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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

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Key Project Information

GS ID (s) of Project (s)	GS7079
Title of the project (s) covered by monitoring report	72 MWac Kamuthi Renewable Energy Project
Version number of the PDD / VPA-DD (s) applicable to this monitoring report	07
Version number of the monitoring report	05
Completion date of the monitoring report	25/06/2022
Date of project design certification	09/11/2020
Date of Last Annual Report	NA
Monitoring period number	01
Duration of this monitoring period	09/11/2018 to 31/12/2020
Project Representative	Kamuthi Renewable Energy 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	261,616	MWh
SDG 8: Decent Work and Economic Growth	Trainings Employees Income (INR)	10 22 21,839,000	Training Employees INR
SDG 13: Climate Action	Emission Reduction	246,415	VERs

Table 2 – Product Vintages

		Amount Achieved
Start Dates	End Dates	VERs
09/11/2018	31/12/2018	14,096
27/12/2018	31/12/2019	119,979
01/01/2020	31/12/2020	112,340

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. Kamuthi Renewable Energy Limited (KREL) 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: Ramanthpuram 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 will replace 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.

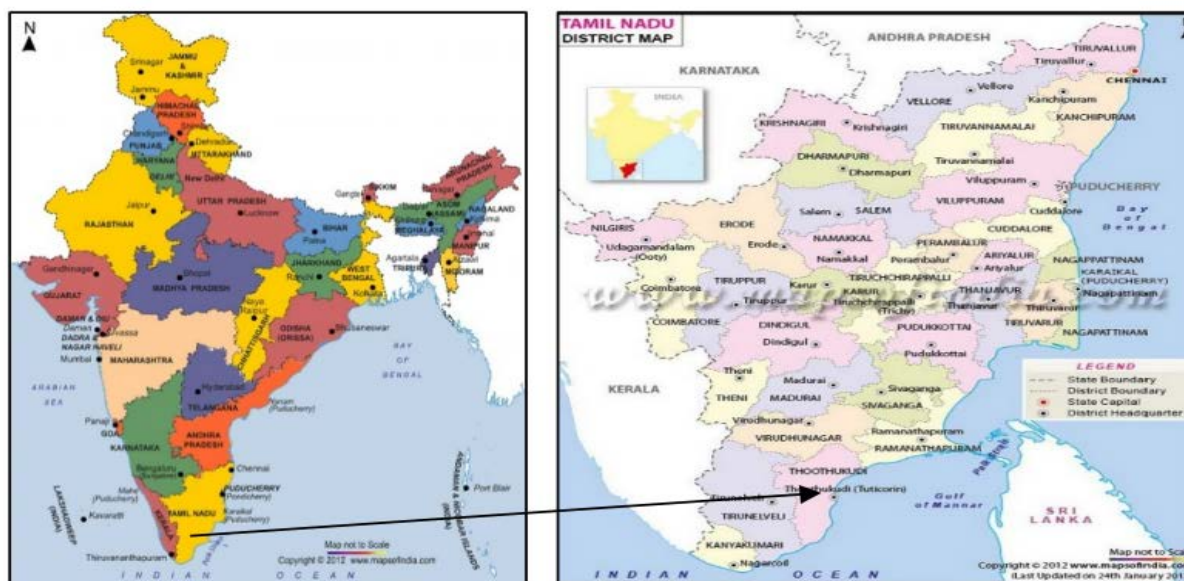
The details of the project are mentioned in the table:

Capacity in MW	72
Project registered under CDM	04/08/2020
Stakeholders Feedback Round	25/05/2019
Commissioning Date	31/03/2016
PPA	04/07/2015
Start Date (Earliest contract between supplier of equipment and PP)	13/06/2015
Local Stakeholder Consultation as per CDM	10/06/2015
State	Tamil Nadu

A.2. Location of project

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The Project is located at Village O. Karisalkulam, Tehsil: Kamuthi, Dist .Ramanthpuram, Tamilnadu. The site is well connected by state highway state highway (SH) 47 up to Arruppukottai 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 form the site and Madurai is the closest airport approximately 90km form the site. The project coordinates are 9°19'1.33"N and 78°23'45.01"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, EB 105 Annex 3)¹

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 8²

A.4. Crediting period of project

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¹ <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

² <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf>

Type	Renewable
CDM crediting period	04/08/2020 to 03/08/2027 ³
GS design Certification date	09/11/2020
Transition review end date (GSCER to GSVER)	08/04/2022
GS crediting period	09/11/2018 ⁴ to 08/11/2023
Length of Crediting period	5 years Which will be renewed twice totalling to 15 years
Current Monitoring Period	09/11/2018 to 31/12/2020(Both Date included)

The project will not issue both a CER/other compliance unit under Paris Agreement and GS VER for the same vintage.

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 86.4 MWp). The solar PV power plant has solar PV modules, inverters, transformers and other protection system and supporting components.

Technical Specifications of project activity.

A. Solar PV module

Module Supplier	Module Model	Capacity (p)	Number	Total Capacity (MWp)

³<https://cdm.unfccc.int/Projects/DB/Appendix1595357498.47/view>

⁴ GHG Emissions Reduction & Sequestration Product Requirements v.2.1 10.2.1 | 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.

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
Sun Tech	Poly C-Si	310	30080	9.3258
Sun Tech	Poly C-Si	315	28160	8.8704

B. 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	350 V

C. Transformers

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

D. 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

The solar PV modules have a useful life of 25 years.

In case of degradation / damage / destroy of any equipment in future:

At a given time in the future, the equipment of the same capacity might not be available with the supplier or in the market. So, the equipment of available capacity will be installed keeping the overall output capacity of the project within the project capacity as in registered PDD.

Thus, the changes in project activity specifications information will not affect the design of project activity, the applicability of methodology, additionality of project activity and scale of project activity. And there would be no need to revise PDD in case of equipment

configuration changes as the overall output capacity of the project is within the project capacity as in registered PDD. It is to be noted that in case of future replacement, PP will replace the equipment's by the same make and the changes made in the future will be transparently reflected in the monitoring report.

B.1.1 Forward Action Requests

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No FAR raised

B.2. Post-Design Certification changes

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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

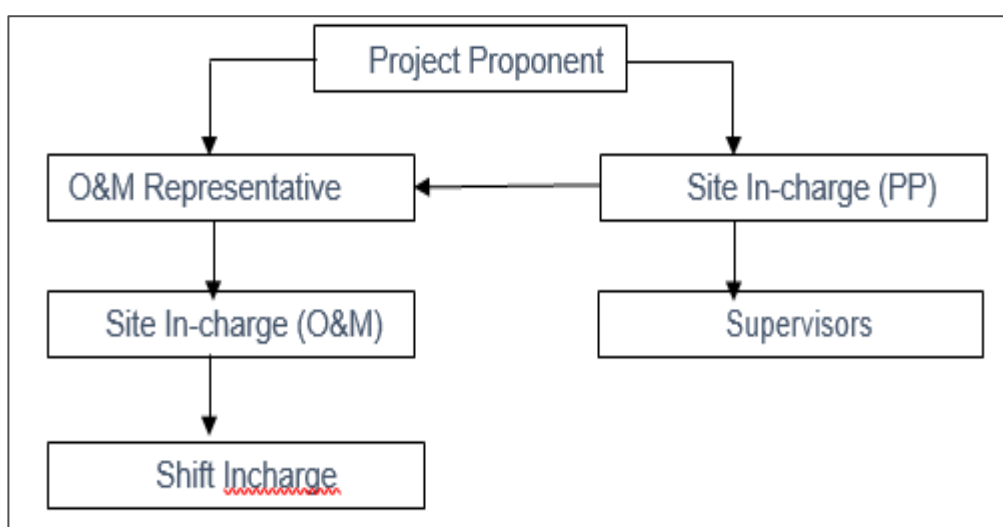
> >

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 is proposed for grid-connected solar power project/ unit being implemented in Tamil Nadu, India. The monitoring plan, implemented by the project participant describes about the monitoring organization, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving. The authority and responsibility for monitoring, measurement, reporting and reviewing of the data rests with the project participant.



Responsibilities of Site Incharge (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 incharge of the O&M operator as well as the project participant and further report to PP head office.

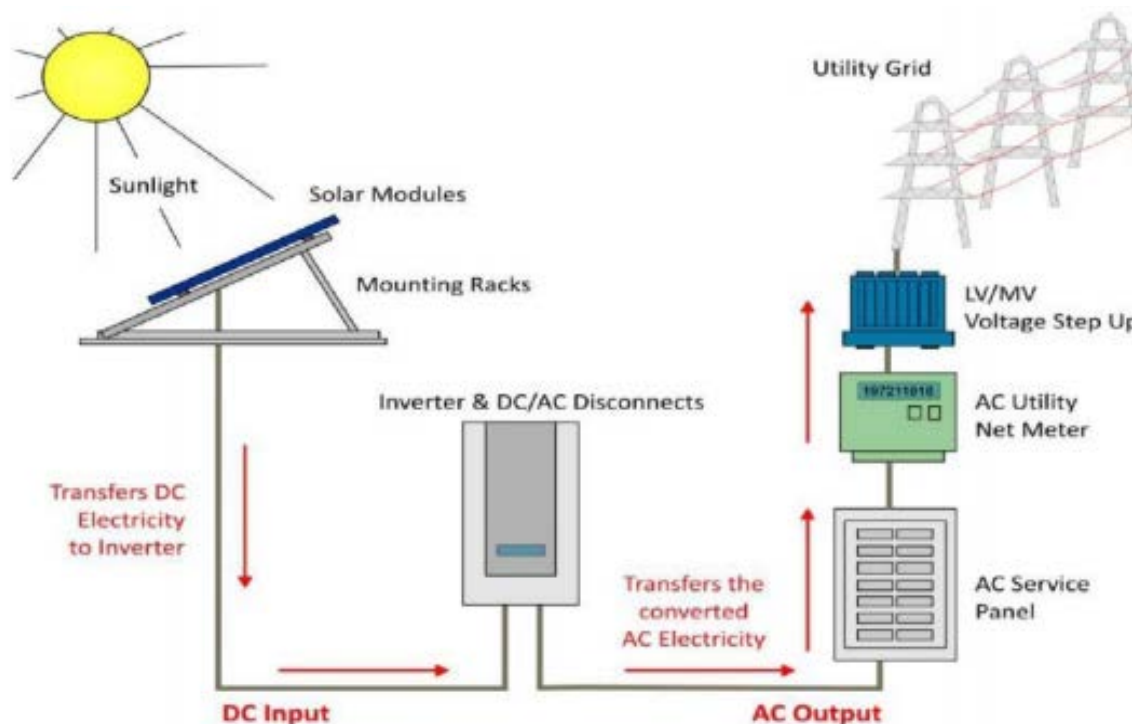
Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge: Responsibility for day to day data collection and maintains day to day monitored data.

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 is 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 is 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.



It is to be noted that though the PP or their representatives are available during meter reading, the calculations of net electricity supplied to grid is completely under purview of TANGEDCO and PP does not have any control on it. Also accuracy class of meters and calibration frequency is under purview of TANGEDCO/Discom officer and PP does not have any control on it. PP gets the monthly credit 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 is 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 current monitoring period starts from 09/11/2018 to 31/12/2020

Therefore, following the above-mentioned apportioning procedure:

A	Difference of number of days which are not matching for November	19
B	Number of days of November (billing cycle is 27/10/2018 to 27/11/2018)	32

C	Net Electricity supplied to the grid for November	9388
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the net electricity exported to the grid is calculated from:

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

$$= (19/32) * 9388 = 5574 \text{ MWh}$$

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 are used for monitoring of net electricity exported to the grid.

In order to ensure a proper functioning of the project activity and a proper monitoring of emission reductions, the staff (CDM team) will be trained. The plant helpers are 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

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Relevant SDG Indicator	SDG13 : Climate Action
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, Dec 2019
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 and 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 comment	This parameter is fixed ex-ante for the entire crediting period.
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Relevant SDG Indicator	SDG13 : Climate Action
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, Dec 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 comment	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, Dec 2019
Value(s) applied	0.9419
Choice of data or Measurement methods and procedures	Calculated as per “Tool to calculate the emission factor for an electricity system,”. The data is 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.

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	261,616 MWh
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 guidelines 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. Authorized officer of TANGEDCO in the presence of PP or representative of PP. shall take export readings of Main & Check meters on monthly basis. The project comprises of total 6 meters. , 3 Energy meters (1 main meter and 1 check meter, 1 standby meter) under control of PP and 3 Energy meters: 1 main meter : TNW01988 1 check meter : TNW01989 1 standby meter : TNE81542 sealed and under control of TANGEDCO used for joint metering installed at interconnection point of the Grid at project site. The details of energy meters are given below: <table><tr><td>Details</td><td>Main meter</td><td>Check meter</td></tr><tr><td>Meter number</td><td>TNW01988</td><td>TNW01989</td></tr><tr><td>Make</td><td>Secure</td><td>Secure</td></tr><tr><td>Class</td><td>0.2S</td><td>0.2S</td></tr><tr><td>Calibration date</td><td>27/08/2018</td><td>27/08/2018</td></tr><tr><td>Calibration frequency</td><td colspan="2">Once in 5 years as per CEA guidelines</td></tr></table> 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.	Details	Main meter	Check meter	Meter number	TNW01988	TNW01989	Make	Secure	Secure	Class	0.2S	0.2S	Calibration date	27/08/2018	27/08/2018	Calibration frequency	Once in 5 years as per CEA guidelines	
Details	Main meter	Check meter																	
Meter number	TNW01988	TNW01989																	
Make	Secure	Secure																	
Class	0.2S	0.2S																	
Calibration date	27/08/2018	27/08/2018																	
Calibration frequency	Once in 5 years as per CEA guidelines																		
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	Some of the trainings & workshops that are given to the respective O&M staffs <table><tr><td>S. No.</td><td>Name of Training</td><td>No of participants</td><td>Date of Training</td></tr><tr><td>1.</td><td>Manual material handling</td><td>8</td><td>13/09/2019</td></tr><tr><td>2.</td><td>gensuite training</td><td>8</td><td>12/10/2019</td></tr><tr><td>3.</td><td>First aid awareness</td><td>8</td><td>12/11/2019</td></tr><tr><td>4.</td><td>JSA training</td><td>10</td><td>21/11/2019</td></tr><tr><td>5.</td><td>Hand and power tool training</td><td>10</td><td>25/11/201</td></tr><tr><td>6.</td><td>PPE Training</td><td>16</td><td>25/11/2020</td></tr><tr><td>7.</td><td>EMS training</td><td>16</td><td>20/11/2020</td></tr><tr><td>8.</td><td>First aid care</td><td>9</td><td>10/11/2020</td></tr><tr><td>9.</td><td>Bike slip awareness</td><td>11</td><td>30/10/2020</td></tr><tr><td>10.</td><td>Fire and hot work training</td><td>17</td><td>24/01/2020</td></tr></table>				S. No.	Name of Training	No of participants	Date of Training	1.	Manual material handling	8	13/09/2019	2.	gensuite training	8	12/10/2019	3.	First aid awareness	8	12/11/2019	4.	JSA training	10	21/11/2019	5.	Hand and power tool training	10	25/11/201	6.	PPE Training	16	25/11/2020	7.	EMS training	16	20/11/2020	8.	First aid care	9	10/11/2020	9.	Bike slip awareness	11	30/10/2020	10.	Fire and hot work training	17	24/01/2020
S. No.	Name of Training	No of participants	Date of Training																																													
1.	Manual material handling	8	13/09/2019																																													
2.	gensuite training	8	12/10/2019																																													
3.	First aid awareness	8	12/11/2019																																													
4.	JSA training	10	21/11/2019																																													
5.	Hand and power tool training	10	25/11/201																																													
6.	PPE Training	16	25/11/2020																																													
7.	EMS training	16	20/11/2020																																													
8.	First aid care	9	10/11/2020																																													
9.	Bike slip awareness	11	30/10/2020																																													
10.	Fire and hot work training	17	24/01/2020																																													

	The total number of O&M staffs employed for the operation & maintenance of the project activity are around 22. <table> <tr> <th>year</th><th>No. of employees</th></tr> <tr> <td>2018</td><td>11</td></tr> <tr> <td>2019</td><td>11</td></tr> <tr> <td>2020</td><td>22</td></tr> </table> Total expenses for the O&M during the monitoring period is 2,18,39,000 INR	year	No. of employees	2018	11	2019	11	2020	22
year	No. of employees								
2018	11								
2019	11								
2020	22								
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, Government of India.
Value(s) applied	246,415 tCO 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 ⁵

⁵ http://www.aegcl.co.in/Metering_Regulations_Of_CEA_17_03_2006.pdf1

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	784	-
EG _{facility,y}	261,616	-
Emissions Reductions in tCO ₂	246,415	-

Quantitative employment,	22 employee
Quality of employment and 10 training	
income generation	21,839,000 INR

D.4. Implementation of sampling plan

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Sampling is not required for the given project activity.

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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As per the approved consolidated Methodology ACM0002 Version 20.0, EB 105 Annex 3, reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

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

BE_y = Baseline emissions in year y (t CO₂/yr)

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

Baseline Emissions:

Baseline Emissions for the amount of electricity supplied by project activity, BE_y is calculated as

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

Where:

BE_y = Baseline emissions in year y (t CO₂/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 CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (t CO₂/MWh).

Thus, the estimated baseline situation of each SDG outcome is summarized as follows:

Item	Baseline estimate
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 110,317 tCO ₂

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

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SDG 7:

The monitoring parameter for the SDG 7 is Quantity of net electricity supplied to the grid during the year y. In the project situation, the project supplied 261,616 MWh electricity during the monitoring period. This can be crosschecked from JMR & Invoices.

During Monitoring period -09/11/2018 to 31/12/2020

Quantity of net electricity supplied to the grid (MWh) = 261,616 MWh

SDG 8:

The monitoring parameter for the SDG 8 are Number of training provided to employees & O&M staff, Cost spent for O&M & Number of O&M staffs involved in the project. During the project scenario, the following is achieved:

During Monitoring period - 09/11/2018 to 31/12/2020

Quality of Employment – 10 trainings

Quantitative employment and income generation - 22 employees & INR 2,18,39,000

These can be crosschecked from the training records & employment records.

SDG 13 :

The emission reduction parameter is calculated as product of net electricity supplied to grid and grid emission factor. The grid emission factor is ex-ante parameter and determined based on data obtained from "CO2 Baseline Database for Indian Power Sector" version 15, published by the Central Electricity Authority, Ministry of Power, Government of India. This is in line with "Tool to calculate the emission factor for an electricity system, version 7". The emission reductions are calculated as per registered PDD and as per methodology requirement.

During Monitoring period - 09/11/2018 to 31/12/2020

Quantity of emission reduction achieved = 246,415 tCO₂

E.3. Calculation of leakage

>>

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	261,616	261,616
8	Decent Work and Economic Growth	0	10 trainings 22 Employees 21,839,000 INR	10 trainings 22Employees 21,8,39,000 INR
13	Emission Reduction	246,415	0	246,415

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 ⁶ achieved during this monitoring period
	117,122 MWh/Year (365 days)	
7	251,572 MWh for the Monitoring period (784 days)	261,616 MWh/Year
8	1 training/year	10 trainings 22 Employees 2,18,39,000INR
13	110,317 tCO ₂ /Year (365 days) 236,955 tCO ₂ for the monitoring period (784 days)	246,415 tCO ₂

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

>>

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

$$\begin{aligned}
 &= 110,317 * 784 \text{ (days)}/365 \\
 &= 236,955 \text{ tCO}_2\text{e}
 \end{aligned}$$

Whereas actual emission reductions achieved are 246,415 tCO₂e, which is approximately 4% Higher than the estimated emission reductions.

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

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⁶ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

The actual achieved emission reduction for this monitoring period is 4% 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.

>>

No grievance received during the monitoring period.

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

>>

There is no input/grievance to follow up action.

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

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No legal contest or dispute has been arisen with the project during the monitoring period.

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption