PROJECT CONCEPT NOTE (PCN)

CARBON OFFSET UNIT (CoU) PROJECT



Title: Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra

Version 1.0

Date of PCN: 23/12/2022

1st Issuance Period: 11/03/2017-31/11/2022
1st Monitoring Period: 11/03/2017 to 31/11/2022
1st Crediting Period: 05 years, 09 months

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

BASIC INFORMATION	
Title of the project activity	**Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra**
Scale of the project activity	Small Scale
Completion date of the PCN	23/12/2022
Project participants	Project Owner: Serum Institute of India Pvt Ltd (SIIPL), Pune, Maharashtra Aggregator: Egis India Consulting Engineers Pvt Ltd UCR ID: 467947294 Email: sneha.k@egis-india.com
Host Party	India
Applied methodologies and standardized baselines	Type I (Renewable Energy Projects) UNFCCC Methodology Category AMS I.D.: "Grid connected renewable electricity generation" Ver 18 UCR Protocol Standard Baseline EF
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources)
Estimated amount of total GHG emission reductions per year	**200 CoUs/yr (200 tCO_{2eq}/yr)**

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SECTION A. Description of project activity

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

The project activity titled, **Bundled Solar Grid Power Project SIIPL, Pune, Maharashtra,** is located in Village: Hadapsar and Manjari, District: Pune, State: Maharashtra, Country: India.

This is a small scale bundled project activity of total installed capacity of 0.36 MW_h (360KW_h), roof-top grid connected solar power generation project supplying renewable power to the Maharashtra State Electricity Distribution Co Ltd (MSEDC) in the District of Pune, in the state of Maharashtra, in India. The purpose of these solar installations and power generation is for grid supply only.



Serum Institute of India Pvt Ltd (SIIPL), the project proponent (PP), is an Indian biotechnology and biopharmaceuticals company founded in 1966 and since then it has established itself as the world's largest manufacturer of vaccines. The PP has the full ownership of the project activity. This project is an operational activity with continuous reduction of GHGs, currently being applied under "Universal Carbon Registry" (UCR), which rewards solar programs with carbon incentives as opposed to carbon finance in other international programs. It's now widely accepted that the world needs to ramp up clean technologies by 2030 to prevent permanent climate disaster, and carbon incentive policies, such as the UCR CoU program, will be key to such efforts. India is aiming for 450 GW of renewables and 500 GW of non-fossil capacity by 2030. With 110 GW already installed (as of 2021-22), the nation needs to deploy 340 GW of new renewable energy capacity (on average, 42.5 GW of renewable energy per year for the next eight years) to meet the 2030 target and offer the world some hope in combating climate change. That would require the country's solar capacity to rise fivefold to 280 GW from 54 GW during this period. This translates to 29 GW of new solar capacity additions every year on average until the end of this decade – a far faster pace than the nation's record annual addition of 15 GW renewable energy (14 GW of solar and 1 GW wind) in fiscal 2021-22.

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 project activity of 0.36 MWh (i.e. 360 kWh) total capacity involves the installation and operation of a solar power plant in Pune district in the state of Maharashtra are per the details listed below:

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Village	District	Type	Total installed capacity kW	Commissioning date
Hadapsar	Pune	Roof-Top	30	11/03/2017
Manjari	Pune	Roof-Top	130	23/12/2021
Hadapaar	Pune	Roof-Top	200	14/05/2022

As per the ex-ante estimate, this project will generate approximately 222 MWh of electricity per annum considering an average PLF of 17%. The project activity uses Poly Crystalline 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.



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The estimated annual average and the total yearly CO2e emission reduction by the project activity is expected to be **200 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 and mitigates CO2 emissions, hence is entitled to carbon incentives in the form of CoUs as carbon incentive support, which signifies flows of clean energy investments into the host country. The project activity requires temporary and permanent,

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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 projects will provide new opportunities for industries and economic activities to be setup in the area and also provide carbon incentives to upgrade or expand capacities as the world seeks to limit a 1.5 degree centigrade rise by 2030. 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 leads to the 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 the 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 SOx, NOx, 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.

The project activity will generate power through solar PV technology and displace equivalent amount of power from the regional grid, thereby contributing towards the reduction in greenhouse gas emission due to generation of electricity in the regional grids in India. If the world needs to ramp up clean technologies by 2030 to prevent permanent climate disaster, carbon incentive policies, such as the UCR CoU program, are key to such efforts.

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

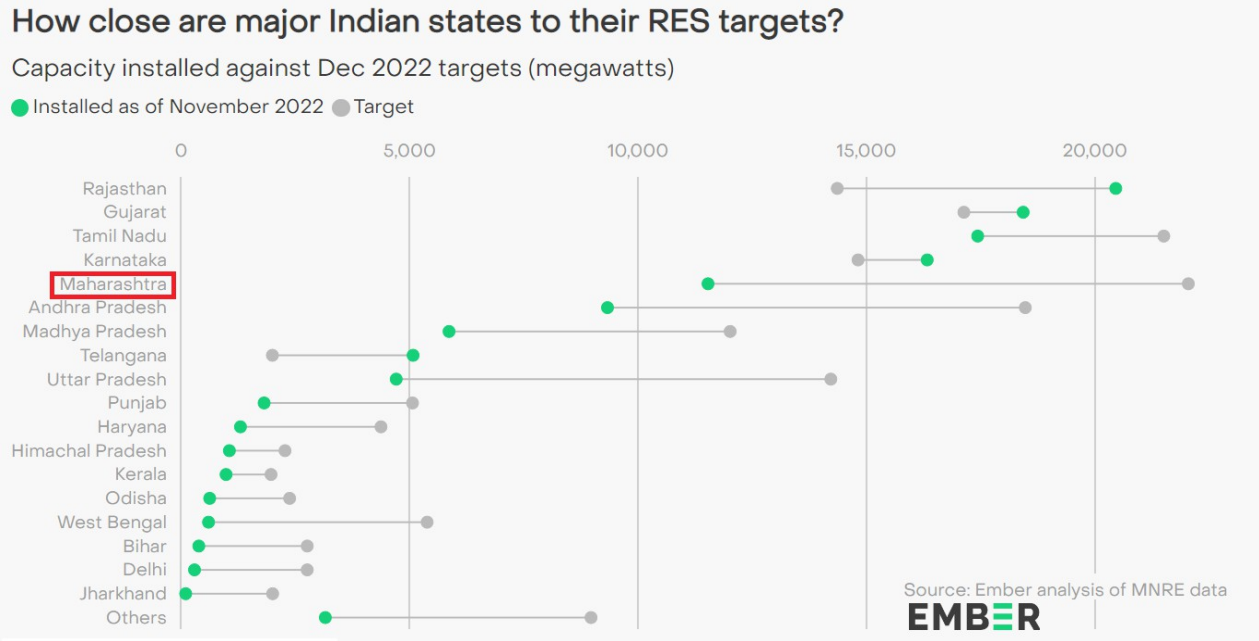
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respect to this project activity, the PP has robust policies in place to ensure equitable employment, health & safety measures, local jobs creation etc. Also, the organizational CSR activities directly support local stakeholders to ensure social sustainability. Thus, the project contributes to ESG credentials.

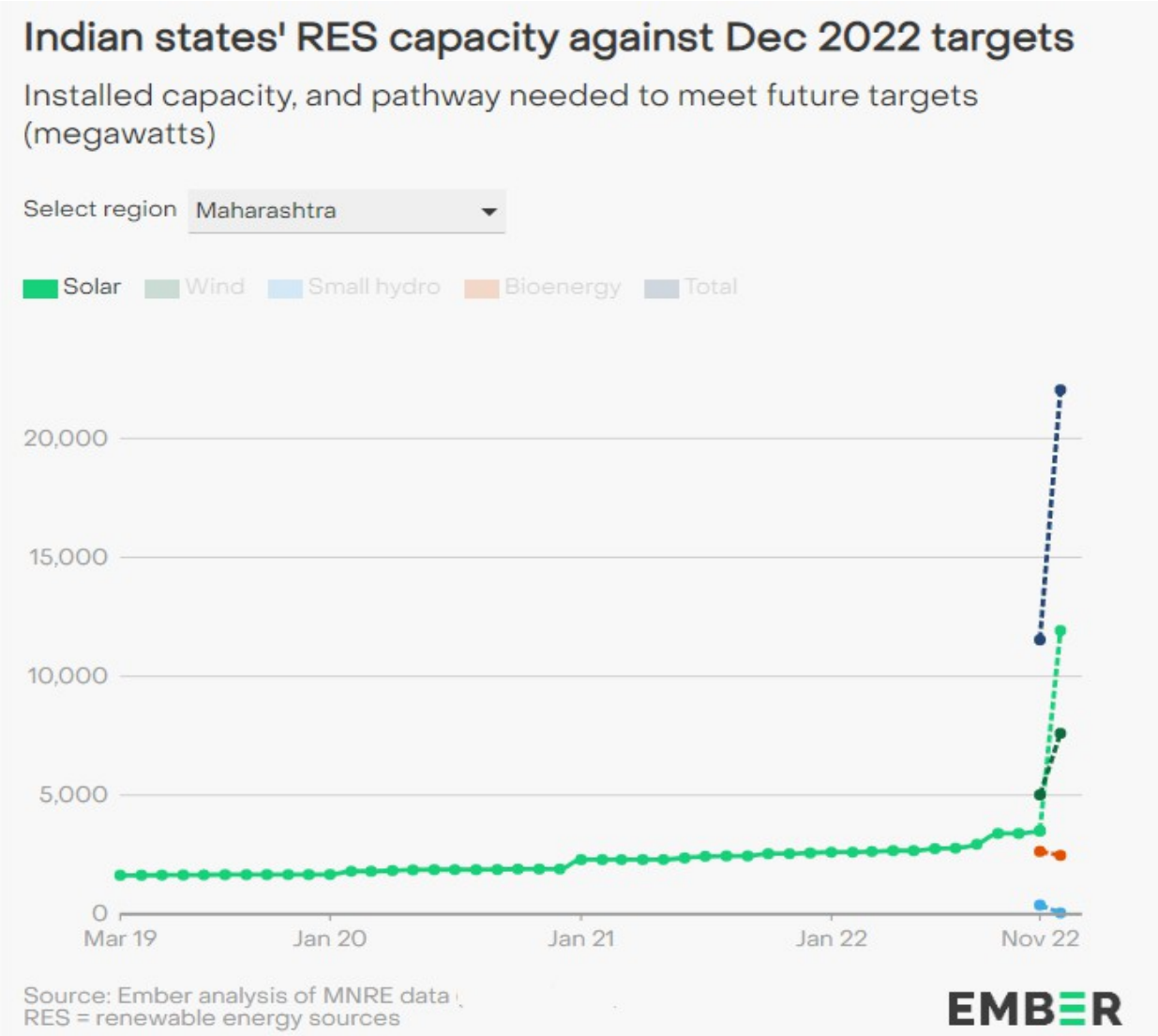
Under Governance:

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. Also, the project activity is a solar power project owned and managed by the proponent for which all required NOCs and approvals are received. 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.

Majority of Indian states, including several currently facing power crisis due to coal shortage, have not even met half of their renewable energy targets for December 2022. As of March 2022, the country had installed 110 gigawatt of renewable energy capacity excluding large hydropower projects. That's just 63% of the 175 GW target that Prime Minister Narendra Modi's administration had targeted. India is unlikely to achieve that target this year (2022) without including large hydropower projects classified as renewable energy three years ago. (source:https://www.bloombergquint.com/business/27-states-have-not-met-even-half-of-their-2022-renewable-targets). The underwhelming progress of rooftop solar installation can be attributed to low consumer awareness and inadequate supply-side infrastructure. Large power consuming states, like Maharashtra, are already well below the halfway mark and will have a lot to catch up to meet India's renewable energy target, hence the flow of UCR carbon incentives will provide a boost to setup similar projects at scale and speed to avert the 2030 climate tragedy that is predicted by the IPCC.



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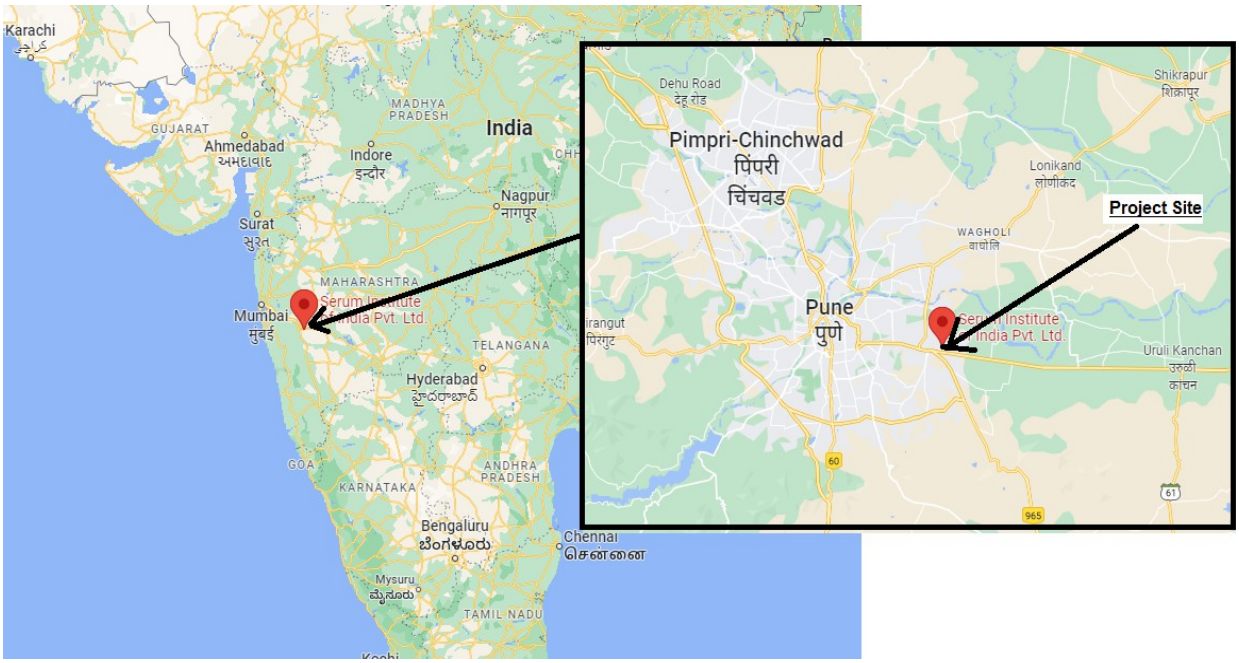
A.2 Do no harm or Impact test of the project activity>>

- 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. Provides employment to local communities through construction and maintenance of units.

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A.3. Location of project activity >>

Country : India
Village : Hadapsar, Manjari
District : Pune
State: Maharashtra





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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 a number 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.
Each power production unit will in general constitute the following equipment:

1. Solar Photovoltaic modules
2. Inverters
3. Transformers
4. Circuit breakers
5. Mounting structures
6. Cables and hardware.
7. Junction box and distribution boxes.
8. Earthing kit.
9. Control room equipment.
10. System for control and monitoring.
11. Evacuation system

The technology used does not pose any threat to the environment in comparison to the fossil fuel-fired power plants. The technology to be applied in the project activity is proven technology and can hence be considered safe and sound technology. The project does not involve any transfer of technology from any Annex 1 country. There is no Public funding (ODA and/ or Annex I countries) for the project activity.

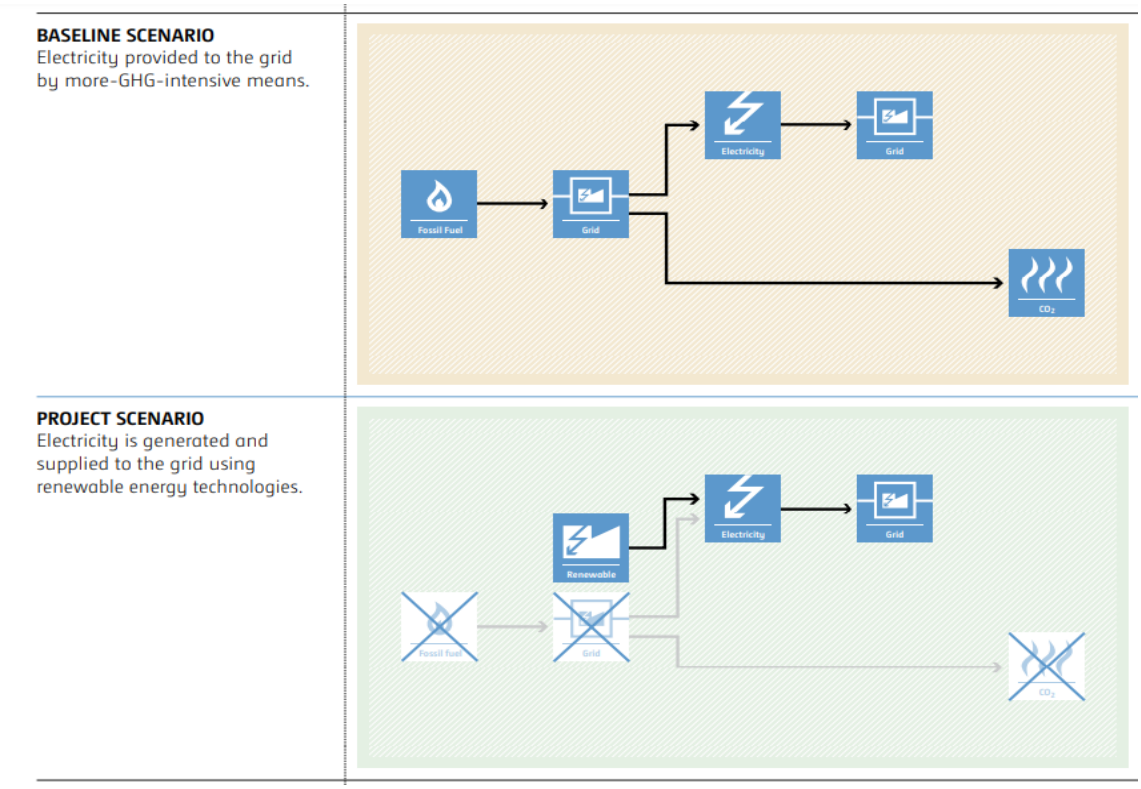
Parameter	Description		
Total number of Photovoltaic Modules	94	446	296
Rating of Photovoltaic Module	320 Wp	450 Wp	440 Wp
Location	Latitude: 18°30'12.4”N Longitude: 73° 56'44.9"E	Latitude: 18° 30' 18.2412" N Longitude: 73° 56' 43.2528" E	
Make	AcuTech Solar	Tata Power Solar	Orb
Technology	Poly Crystalline Silicon		

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A.5. Parties and project participants >>

Party (Host)	Participants
India	Project Owner: Serum Institute of India Pvt Ltd (SIIPL), Pune, Maharashtra Aggregator: Egis India Consulting Engineers Pvt Ltd UCR ID: 467947294 Email: sneha.k@egis-india.com

A.6. Baseline Emissions>>



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

- the electricity delivered to the grid by the project activity that 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 comprises of a renewable energy generation through installation of solar photovoltaic modules and displaces electricity from the regional grid either by supplying to the grid itself or by supplying power to an identified consumer through the regional grid.

A.7. Debundling>>

This project activity is not a debundled component of a larger carbon or GHG registered project activity.

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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.D. - "Grid connected renewable electricity generation", Version 18.0
This methodology comprises of activities that include the construction and operation of a power plant that uses renewable energy sources and supplies electricity to the grid (Greenfield power plant).

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

This project is included within the UCR Standard Positive List of technologies and are within the small-scale CDM thresholds (e.g. installed capacity up to 15 MW). The positive list comprises of: (a) The grid-connected renewable electricity generation technologies of installed capacity up to 15 MW, (b) Solar technologies (photovoltaic and solar thermal electricity generation);
Project activity involves installation of grid-connected solar photovoltaic power generation with capacity 0.36 MW which is less than 15MW.
The project activity involves installation of Solar PV (SPV). Hence, the activity is not a Hydro power project.
The project activity was commissioned in two phases, however, the total capacity of the project activity is below the 15 MW threshold.
The project activity is a new installation, it does not involve any retrofit measures nor any replacement.
Landfill gas, waste gas, wastewater treatment and agro-industries projects are not relevant to the project activity. No biomass is involved, the project is only a solar power project.
The technology/measure allowed under the grid connected Solar PV based generation systems displace equivalent quantity of electricity from the regional grid in India. The testing/certifications; all the equipment of the solar project activity will be complying with applicable national/ international standards. The above details may be verified from one or more of the following documents: • Technology Specification provided by the technology supplier • Purchase order copies • EPC contracts • Power purchase agreement • Project commissioning certificates
The project activity is a voluntary coordinated action
As per the Ministry of Environment and Forest (MoEF), Govt. of India Office Memorandum dated 13/05/2011, it had received specific clarification regarding the applicability of EIA Notification, 2006 in respect of Solar Photo Voltaic (PV) Power plants. It was further clarified in the above memorandum that both Solar PV power projects are not covered under the ambit of EIA Notification, 2006 and no environment clearance is required for such projects under provisions thereof.
The project activity comprises of a renewable energy generation through installation of solar photovoltaic modules and will displace electricity from the regional grid by supplying to the grid itself. Hence this methodology is applicable and fulfilled.
The project activity involves installation of new power plants at listed sites where there was no renewable energy power plant operating prior to implementation of project.

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

This section provides details of emission displacement rates/coefficients/factors established by the applicable methodology selected for the project.

As per para 19 of the approved consolidated methodology AMS-I.D. Version 18, 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 of a new grid connected solar power plant to harness the green power from solar energy and utilize the generated electricity as captive source for PP. In the absence of the project activity, the equivalent amount of power would have been supplied by the Indian grid, which is fed mainly by fossil fuel fired plants. The power produced at grid from the 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) which 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 2014-2020 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 CEA database in India results into higher emission than the default value. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.

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

The project boundary encompasses the physical, geographical site of the solar power plant, the energy metering equipment and the connected regional electricity grid.

	Source	GHG	Included?	Justification/Explanation
Baseline	Grid-connected electricity	CO_2	**Included**	Major source of emission
		CH_4	Excluded	Excluded for simplification. This is conservative
		N_2O	Excluded	Excluded for simplification. This is conservative
Project Activity	Greenfield solar power project	CO_2	Excluded	Excluded for simplification. This is conservative
		CH_4	Excluded	Excluded for simplification. This is conservative
		N_2O	Excluded	Excluded for simplification. This is conservative

Net GHG Emission Reductions and Removals

Thus, ERy = BEy – PEy – LEy Where:

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

BEy = Baseline Emissions in year y (t CO2/y); PEy = Project emissions in year y (tCO2/y)

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

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B.5. Establishment and description of baseline scenario (UCR Protocol) >>

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.

Total Capacity: 0.36 MW

Commissioning Date of first installation: 11/03/2017

Estimated Annual Emission Reductions: $BE_y = EG_{BL,yl} \times EF_{,CO2,GRID,y}$

BE_y = Emission reductions in a year y.

where:

$EG_{BL,y}$ = Quantity of net electricity supplied to the grid as a result of the implementation of the UCR project activity in year y (MWh)

$EF_{Grid,CO2,y}$ = CO_2 emission factor of the grid in year y (t CO_2/MWh) as determined by the UCR Standard.

Estimated annual baseline emission reductions (BE_y) = 200 CoUs (200 tCO_{2eq})

B.6. Prior History>>

The project activity has never applied for registration or issuance of carbon credits under any other GHG mechanism prior to this registration with UCR. Hence project will not cause double accounting of carbon credits (i.e., COUs).

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

There is no change in the start date of crediting period. The start date of crediting under UCR is considered as 11/03/2017 and no GHG emission reduction has been claimed so far.

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

There are no permanent changes from registered PCN monitoring plan and applied methodology

B.9. Monitoring period number and duration>>

1st Issuance Period: 11/03/2017-31/11/2022
1st Monitoring Period: 11/03/2017 to 31/11/2022
1st Crediting Period: 5 years 9 months

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B.8. Monitoring plan>>

Key Data Monitored: • Quantity of net electricity supplied to the grid

1. Monitoring Plan Objective and Organization

PP is the project implementer and monitors the electricity delivered to the electricity grid by the project activity. The data is already archived electronically and is stored since 2017.

To ensure that the data is reliable and transparent, the PP has established Quality Assurance and Quality Control (QA&QC) measures to effectively control and manage data reading, recording, auditing as well as archiving data and all relevant documents. The data is monitored on a daily basis and is submitted to PP on a daily basis.

PP has implemented QA&QC measures to calibrate and ensure the accuracy of metering and safety aspects of the project operation. The metering devices are calibrated and inspected properly and periodically, according to state electricity board's specifications and requirements to ensure accuracy in the readings.

Data / Parameter:	***EGy***
Data unit:	MWh
Description:	Quantity of net electricity supplied by the Project Activity to the grid in year y
Source of data:	JMR. Statement of net export of power to the grid issued Monthly by State Electricity Board or any other competent authority as applicable.
Measurement procedures (if any):	To be specified by State Electricity Board
Monitoring frequency:	The net energy exported to the grid is measured every month using calibrated energy meter by the State Electricity Board authorities in the presence of the project implementer or its representatives. The meter/s shall be jointly inspected, and sealed by authorised representatives of the company and the state utility. Measuring procedure: Will be measured by an export-import energy meter. The net electricity exported by the project plant would either be directly sourced as a measured parameter or be calculated by deducting the amount of imported electricity from the total amount of exported electricity. Accuracy class of energy meter:As per Power Purchase Agreement (PPA) or relevant National standards amended/modified from time to time. Calibration Frequency: As per the Central Electricity Authority the testing and calibration frequency should be minimum once in five years. However, the calibration will be done following the relevant applicable National Guidelines updated from time to time during the operation of the project activity. Entity responsible: Aggregator
QA/QC procedures:	Monitoring frequency: Continuous Measurement frequency: Hourly Recording frequency: Monthly

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	The electricity meter/s record both export and import of electricity from the solar Power plant and the readings with regard to net electricity generated will be used for calculation of emission reductions. The net electricity supplied to the grid will be cross checked with the monthly invoices. The meter/s would be checked for accuracy and the meters will be calibrated as per the procedures of State Electricity Board as per the national or international standards. Measurement results shall be cross checked with records for sold electricity (i.e. invoice).
Purpose of Data	-Calculation of baseline emissions

Data/Parameter	$EF_{, CO2, GRID, y}$
Data unit	tCO2 /MWh
Description	Fixed Ex-Ante
of data Value(s) applied	UCR Standard Protocol As per Standard
Measurement methods and procedures	Fixed
Monitoring frequency	NA
Purpose of data	To estimate baseline emissions

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