



PROJECT CONCEPT NOTE

CARBON OFFSET UNIT (CoU) PROJECT

Title: 990 kW Solar Ground Mounted Power Project By M/s Sidwin Fabric Pvt. Ltd

Version 2.0

Date 25/12/2023

Total CoU Issuance Period: 19 Years 07 Months

Date: 15/06/2021 to 31/12/2041



**Project Concept Note (PCN)
CARBON OFFSET UNIT (CoU) PROJECT**

BASIC INFORMATION

Title of the project activity	990 kW Solar Ground Mounted Power Project By M/s Sidwin Fabric Pvt. Ltd
Scale of the project activity	Small Scale
Completion date of the PCN	25/12/2023
Project participants	Creduce Technologies Private Limited (Representator) M/s Sidwin Fabric Pvt. Ltd (Developer)
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 scopes	01 Energy industries (Renewable/Non-Renewable Sources)
Estimated amount of total GHG emission reductions	To be estimated during verification [An ex-ante estimate is 1,561 CoUs per year]

SECTION A. Description of project activity

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

This is a project activity of capacity 990 kW, which is Solar Ground Mounted grid connected solar power generation project in the District Sabarkantha, in the state of Gujarat, in India. The purpose of this plant installation and power generation is for captive consumption. The promoter of the project activity is 'M/s Sidwin Fabric Pvt. Ltd' (herein after called as Project Proponent or PP). PP has the full ownership of the project activity. This project is an operational activity with continuous reduction of GHG, currently being applied under "Universal Carbon Registry" (UCR).

Purpose of the project activity:

The purpose of the proposed project activity is to generate electricity using a clean and renewable source of energy i.e., solar radiation. The proposed project activity of 990 kW was installed in one phase. Operation of solar power plant in Sabarkantha district in the state of Gujarat are per details listed below:

Taluka	District	Type	Total installed capacity kW	Commissioning date
Himatnagar	Sabarkantha	Ground mounted	990	15/06/2021

As per the ex-ante estimate, this project will generate approximately 1,734 MWh of electricity per annum considering an average PLF of 20%. The project activity uses Mono Crystalline Axitec solar photovoltaic technology to generate clean energy. The generation of power from solar photovoltaic is a clean technology as there is no fossil fuel fired or no GHG gases are emitted during the process. 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. Thus, project activity leads to reduce the GHG emissions as it displaces power from fossil fuel-based electricity generation in the regional grid. The technological details have been provided in Section A.4.

The estimated annual average and the total CO₂e emission reduction by the project activity is expected to be 1,561 tCO₂e, whereas actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification.

Since the project activity generates electricity through solar energy, a clean renewable energy source it will not cause any negative impact on the environment and thereby contributes to climate change mitigation efforts.

Project's Contribution to Sustainable Development

This project is a greenfield activity where grid power is the baseline. Indian grid system has been predominantly dependent on power from fossil fuel powered plants. The renewable power generation is gradually contributing to the share of clean & green power in the grid; however, grid emission factor is still on higher side which defines grid as distinct baseline.

The Government of India has stipulated 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, environment 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: There has been good employment opportunities created for the local workforce during the project construction phase. The project after implementation has also continued to provide employment opportunities for the local populace in a sustained manner and the same would be continued over the project life time. The employment opportunities created will contribute towards alleviation of poverty in the surrounding area throughout the lifetime of the project activity.

Economic well-being: The project is a clean technology investment decided based on carbon revenue support, which signifies flows of clean energy investments into the host country. The project activity requires temporary and permanent, skilled and semi-skilled manpower at the project location; this will create additional employment opportunities in the region. The electricity replaced in grid will be available for nearby area which directly and indirectly improves the economy and life style of the area. In addition, success of these kind of project will provide new opportunities for industries and economic activities to be setup 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 successful operation of project activity would lead to promotion of solar based power generation and would encourage other entrepreneurs to participate in similar projects. Increased interest in solar energy projects will further push R&D efforts by technology providers to develop more efficient and better machinery in future. The project activity leads to the promotion and demonstrates the success of solar projects in the region which further motivate more investors to invest in solar power projects. Hence, the project activity leads to technological well-being.

Environmental well-being: The project activity will generate power using zero emissions solar based power generation facility which helps to reduce GHG emissions and specific pollutants like SO_x, NO_x, and SPM associated with the conventional thermal power generation facilities. The project utilizes solar energy for generating electricity which is a clean source of energy. Also, being a renewable resource, use of solar energy to generate electricity contributes to resource conservation. It reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. The impact on land, water, air and soil is negligible. Thus, the project causes no negative impact on the surrounding environment contributing to environmental well-being.

With regards to ESG credentials:

At present specific ESG credentials have not been evaluated, however, the project essentially contributes to various indicators which can be considered under ESG credentials. Some of the examples are as follows:

Under Environment:

Environmental criteria may include a company's energy use, waste, pollution, natural resource conservation, and treatment of animals, etc. For the PP, energy use pattern is now based on renewable energy due to the project and it also contributes to GHG emission reduction and conservation of depleting energy sources associated with the project baseline. Also, the criteria can be further evaluated on the basis of any environmental risks which the company might face and how those risks are being managed by the company. Here, as the power generation will be based on solar power, the risk of environmental concerns associated with non-renewable power generation and risk related to increasing cost of power etc. are now mitigated. Hence, project contributes to ESG credentials.

Under Social:

Social criteria reflect on the company's business relationships, qualitative employment, working conditions with regard to its employees' health and safety, interests of other stakeholders, etc. With respect to this project activity, the PP has robust policies in place to ensure equitable employment, health & safety measures, local jobs creation etc. Also, the organizational CSR activities directly support local stakeholders to ensure social sustainability. Thus, the project contributes to ESG credentials.

Under Governance:

Governance criteria relates to overall operational practices and accounting procedure of the organization. With respect to this project activity, the PP practices a good governance practice with transparency, accountability and adherence to local and national rules & regulations etc. This can be further referred from the company's annual report. The electricity generated from the project can be accurately monitored, recorded and further verified under the existing management practice of the company. Thus, the project and the proponent ensure good credentials under ESG.

A.2 Do no harm or Impact test of the project activity>>

There was no harm identified from the project and hence no mitigations 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 small-scale Solar Projects.

Additionally, there are social, environmental, economic and technological benefits which contribute to sustainable development. The key details have been discussed in the previous section.

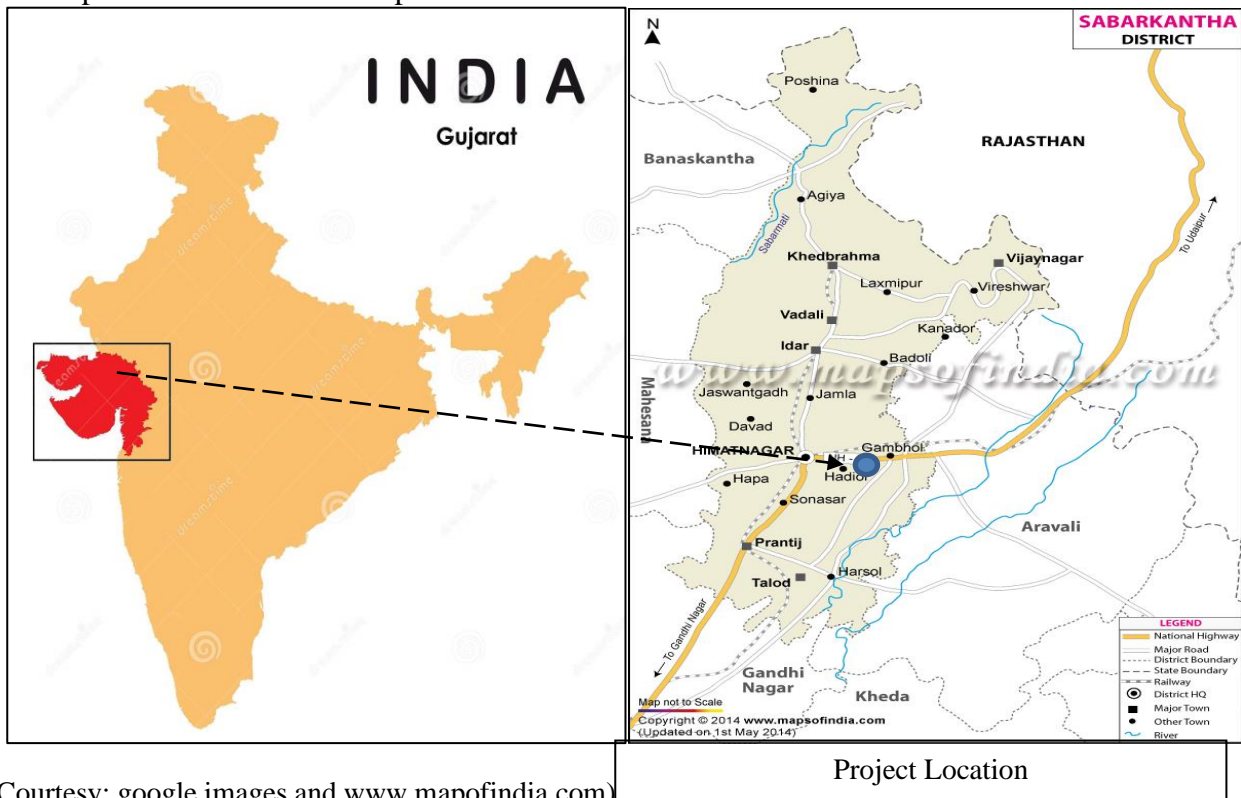
A.3. Location of project activity >>

Country : India
Village : Dhudhor
Taluka : Himatnagar
District : Sabarkantha

The project site is in village Dhudhor of Sabarkantha district, Gujarat. The project site is well connected from airport and railway station. The geographic co-ordinates of the project location have been given below:

Latitude : 23°34'59.5"N
Longitude : 73°06'01.9"E

The representative location map is included below:



(Courtesy: google images and www.mapsofindia.com)

A.4. Technologies/measures>>

The project activity is using clean renewable solar energy to produce electricity. The applied technology is considered to be one of the most environment friendly technologies available as the operation of the Solar photovoltaic does not emit any GHGs or any other harmful gases unlike the operation of conventional power plants.

Photovoltaic module consists of 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 to ensure that an environmentally safe and sound technology is only being implemented in the proposed project activity leading to the GHG reduction.

The other salient features of the technology are:

Parameter	Description
Total number of Photovoltaic Modules	2,475
Rating of Photovoltaic Module	400 Wp
Module make	Axitec
Technology	Mono Crystalline FarmSon
No. of Inverter	9
Inverter Capacity	82.8 KW
Inverter make	Solar edge
Optimizer	618/ Solar edge

A.5. Parties and project participants >>

Party (Host)	Participants
India	<p>Creduce Technologies Private Limited (Representator) 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 Sidwin Fabric Pvt. Ltd (Developer) Address: Harsol Road, Near Gamhoi, Ta. Himatngar, Dist. Sabarkantha, Gujarat, India. 383001</p>

A.6. Baseline Emissions>>

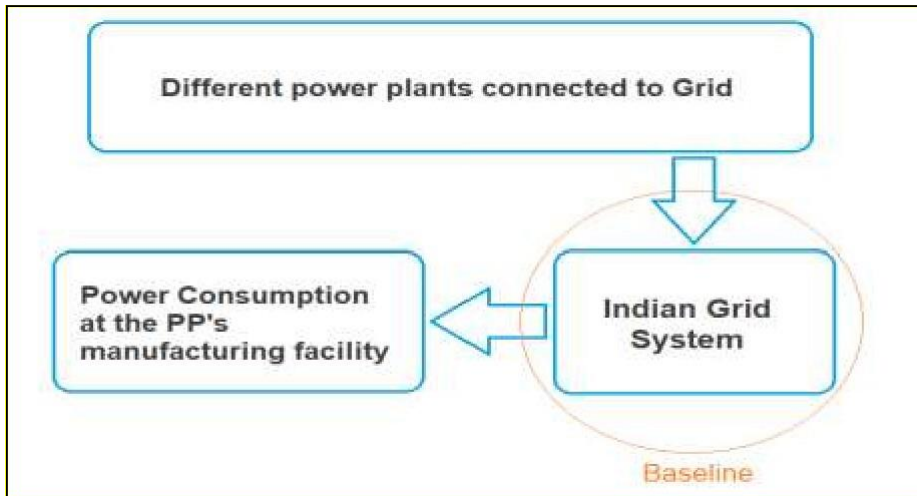
The baseline scenario identified at the PCN stage of the project activity is:

- Grid

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



A.7. Debundling>>

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

SECTION B. Application of methodologies and standardized baselines

B.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: “Renewable electricity generation for captive use and mini-grid, Version 05.0”

B.2. Applicability of methodologies and standardized baselines >>

This project activity involves generation of grid connected electricity from the construction and operation of a new solar power-based power project. The project activity has installed capacity of 990 kW 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 5 and applicability of methodology is discussed below:

Applicability Criterion	Project Case
<p>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:</p> <p>(a) A national or a regional grid (grid hereafter); (b) A fossil fuel fired captive power plant; (c) A carbon intensive mini-grid.</p>	<p>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”.</p> <p>Hence the project activity meets the given applicability criterion.</p>
<p>2. This methodology is applicable for project activities that:</p> <p>(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).</p>	<p>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.</p>

<p>3. Illustration of respective situations under which each of the methodology (“AMS-I.D.: Grid connected renewable electricity generation”, “AMS-I.F.: Renewable electricity generation for captive use and mini-grid” and “AMS-I.A.: Electricity generation by the user”) applies is included -</p> <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 	<p>Option (a) and option (b) are applicable to AMS-1. F. methodology.</p>
<p>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.</p>	<p>The proposed project is 990 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.</p>
<p>5. Combined heat and power (co-generation) systems are not eligible under this category.</p>	<p>This is not relevant to the project activity as the project involves only solar power generating units.</p>
<p>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.</p>	<p>The proposed project is a greenfield 990 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.</p>
<p>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.</p>	<p>This is a green field project and no expansion and retrofitting were carried out. Hence this criterion is not applicable.</p>

<p>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.</p>	<p>The proposed project is a greenfield 990 kW (AC) Rooftop Mounted solar power projects; hence, this criterion is not applicable to this project activity.</p>
<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>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>
<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 project and thus the criterion is not applicable to this project activity.</p>

B.3. Applicability of double counting emission reductions >>

There is no double accounting of emission reductions in the project activity due to the following reasons:

- Project is uniquely identifiable based on its location coordinates,
- Project has dedicated commissioning certificate and connection point,
- Project is associated with energy meters which are dedicated to the consumption point for project developer

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

As per applicable methodology AMS-I.F. Version 5, “The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system

that the project power plant is connected to.”

Thus, the project boundary includes the Solar PV systems and the Indian grid system.

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 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

B.5. Establishment and description of baseline scenario >>

As per the approved consolidated methodology AMS-IF. 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”.

The project activity involves setting up 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, 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.

Net GHG Emission Reductions and Removals

Thus, $ER_y = BE_y - PE_y -$

LE_y Where:

ER_y = Emission reductions in year (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:

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

Where,

BE_y	=	Baseline emissions in year y (t CO ₂)
$EG_{PJ,y}$	=	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 tCO ₂ /MWh has been considered. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

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, $PE_y = 0$.

Leakage

As per paragraph 29 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, all projects other than Biomass projects have zero leakage.

LE = 0

Hence, LE_y = 0

The actual emission reduction achieved during the first CoU period shall be submitted as a part of first monitoring and verification. However, for the purpose of an ex-ante estimation, following calculation has been submitted:

Estimated annual baseline emission reductions (BE_y)

= 1,734 MWh/year × 0.9 tCO₂/MWh

= 1,561 tCO₂e/year (i.e., 1,561 CoUs/year)

B.6. Prior History>>

The project activity is a Ground mounted small-scale solar project and this project was never applied under any other GHG mechanism prior to this registration with UCR. Also, the capacity or the total project as a whole has not been applied for any other environmental crediting or certification mechanism. Hence project will not cause double accounting of carbon credits (i.e., COUs).

B.7. Changes to start date of crediting period >>

The start date of crediting under UCR is considered as 15/06/2021 and no GHG emission reduction has been claimed so far.

B.8. Permanent changes from PCN monitoring plan, applied methodology or applied standardized baseline >>

Not applicable.

B.9. Monitoring period number and duration>>

Total Monitoring Period of this project activity is 19 Years 07 Months i.e., from 15/06/2021 to 31/12/2041 (inclusive of both dates).

B.10. Monitoring plan>>

Data and Parameters available at validation (ex-ante values):

Data / Parameter	UCR recommended emission factor
Data unit	tCO ₂ /MWh
Description	As per UCR CoU Standard Aug 2022 (Updated Ver.6), Clause – Emission Factors “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. Emission factors for the post 2020 period are to be selected as the most conservative estimate between the national electricity/power authority published data set and UCR default of 0.9 tCO ₂ /MWh.”
Source of data	https://a23e347601d72166dcd6-16da518ed3035d35cf0439f1cdf449c9.ssl.cf2.rackcdn.com/Documents/UCR CoUStandardAug2022updatedVer6_090822220127104470.pdf 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	Ex-ante 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 18, 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 supplied to the NEWNE grid facility by the project activity
Source of data	Generation data will be provided by client
Measurement Procedure s (if any):	Data Type: Measured Monitoring equipment: Energy Meters are used for monitoring Archiving Policy: Electronic Calibration frequency: Once in 5 years (considered as per provision of CEA India). The net electricity generated by the project activity will be calculated from net electricity supplied to grid from the share certificate issued by state utility (currently GETCO) on monthly basis for respective WTGs. The amount of energy supplied by the WTGs are continuously monitored and recorded once a month. The same can be cross-checked from the State utility website which is publicly available.
Measurement Frequency:	Monthly
Value applied:	1,734 (Ex-ante estimate)

QA/QC procedures applied:	Continuous monitoring, hourly measurement monthly recording. Tri-vector (TVM)/ABT energy meters with accuracy class 0.2s
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.