# BUNDLED SOLAR POWER PROJECT BY SOLARARISE INDIA PROJECTS PVT. LTD.

Document Prepared by SolarArise India Projects Private Limited

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| **Version** | 02 |
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| **Project ID** | 1762 |
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# 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 120 MW solar project in different states of India 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 244,968 $tCO_2e$ per year, thereon displacing 253,776 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: -

| Name of Investor | Capacity (MW) | COD | Connection with Grid | State | Usage |
|---|---|---|---|---|---|
| Talettutayi Solar Projects Pvt Ltd | 10 MW | 23/06/2016 | Indian Grid | Telangana | Sale to State DISCOM |
| NV Vogt Solar One Pvt Ltd[1] (Talettutayi Solar Projects Six Pvt Ltd) | 10 MW | 23/06/2016 | Indian Grid | Telangana | Sale to State DISCOM |
| Talettutayi Solar Projects Four Pvt Ltd | 50 MW | 10/08/2017 | Indian Grid | Maharashtra | Sale to SECI |
| Talettutayi Solar Projects One Pvt Ltd | 30 MW | 05/01/2018 | Indian Grid | Karnataka | Sale to SECI |
| Talettutayi Solar Projects Two Pvt Ltd | 20MW | 07/08/2019 | Indian Grid | Karnataka | Sale to State DISCOM |

These are the SPVs of SolarArise India Projects Pvt. Ltd. and the project is promoted by SolarArise India Projects Pvt. Ltd.

**Total emission reductions achieved in this monitoring period:**

During the Current Monitoring Period from 01/09/2021 to 31/03/2022 (First and last date included), the project activity has supplied 130,978 MWh of electricity, and thus contributing to the GHG reductions 126,432 $tCO_2e$.

## 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 18.1[2]

## 1.3 Project Proponent

| | |
|---|---|
| **Organization name** | SolarArise India Projects Pvt. Ltd. |
| **Contact person** | Mr. Rakesh Patel |
| **Title** | Sr Manager – Business Development |
| **Address** | Unit No. 1004, 10th Floor BPTP Park Centra, Sector – 30, NH – 8, Gurugram – 122001 |
| **Telephone** | 0124 – 4204108 |
| **Email** | rakesh.patel@solar-arise.com |

## 1.4 Other Entities Involved in the Project

Not Applicable

## 1.5 Project Start Date

Start date of the project activity is the earliest date of interconnection with the grid i.e., 23/06/2016. This is the date of commissioning of 10 MW Solar PV Project activity in Talettutayi Solar Projects Pvt. Ltd. and 10 MW Solar PV Project activity by NV Vogt Solar One Pvt. Ltd (Talettutayi Solar Projects Six Pvt. Ltd.)

The details of the commissioning dates of the individual project activity are mentioned in the section 1.1 of this report.

## 1.6 Project Crediting Period

Crediting Period Start date: 23/06/2016; Crediting Period End date: 22/06/2026

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

## 1.7 Project Location

*he details of the project locations are mentioned in the table below:*

| Name of Investor | Capacity (MW) | Location | | | | |
|---|---|---|---|---|---|---|
| | | State | District | Tehsil/ Taluka | Village | Lat/Long |
| Talettutayi Solar Projects Pvt Ltd | 10 MW | Telangana | Mahabubnagar | Gadwal | Palwai | 16.153ºN, 77.763º E |
| Talettutayi Solar Projects Six Pvt Ltd (previously known as NV Vogt Solar One Pvt Ltd) | 10 MW | Telangana | Mahabubnagar | Gadwal | Palwai | 16.266ºN, 77.784º E |
| Talettutayi Solar Projects Four Pvt Ltd | 50 MW | Maharashtra | Beed | Telgaon | Chatgaon | 18.966ºN, 76.218ºE |
| Talettutayi Solar Projects One Pvt Ltd | 30 MW | Karnataka | Koppal | Yelburga | Chikkoppa and Mudhol | 15.649N, 75.983E |
| Talettutayi Solar Projects Two Pvt Ltd | 20MW | Karnataka | Koppal | Koppal | Kerahalli | 15.371N, 76.306E |

The project locations have been shown in the maps below.










## 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 18.1[3]

**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[1] - Version 07.0 (EB 100, Annex 04)
- Methodological Tool- Tool for the demonstration and assessment of additionality[2] - Version 07.0.0 (EB 70, Annex 08)

## 1.9 Participation under other GHG Programs

The project has neither been registered, nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program.

The undertaking from PP has been submitted accepting there is no double accounting for current monitoring period and the project activity is not a participant of any other GHG program other than VCS.

## 1.10 Other Forms of Credit

The Project has no intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

However, it can be crosschecked that PP is not claiming REC benefits, the same can be verified with the REC accreditation body of India[3].

## 1.11 Sustainable Development Contributions

The National CDM Authority (NCDMA), which is the Designated National Authority (DNA) for the Government of India (GOI) under the Ministry of Environment, Forests and Climate Change (MoEF&CC), has mentioned four indicators for sustainable development in the interim approval guidelines for Clean Development Mechanism (CDM) projects from India. Thus, this project's contribution towards sustainable development has been addressed based on the following sustainable development aspects:

[3] https://cdm.unfccc.int/methodologies/DB/5725LCHYPYM4I1V8OD9SFYVAMFFWNP

[4] http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

- **Social well-being:**
    - Contribution to the development of an otherwise underdeveloped area.
    - Generation of employment opportunities for local people during various phases of the project activity.
- **Economic well-being:**
    - Since the project uses renewable solar power resources for power generation it does not lead to any emissions in the environment.
    - o Avoiding further depletion of the already over-exploited, limited non-renewable sources like coal, oil, etc.
- **Technological well-being:**
    - The technology selected for the power project would use well established Solar PV power generation and the project activity would promote the use of such technology.
- **Environmental well-being:**
    - Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions and specific pollutants like SOx, NOx, and SPM associated with the conventional thermal power generation facilities.

**Table 1: Sustainable Development Contributions**

| Row number | SDG Target | SDG Indicator | Net Impact on SDG Indicator | Current Project Contributions | Contributions Over Project Lifetime |
|---|---|---|---|---|---|
| *Sequential row number* | *SDG Target number* | *Number and text of SDG indicator or, if no official SDG indicator is applicable, user-defined indicator* | *Indicate the project's contribution to the SDG Indicator (implemented activities to increase or decrease)* | *Brief description of the quantifiable impact of the project's activities related to the SDG indicator, during the monitoring period.* | *Brief description of the cumulative quantifiable impact of the project's activities related to the SDG indicator, over the project lifetime.* |
| 1) | 7.2 | 7.2.1: Renewable energy share in the total final energy consumption | Implemented activities to increase | About 130,978 MWh renewable electricity has supplied to Central Grid of Indian Electricity grid during the reported period that helps to increase the renewable energy share in the energy mix. | A total of 1,079,929 MWh renewable electricity has been supplied to the Indian grid by the project activity since commissioning. |

<table>
<tr>
<td>2)</td>
<td>8.8</td>
<td>Protect labour rights and promote safe and secure working environments for all workers</td>
<td>Implemented activities to increase</td>
<td>Approximately 150 employees are employed directly/indirectly in the projects. To ensure occupational health and safety various trainings has been conducted:
<table>
<tr><th>Date</th><th>Name of the Training</th><th>No of Employee Benefitted</th></tr>
<tr><td>05/01/2022</td><td>Importance of PPEs during Work</td><td>25</td></tr>
<tr><td>06/01/2022</td><td>Fire Fighting</td><td>13</td></tr>
<tr><td>07/01/2022</td><td>First Aid</td><td>17</td></tr>
<tr><td>23/01/2022</td><td>Omicron</td><td>16</td></tr>
<tr><td>24/01/2022</td><td>Fire Mock Drill</td><td>14</td></tr>
<tr><td>24/01/2022</td><td>Fire Mock Drill</td><td>14</td></tr>
<tr><td>15/02/2022</td><td>Safety at Site & Importance of PPEs</td><td>8</td></tr>
</table>
</td>
<td>To ensure occupational health and safety 3 trainings has been conducted<br><br>Please refer Appendix II for supporting documents</td>
</tr>
</table>

| | | | | | |
|---|---|---|---|---|---|
| 3) | 13.2.2 | Total greenhouse gas emissions per yearavoided or removed | Implemented activities to increase | By generating 130,978 MWh renewable electricity the project has avoided emission of 126,432 tCO2e in the atmosphere. | Since commissioning the project has avoided emission of 1,042,456 tCO2e in the atmosphere. |

# 2 SAFEGUARDS

## 2.1 No Net Harm

The project activity does not involve any major construction activity. It primarily requires the installation of Solar PVs interfacing the generators with the State Electricity Board by setting up HT transmission lines and installation of other accessories.

The report on "Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects" prepared by MNRE dated September 2013. This report clearly mentioned that solar power project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same[4].

Thus, it is envisaged that the implementation of the project activity will not lead to any significant impacts on air, water, soil quality and ambience.

## 2.2 Local Stakeholder Consultation

The project has already been registered under VCS mechanism. The local stakeholder meeting was carried out for the project activity and the details of the same can be referred from the registered VCS PD.

There were no negative comments received during the meeting and stakeholders appreciated proactive efforts taken by project proponent towards reducing emissions.

As a part of continuous feedback from stakeholders, the PP has also placed a grievance register onsite where in the stakeholder can put down his/her complain and the same if found genuine will be addressed immediately.

However, there is no negative feedback has been reported within this monitoring period.

## 2.3 AFOLU-Specific Safeguards

Not applicable to this as this is not an AFOLU project activity.

[4] http://mnre.gov.in/file-manager/UserFiles/report-on-developmental-impacts-of-RE.pdf

# 3 IMPLEMENTATION STATUS

## 3.1 Implementation Status of the Project Activity

The project activity involves the installation of Solar PVs. The total installed capacity of the project is 120 MW located across different states in India. The project is promoted by SolarArise India Projects Pvt. Ltd.

The project shall result in annual replacement of anthropogenic emissions of greenhouse gases (GHGs) estimated to be approximately 244,968 $tCO_2e$, thereon displacing 253,776 MWh/year amount of electricity from the gird over the 10 years crediting period.

**Solar PV Project Technology Details –**

The project activity aims to harness solar energy through installation of Solar PVs with total installed capacity of 120 MW.

a) The technical specification of 10 MW plant interconnection with grid on 23/06/2016 by Talettutayi Solar Projects Pvt Ltd are as follows:

| S. No | Technical details of the equipment | Description |
|---|---|---|
| 1 | Technology Used | Poly Crystalline Silicon |
| 2 | Make of modules installed | Trina Solar |
| 3 | Model of the modules installed | TSM-310PC14, TSM-315PC14 |
| 4 | Make & Model of Inverter | Make – ABB, Model - PVS-800-1000KW |
| 5 | Number of Inverters | 10 Nos. |
| 6 | Make & Number of Transformers | Make- Voltamp Model- 2 MVA, 5 Nos. |

b) The technical specification of 10 MW plant interconnection with grid on 23/06/2016 by Talettutayi Solar Projects Pvt Ltd are as follows:

| S. No | Technical details of the equipment | Description |
|---|---|---|
| 1 | Technology Used | Poly Crystalline Silicon |
| 2 | Make of modules installed | Trina Solar |
| 3 | Model of the modules installed | TSM-310PC14, TSM-315PC14 |
| 4 | Make & Model of Inverter | Make – ABB, Model - PVS-800-1000KW |

| | | |
|---|---|---|
| 5 | Number of Inverters | 10 Nos. |
| 6 | Make & Number of Transformers | Make- Voltamp Model- 2 MVA, 5 Nos. |

c) The technical specification of 50 MW plant interconnection with grid on 10/08/2017 by Talettutayi Solar Projects Four Pvt Ltd are as follows:

| S. No | Technical details of the equipment | Description |
|---|---|---|
| 1 | Technology Used | Poly Crystalline Silicon |
| 2 | Make of modules installed | JA Solar |
| 3 | Model of the modules installed | 320 Wp & 325 Wp |
| 4 | Make & Model of Inverter | Make- Sungrow, Model- SG 2500 |
| 5 | Number of Inverters | 20 Nos. |
| 6 | Make & Number of Transformers | Make- Sudhir, Model- 5 MVA, 10 Nos.<br>Make- Voltamp, Model- 50 MVA, 1 No. |

d) The technical specification of 30 MW plant interconnection with grid on 05-01-2018 by Talettutayi Solar Projects One Pvt Ltd are as follows:

| S. No | Technical details of the equipment | Description |
|---|---|---|
| 1 | Technology Used | Poly Crystalline Silicon |
| 2 | Make of modules installed | JA Solar |
| 3 | Model of the modules installed | 320 Wp & 325 Wp |
| 4 | Make & Model of Inverter | Make- Sungrow, Model- SG 2500 |
| 5 | Number of Inverters | 12 Nos. |
| 6 | Make & Number of Transformers | Make- Silchar, Model- 5 MVA, 6 Nos.<br>Make- Raychem, Model- 30 MVA, 1 No. |

e) The technical specification of 20 MW plant interconnection with grid on 07-08-2019 by Talettutayi Solar Projects Two Pvt Ltd are as follows:

| S. No | Technical details of the equipment | Description |
|---|---|---|
| 1 | Technology Used | Poly Crystalline Silicon |
| 2 | Make of modules installed | JA Solar |
| 3 | Model of the modules installed | 325 Wp & 330 Wp |
| 4 | Make & Model of Inverter | Make- TBEA, Model- TBEA 3750, TBEA 5000 |
| 5 | Number of Inverters | 5 Nos. (4 Nos of TBEA 3750 and 1 Nos of TBEA 5000) |

| | | |
|---|---|---|
| 6 | Make & Number of Transformers | Make- Silchar, Model- 5 MVA & 7.5MVA, 3 Nos.<br>Make- Voltamp, Model- 20 MVA, 1 No. |

## 3.2 Deviations

### 2.1.1 Methodology Deviations

No methodology deviation is applied during the monitoring period.

### 2.1.2 Project Description Deviations

Below deviation has been applied in the last monitoring period: -

In the registered PD, formula used in the calculation net electricity supplied to the grid was not mentioned correctly for the Karnataka state projects, hence the same was corrected in line with the JMRs (Form-B). This correction was considered as project deviation in the current monitoring period. The formula used in the monitoring plan for calculating the net electricity supplied to the grid was based on the B-Form values provided by KPTCL as follows for the Karnataka state projects: -

**EGPJ, y = Export (Kwh)– 115% * Import (Kwh)– Transmission losses (Kwh)**

This was in line with the actual monitoring procedure followed on the project activity.

The Project deviation was in line with the guidance provided under section 3.18.2 point 2. of VCS standard v4.3. However, it did not impact the existing applicability conditions of the methodology, additionality or the appropriateness of the baseline scenario.

No deviation has been applied in this monitoring period.

## 3.3 Grouped Projects

The project is not a grouped project thus this is not applicable.

# 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 for the project electricity system in year y |
| **Source of data** | Calculated from CEA database, Version 12, May 2017 |
| **Value applied** | 0.9843 $tCO_2/MWh$ |

| | |
|---|---|
| **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 05" as 3-year generation weighted average using data for the years 2013-14, 2014-15 & 2015-16. The data are obtained from "CO2 Baseline Database for Indian Power Sector" version 12, 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 for the project electricity system in year y |
| **Source of data** | Calculated from CEA database, Version 12, May 2017 |
| **Value applied** | 0.9083 tCO2/MWh |
| **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 05" as per the latest data available for the most recent year 2015-16. The data is obtained from "CO2 Baseline Database for Indian Power Sector" version 12, published by the Central Electricity Authority, Ministry of Power, Government of India. |
| **Purpose of Data** | • Calculation of baseline emissions |
| **Comments** | The above value is fixed, and it is same for the entire crediting period |

| | |
|---|---|
| **Data / Parameter** | $EF_{grid, CM, y}$ |
| **Data unit** | $tCO_2/MWh$ |
| **Description** | Combined margin $CO_2$ emission factor for the project electricity system in year y |
| **Source of data** | Calculated from CEA database, Version 12, May 2017 |
| **Value applied** | 0.9653 tCO2/MWh |
| **Justification of choice of data or description of measurement methods and procedures applied** | The combined margin emissions factor is calculated as follows:<br>$EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid, BM,y} * W_{BM}$<br>Where:<br>$EF_{grid,BM,y}$= Build margin $CO_2$ emission factor in year y ($tCO_2/MWh$)<br>$EF_{grid,OM,y}$= Operating margin $CO_2$ emission factor in year y ($tCO_2/MWh$)<br>$W_{OM}$ = Weighting of operating margin emissions factor (%) = 75% |

| | |
|---|---|
| | $W_{BM}$= Weighting of build margin emissions factor (%) = 25% |
| **Purpose of Data** | • Calculation of baseline emissions |
| **Comments** | The above value is fixed, and it is same for the entire crediting period |

## 4.2 Data and Parameters Monitored

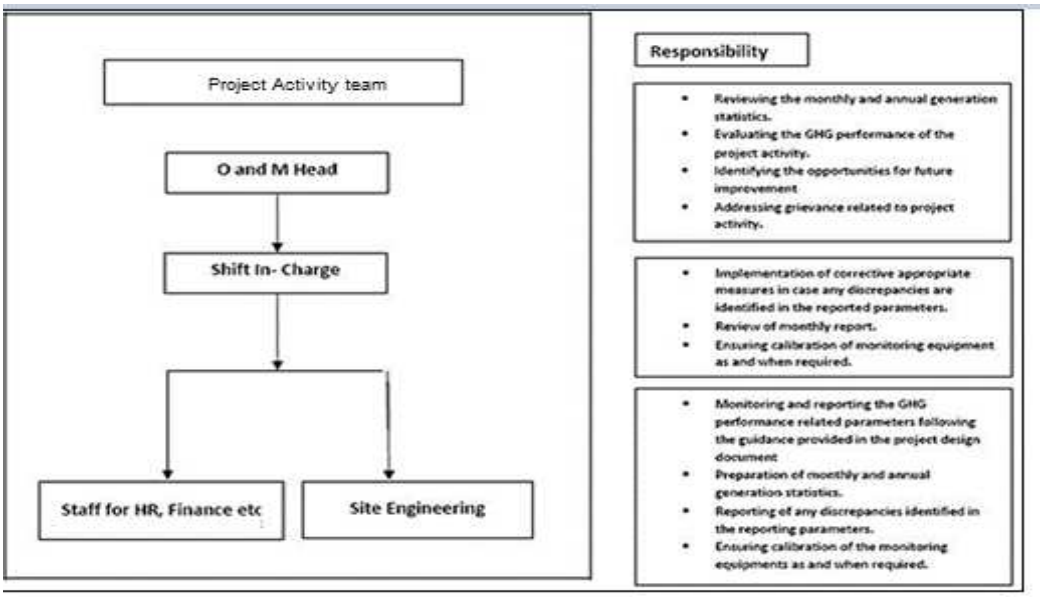
| | |
|---|---|
| **Data / Parameter** | $EG_{PJ, y}$ |
| **Data unit** | MWh |
| **Description** | Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh |
| **Source of data** | Credit note/ JMR/Form B reports/ monthly generation report from respective state electricity board/DISCOM |
| **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 will be considered for ER calculations for Telangana & Maharashtra sites.<br>The difference of final value of export and import (115%) & transmission loss is used for monthly values of net electricity supplied to the grid by the project activity and same value will be considered for ER calculations for Karnataka sites.<br>For detailed schedule of Calibration of energy meters involved in project activity please refer Appendix 1. |
| **Frequency of monitoring/recording** | Continuous measurement & monthly recording |
| **Value monitored** | 130,978 MWh |
| **Monitoring equipment** | The electricity exported / supplied by the plant to pooling substation and further to MSEDCL/RRVPNL/TSTRANSCO/KPTCL substation. This meter also measures electricity imported by the plant from the grid. |
| **QA/QC procedures to be applied** | The meters are 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. 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.<br>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** | Telangana & Maharashtra sites: -<br>Net electricity supplied to the grid by the project plant in a given month = Export (kWh)– Import (kWh)<br>Karnataka sites: -<br>Net electricity supplied to the grid by the project plant in a given month = Export (kWh) – 115% * Import (kWh) – transmission loss |
| **Comments** | Data will be 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. |

## 4.3 Monitoring Plan.

Where appropriate monitoring plan is developed in accordance with the modalities and procedures for CDM project activities and is proposed for grid-connected solar power project being implemented. The monitoring plan, which will be 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 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 equipments for this project activity. The team comprises of the following members:



**Data Measurement**

The export and import energy will be 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 will be 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 will be 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 VCUs for the project activity whichever occurs later.

**Emergency preparedness**

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

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

**Personnel training**

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

**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 will be 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

As per the approved consolidated Methodology ACM0002 (Version 18.1) para 42:

Baseline emissions include only $CO_2$ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that existing grid- connected power plants and the addition of new grid- connected power plants would have generated all project electricity generation above baseline levels. The baseline emissions are to be calculated as follows:

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

Where:

$\mathbf{BE_y}$ = 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" (t $CO_2$/MWh)

**Grid Emission Factor**

The grid emission factor is fixed ex-ante in the PD as given below:

| Parameter | Value |
|---|---|
| **OM** | 0.9843 |
| **BM** | 0.9083 |
| **CM** | 0.9653 |

Therefore,

$BE_y$ = 130,978 x 0.9653

= 1,261,432 $tCO_2e$ (Rounded Down)

## 5.2 Project Emissions

Not Applicable, since project emissions from the solar power project activity is zero as per ACM0002 methodology. Hence, $PE_y = 0$.

## 5.3 Leakage

Not Applicable, since leakage emissions from the solar power project activity is zero as per ACM0002 methodology. Hence, $LE_y = 0$.

## 5.4 Net GHG Emission Reductions and Removals

| Year | Baseline emissions or removals ($tCO_2e$) | Project emissions or removals ($tCO_2e$) | Leakage emissions ($tCO_2e$) | Net GHG emission reductions or removals ($tCO_2e$) |
|---|---|---|---|---|
| **2021 (01/09/2021 to 31/12/2021)** | 65,840 | 0 | 0 | 65,840 |
| **2022** | 60,592 | 0 | 0 | 60,592 |

| | | | | |
|---|---|---|---|---|
| **(01/01/2022 to 31/03/2022)** | | | | |
| **Total** | 126,432 | 0 | 0 | 126,432 |

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 142,283, $tCO_2e$, whereas actual emission reductions achieved are 126,432 which is approximately -11. 14% lower than the estimated emission reductions. This is due to low PLF achieved during the current monitoring period.

The generation of electricity depends upon many other climatic conditions e.g., availability of sunlight, grid availability etc., and not within the control of the project participant. The lower generation during the current verification period is hence due to certain natural conditions.

# APPENDIX 1: <METER CALIBRATION DETAILS>

a. **Meter Calibration details of 10 MW solar project by Talettutayi Solar Projects Pvt Ltd**

**Metering Location:** 132/33 kV Substation Control Room, Gadwal.

| Meter Sl. No. | Make | Class | Calibration date | Due date for Calibration |
|---|---|---|---|---|
| APX00685 (Main Meter) | Secure | 0.2 s | 03/12/2020 | 03/12/2025 |
| APX00686 (Check Meter) | Secure | 0.2 s | 03/12/2020 | 03/12/2025 |
| APX00687(Standby Meter) | Secure | 0.2 s | 03/12/2020 | 03/12/2025 |

b. **Meter Calibration details of 10 MW solar project by Talettutayi Solar Projects Six Pvt Ltd**

**Metering Location:** 132/33 kV Substation Control Room, Gadwal.

| Meter Sl. No. | Make | Class | Calibration date | Due date for Calibration |
|---|---|---|---|---|
| APX00682 (Main Meter) | Secure | 0.2 s | 03/12/2020 | 03/12/2025 |
| APX00684 (Check Meter) | Secure | 0.2 s | 03/12/2020 | 03/12/2025 |
| APX00704(Standby Meter) | Secure | 0.2 s | 03/12/2020 | 03/12/2025 |

c. **Meter Calibration details of 50 MW solar project by Talettutayi Solar Projects Four Pvt Ltd**

**Metering Location:** Control Room, 132kV Telgaon Sub-Station

| Meter Sl. No. | Make | Class | Calibration date | Due date for Calibration |
|---|---|---|---|---|
| 02832405 (Main Meter) | Elster | 0.2 s | 22/12/2020 | 22/12/2025 |
| 02832406 (Check Meter) | Elster | 0.2 s | 22/12/2020 | 22/12/2025 |
| 02832404 (Standby Meter) | Elster | 0.2 s | 22/12/2020 | 22/12/2025 |

d. **Meter Calibration details of 30 MW solar project by Talettutayi Solar Projects One Pvt Ltd**

**Metering Location:** 110/33/11 KV MUSS Yelburga substation

| Meter Sl. No. | Make | Class | Calibration date | Due date for Calibration |
|---|---|---|---|---|
| 20007786 (Main Meter) | L&T | 0.2 s | 19/07/2021 | 19/07/2026 |
| 20007853 (Check Meter) | L&T | 0.2 s | 19/07/2021 | 19/07/2026 |

a. **Meter Calibration details of 20 MW solar project by Talettutayi Solar Projects Two Pvt Ltd**

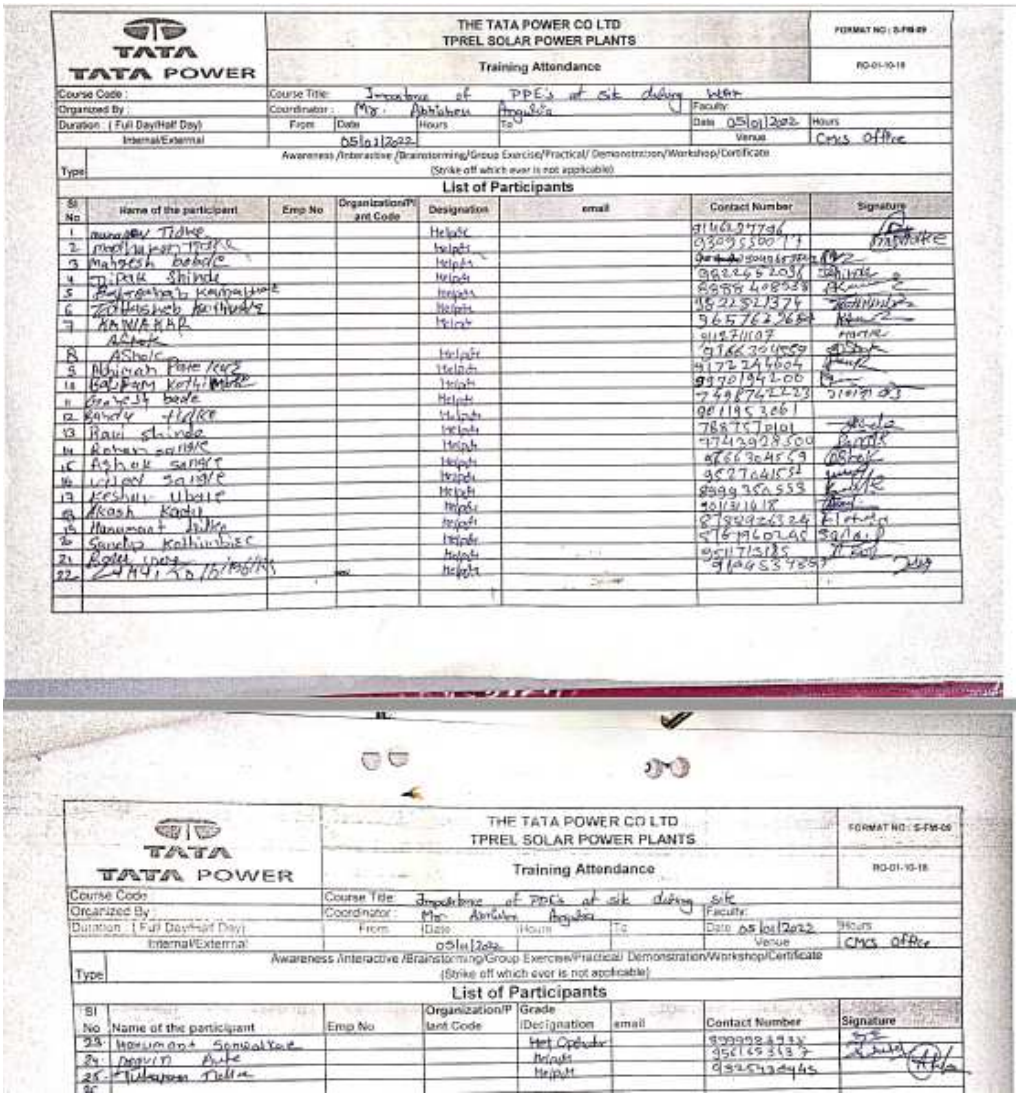
**Metering Location:** 110/33/11 KV Kerehalli substation

| Meter Sl. No. | Make | Class | Calibration date | Due date for Calibration |
|---|---|---|---|---|
| 20009519 (New Main Meter) | L&T | 0.2 s | 16/02/2022 | 16/02/2027 |
| 20009520 (New Check Meter) | L&T | 0.2 s | 16/02/2022 | 0416/02/2027 |

# APPENDIX II: SUPPORTING EVIDENCE FOR SDG

**SDG 7.2**: About 130,978 MWh renewable electricity has supplied to Indian grid during the reported period that helps to increase the renewable energy share in the energy mix.

**SDG 8.8:** To ensure occupational health and safety various trainings has been conducted. To systematically manage safety at SolarArise, have a well- defined EHS policy.



TATA POWER

THE TATA POWER CO LTD
TPREL SOLAR POWER PLANTS

Training Attendance

FORMAT NO : S-FM-09
RO-01-10-18

Course Code :
Course Title : Importance of PPE's at site during work
Organized By :
Coordinator : Mr. Abhishek Angolkar
Faculty :
Duration : ( Full Day/Half Day)
From Date 05/01/2022 To Hours
Internal/External
Date 05/01/2022 Hours
Venue CMCS office

Type : Awareness /Interactive /Brainstorming/Group Exercise/Practical/ Demonstration/Workshop/Certificate
(Strike off which ever is not applicable)

List of Participants

| Sl No | Name of the participant | Emp No | Organization/Plant Code | Designation | email | Contact Number | Signature |
|---|---|---|---|---|---|---|---|
| 1 | [illegible] | | | Helper | | | |
| 2 | [illegible] | | | Helper | | | |
| 3 | [illegible] | | | Helper | | | |
| 4 | [illegible] | | | Helper | | | |
| 5 | [illegible] | | | Helper | | | |
| 6 | [illegible] | | | Helper | | | |
| 7 | [illegible] | | | Helper | | | |
| 8 | [illegible] | | | Helper | | | |
| 9 | [illegible] | | | Helper | | | |
| 10 | [illegible] | | | Helper | | | |
| 11 | [illegible] | | | Helper | | | |
| 12 | [illegible] | | | Helper | | | |
| 13 | [illegible] | | | Helper | | | |
| 14 | [illegible] | | | Helper | | | |
| 15 | [illegible] | | | Helper | | | |
| 16 | [illegible] | | | Helper | | | |
| 17 | [illegible] | | | Helper | | | |
| 18 | [illegible] | | | Helper | | | |
| 19 | [illegible] | | | Helper | | | |
| 20 | [illegible] | | | Helper | | | |
| 21 | [illegible] | | | Helper | | | |
| 22 | [illegible] | | | Helper | | | |



TATA POWER

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TPREL SOLAR POWER PLANTS

Training Attendance

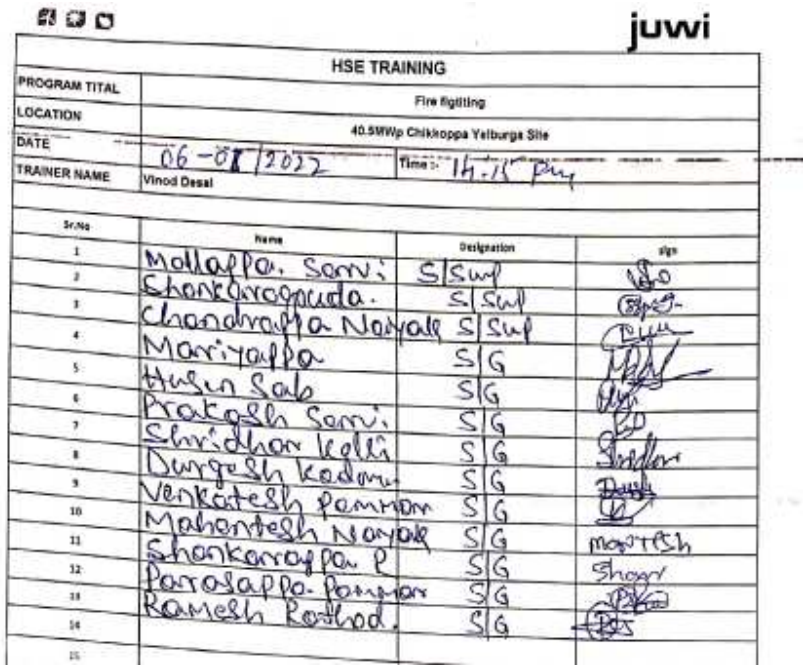
FORMAT NO : S-FM-09
RO-01-10-18

Course Code :
Course Title : Importance of PPE's at site during work
Organized By :
Coordinator : Mr. Abhishek Angolkar
Faculty :
Duration : ( Full Day/Half Day)
From Date (Hours) To Date 05/01/2022 Hours
Internal/External
Venue CMCS office

Type : Awareness /Interactive /Brainstorming/Group Exercise/Practical/ Demonstration/Workshop/Certificate
(Strike off which ever is not applicable)

List of Participants

| Sl No | Name of the participant | Emp No | Organization/Plant Code | Grade /Designation | email | Contact Number | Signature |
|---|---|---|---|---|---|---|---|
| 23 | [illegible] | | | Mst Operator | | | |
| 24 | [illegible] | | | Helper | | | |
| 25 | [illegible] | | | Helper | | | |



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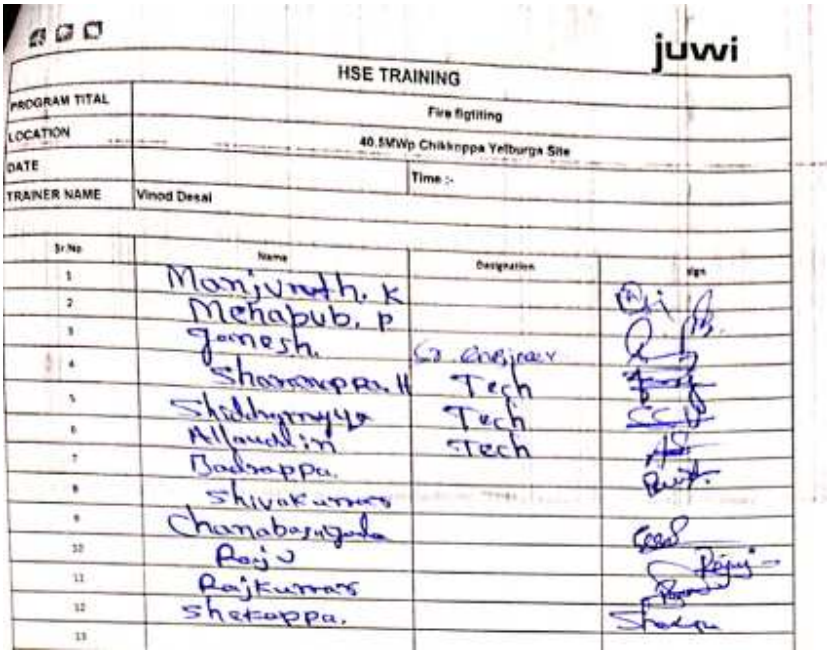
HSE TRAINING

| | |
|---|---|
| PROGRAM TITAL | Fire figtting |
| LOCATION | 40.5MWp Chikkoppa Yelburga Site |
| DATE | 06-08-2022 Time :- 11-15 pm |
| TRAINER NAME | Vinod Desai |

| Sr.No | Name | Designation | sign |
|---|---|---|---|
| 1 | Mallappa. Sarvi | S/Sup | |
| 2 | Shankrappauda. | S/Sup | |
| 3 | Chandrappa Nayak | S/Sup | |
| 4 | Mariyappa | S/G | |
| 5 | Husen Sab | S/G | |
| 6 | Prakash Sarvi | S/G | |
| 7 | Shridhar Kolli | S/G | |
| 8 | Durgesh Kadam | S/G | |
| 9 | Venkatesh Pamman | S/G | |
| 10 | Mahantesh Nayak | S/G | |
| 11 | Shankarappa. P | S/G | |
| 12 | Parasappa. Pamman | S/G | |
| 13 | Ramesh Rathod. | S/G | |
| 14 | | | |
| 15 | | | |



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HSE TRAINING

| | |
|---|---|
| PROGRAM TITAL | Fire figtting |
| LOCATION | 40.5MWp Chikkoppa Yelburga Site |
| DATE | Time :- |
| TRAINER NAME | Vinod Desai |

| Sr.No | Name | Designation | sign |
|---|---|---|---|
| 1 | Manjunath. K | | |
| 2 | Mahabub. P | | |
| 3 | Ganesh. | Sr. Engineer | |
| 4 | Sharanappa. H | Tech | |
| 5 | Siddayya | Tech | |
| 6 | Allauddin | Tech | |
| 7 | Badsappa. | | |
| 8 | Shivakumara | | |
| 9 | Chanabasayya | | |
| 10 | Raju | | |
| 11 | Rajkumara | | |
| 12 | Shekappa. | | |
| 13 | | | |

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**HSE TRAINING**

| | |
|---|---|
| PROGRAM TITLE | Induction Awd. |
| LOCATION | 40.5MWp Chikkoppa Yelburga Site |
| DATE ..... | 07/01/22 ..... Time :- 14:30 pm |
| TRAINER NAME | Vinod Desai |

| Sr.No | Name | Designation | sign |
|---|---|---|---|
| 1 | Manjunath | Engg | |
| 2 | Allauddin | Tech | |
| 3 | Shiddramayya | Tech | |
| 4 | Badrappa | P. Labour | |
| 5 | Ambresh | " | |
| 6 | channabasavanagouda | " | |
| 7 | Shivukumar | " | |
| 8 | Rajakumar | " | |
| 9 | Umesh | " | |
| 10 | Raju | " | |
| 11 | Shekappa | Watch boy | |
| 12 | Prakash | Labour | P.B. Patil |
| 13 | Veeresh | " | V.M. Kolli |
| 14 | Laxman | " | |
| 15 | Shivu T | " | |
| 16 | muttappa | " | |
| 17 | shankrappa | " | |
| 18 | | " | |

1. **Masks and sanitizers were distributed to all workman in Site**
2. **Hand washing facility has been arranged near the main gate**



**2X10MW TT & TT6 Gadwal TS**

**How To Prevent from Fire Mock Drill** Date:24.01.2022

- Types of Fire
- Fire Triangle
- How to Break Fire Triangle
- Types of Fire Extinguisher and Their Use
- Which Fire Extinguisher Use for Which Fire







VIKRAM SOLAR
TRAINING ATTENDEES RECORD

DATE 24/01/2022 TOPIC: How to Prevent From Fire.
SITE 2X 10 MW TT & TT6, Gadwal
Speech Points: (1) Fire Triangle.
(2) How to Break Fire Triangle.
(3) Types of Fire extinguisher and Thin use.
(4) Which Extinguisher use for which fire.

| S.No | NAME | DESIGNATION | SIGNATURE |
|---|---|---|---|
| 1 | Ramesh mudili | Eng | Ramesh |
| 2 | J. Sridhar | Tech | [illegible] |
| 3 | M. Krishna | Techn | M [illegible] |
| 4 | Mahesh | SG | Mahesh |
| 5 | Raju | S/V | [illegible] |
| 6 | R. RAMUDU | S/L | Ramudu |
| 7 | M. [illegible] | SG | [illegible] |
| 8 | T. Parthavramudu | SG | [illegible] |
| 9 | KUMAR | S/J | KUMAR |
| 10 | [illegible] | S/V | [illegible] |
| 11 | J. Rajashekar | S/J | J. [illegible] |
| 12 | R. Kiran | S/J | R. [illegible] |
| 13 | R. Bhavath Kumar | S/J | R. [illegible] |
| 14 | Muzeeb | Electrician | [illegible] |

**SDG 13.0:** By supplying 130,978 MWh clean electricity to Indian grid, the project avoided release of 126,432 tCO2e into the atmosphere during the reporting period.