



Verified Carbon Standard

BUNDLED SOLAR POWER PROJECT BY MAHINDRA SUSTEN PRIVATE LIMITED



STEERING THE PLANET TO NET ZERO

Document Prepared by EKI Energy Services Limited

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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 205 MW AC solar project in different states of India through SPVs. The project is promoted by Mahindra Susten Private Limited and Divine Solren Private Limited.

Over the 10 years of first crediting period, the project will replace anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 329,360 tCO_{2e} per year, thereon displacing 341,202 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 and commissioning dates for the project are mentioned in the table below:-

Name of SPVs	AC Capacity (MW)	COD	State
Cleansolar Renewable Energy Private Limited	30	29-June-2016	Telangana
Divine Solren Private Limited	50	22-July-2017	Telangana
Astra Solren Private Limited	40	31-March-2017	Gujarat
	25	02-June-2017	Gujarat
Mahindra Susten Private Limited	60	31-March-2017	Rajasthan

The project is running smoothly since commissioning with few minor breakdowns and regular scheduled maintenance activities. The previous verification monitoring reports having the generation details and meter records of current monitoring period demonstrated the continued operations. During the Current Monitoring Period from 24-September-2021 to 23-April-2022 (First and last date included) the project activity has injected 223,762.78 MWh of electricity to the Indian Grid, and thus contributing to the GHG reductions 215,993 tCO_{2e}. There is no major breakdown reported during the current monitoring period.

1.2 Sectoral Scope and Project Type

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

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)
Project Type : I - Renewable Energy Projects

Methodology : ACM0002: Grid-connected electricity generation from renewable sources- Version 18.1¹

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	Mahindra Susten Private Limited
Contact person	Mr. Rakesh Khaitan
Title	CEO
Address	6 th Floor AFL House, Lok Bharati Complex, Marol Maroshi Road, Mumbai, Maharashtra- 400059
Telephone	+91-9589899649
Email	mehta.saurabh2@mahindra.com

Organization name	Divine Solren Private Limited
Contact person	Mr. Sandip Saha
Title	Deputy Manager, Carbon & Sustainability
Address	7 th Floor, FULCRUM, Sahar Road, Andheri (East), Mumbai – 400099 India
Telephone	+91- 9833775833
Email	sandip.saha@clpindia.in

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultant

¹ <https://cdm.unfccc.int/methodologies/DB/5725LCHYPYM4I1V8OD9SFYVAMFFWNP>

Contact person	Bhavini Pandey
Title	Project Manager
Address	Office No 201, Plot No 48, Scheme 78, Part 2, Vijay Nagar, Indore-452010, Madhya Pradesh, India
Telephone	+91 9532180246
Email	registry@enkingint.org

1.5 Project Start Date

Project Start Date: 29-June-2016. This is the date of commissioning of 30 MW solar PV project activity by CleanSolar Renewable Energy Private Limited (CREPL).

1.6 Project Crediting Period

Crediting Period Start date : 29-June-2016

Crediting Period End date : 28-June-2026

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

1.7 Project Location

The Geo Coordinates of the project location has been mentioned in the table below:

Name of SPVs	Village / Site	Tehsil / Mandal	District	State	Latitude (N)	Longitude (E)
Cleansolar Renewable Energy Private Limited	Gingurthi	Tandur	Vikarabad	Telangana	17° 21' 55.4"	77° 31' 45.9"
Divine Solren Private Limited	Mallapur, Mujgi	Nirmal, Dilawarpur	Nirmal	Telangana	19° 02' 39.6"	78° 17' 16.1"
Astra Solren Private Limited	Charanka	Santalpur	Patan	Gujarat	23° 54' 00.0"	71° 12' 00.0"
Mahindra Susten Private Limited	Goyalri / Gajner	Kolayat	Bikaner	Rajasthan	27° 53' 48.6"	72° 56' 48.3"

The project location has been highlighted in the geographical map shown below?:





1.8 Title and Reference of Methodology

Sectoral Scope : 01

Methodology : ACM0002: Grid-connected electricity generation from renewable

sources - Version 18.1

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 system³- Version 06.0 (EB 97, Annex 07)
- Methodological Tool- Tool for the demonstration and assessment of additionality⁴- 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.

1.10 Other Forms of Credit

Emission Trading Programs and Other Binding Limits:

Net GHG emission reductions or removals generated by the Project will not be used for compliance with an emissions trading program or to meet binding limits on GHG emissions in any Emission Trading program or other binding limits.

Other Forms of Environmental Credit:

³<http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v6.pdf>

⁴<http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

Not applicable, as the project is not registered in any other GHG mechanism other than VCS. Also, the project activity is not availing any REC benefits and the same can be confirmed from publically available link of REC generators.

Web-link: https://www.recregistryindia.nic.in/index.php/publics/accredited_regens

1.11 Sustainable Development Contributions

The project activity has beneficial effect on the local environment and employment in the nearby region. Clean Electricity generation through Solar PV result in avoidance of consumption of fossil fuels which results in contribution to SDG 7. The emission avoidance through these activities results in contribution to SDG 13. All the workers at site are trained which results in increase of skills, which contributes to SDG 4. Detailed indicators are mentioned in table 1. This is a voluntary project activity doesn't contribute to achieving any nationally stated sustainable development priorities. There is no compliance for monitoring and reporting the emission reduction and SDG contribution from the project activity.

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 223,762.78 MWh renewable electricity has supplied to Indian grid during the reported period that helps to increase the renewable energy share in the energy mix.	Overall 2,074,498.12 MWh (480,370.42 + 633,629.62+540,618.5+196,116.8+223,762.78) renewable electricity has supplied to Indian grid throughout the project lifetime that helps to increase the renewable energy share in the energy mix.
2	4.4	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	Implemented activities to increase	Together with the technology supplier, the Project organize 98(CREPL-41+Mahindra Susten-28+Astra Solren-25+DSPL-4) training during current monitoring period. Training related to soft and technical skills.	Since the SDG 4 target has not been previously reported, current contribution for the monitoring period i.e. 98 trainings is mentioned over the contribution over project lifetime.
3	13.0	Total greenhouse gas emissions avoided or removed.	Implemented activities to increase	By supplying 223,762.78 MWh clean electricity (generated through Solar PV) to Indian grid, the project avoided release of 215,993 tCO ₂ e in to the atmosphere during the reporting period.	Overall prevented the release of 2,002,439 (463,699+ 611,586+ 521,852+ 189,309+215,993) tCO ₂ e into the atmosphere since project commissioning.

2 SAFEGUARDS

2.1 No Net Harm

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

Section 3.3 and 3.4 report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that solar PV project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same⁵.

Thus, there are no negative socio-economic and environment (air, water, soil quality and ambience) impacts due to implementation of project activity on are envisaged due to the project activity.

2.2 Local Stakeholder Consultation

As a part of continual improvement process, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project. It is appropriate publicly accessible location at which local stakeholders can provide their feedback on the project. This location is also conducive to continuous and regular checks for stakeholder comments. For the global stakeholders, the suggestion and the grievance can be submitted to susten@mahindra.com and sandip.saha@clpindia.in

Stakeholder meetings were organized at the time of project validation activity, In order to identify the major challenges around the area, stakeholders were invited well in advance through printed invitation, calls, meeting and a notice is placed around the local common areas. The attendance of the stakeholders was noted and feedback collected through a feedback form. The stakeholder are also requested to share their experiences and grievances on continuous basis. Stakeholders were informed about the grievance register and email ids. Registers is used to records the grievances and feedback.

During the current monitoring period, no any grievances logged by stakeholders. The grievance register are shared with VVB. therefore, no any mitigation measures are required. In case of grievances, the nature of probable resolution is discussed with the plant head office and implemented by the site in-charge. The grievance copies have been submitted to DOE.

⁵ <https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

2.3 AFOLU-Specific Safeguards

Not Applicable, as this is not an AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity involves the installation of Solar PV project. The total installed capacity of the project is 205 MW of Solar PV plant located at different states in India. The project is promoted by Mahindra Susten Private Limited and Divine Solren Private Limited.

The Project activity is a new facility (Greenfield) and the electricity generated by the project is being exported to the Indian electricity grid. The project therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. In the Pre- project scenario the entire electricity, delivered to the grid by the project activity, would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. There is no major breakdown reported during the current monitoring period.

Solar PV Project Technology Details –

The project activity aims to harness solar energy through installation of Solar PV project with total installed capacity of 205 MW.

The technical specification of 30 MW plant commissioning on 29-June-2016 by CleanSolar Renewable Energy Private Limited are as follows:

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Multi-crystalline and Thin Film
2	Make of modules installed	Trina Solar and Solar Frontier
3	Model of the modules installed	Trina Solar TSM-310PC14; Solar Frontier SF170-S
4	Make & Model of Invertor	SMA - Sunny Central 2200
5	Number of Inverters	14
6	Make & Number of Transformers	Power transformer- 1, make-CGL ; Inverter duty transformers-14, make-Danish

The technical specification of 50 MW plant commissioning on 22-July-2017 by Divine Solren Private Limited are as follows:

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Multi-crystalline
2	Make of modules installed	Hanwha Solar
3	Model of the modules installed	Hanwa Solar HSL 72 P6-PC-1-315/320
4	Make & Model of Invertor	SMA - Sunny Central 1000CP-XT
5	Number of Inverters	46
6	Make & Number of Transformers	Power transformer- 2, make-CGL ; Inverter duty transformers-12, make-Danish

The technical specification of 40 MW plant commissioning on 31-March-2017 by Astra Solren Private Limited are as follows:

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Multi-crystalline and Thin Film
2	Make of modules installed	Canadian Solar and First Solar
3	Model of the modules installed	Canadian Solar 320 P Mix, First Solar FS 4117A-3
4	Make & Model of Invertor	SMA - Sunny Central 1000CP-XT, GE Power - LV5 1000kW
5	Number of Inverters	40
6	Make & Number of Transformers	Power transformer- 2, make-CGL ; Inverter duty transformers-11, make-Danish

The technical specification of 25 MW plant commissioning on 02-June-2017 by Astra Solren Private Limited are as follows:

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Multi-crystalline
2	Make of modules installed	Hanwha Solar
3	Model of the modules installed	Hanwa Solar HSL 72 P6-PC-1-320
4	Make & Model of Invertor	SMA - Sunny Central 1000CP-XT
5	Number of Inverters	25
6	Make & Number of Transformers	Power transformer- 1, make-CGL ; Inverter duty transformers-7, make-Danish

The technical specification of 6*10 MW plant commissioning on 31-March-2017 by Mahindra Susten Private Limited are as follows:

Sl. No.	Technical details of the equipment	Description
1	Technology Used	Multi-crystalline and Thin Film
2	Make of modules installed	Canadian Solar and First Solar
3	Model of the modules installed	Canadian Solar 320 P Mix, First Solar FS 4117A-3
4	Make & Model of Invertor	SMA - Sunny Central 1000CP-XT, GE Power - LV5 1000kW
5	Number of Inverters	60
6	Make & Number of Transformers	Power transformer- 1, make-Bharat Bijlee ; Inverter duty transformers-18, make-Danish

During the Current Monitoring Period, all the sites are operational and the project activity has supplied 223,762.78 MWh of electricity, and thus contributing to 215,993 tCO₂e GHG reductions.

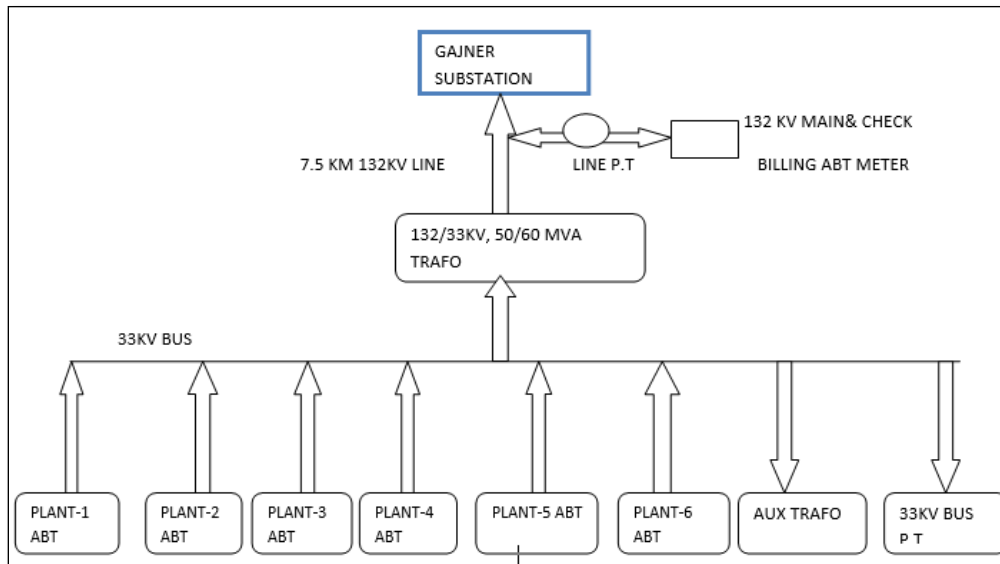


Figure 1. Mahindra Susten Private Limited

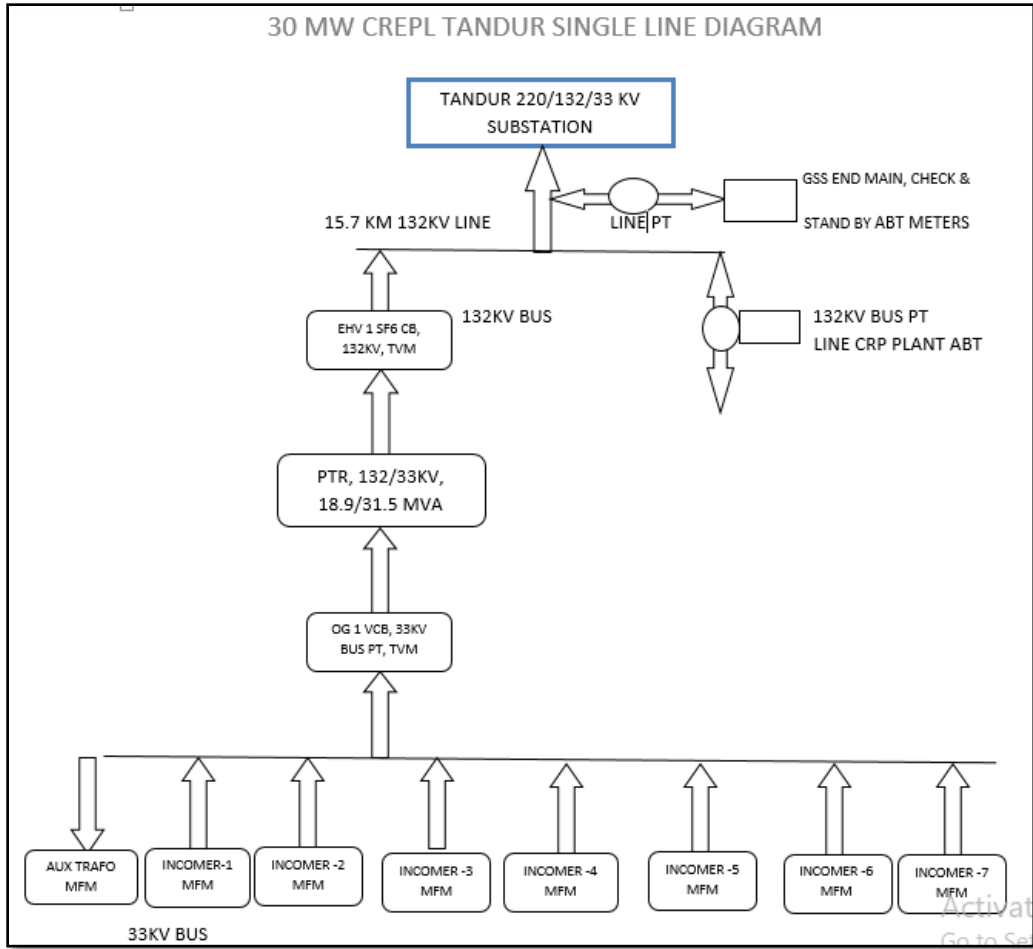


Figure 2. Brief line diagram of Cleansolar Renewable Energy Private Limited

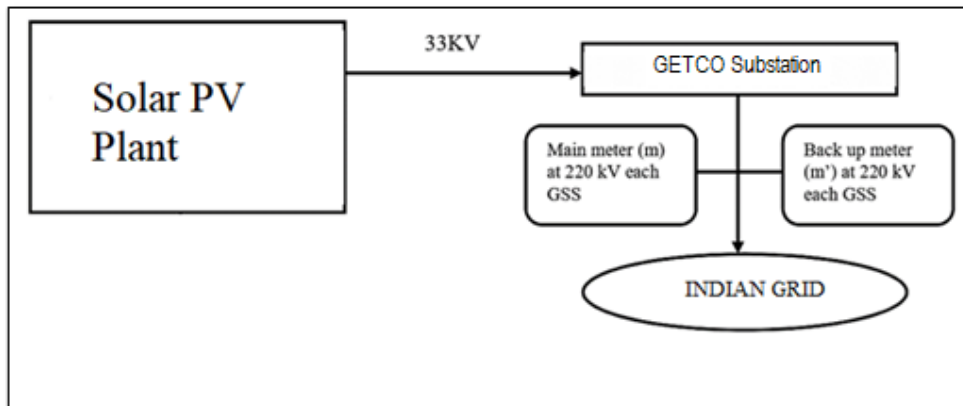


Figure 3. Astra Solren Private Limited

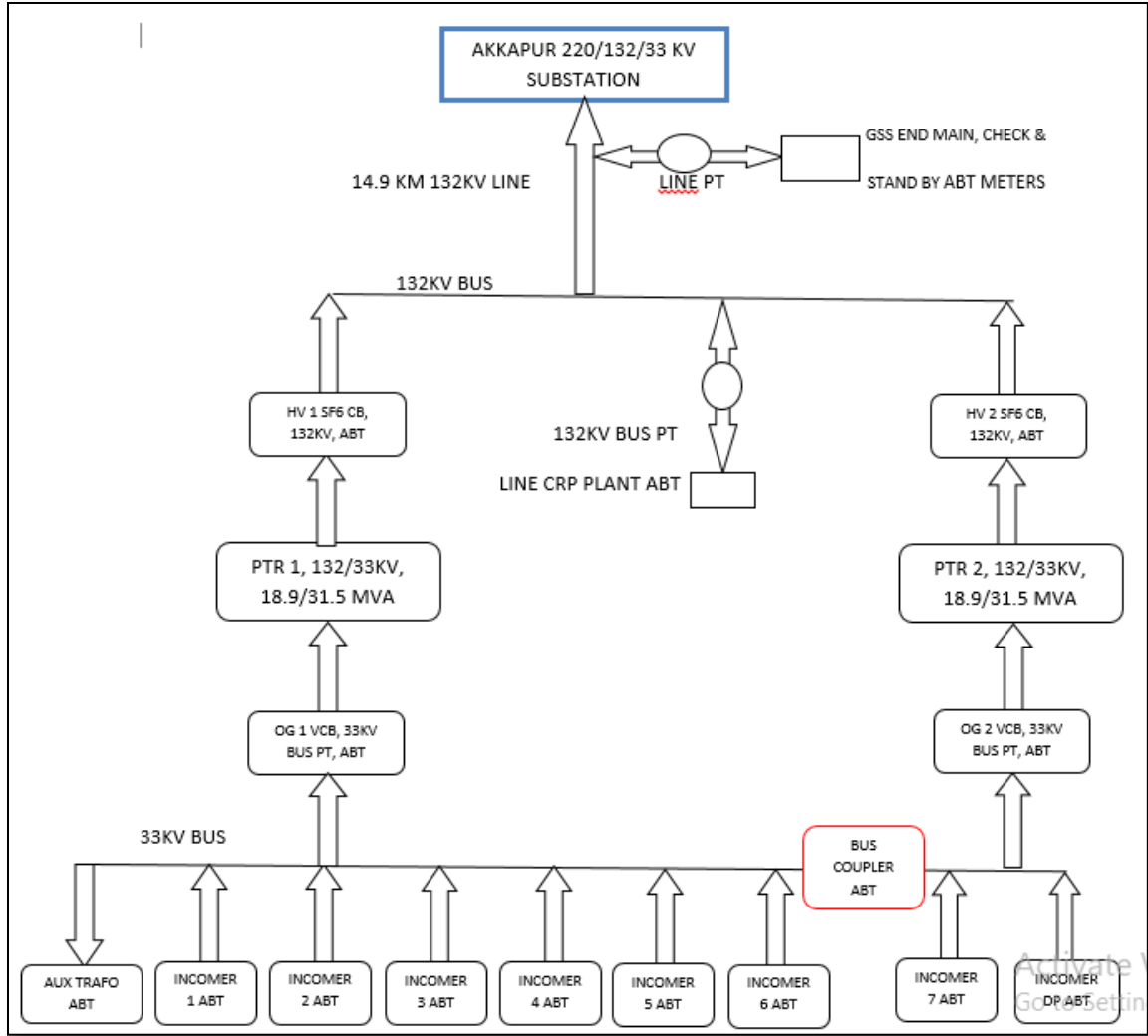


Figure 4. Divine Solren Private Limited

3.2 Deviations

3.2.1 Methodology Deviations

Not Applicable, as there are no methodological deviations.

3.2.2 Project Description Deviations

There is no project description deviation applied during the current monitoring period. The below mention deviation are previously approved:

Deviation 1:

Addition of Divine Solren Private Limited as a Project Participant. The VCS-Accession-Representation has been submitted to VERRA and VVB. The nature of deviation is permanent.

Above mentioned deviation is already approved during 3rd verification.

Deviation 2:

There geo coordinates for Clean Solar Renewable Energy Private Limited, Divine Solren Private Limited and Mahindra Susten Private Limited was slightly inconsistent. The correct coordinates are mentioned below

Divine Solren Private Limited	Mallapur, Mujgi	Nirmal, Dilawarpur	Nirmal	Telangana	19° 02' 39.6"	78° 17' 16.1"
Cleansolar Renewable Energy Private Limited	Gingurthi	Tandur	Vikarabad	Telangana	17° 21' 55.4"	77° 31' 45.9"
Mahindra Susten Private Limited	Goyalri / Gajner	Kolayat	Bikaner	Rajasthan	27° 53' 48.6"	72° 56' 48.3"

The nature of deviation is permanent.

Above mentioned deviation is already approved during 3rd verification.

Deviation 3:

The grid connectivity date for Astra Solren Private Limited was 23-May-2017, after successful trails, it received the commissioning status on 02-June-2017. The grid connectivity date was earlier mentioned as Commissioning date in section 1.1 of the MR, now it has been updated with certified commissioning date. The nature of deviation is permanent.

Above mentioned deviation is already approved during 3rd verification.

Deviation 4:

Billing Meter details of Astra Solren Private Limited has been corrected. During earlier verification, all details were mentioned in Astra Solren Private Limited 40 MW space. Now it has been corrected, billing energy meters connected to GETCO-400KV substation are being mentioned.

Above mentioned deviation is already approved during 3rd verification.

Deviation 5:

This bundled project activity located in three different states and billing cycle of each SPVs are different which is causing a mismatch in emission reduction calculation. Further, there is no specific apportioning approach was mentioned in the registered PD. Therefore, with this deviation, day wise apportioning method (unitary method) is used for export and import values. The deviation having no impact on project design, additionality and monitoring procedures. The nature of deviation is permanent.

Example:⁶ Like for Divine Solren Private Limited September 2021 month, the total export and import are 6390,600 kWh and 54,600 kWh respectively. By applying unitary method i.e. dividing electricity values by the number of days in the month and then multiplying with number of days covered in the monitoring period. Like for export $6,390,600/31*29=5,978,303$ and $54,600/31*29=51,077$ kWh. The outcomes of the unitary method are lower than the month values with appropriate ratio of the days covered in the monitoring period. Therefore, the ease usage of method across the different site is justified and conservative.

Above mentioned deviation is already approved during 4th verification.

3.3 Grouped Projects

Not Applicable, as this is not a grouped project activity.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO ₂ /MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017 ⁷
Value applied	0.9843
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 “CO ₂ Baseline Database for Indian Power Sector” version 12, published by the Central Electricity Authority, Ministry of Power, and 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.

⁶ DSPL billing cycle is 26 to 26 and the values of September is taken to show as an example for which the billing cycle was 26 August 2021 to 26 September 2021 but previous monitoring period i.e.4th monitoring period ended in 23 September 2021. So when we subtract the 26 September 2021 to 26 August 2021 the value is 31 that’s why it has been divided to the total of export and import and when 23 September 2021 is subtracted from 26 August 2021 the value is 29. So it has been multiplied in the total export and import for the apportioning to match the monitoring date.

⁷ https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver12.pdf

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO ₂ /MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017
Value applied	0.9083
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 “CO ₂ 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	$EF_{grid,CM,y}$
Data unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Calculated from CEA database, Version 12, May 2017
Value applied	0.9653
Justification of choice of data or description of measurement methods and procedures applied	<p>The combined margin emissions factor is calculated as follows:</p> $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ <p>Where:</p> <p>$EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh)</p> <p>$EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh)</p> <p>W_{OM} = Weighting of operating margin emissions factor (%) = 75%</p> <p>W_{BM} = Weighting of build margin emissions factor (%) = 25%</p>
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period

4.2 Data and Parameters Monitored

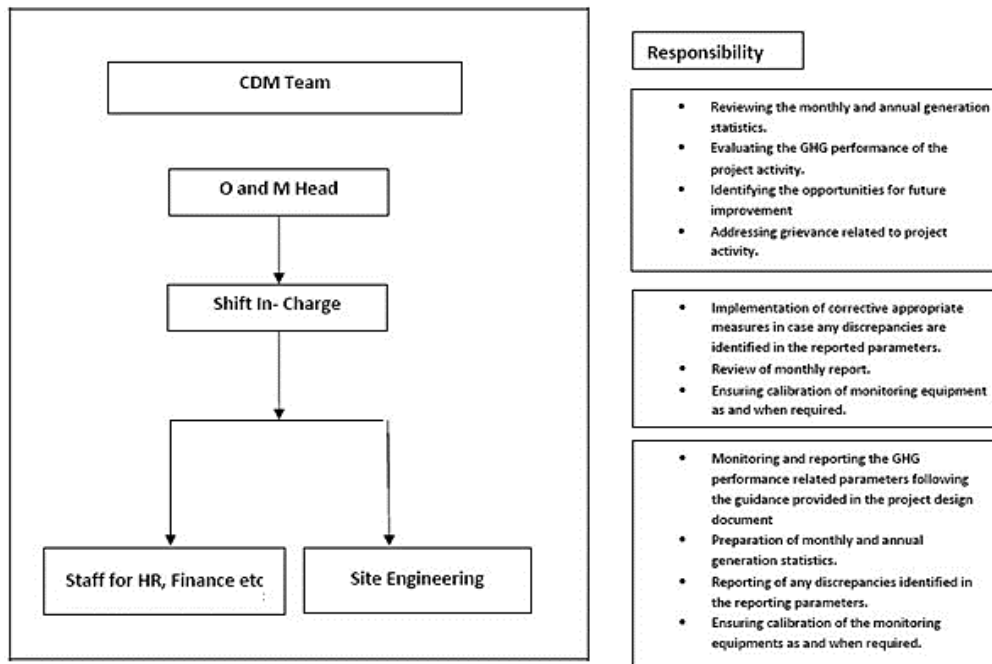
Data / Parameter	$EG_{PJ,y}$
Data unit	MWh/year

Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y in MWh. (This value is sum of the net electricity generated from all 4 sites).
Source of data	Monthly joint meter reading reports
Description of measurement methods and procedures to be applied	The difference of final value of export and import is used for monthly values of net electricity supplied to the grid by the project activity and same value will be considered for ER calculations.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value monitored	223,762.78 MWh/year
Monitoring equipment	The electricity exported / supplied by the plant to pooling substation and further to substation. This meter also measures electricity imported by the plant from the grid. The calibration details are being mentioned in Error! Reference source not found.
QA/QC procedures to be applied	<p>The meters are 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.</p> <p>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.</p> <p>The billing is raised based on substation meters.</p>
Purpose of the data	Calculation of baseline emissions
Calculation method	Thus, Net electricity supplied to the grid by the project plant in a given month = Export, kWh – Import, kWh
Comments	Data will be archived in paper & electronic form for two years after the end of crediting period or of the last issuance of VCUs for this project activity, whichever occurs later.

4.3 Monitoring Plan

As per the registered Project description, the monitoring plan is being implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

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



Data Measurement

The export and import energy are 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 are 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 are collected in the presence of the plant in-charge. Export and Import data is recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later. The Site In-charge will be responsible for carrying out internal auditing and QA/QC. All the values from generation record

will be checked with JMR and invoices for consistency. In case there are any non-conformances identified. The Site In-charge will investigate the error and revise the record to correct it. In any case where values have slightest of variation in different records the most conservative value will be taken in the project monitoring report.

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.

Personnel training

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

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

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

Where:

BE_y : Baseline emissions in year y (tCO₂e/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 VCS 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” (tCO₂e/MWh)

Based upon monitored values:

Year	Capacity (MW)	Net Generation (MWh)
Cleansolar Renewable Energy Private Limited (CREPL)	30	30,951.61
Divine Solren Private Limited (DSPL)	50	53,902.25
Astra Solren Private Limited (ASPL)	40	48,659.03
	25	29,590.71

Mahindra Susten Private Limited (MSPL)	60	60,659.19
Total	205	223,762.78

$$\begin{aligned}
 EG_{PJ,y} &= 223,762.78 \text{ MWh} \\
 EF_{grid,CM,y} &= 0.9653 \text{ tCO}_2\text{e} \\
 BE_y &= 223,762.78 * 0.9653 \\
 &= 215,993 \text{ (Round down value)}
 \end{aligned}$$

5.2 Project Emissions

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

5.3 Leakage

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

5.4 Net GHG Emission Reductions and Removals

Reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Using above values

$$ER_y = 215,993 - 0 - 0$$

$$ER_y = 215,993$$

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
24-September- 2021 to 31-December-2021	90,692	0	0	90,692
01-January-2022 to 23-April -2022	125,301	0	0	125,301
Total	215,993	0	0	215,993

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 191,299 tCO_{2e}, whereas actual emission reductions achieved are 215,993 tCO_{2e}, which is approximately 12.91% higher than the estimated emission reductions for this monitoring period.

Project Investor	Observed PLF	PLF at the time of Validation	PLF Variations	Additionality Breaching Values	Additionality breached due to increased PLF
Cleansolar Renewable Energy Private Limited (CREPL)	20.28%	19%	6.72%	12.16%	No
Divine Solren Private Limited (DSPL)	21.19%	19%	11.52%	17.39%	No
Astra Solren Private Limited (ASPL)	23.66%	19%	24.53%	38.23%	No
Mahindra Susten Private Limited (MSPL)	19.87%	19%	4.58%	35.12%	No

For CREPL the observed PLF for this monitoring period is 20.28% and PLF at the time of validation was 19% whereas breaching value as per the registered PD is 12.16%. Variation of 6.72% has been observed for this monitoring period which is lower than the breaching value which does not affect the additionality of the project.

Annual variation for the SPV is calculated as -0.12% for the Indian Financial year 2021-2022 (April to March) which is lower than the breaching value of 12.16%. Hence, it does not affect additionality of the project.

For DSPL the observed PLF for this monitoring period is 21.19% and PLF at the time of validation was 19% whereas breaching value as per the registered PD is 17.39%. Variation of 11.52% has been observed for this monitoring period which is lower than the breaching value which does not affect the additionality of the project.

Annual variation for the SPV is calculated as 8.47% for the Indian Financial year 2021-2022 (April to March) which is lower than the breaching value of 17.39%. Hence, it does not affect additionality of the project.

For ASPL-65MW the observed PLF for this monitoring period is 23.66% and PLF at the time of validation was 19% whereas breaching value as per the registered PD is 38.23%. Variation of 24.53% has been observed for this monitoring period which is lower than the breaching value which does not affect the additionality of the project.

Annual variation for the SPV is calculated as 21.06% for the Indian Financial year 2021-2022 (April to March) which is lower than the breaching value of 38.23%. Hence, it does not affect additionality of the project.

For **MSPL-60MW** the observed PLF for this monitoring period is 19.87% and PLF at the time of validation was 19% whereas breaching value as per the registered PD is 35.12%. Variation of 4.58% has been observed for this monitoring period which is lower than the breaching value which does not affect the additionality of the project.

Annual variation for the SPV is calculated as 20.30% for the Indian Financial year 2021-2022 (April to March) which is lower than the breaching value of 35.12%. Hence, it does not affect additionality of the project.

The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant.

Energy Generation Vintage Wise Report is as follows:

Project Investor	Project Location	Site	2021	2022
Cleansolar Renewable Energy Private Limited (CREPL)	Telangana	Vikarabad	12,794	17,083
Divine Solren Private Limited (DSPL)	Telangana	Nirmal	22,675	29,356
Astra Solren Private Limited (ASPL)	Gujarat	Patan	19,674	27,295
	Gujarat		12,046	16,517
Mahindra Susten Private Limited (MSPL)	Rajasthan	Bikaner	23,503	35,050
Total(tCO₂)			90,692	125,301

APPENDIX 1: CALIBRATION DETAILS

The Energy Meters details for the project activity is as below.

Calibration and Meter Details of 30 MW solar project by Clean solar Renewable Energy Private Limited

Meter Details	Main Meter	Check Meter	Standby Meter
Meter Serial No	APX00619	APX00620	APX00622
Meter Make	SECURE	SECURE	SECURE
Accuracy Class	0.2 s	0.2 s	0.2 s
Date of Calibration	23-February-2019	23-February-2019	23-February-2019
Due date of Calibration	22-February-2024	22-February-2024	22-February-2024

Calibration and Meter Details of 50 MW solar project by Divine Solren Private Limited

Meter Details	Main Meter	Check Meter	Standby Meter
Meter Serial No	APZ00292	APZ00293	APZ00294
Meter Make	SECURE	SECURE	SECURE
Accuracy Class	0.2 s	0.2 s	0.2 s
Date of Calibration	04-September-2019	04-September-2019	04-September-2019
Due date of Calibration	03-September-2024	03-September-2024	03-September-2024

Calibration and Meter Details of 40 MW solar project by Astra Solren Private Limited

Meter Details	Main Meter	Check Meter
Meter Serial No	GJ 3832 A	GJ 3833 A
Meter Make	SECURE	SECURE
Accuracy Class	0.2 s	0.2 s
Date of Calibration	24-March-2017	24-March-2017
Due date of Calibration	23-March-2022	23-March-2022
Date of Calibration	19-November-2019	19-November-2019
Due date of Calibration	18-November-2024	18-November-2024

Calibration and Meter Details of 25 MW solar project by Astra Solren Private Limited

Meter Details	Main Meter	Check meter
Meter Serial No	GJ 3830 A	GJ 3831 A
Meter Make	SECURE	SECURE
Accuracy Class	0.2 s	0.2 s
Date of Calibration	24-March-2017	24-March-2017
Due date of Calibration	23-March-2022	23-March-2022
Date of Calibration	19-November-2019	19-November-2019
Due date of Calibration	18-November-2024	18-November-2024

Main Meter has been changed and calibrated by UGVCL on both the sites of 40 MW and 25MW of Astra Solren in June 2022. As meter custody is under the GETCO, PP has no control over it. The check meter is not changed.

Calibration and Meter Details -New Meter of 25 MW solar project by Astra Solren Private Limited

Meter Details	Main Meter
Meter Serial No	GJ5815A
Meter Make	SECURE
Accuracy Class	0.2 s
Date of Calibration	20-June-2022
Due date of Calibration	19-June-2027

Calibration and Meter Details -New Meter of 40 MW solar project by Astra Solren Private Limited

Meter Details	Main Meter
Meter Serial No	GJ5814A
Meter Make	SECURE
Accuracy Class	0.2 s
Date of Calibration	20-June-2022
Due date of Calibration	19-June-2027

Calibration and Meter Details of 60 MW solar project by Mahindra Susten Private Limited

Meter Details	Main Meter	Check Meter
Meter Serial No	15624818	15624819
Meter Make	L & T	L & T
Accuracy Class	0.2 s	0.2 s
Date of Calibration	28-September-2019	
Due date of Calibration	27-September-2024	
Date of Calibration	24-December-2021	
Due date of Calibration	23-December-2026	