures is not applicable.

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

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As a part of continuous feedback from stakeholders, the grievances register is being placed at site and is being continuously monitored and addressed on regular basis and maintained in a registered site office. During the monitoring period no grievances have been received. The scan copies have been provided to the VVB.

The grievances if any are recorded as per the table below:

S. No.	Date of Complaint	Topic	Date of resolution	Remark from PP
-	-	-	-	-

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

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No grievances received in the previous monitoring period, thus no follow up required.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

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Not legal contest or dispute that has arisen with the project during the monitoring period.