MONITORING REPORT

CARBON OFFSET UNIT (CoU) PROJECT



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

Version 1.0
UCR ID# 269
Date of MR: 13/03/2023
MR No.: 01
1st Issuance Period: 11/03/2017-31/12/2022
1st Monitoring Period: 11/03/2017 to 31/12/2022
1st Crediting Period: 05 years, 09 months

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Monitoring Report (MR)
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
UCR PROJECT ID	269
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.F.: "Renewable electricity generation for captive use and mini-grid" Ver 05 UCR Protocol Standard Baseline & Emission Factor
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources)
Calculated amount of annual average GHG emission reductions	**2017: 27 CoUs (27 tCO_{2eq})** **2018: 33 CoUs (33 tCO_{2eq})** **2019: 33 CoUs (33 tCO_{2eq})** **2020: 33 CoUs (33 tCO_{2eq})** **2021: 39 CoUs (39 tCO_{2eq})** **2022: 357 CoUs (357 tCO_{2eq})**
Calculated total GHG emission reductions this crediting period	**522 CoUs (522 tCO_{2eq})**

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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.

The details of the registered project are as follows:

Purpose of the project activity:

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 for captive use 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.

The project activity of 0.36 MWh (i.e. 360 kWh) total capacity involves the installation and operation of three small scale roof-top solar power plants in Pune district in the state of Maharashtra are per the details listed below:

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 activity generates approximately 397 MWh of electricity per annum considering an average PLF of 17%. The project activity uses Poly Crystalline solar photovoltaic technology to generate clean energy.

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This is a voluntary initiative (project activity) implemented by the PP in which renewable power is generated using solar energy involving solar radiation only and not PV Hybrid systems combining solar and other renewable sources which are not part of this project activity.

The electricity generated from grid connected solar power plants is supplied to the regional grid and thereby displaces equivalent generation from grid connected thermal power plants. The project activity results in the avoidance of GHG emissions from fossil power plants connected to the regional grid.

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

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 CO_2 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, 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.

With regards to ESG credentials:

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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.

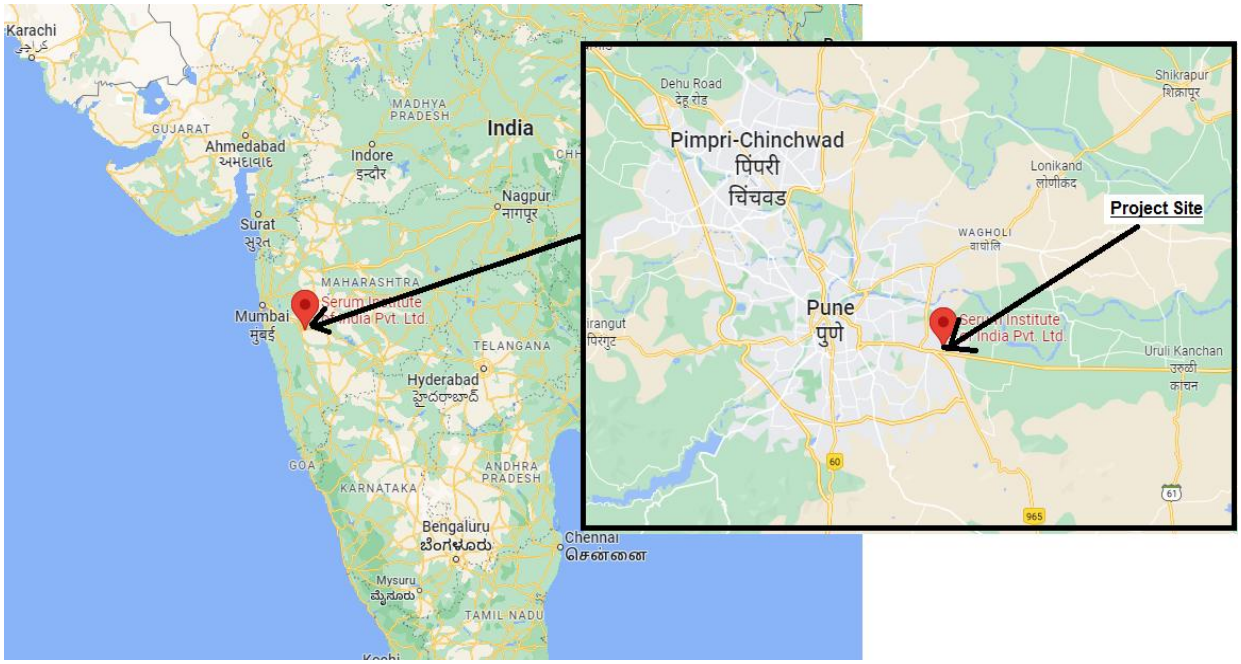
Under Governance:

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. 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.

A.3. Location of project activity >>

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

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A.4. Technologies/measures >>

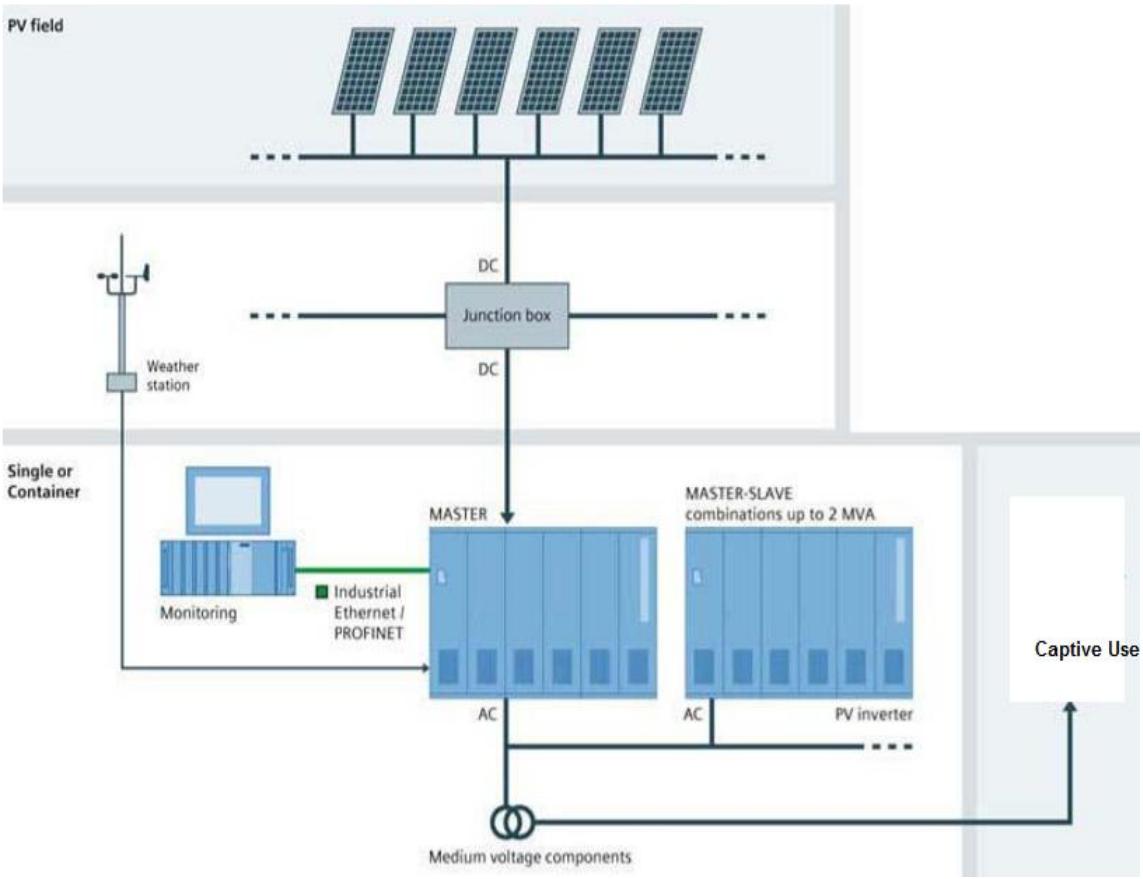
Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array. Crystalline or thin film type PV modules or a combination of both shall be used. Inverter, Switchgear Cubicle for Grid Connection, Circuit Breaker and Transformer of suitable capacity is installed.

Each power production unit in general constitutes of the following equipment:

- Solar Photovoltaic modules

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- Inverters
- Transformers
- Circuit breakers
- Mounting structures
- Cables and hardware.
- Junction box and distribution boxes.
- Earthing kit.
- Control room equipment.
- System for control and monitoring.
- Evacuation system



The project is in operation since the commissioning. There is no exchange of equipment's or major breakdown of equipment's during the current monitoring period. Also, no such event occurred during the current monitoring period that may have impact on the applicability of methodology.

There are power evacuation lines to export electricity to the facilities in house and for each of the lines, one Main meter has been installed at the sites to continuously monitor the captive electricity imported.

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.

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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		









A.5. Parties and project participants >>

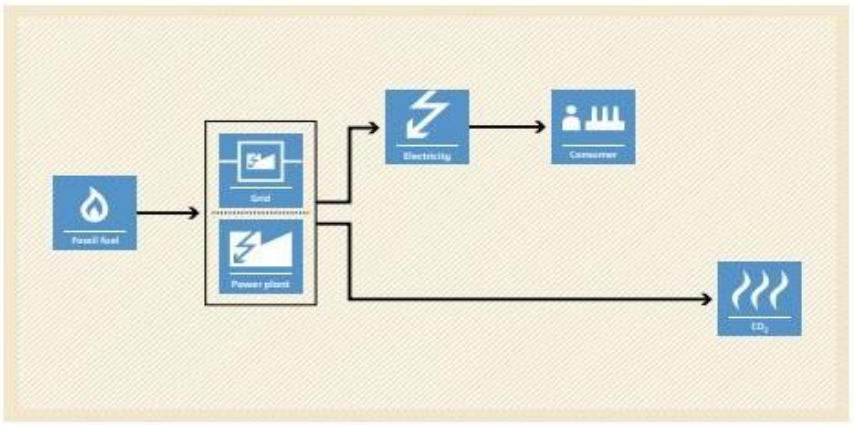
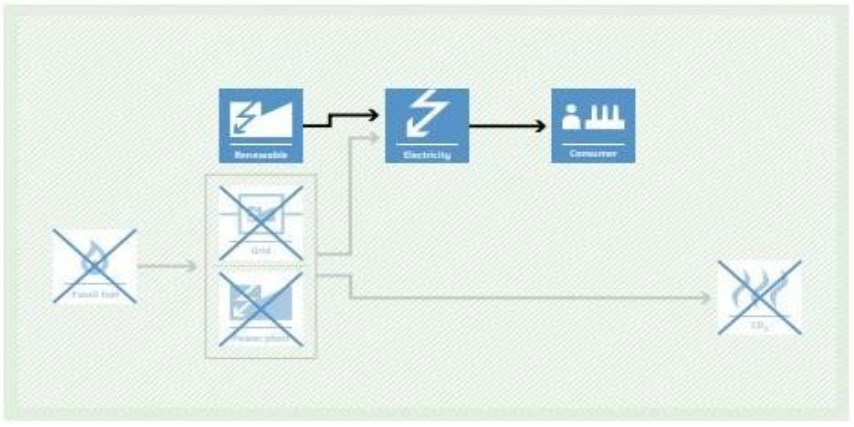
Party (Host)	Participants
India	Project Owner: Serum Institute of India Pvt Ltd (SIIPL), Pune, Maharashtra Aggregator: Egis India Consulting Engineers Pvt Ltd UCR ID: 467947294 Email: sneha.k@egis-india.com

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A.6. Baseline Emissions>>

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

- *Baseline emissions for other systems are the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor*

Important parameters	Monitored: · Net electricity generation,
BASELINE SCENARIO Electricity would have been supplied by one or more energy sources such as a national or a regional grid or a fossil-fuel-fired captive power plant or a carbon-intensive mini-grid.	
PROJECT SCENARIO Electricity is supplied using renewable energy technologies.	

The project activity displaces electricity from an electricity distribution system that is supplied by fossil fuel fired generating units, i.e. in the absence of the project activity, the PP would have been supplied electricity from sources listed below:

(a) A national or a regional grid (grid hereafter)

A.7. Debundling>>

This project is not a debundled component of a larger registered carbon offset 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)

CATEGORY- ***AMS-I.F.-"Renewable electricity generation for captive use and mini-grid", Ver. 05***

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 sources listed below:

(a) *A national or a regional grid (grid hereafter*)

For the purpose of this methodology the following definition applies:

(a) Mini-grid - is a small-scale power system with a total capacity not exceeding 15 MW (i.e. the sum of installed capacities of all generators connected to the minigrid is equal to or less than 15 MW) which is not connected to a national or a regional grid

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 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 □ 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.

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The project activity comprises of a renewable energy generation through installation of solar photovoltaic modules and will displace electricity from the regional grid for captive use. 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.
Project displaces grid electricity consumption (e.g. grid import) at the user end.

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

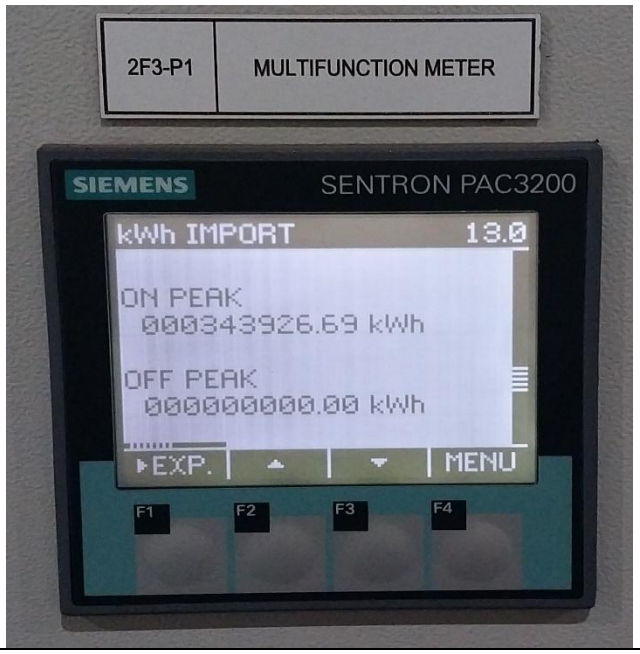
Each of the installations within the Project Activity are provided with unique IDs and meters, which is visible on each of the installations. The verifier has been provided with the details as below:.

Meter Details	
Description	30 Kw Solar System
Location	MSEZ Civil Bldg. Terrace
Make	Schneider
Model	Conzerv EM6436
Serial Number	34165220907 

Meter Details	
Description	100 Kw Solar System
Location	MSEZ Engg. Block
Make	Siemens
Model	Sentron PAC3200
Serial Number	LQN 3717 
Meter Details	
Description	200 Kw Solar System

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Location	SEZ-10 Terrace
Make	Siemens
Model	Sentron PAC3200
Serial Number	LQN 5019



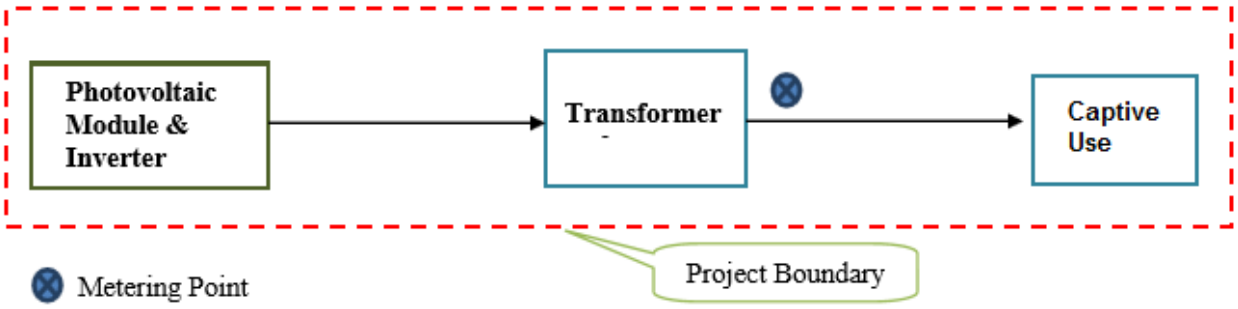
Meter Details	
Description	30 (15x2) Kw Solar System
Location	Corporate Bldg
Make	Delta MPPT
Model	RPI-M15A
Serial Number	04716900012W0



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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

Leakage Emissions is not applicable.

PEy = Project emissions in year y (tCO2/y) related to the operation of geothermal power plants (e.g. noncondensable gases, electricity/fossil fuel consumption) are not applicable. Project emissions from water reservoirs of hydro power plants is also not applicable. Hence, PEy = 0

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 involves "*a small-scale power system with a total capacity not exceeding 15 MW (i.e. the sum of installed capacities of all generators connected to the minigrid is equal to or less than 15 MW) which is not connected to a national or a regional grid.*"

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

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project activity is *the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor.*

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 2021-2022, the combined margin emission factor calculated from CEA database in India results into higher emission than the default value. Hence, the same UCR emission factor has been considered to calculate the emission reduction under conservative approach

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

Baseline emissions for other systems are the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor.

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.

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) = 0

LEy = Leakage emissions in year y (tCO2/y) = 0

$BE_{power,y}$	=	Baseline emissions for the grid electricity displaced by the project in year y (t CO2e)
$EG_{y,grid}$	=	Amount of grid electricity displaced by project in year y (MWh)
$EF_{y,grid}$	=	Emission factor of the grid (t CO2e/MWh) = 0.9 (UCR Standard)

Year	2017	2018	2019	2020	2021	2022
kwh	31072	36799	37062	37176	43463	3,97,148.22

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MWh	31.072	36.799	37.062	37.176	43.463	397.148223
ER (tCO_{2eq})	27	33	33	33	39	357

B.6. Prior History>>

The project activity has not applied to any other GHG program for generation or issuance of carbon offsets or credits.

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

There is no change in the start date of crediting period.

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

There are no permanent changes from updated PCN ver 2, monitoring plan and the updated applied methodology.

B.9. Monitoring period number and duration>>

MR No: 01
1st Issuance Period: 11/03/2017-31/12/2022
1st Monitoring Period: 11/03/2017 to 31/12/2022
Duration of MR: 05 years, 09 months

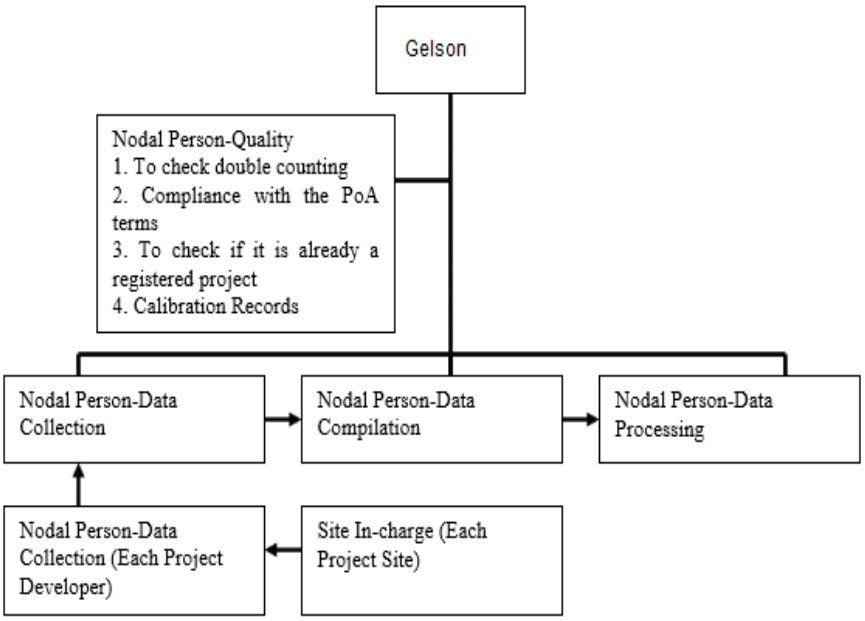
B.8. Monitoring plan>>

The monitoring plan for the project activity consists of the following parameters:

- Organizational Structure for the Data Management (flow of data/information for monitoring) Meters and Calibration
- Data Recording & Archiving
- Emergency Preparedness & Uncertainty procedure Organization Structure for Data Management:

The day-to-day operation like planning the routine maintenance, safety and environmental control has been placed under the care of the site engineers. All administrative functions like personnel, industrial relations, labor welfare and financial functions are being looked after by SIIPL. The organizational structure and responsibilities on project operation, monitoring and data recording has been mentioned below:

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Meters & Calibration:-. Main meters have been installed at each site to continuously monitor the grid electricity generated and used for captive purposes. These measurements are being undertaken on an hourly basis and readings from main meter is recorded daily by representatives of the PP. Calibration of all the meters have been scheduled to be undertaken once in three years and faulty meters are to be replaced immediately.

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ARCHERCAL Private Limited

(Formerly known as Archerchem Calibrations Pvt Ltd)

Laboratory : Unit No. 8/103, Tanvi's Tanishka Industrial Estate, Tanvi Complex, Near HP Petrol Pump, Dahisar (East), Mumbai - 400 068. India. • **Tel.**: +91 22 20892984

E-mail : sales1@archercal.com / admin@archercal.com • **Website** : www@archercal.com

CIN : U74999MH2018PTC304510

Redefining Accuracy

CALIBRATION CERTIFICATE

7.8/R/ET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/01/22-23

ULR no.: CC230123000001959F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	01 of 02

CUSTOMER NAME & ADDRESS	: Serum Institute Of India Pvt. Ltd. (SEZ UNIT PBP-I) Manjri BK, tal-haveli, Pune Pune Maharashtra - 412307
DATE OF RECEIPT	: 07-02-2023
CALIBRATED AT	: Site
INSTRUMENT	: ENERGY METER
SR. NO.	: 34165220907
CONDITION OF ITEM	: OK
CALIBRATION PROCEDURE	: WI/APL/CAL/ET/06
ENVIRONMENTAL CONDITION	: Temperature : 25°C ± 5°C Relative humidity : 60% ± 15%
REFERENCE STANDARDS USED FOR CALIBRATION	: 1) Reference Energy Meter MAKE : Zera MODEL : MT-320-02V02 SR. NO. 050069730 2) Digital Multimeter MAKE : Fluke MODEL : 87V SR. NO. 39750292 : 3) AC/DC CLAMPMETER MAKE : Fluke MODEL : 376 SR. NO. 40650169WS
TRACEABILITY	: 1) Traceable to National Standards through NABL Lab.No.CC-2248 Certified by : Nashik Engineering Cluster, Nashik Certificate. No.: NEC/22-23/PC/101-1, valid upto: 01-12-2023 : 2) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/03/22-23, valid upto: 26-07-2023 : 3) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/04/22-23, valid upto: 26-07-2023
REMARKS	: The uncertainty stated is the expanded uncertainty of measurement obtained by multiplying the standard uncertainty by the coverage factor k =2 correspondes to confidence level of 95%. : The observed readings have been mentioned.
NOTE	: The report refer only the particular item calibrated at site / laboratory. : The calibration result reported are valid at the time of and under the condition of measurement : Certificate should not be reproduced, except in full without the prior premission of Laboratory : Any correction in this certificate invalidates the certificate
MEASUREMENT RESULTS	: Calibration Results are enclosed on Page No. 2 onwards.

Calibrated By:

for Dr. Vidya

MUMBAI

Approved By :

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ARCHERCAL Private Limited

(Formerly known as Archerchem Calibrations Pvt Ltd)

Laboratory : Unit No. B/103, Tanvi's Tanishka Industrial Estate, Tanvi Complex, Near HP Petrol Pump, Dahisar (East), Mumbai - 400 068. India. • **Tel.** : +91 22 20892984
E-mail : sales1@archercal.com / admin@archercal.com • **Website** : www@archercal.com
CIN : U74999MH2018PTC304510

Redefining Accuracy

CALIBRATION RESULTS

7.8/R/ET-01.Rev.00

Certificate no.: ACPL/ET/S/0216/01/22-23
ULR no.: CC230123000001959F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	02 of 02

ENERGY METER

Make :	Schneider	Range :	As per Manual
Model :	Conzerv EM6436	Least Count :	As per Manual
Sr.No. :	34165220907	Accuracy :	As per Manual
Tag/Id.No. :	---	CT Ratio :	100/5 Amp
Location :	MSEZ Civil Bldg.		

Discipline : Electro-Technical Calibration

Measurement Result :

Reading On UUC in (V)			Measured Value on Standard in (V)			Error in (V)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Voltage @ 50 Hz										
245.1	244.2	242.5	245.62	244.53	242.85	-0.52	-0.33	-0.35	0.01	2.00
Reading on UUC in (A)			**Measured Value on Standard in (A)**			**Error in (A)**			**(±) Expanded Uncertainty (%rdg.)**	**Coverage Factor (k)**
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Current @ 50 Hz										
2.510	2.508	2.511	2.499	2.496	2.501	0.011	0.012	0.010	0.70	2.00
Parameter : Frequency @ 230V										
50.0 Hz			50.02 Hz			-0.02 Hz			0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1.000 PF			0.9998 PF			0.0002 PF			0.01	2.00

Parameter: Energy Measurment						
UUC Reading in kwh			Standard Reading in kwh			% Error
Start	End	Energy Consumed	Start	End	Energy Consumed	
Mwh	Mwh	Mwh	Mwh	Mwh	Mwh	
5660.8336	5661.934000	1.1004	0.0000	1.1006	1.1006	0.0182

Calibrated By:
for
Sanjay Dubla

ARCHERCAL CONSULTANTS LIMITED MUMBAI

Approved By :
Kailas Chilap

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ARCHERCAL Private Limited

(Formerly known as Archerchem Calibrations Pvt Ltd)

Laboratory : Unit No. B/103, Tanvi's Tantalike Industrial Estate, Tanvi Complex, Near HP Petrol Pump, Dahisar (East), Mumbai - 400 068. India. • Tel.: +91 22 20892984

E-mail : sales1@archercal.com / admin@archercal.com • Website : www@archercal.com

CIN : U74999MH2018PTC304510

CALIBRATION CERTIFICATE

7.8/RET-01.Rev.00

Certificate no.: ACPL/ET/S/0216/02/22-23

ULR no.: CC230123000001960F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	01 of 02

CUSTOMER NAME & ADDRESS	: Serum Institute Of India Pvt. Ltd. (SEZ UNIT PBP-I) Manjri BK, tal-haveli, Pune Pune Maharashtra - 412307
DATE OF RECEIPT	: 07-02-2023
CALIBRATED AT	: Site
INSTRUMENT	: ENERGY METER
SR. NO.	: LQN 3717
CONDITION OF ITEM	: OK
CALIBRATION PROCEDURE	: WI/APL/CAL/ET/06
ENVIRONMENTAL CONDITION	: Temperature : 25°C ± 5°C Relative humidity : 60% ± 15%
REFERENCE STANDARDS USED FOR CALIBRATION	: 1) Reference Energy Meter MAKE : Zera MODEL : MT-320-02V02 SR. NO. 050069730 2) Digital Multimeter MAKE : Fluke MODEL : 87V SR. NO. 39750292 : 3) AC/DC CLAMPMETER MAKE : Fluke MODEL : 376 SR. NO. 40850169WS
TRACEABILITY	: 1) Traceable to National Standards through NABL Lab.No.CC-2248 Certified by : Nashik Engineering Cluster, Nashik Certificate. No.: NEC/22-23/PC/101-1, valid upto: 01-12-2023 : 2) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/03/22-23, valid upto: 26-07-2023 : 3) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/04/22-23, valid upto: 26-07-2023
REMARKS	: The uncertainty stated is the expanded uncertainty of measurement obtained by multiplying the standard uncertainty by the coverage factor k=2 correspondes to confidence level of 95%. : The observed readings have been mentioned.
NOTE	: The report refer only the particular item calibrated at site / laboratory. : The calibration result reported are valid at the time of and under the condition of measurement : Certificate should not be reproduced, except in full without the prior premission of Laboratory : Any correction in this certificate invalidates the certificate
MEASUREMENT RESULTS	: Calibration Results are enclosed on Page No. 2 onwards.

Calibrated By:

Sanjay Dubla

MUMBAI

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E-mail : sales1@archercal.com / admin@archercal.com • **Website** : www.archercal.com

CIN : U74999MH2018PTC304610

CALIBRATION RESULTS

7.8/RET-01/Rev.00

Certificate no.: ACPL/ET/S/0216/02/22-23

ULR no.: CC230123000001960F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	02 of 02

ENERGY METER

Make :	Seimens	Range :	As per Manual
Model :	Sentron PAC3200	Least Count :	As per Manual
Sr.No. :	LQN 3717	Accuracy :	As per Manual
Tag/Id.No. :	—	CT Ratio :	400/5 Amp
Location :	MSEZ Engg. Block		

Discipline : Electro-Technical Calibration

Measurement Result :

Reading On UUC in (V)			Measured Value on Standard in (V)			Error in (V)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Voltage @ 50 Hz										
235.2	234.3	238.6	235.44	234.52	238.87	-0.24	-0.22	-0.27	0.01	2.00
Reading on UUC in (A)			Measured Value on Standard in (A)			Error in (A)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Current @ 50 Hz										
4	4	4	4.21	4.15	4.19	-0.21	-0.15	-0.19	0.70	2.00
Parameter : Frequency @ 230V										
49.84	Hz		49.901	Hz		-0.061	Hz		0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1.00	PF		1.0004	PF		-0.0004	PF		0.01	2.00

Parameter: Energy Measurment						
UUC Reading in kwh			Standard Reading in kwh			% Error
Start	End	Energy Consumed	Start	End	Energy Consumed	
kwh	kwh	kwh	kwh	kwh	kwh	
283.94	284.94	1.00	0.0000	0.99973	0.99973	0.0270

Calibrated By:

Sanjay Dubla

MUMBAI

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CIN : U74999MH2018PTC304510

Redefining Accura

CALIBRATION CERTIFICATE

7.8/RUET-01,Rev 00

Certificate no.: ACPL/ET/S/0216/03/22-23
ULR no.: CC230123000001961F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	01 of 02

CUSTOMER NAME & ADDRESS	: Serum Institute Of India Pvt. Ltd. 212/2, Hadpsar, Pune 411028
DATE OF RECEIPT	: 07-02-2023
CALIBRATED AT	: Site
INSTRUMENT	: ENERGY METER
SR. NO.	: LQN 5019
CONDITION OF ITEM	: OK
CALIBRATION PROCEDURE	: WI/APL/CAL/ET/06
ENVIRONMENTAL CONDITION	: Temperature : 25°C ± 5°C Relative humidity : 60% ± 15%
REFERENCE STANDARDS USED FOR CALIBRATION	: 1) Reference Energy Meter MAKE : Zera MODEL : MT-320-02V02 SR. NO. 050069730 2) Digital Multimeter MAKE : Fluke MODEL : 87V SR. NO. 39750292 : 3) AC/DC CLAMPMETER MAKE : Fluke MODEL : 376 SR. NO. 40850169WS
TRACEABILITY	: 1) Traceable to National Standards through NABL Lab.No.CC-2248 Certified by : Nashik Engineering Cluster, Nashik Certificate. No.: NEC/22-23/PC/101-1, valid upto: 01-12-2023 : 2) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/03/22-23, valid upto: 26-07-2023 : 3) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/04/22-23, valid upto: 26-07-2023
REMARKS	: The uncertainty stated is the expanded uncertainty of measurement obtained by multiplying the standard uncertainty by the coverage factor k=2 corresponds to confidence level of 95%. : The observed readings have been mentioned.
NOTE	: The report refer only the particular item calibrated at site / laboratory. : The calibration result reported are valid at the time of and under the condition of measurement : Certificate should not be reproduced, except in full without the prior premission of Laboratory : Any correction in this certificate invalidates the certificate
MEASUREMENT RESULTS	: Calibration Results are enclosed on Page No. 2 onwards.

Calibrated By: Vaidya

MUMBAI

Approved By :

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CIN : U74999MH2018PTC304510

Redefining Accuracy

CALIBRATION RESULTS

7.8/RET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/03/22-23
ULR no.: CC230123000001961F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	02 of 02

ENERGY METER

Make :	Seimens	Range :	As per Manual
Model :	Sentron PAC3200	Least Count :	As per Manual
Sr.No. :	LQN 5019	Accuracy :	As per Manual
Tag/Id.No. :	---	CT Ratio :	600/5 Amp
Location :	SEZ-10 Terrace		

Discipline : Electro-Technical Calibration

Measurement Result :

Reading On UUC in (V)			Measured Value on Standard in (V)			Error in (V)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Voltage @ 50 Hz										
246.5	247.6	246.1	246.54	247.72	246.34	-0.04	-0.12	-0.24	0.01	2.00
Reading on UUC in (A)			Measured Value on Standard in (A)			Error in (A)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Current @ 50 Hz										
2.410	2.408	2.411	2.299	2.296	2.401	0.11	0.11	0.01	0.70	2.00
Parameter : Frequency @ 230V										
49.98 Hz			49.994 Hz			-0.014 Hz			0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1.000 PF			0.99989 PF			0.00011 PF			0.01	2.00

Parameter: Energy Measurment						
UUC Reading in kwh			Standard Reading in kwh			% Error
Start	End	Energy Consumed	Start	End	Energy Consumed	
kwh	kwh	kwh	kwh	kwh	kwh	
349077	349087	10	0.000000	9.999689	9.999689	0.0031

Calibrated By:
Sanjay Dubla
Calibration Engineer

MUMBAI

Approved By :
Kailas Chilap

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CIN : U74999MH2018PTC304510

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CALIBRATION CERTIFICATE

7.8/RET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/04/22-23

ULR no.: CC230123000001962F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	01 of 02

CUSTOMER NAME & ADDRESS	: Serum Institute Of India Pvt. Ltd. 212/2, Hadpsar, Pune 411028
DATE OF RECEIPT	: 07-02-2023
CALIBRATED AT	: Site
INSTRUMENT	: ENERGY METER
SR. NO.	: 04716900012
CONDITION OF ITEM	: OK
CALIBRATION PROCEDURE	: WI/APL/CAL/ET/06
ENVIRONMENTAL CONDITION	: Temperature : 25°C ± 5°C Relative humidity : 60% ± 15%
REFERENCE STANDARDS USED FOR CALIBRATION	: 1) Reference Energy Meter MAKE : Zera MODEL : MT-320-02V02 SR. NO. 050069730
	2) Digital Multimeter MAKE : Fluke MODEL : 87V SR. NO. 39750292
	: 3) AC/DC CLAMPMETER MAKE : Fluke MODEL : 376 SR. NO. 40850169WS
TRACEABILITY	: 1) Traceable to National Standards through NABL Lab.No.CC-2248 Certified by : Nashik Engineering Cluster, Nashik Certificate. No.: NEC/22-23/PC/101-1, valid upto: 01-12-2023
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	: 3) Traceable to National Standards through NABL Lab.No.CC-2301 Certified by : Archerchem Calibrations Pvt. Limited, Mumbai Certificate. No.: ACPL/ET/L/0925/04/22-23, valid upto: 26-07-2023
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MEASUREMENT RESULTS	: Calibration Results are enclosed on Page No. 2 onwards.

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E-mail : sales1@archercal.com / admin@archercal.com • Website : www@archercal.com
CIN : U74999MH2018PTC304510

Redefining Accuracy

CALIBRATION RESULTS

7.8/R/ET-01,Rev.00

Certificate no.: ACPL/ET/S/0216/04/22-23
ULR no.: CC230123000001962F

Date of Calibration:	07-02-2023	Issue Date:	07-02-2023
Next Recommended Due Date:	06-02-2024	Page:	02 of 02

ENERGY METER

Make :	Delta MPPT	Range :	As per Manual
Model :	RPI-M15A	Least Count :	As per Manual
Sr.No. :	04716900012	Accuracy :	As per Manual
Tag/Id.No. :	---	CT Ratio :	---
Location :	Corporate Bldg.		

Discipline : Electro-Technical Calibration

Measurement Result :

Reading On UUC in (V)			Measured Value on Standard in (V)			Error in (V)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Voltage @ 50 Hz										
238.9	239.2	239.8	239.62	239.94	240.21	-0.72	-0.74	-0.41	0.01	2.00
Reading on UUC in (A)			Measured Value on Standard in (A)			Error in (A)			(±) Expanded Uncertainty (%rdg.)	Coverage Factor (k)
L1	L2	L3	L1	L2	L3	L1	L2	L3		
Parameter : AC Current @ 50 Hz										
4.05	3.99	4.01	4.18	4.12	4.15	-0.13	-0.13	-0.14	0.70	2.00
Parameter : Frequency @ 230V										
50.0 Hz			50.01 Hz			-0.01 Hz			0.24	2.00
Parameter : Power Factor, 230V/5A @ 50 Hz										
1 PF			0.99994 PF			0.00006 PF			0.01	2.00

Parameter: Energy Measurment						
UUC Reading in MWh			Standard Reading in MWh			% Error
Start	End	Energy Consumed	Start	End	Energy Consumed	
MWh	MWh	MWh	MWh	MWh	MWh	
78140	78142	2	0.00000	1.99980	1.99980	0.01000

Calibrated By:
Sanjay Dubla
Calibration Engineer

ARCHERCAL PRIVATE LIMITED MUMBAI

Approved By :
Kailas Chilap
Technical Director

********** End of Certificate **********

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Data Recording & Archiving: - SIIPL keeps complete and accurate records of operating log online at their headquarters. This data is archived electronically and is provided to the third party UCR auditor for review during the verification process.

Emergency Preparedness & Uncertainty procedure: - In case the Main meters are found to be outside the acceptable limits of accuracy or faulty or not functioning properly, they are repaired, recalibrated or replaced by SIIPL as soon as possible. The faulty equipment/instrument is be replaced with immediate effect. In the event of unavailability of the instrument, the emission reductions for the concerned is not considered. However, all meters during this crediting period have been calibrated and are functional.

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Data / Parameter:	***EGy***
Data unit:	<table><tr><td>Year</td><td>**2017**</td><td>**2018**</td><td>**2019**</td><td>**2020**</td><td>**2021**</td><td>**2022**</td></tr><tr><td>kwh</td><td>31072</td><td>36799</td><td>37062</td><td>37176</td><td>43463</td><td>3,97,148.22</td></tr></table>
Description:	Quantity of net electricity generated supplied by the Project Activity for captive consumption in year y
Source of data:	Direct measurement. Based on measurements from more than one electricity meters.
Measurement procedures (if any):	Use electricity meters installed at the electricity consumption sources. SIIPL keeps complete and accurate records of operating log online at their headquarters. This data is archived electronically and is kept on file for review anytime during or after the crediting period. Records are provided to the verifier
Monitoring frequency:	Continuous measurement and at daily recording.
QA/QC procedures:	In this case, where electricity meters are not regulated (e.g. the electricity is supplied by captive power plants), the electricity meter is subject to regular maintenance and testing in accordance with the stipulation of the meter supplier or national requirements. The calibration of meters, including the frequency of calibration, is done in accordance with national standards or requirements set by the meter supplier. The accuracy class of the meters is in accordance with the stipulation of the meter supplier or national requirements. Meters are calibrated every 3 years.
Purpose of Data	-Calculation of baseline emission

Data/Parameter	$EF_{, CO2, GRID, y}$
Data unit	0.90 tCO2 /MWh
Description	Fixed Ex-Ante
of data Value(s) applied	UCR Standard Protocol As per Standard 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 and 2022, the combined margin emission factor calculated from CEA database in India results into higher emission than the default value. Hence, the same UCR emission factor of 0.9 has been considered to calculate the emission reduction under conservative approach.
Measurement methods and procedures	Fixed
Monitoring frequency	NA
Purpose of data	To estimate baseline emissions in a conservative manner

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