



MONITORING REPORT

CARBON OFFSET UNIT (CoU) PROJECT



Title : 990 kW rooftop solar project by M/S R&B Denim Ltd

Version : 2.0

MR Date : 18/10/2023

First CoU Issuance Period : 01 Year 03 Months

First Monitoring Duration : 01/10/2021 to 31/12/2022



Monitoring Report (MR)

CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION

| | |
|---|--|
| Title of the project activity | 990 kW rooftop solar project by M/S R&B Denim Ltd |
| UCR Project Registration Number | 238 |
| Version | 2.0 |
| Completion date of the MR | 18/10/2023 |
| Monitoring period number and duration of this monitoring period | Monitoring Period Number: 01 Duration of this monitoring Period: (first and last days included (01/10/2021 to 31/12/2022) |
| Project participants | Creduce Technologies Private Limited (Aggregator) M/S R & B Denims Limited (Project Proponent) |
| Host Party | India |
| Applied methodologies and standardized baselines | Applied Baseline Methodology: AMS-I. F: “Renewable electricity generation for captive use and mini-grid, Version 05.0” |
| Sectoral Scope | 01 Energy industries (Renewable/Non-Renewable Sources) |
| Estimated amount of GHG emission reductions for this monitoring period | 2021 : 315 CoUs (315 tCO ₂ e) 2022 : 1384 CoUs (1384 tCO ₂ e) |
| Total: | 1699 CoUs (1699 tCO ₂ e) |

SECTION - A - Description of project activity

A.1 Purpose and General description of Carbon offset Unit (CoU) project activity

The proposed project activity with title under UCR “990 kW rooftop Solar project by M/s R & B Denim Limited”, is a renewable power generation activity which incorporates installation and operation Rooftop Mounted Solar Photovoltaic power generation project in the state of Gujarat in India. The project has aggregated installed capacity of 1000 kW (AC). The project is an operational activity with continuous reduction of GHG, currently being applied under “Universal Carbon Registry” (UCR).

A.1.1 Purpose of the project activity:

The project activity aims to harness Solar radiation of sun which is a renewable source, to generate electricity. The net generated electricity from the project activity is consumed by the manufacturing facility of the PP. The promoter of the project activity is ‘M/s R & B Denims Limited’ (herein after called as Project Proponent or PP). PP has the 100% ownership of the project activity. A Wheeling agreement has been signed between PP and Dakshin Gujarat Viji Company Ltd (DGVCL). In pre-project scenario the State utility was importing the required electricity from the NEWNE grid to meet its requirement of electrical energy. Currently, NEWNE grid is connected to large numbers of fossil fuel-based power plants. Hence, project activity is displacing the gross electricity generation i.e., 1890 MWh from the NEWNE grid, which otherwise would have been imported from the grid. The project activity doesn't involve any GHG emission sources.

The annual and the total CO_{2e} emission reduction by the project activity over the defined monitoring period is as per **Annexure I**.

A.1.2 Description of the installed technology and equipment:

The project activity involves Rooftop Mounted Polycrystalline Mono- PERC Photovoltaic (PV) Plant having installed capacity of 1000 kW (AC). The project activity uses Monocrystalline solar photovoltaic technology to generate clean energy. Solar radiation is converted directly into electricity by solar cells (photovoltaic cells). In such cells, a small electric voltage is generated when light strikes the junction between a metal and a semiconductor (such as silicon) or the junction between two different semiconductors. Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array.

A.1.3 Relevant dates for the project activity (e.g., construction, commissioning, continued operation periods, etc.)

The duration of the crediting period corresponding to the monitoring period is covered in this monitoring report. Here the start date of generation has been considered as:

| | | |
|--------------------------------|---|------------|
| UCR Project ID | : | 238 |
| Start Date of Crediting Period | : | 01/10/2021 |

| Village | District | Type | Total installed Capacity | Commissioning date |
|---------|----------|-----------------|--------------------------|--------------------|
| Palsana | Surat | Rooftop Mounted | 1000 kW (AC) | 30/09/2021 |

A.1.4 Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period

The total GHG emission reductions achieved in this monitoring period are as follows:

| Summary of the Project Activity and ERs Generated for the Monitoring Period | |
|---|-------------------------|
| Start date of this Monitoring Period | 01/10/2021 |
| Carbon credits claimed up to | 31/12/2022 |
| Total ERs generated (tCO ₂ e) | 1699 tCO ₂ e |
| Leakage Emission | 0 |
| Project Emission | 0 |

A.1.5 Baseline Scenario

As per the approved consolidated methodology AMS-I.F. Version 05, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: **“The baseline scenario is that the 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 into the grid”.**

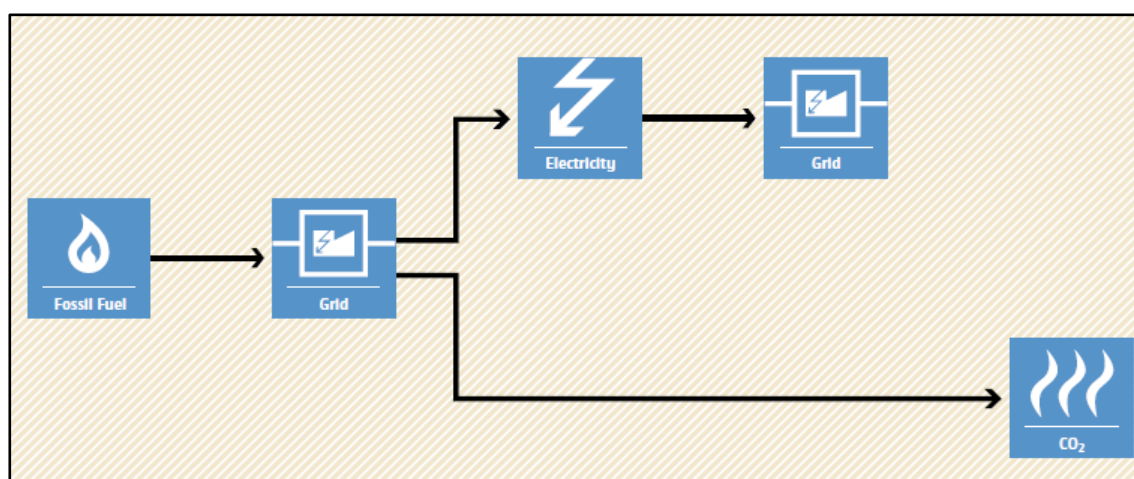


Figure 1 Baseline Scenario

A.2 Location of Project Activity

Country : India
State : Gujarat

The project sites are well connected from airport and railway station. The geographic co-ordinates of the project location have been given below:

| Taluka | District | Type | Project location |
|---------|----------|---------------|---|
| Palsana | Surat | Rooftop solar | Latitude: 21°05'19.0"N Longitude: 72°58'11.3"E |

The representative location map is included below:



Figure-1- Location of the project activity (courtesy: google images and www.mapsofindia.com)

A.3 Parties and project participants

| Party (Host) | Participants |
|--------------|---|
| India | <p>Creduce Technologies Private Limited (Aggregator) Contact person : Shailendra Singh Rao Mobile : +91 9016850742, 9601378723 Address : 2-O-13,14 Housing Board Colony, Banswara, Rajasthan -327001, India</p> <p>M/S R & B Denims Limited in Gujarat, India (Project Owner) Address: Block No. 467, Sachin Palsana Road, Surat-394315, Gujarat, India.</p> |

A.4 Methodologies and standardized baselines

Sectoral Scope : 01 Energy industries (Renewable/Non-Renewable Sources)

Type : Renewable Energy Projects

Category : AMS-I. F: “Renewable electricity generation for captive use and mini-grid”, Version 05

A.5 Crediting period of project activity

Start date of the crediting period: 01/10/2021

Crediting period corresponding to this monitoring period: 01/10/2021 to 31/12/2022 (Both dates are inclusive)

A.6 Contact information of responsible persons/entities

Contact person : **Shailendra Singh Rao**

Mobile : +91 9016850742, 9601378723

Address : 2-O-13,14 Housing Board Colony,
Banswara, Rajasthan -327001, India

SECTION - B - Implementation of project activity

B.1 Description of implemented registered project activity

B.1.1 Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN

The project consists of Rooftop Mounted fitted Photo Voltaic solar Plant with aggregated installed capacity of 1000 kW (AC). The plant was commissioned on different date by the respective authority of Government of Gujarat. Here the start date of generation will be called as commissioning date, and project wise commissioning date has been mentioned in Section A.1.3. The project generates clean energy by utilizing the Solar Radiations.

B.1.2 For the description of the installed technology, technical process, and equipment, include diagrams, where appropriate

Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array. The project activity has used the reliable and proven technology from supplier to ensure that an environmentally safe and sound technology is only being implemented in the proposed project activity leading to the GHG reduction.

Technical details of the 1000 kW (AC) Rooftop Mounted solar power plant installed are mentioned below:

| Parameters | Description |
|--------------------------------------|-----------------|
| Total number of Photovoltaic Modules | 2384 Nos. |
| Rating of Photovoltaic Module | 495Wp & 500 Wp |
| Modules make | Trina Solar |
| Technology | Monocrystalline |
| No. of Inverter | 10 |
| Inverter Capacity | 100 kW |
| Inverters make | ABB-Fimer |
| PV Connectors | MC4 |

B.2 Do no harm or impact test of the project activity

There was no harm identified from the project and hence no mitigation measures are applicable.

Rational: as per ‘Central Pollution Control Board (Ministry of Environment & Forests, Govt. of India)’, final document on revised classification of Industrial Sectors under Red, Orange, Green and White Categories (07/03/2016), it has been declared that Solar project activity falls under the “White category”. White Category projects/industries do not require any Environmental Clearance such as ‘Consent to Operate’ from PCB as such project does not lead to any negative environmental impacts. Additionally, as per Indian Regulation, Environmental and Social Impact Assessment is not required for Solar Projects.

The Government of India has stipulated the following indicators for sustainable development in the interim approval guidelines for such projects which are contributing to GHG mitigations. The Ministry

of Environment, Forests & Climate Change, has stipulated economic, social, environmental, and technological well-being as the four indicators of sustainable development. It has been envisaged that the project shall contribute to sustainable development using the following ways:

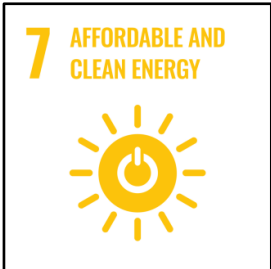
Social well-being: The project would help in generating direct and indirect employment benefits accruing out of ancillary units for installing and maintenance during operation of the project activity. It will lead to the development of infrastructure around the project area in terms of improved road network etc. and will also directly contribute to the development of renewable infrastructure in the region.

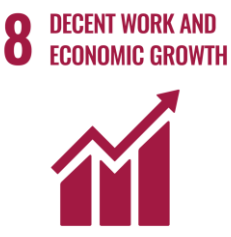

Environmental well-being: The project utilizes Solar energy for generating electricity which is a clean source of energy. The project activity will not generate any air pollution, wind pollution or solid waste to the environment which otherwise would have been generated through fossil fuels. Also, it will contribute to the reduction of GHG emissions. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

Economic well-being: Being a renewable resource, using Solar energy to generate electricity contributes to the conservation of precious natural resources. The project contributes to economic sustainability through the promotion of decentralization of economic power, leading to the diversification of the national energy supply, which is dominated by conventional fuel-based generating units. Locally, improvement in infrastructure will provide new opportunities for industries and economic activities to be set up in the area. Apart from getting better employment opportunities, the local people will get better prices for their land, thereby resulting in overall economic development.

Technological well-being: The project activity leads to the promotion of 1000 kW (AC) PV power generation project into the region and will promote practice for small scale industries to reduce the dependence on carbon intensive grid supply to meet the captive consumption requirement of electrical energy and also increasing energy availability and improving quality of power under the service area. Hence, the project leads to technological well-being.

The project activity contributes to the following SDGs;

| SDG | Description |
|---|---|
| <p>Goal 7</p>  | <ul style="list-style-type: none"> ➤ The project activity has generated 1890 MWh of clean energy, which with increased shared will increase the affordability at a cheaper rate to end user. ➤ The project activity will utilize Solar energy (renewal resource) to generate power. The project activity will increase the share of renewable resource-based electricity to global mix of energy consumption. |
| Goal 8 | <ul style="list-style-type: none"> ➤ Decent work and economic growth. ➤ This project activity generates additional employment for skilled and |

| | |
|--|--|
|  | <p>unskilled, also the project situated in a remote area will provide employment opportunities to unskilled people from villages. Training on various aspects including safety, operational issues, and developing skill sets will also be provided to employees.</p> |
| <p>Goal 13</p>  | <ul style="list-style-type: none"> ➤ This 1000 kW (AC) Rooftop Mounted solar power projects meets the SDG 13 goal by saving fossil fuel and producing clean energy. ➤ This project has avoided 1699 tons of CO₂ emissions during this monitoring period. ➤ SDG 13 on clean energy is closely related and complementary. ➤ In a Greenfield project, electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants. Thereby the project activity reduces the dependence on fossil fuel-based generation units and as there are no associated emissions with this project it contributes to the reduction of greenhouse gases (GHG) emissions. |

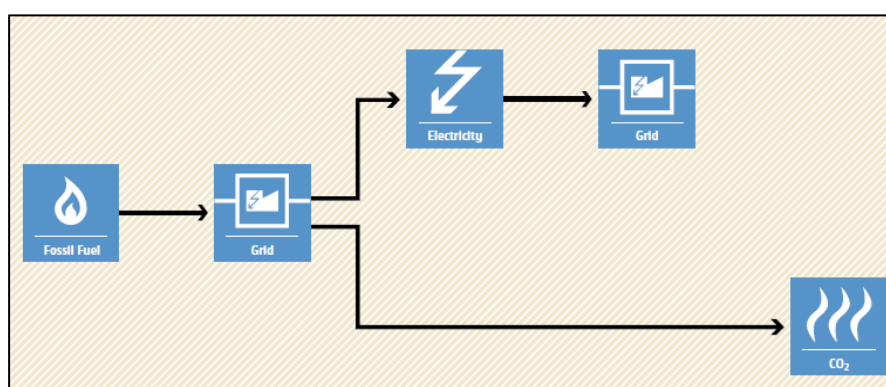
B.3 Baseline Emissions

The baseline scenario identified at the MR stage of the project activity is:

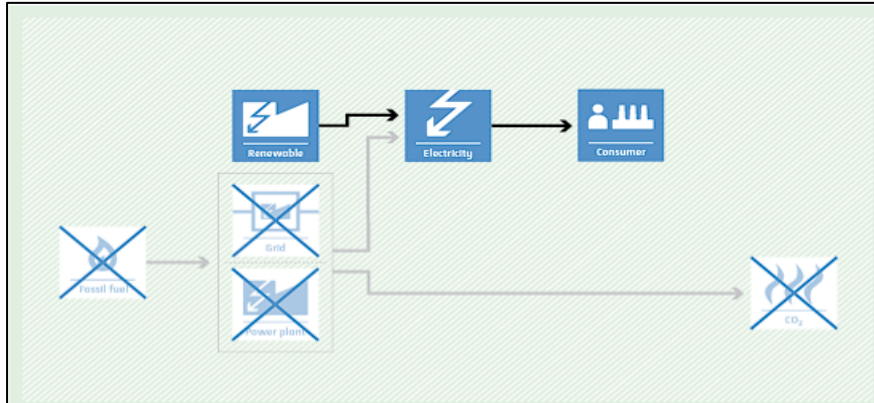
In the absence of the project activity, the equivalent amount of electricity would have been imported from the grid (which is connected to the unified Indian Grid system (NEWNE Grid)), which is carbon intensive due to being predominantly sourced from fossil fuel-based power plants. Hence, the baseline scenario of the project activity is the grid-based electricity system, which is also the pre-project scenario.

Schematic diagram showing the baseline scenario:

Baseline Scenario:



Project Scenario:



Thus, this project activity was a voluntary investment that replaced an equivalent amount of electricity from the Indian grid. The project proponent was not bound to incur this investment as it was not mandatory by national and sectoral policies. Thus, the continued operation of the project activity would continue to replace fossil fuel-based power plants and fight against the impacts of climate change. The Project Proponent hopes that revenues from the carbon credits generated will help repay the loans and help in the continued maintenance of this project activity.

B.4. De-bundling

This project activity is not a debundled component of a larger project activity.

SECTION - C - Application of methodologies and standardized baselines

C.1 References to methodologies and standardized baselines

| | | |
|-----------------------|---|---|
| Sectoral scope | : | 01, Energy industries (Renewable/Non-renewable sources) |
| Type | : | I-Renewable Energy Projects |
| Category | : | AMS. I.F. (Title: “Renewable electricity generation for captive use and mini-grid”, Version 05) |

C.2 Applicability of methodologies and standardized baselines

The project activity involves the generation of grid-connected electricity from the construction and operation of a Solar Power based project for captive consumption.

The project activity has an installed capacity of 1000 kW (AC) which will qualify for a small-scale project activity under Type-I of the Small-Scale methodology. The project status is corresponding to the methodology AMS-I.F., Version 05, and the applicability of the methodology is discussed below:

| Applicability Criterion | Project Case |
|--|---|
| 1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s). The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit, i.e., in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below: (a) A national or a regional grid (grid hereafter); (b) A fossil fuel fired captive power plant; (c) A carbon intensive mini-grid. | The project activity is a Renewable Energy Project i.e., a Rooftop Mounted solar power projects which falls under applicability criteria option 1 (a) i.e., “Consuming electricity generated and supplying excess to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling”. Hence the project activity meets the given applicability criterion. |
| 2. This methodology is applicable for project activities that: (a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) Involve a capacity addition, (c) Involve a retrofit of (an) existing plant(s); or (d) Involve a replacement of (an) existing plant(s). | The option (a) of applicability criteria 2 is applicable as project is a Greenfield plant/Unit. Hence the project activity meets the given applicability criterion. |

| | |
|--|---|
| <ul style="list-style-type: none"> a) Project supplies electricity to a national/regional grid b) Project displaces grid electricity consumption (e.g., grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid) c) Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling) d) Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel e) Project supplies electricity to household users (included in the project boundary) located in off grid areas | Option (a) and option (b) are applicable to AMS-1. F. methodology. |
| 4. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units. | The proposed project is 1000 kW (AC) Rooftop Mounted solar power projects, i.e., only component is renewable power project below 15 MW, thus the criterion is not applicable to this project activity. |
| 5. Combined heat and power (co-generation) systems are not eligible under this category. | This is not relevant to the project activity as the project involves only solar power generating units. |
| 6. In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units. | The proposed project is a greenfield 1000 kW (AC) Rooftop Mounted solar power projects, i.e., the only component is a renewable power project below 15 MW, thus the criterion is not applicable to this project activity. |
| 7. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW. | This is a green field project and no expansion and retrofitting were carried out. Hence this criterion is not applicable. |
| 8. If the unit added has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW. | The proposed project is a greenfield 1000 kW (AC) Rooftop Mounted solar power projects; hence, this criterion is not applicable to this project activity. |

| | |
|--|---|
| <p>9. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <p>(a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</p> <p>(b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m²;</p> <p>(c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m².</p> | <p>The project is a Rooftop Mounted solar power projects and thus the criterion is not applicable to this project activity.</p> |
| <p>10. If electricity and/or steam/heat produced by the project activity is delivered to a third party, i.e., another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered that ensures that there is no double counting of emission reductions.</p> | <p>The electricity generated by the Rooftop solar power plant is consumed by manufacturing facility of PO and injected to the grid of the distribution utility under the mechanism of net metering if any surplus electricity is available after meeting their own consumption.</p> |
| <p>11. In the case the project activities utilize biomass, the “TOOL16: Project and leakage emissions from biomass” shall be applied to determine the relevant project emissions from the cultivation of biomass and the utilization of biomass or biomass residues.</p> | <p>No biomass is involved, the project is a Rooftop Mounted solar power projects and thus the criterion is not applicable to this project activity.</p> |

C.3 Applicability of double counting emission reductions

The project was not applied under any other GHG mechanism. Hence the project will not cause double accounting of carbon credits (i.e., CoUs).

C.4 Project boundary, sources, and greenhouse gases (GHGs)

As per applicable methodology AMS-I.F. Version 05.0, “The spatial extent of the project boundary includes industrial, commercial facilities consuming energy generated by the system.”

Thus, the project boundary includes the Solar Photovoltaic Plant.

| Source | | Gas | Included? | Justification/Explanation |
|----------|--|------------------|-----------|---|
| Baseline | Grid-connected electricity generation | CO ₂ | Yes | Main emission source |
| | | CH ₄ | No | Minor emission source |
| | | N ₂ O | No | Minor emission source |
| | | Other | No | No other GHG emissions were emitted from the project |
| Project | Greenfield Electric solar Power project Activity | CO ₂ | No | No CO ₂ emissions are emitted from the project |
| | | CH ₄ | No | Project activity does not emit CH ₄ |
| | | N ₂ O | No | Project activity does not emit N ₂ O |
| | | Other | No | No other emissions are emitted from the project |

C.5 Establishment and description of the baseline scenario

As per the approved consolidated methodology AMS-I.F. Version 05, if the project activity is the installation of a new renewable power plant/unit, the baseline scenario is the following:

“The baseline scenario is that the 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 into the grid”.

The project activity involves setting up of a new Solar power plant to harness the solar energy and use it for captive consumption i.e., the Indian grid system through wheeling and banking arrangement. In the absence of the project activity, the equivalent amount of power would have been generated by the operation of grid-connected fossil fuel-based power plants and by the addition of new fossil fuel-based generation sources into the grid. The power produced from other conventional sources which are predominantly fossil fuel-based. Hence, the baseline for the project activity is the equivalent amount of power produced at the Indian grid.

A "grid emission factor" refers to a CO₂ emission factor (tCO₂/MWh) that will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO₂/MWh for the 2013 - 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021-2022, the combined margin emission factor calculated from the CEA database in India results in higher emissions than the default value. Hence, the same emission factor has been considered to calculate the emission reduction under a conservative approach.

C.5.1 Net GHG Emission Reductions and Removals

$$\text{Thus, } ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂/y)

BE_y = Baseline Emissions in year y (tCO₂/y)

PE_y = Project emissions in year y (tCO₂/y)

LE_y = Leakage emissions in year y (tCO₂/y)

- **Baseline Emissions**

Baseline emissions include only CO₂ emissions from electricity generation in power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

BE_y = Baseline emissions in year y (t CO₂)

$EG_{PJ,y}$ = 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)

$EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO₂/MWh has been considered.
(Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Hence

| Baseline Emissions Calculation | | | | |
|--------------------------------|--|------------|----------|------|
| Sr.No | Year | EGpy (MWh) | EFgrid,y | BEy |
| 1 | 2021 | 350.99 | 0.9 | 315 |
| 2 | 2022 | 1538.29 | 0.9 | 1384 |
| 3 | BE (tCO ₂ e) for the period of 2021 to 2022 | | | 1699 |

Estimated annual baseline emission reductions (BE_y)

$$= 1888 \text{ MWh/year} \times 0.9 \text{ tCO}_2/\text{MWh}$$

$$= 1699 \text{ tCO}_2/\text{year}$$

- **Project Emissions**

As per Paragraph 25 of AMS-I.F. Version 05, only emissions associated with fossil fuel combustion, emissions from the operation of geothermal power plants due to the release of non-condensable gases, and emissions from a water reservoir of Hydro should be accounted for the project emission. Since the

project activity is a Solar electric power project, project emission for renewable energy plants is nil.

Thus, PE = 0

- ***Leakage Emission***

As per paragraph 28 of AMS-I.F. Version 05, “For project activities utilizing biomass and/or biomass residues, the TOOL16 shall be applied to determine the leakage as zero”.

No biomass is involved, the project is a Rooftop Mounted solar power projects and thus the criterion is not applicable to this project activity.

Hence, LE = 0

The actual emission reduction achieved during the first CoU period is calculated below:

Hence Net GHG emission reduction, = $1699 - 0 - 0 = 1699$ tCO₂/year (i.e., 1699 CoUs/year)

C.6 Prior History

The project was not applied under any other GHG mechanism. Hence the project will not cause double accounting of carbon credits (i.e., CoUs).

C.7 Changes to the start date of crediting

The crediting period under UCR has been considered from the date of the generation of electricity. There is no change in the start date of crediting period.

C.8 Permanent changes from MR monitoring plan, applied methodology, or applied standardized baseline

The initial application of the CDM Methodology AMS-I. D version 18 was later reassessed through a comprehensive desk review and on-site visit conducted by the verifier. This evaluation resulted in the determination that CDM Methodology AMS-I.F. Version 05 aligns with the project activity. Subsequently, the AMS-I.F. Version 05 methodology was adopted and implemented.

C.9 Monitoring period number and duration

Total Monitoring Period: 01 Year 03 Months

Date: 01/10/2021 to 31/12/2022 (inclusive of both dates).

C.10 Monitoring Plan

The project activity essentially involves the generation of electricity from solar radiations, the employed SPV can only convert Solar energy into electrical energy and cannot use any other input fuel for electricity generation, thus no special ways and means are required to monitor leakage from the project activity. The recording of the electricity fed to the state utility grid is carried out jointly at the incoming feeder of the state power utility.

Data and Parameters available:

| | |
|------------------------------------|---|
| Data / Parameter | UCR recommended emission factor |
| Data unit | tCO ₂ /MWh |
| Description | A "grid emission factor" refers to a CO ₂ emission factor (tCO ₂ /MWh) which will be associated with each unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO ₂ /MWh for the 2013 - 2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach. |
| Source of data | https://cea.nic.in/wp-content/uploads/baseline/2023/01/Approved_report_emission__2021_22.pdf |
| Value applied | 0.9 |
| Measurement methods and procedures | - |
| Monitoring frequency | Fixed parameter |
| Purpose of Data | For the calculation of Emission Factor of the grid |
| Additional Comment | The combined margin emission factor as per CEA database (current Version 05, December 2022) results into higher emission factor. Hence for 2022 vintage UCR default emission factor remains conservative. |

Data and Parameters to be monitored (ex-post monitoring values):

| | |
|----------------------------------|---|
| Data / Parameter | EG _{PJ, facility, y} |
| Data unit | MWh |
| Description | Net electricity produced for the captive use by the project activity from 01/10/2021 to 31/12/2022. |
| Source of data | Daily recording of solar electricity generation data in log book and Inverter |
| Measurement procedures (if any): | <p>Data Type: Measured</p> <p>Monitoring equipment: Energy Meters are used for monitoring</p> <p>Recording Frequency: Continuous monitoring, Daily and Monthly recording from Energy Meters, Summarized Annually</p> <p>Archiving Policy: Paper & Electronic</p> <p>Calibration frequency: 5 years (as per CEA provision)</p> |

| | |
|---------------------------|--|
| | The total electricity generation by the Solar power plant is recorded at the plant facility, at the end of every month, |
| Measurement Frequency: | Monthly |
| Value applied: | 1890 (Ex-post estimate) |
| QA/QC procedures applied: | Continuous monitoring, hourly measurement, daily recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.5s |
| Purpose of data: | The Data/Parameter is required to calculate the baseline emission |
| Any comment: | Data will be archived electronically for a period of 36 months beyond the end of crediting period. |

ANNEXURE I (Emission Reduction Calculation)

| 990 kW rooftop solar project by M/S R&B Denim Ltd | | | | | | | | | | | | |
|--|---|----------|----------|----------|---|----------|--------|----------|----------------------|----------|----------|----------|
| | | | | | | | | | | | | |
| Month - Wise Energy generated (in kWh) | | | | | | | | | | | | |
| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2021 | - | - | - | - | - | - | - | - | - | 1,33,266 | 1,14,192 | 1,03,533 |
| 2022 | 1,27,185 | 1,40,736 | 1,54,614 | 1,61,601 | 1,60,443 | 1,30,689 | 85,431 | 1,04,028 | 97,788 | 1,28,454 | 1,30,197 | 1,17,120 |
| Year-Wise Emission reduction calculation for the project activity | | | | | | | | | | | | |
| Year | Total No. of Electricity delivered in kWh | | | | Recommended emission factor tCO ₂ /MWh | | | | Total CoUs generated | | | |
| 2021 | 3,50,991 | | | | 0.9 | | | | 315 | | | |
| 2022 | 15,38,286 | | | | 0.9 | | | | 1384 | | | |
| Total CoUs to be issued for the first monitoring period (Year: 2021 to 2022) | | | | | | | | | | | | 1,699 |