



MONITORING REPORT

CARBON OFFSET UNIT (CoU) PROJECT



UCR PROJECT ID: 325

Title: 2.0 MW Solar Grid Power Project by VSESPL, Chittoor, Andhra Pradesh

Version 1.0

Date of MR: 09/06/2023

1st CoU Issuance Period: 31/03/2017-31/12/2022

1st Monitoring Period: 31/03/2017 to 31/12/2022

1st Crediting Period: 05 years 09 months

8 DECENT WORK AND
ECONOMIC GROWTH



13 CLIMATE
ACTION



7 AFFORDABLE AND
CLEAN ENERGY





MONITORING REPORT (MR) CARBON OFFSET UNIT (CoU) PROJECT

BASIC INFORMATION

Title of the project activity	2.0 MW Solar Grid Power Project by VSESPL, Chittoor, Andhra Pradesh
UCR Project ID	325
Scale of the project activity	Small Scale
Completion date of the PCN	09/06/2023
Project participants	<p>Project Proponent: VYSHAKA SOLAR ENERGY SYSTEMS PRIVATE LIMITED (VSESPL)</p> <p>UCR Aggregator: Climekare Sustainability Pvt. Ltd. UCR ID: 336812961</p>
Host Party	India
Applied methodologies and standardized baselines	<p>Type I (Renewable Energy Projects) UNFCCC Methodology Category AMS I.D.: “Grid connected renewable electricity generation” Ver 18</p> <p>UCR Protocol Standard Baseline EF</p>
Sectoral scopes	01 Energy industries (Renewable/NonRenewable Sources)
Estimated amount of total GHG emission reductions for the crediting period per year	<p>2017: 2005 CoUs (2005 tCO₂eq) 2018: 3264 CoUs (3264 tCO₂eq) 2019: 2970 CoUs (2970 tCO₂eq) 2020: 2361 CoUs (2361 tCO₂eq) 2021: 2064 CoUs (2064 tCO₂eq) 2022: 1960 CoUs (1960 tCO₂eq)</p> <p>Total: 14624 CoUs (14624 tCO₂eq/yr)</p>

SECTION A. Description of project activity

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

The project activity titled, **2.0 MW Solar Grid Power Project by VSESPL, Chittoor, Andhra Pradesh**, is located in Village: M V Palli, Mandal: Kambam Vari Palle, District: Chittoor, State: Andhra Pradesh, Country: India.

This is a single project activity of installed capacity of 2.2 MWh (of which 2.0 MWh is supplied to the grid) ground mounted grid connected solar power generation project supplying renewable power to the Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) in the District of Chittoor, in the state of Andhra Pradesh, in India. The purpose of this plant installation and power generation is for grid supply.

The promoter of the project activity is 'M/s Vyshaka Solar Energy Systems Pvt Ltd (VSESPL or PP). 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 2.0 MWh (i.e., 2000 kWh) is the installation and operation of a solar power plant in Chittoor district in the state of Andhra Pradesh as per the details listed below:

Village	District	Type	Total installed capacity kW	Commissioning date
M V Palli	Chittoor	Ground mounted	2000	31/03/2017

Hence, project activity is displacing the gross electricity generation from the Southern grid, which otherwise would have been imported from the Southern grid. The project activity doesn't involve any GHG emission sources. The annual and the total CO₂e emission reduction by the project activity over the defined monitoring period is as per Annexure I. Thus, project activity leads to reduce the GHG emissions as it displaces power from fossil fuel-based electricity generation in the regional grid.

b). 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. As per the ex-post estimate, this project generated approximately 16252 MWh of electricity over the first monitored period 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.

The average life time of the Photovoltaic Panel is around 20 years as per the equipment supplier specification. Solar radiation is converted directly into electricity by solar cells (photovoltaic cells). In such cells, a small electric voltage is generated when light strikes the junction between a metal and a semiconductor (such as silicon) or the junction between two different semiconductors. Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array



The estimated annual average CO₂e emission reductions by the project activity is 14624 tCO₂e. 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.

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

1.	Project site	M V Palli Village, Kambham Vari Palli Mandal,
2.	District	Chittoor
3.	Name of the state	Andhra Pradesh
4.	Location	Latitude : 13.8681 ' N Longitude : 78.920 ' E
5.	Irradiation details considered	NASA
6.	Type of System	Fixed Structure with tilt
7.	Type of PV Module	Poly Crystalline silicon
8.	Proposed Capacity	2.2 MWp
9.	Capacity of each module	315Wp ~ 320Wp with Positive Tolerance (-0%, +3%)
10.	Inverter capacity	1000KW : ABB / Gamesa
11.	Projected energy generation	35.00 Lakh Units (Kwh)

**POWER DEVELOPMENT
IN
ANDHRA PRADESH
(STATISTICS)**

2018-19

6.4 (c) Commissioning Dates of Generating Units in Private Sector

Sl. No.	Name of the Company	Location (District)	District	Connected Capacity (in MW)	Date of Commissioning
53	M/S Vajraia Sujanra (SPRUVIS Solar Energy Pvt Ltd)	Pamulapadu	Kurnool	2.00	8/9/2016
54	M/S Ushodava Enterprises	Tadimarru (V) & (M)	Ananthapur	5.00	22/9/2016
55	Sumeru Energy Pvt Ltd	Jagadurthy(V) Dhone(M)	Kurnool	4.00	22/9/2016
56	M/S VBC Renewable Energy Pvt Ltd	Garividi	Vizianagaram(Dt)	3.00	22/7/2016
57	M/S Narasimha Swamy Solar Generations Pvt Ltd	Peravali Singanamala (M)	Ananthapur	5.00	26/9/2016
58	M/S Yashwanth Solar Energy Pvt Ltd	Kothapalli Mudunuru (M)	Kadapa	1.00	1/10/2016
59	Repal Renewables Pvt Ltd	Thanakallu (V&M)	Ananthapur	4.90	19/11/2016
60	Sri Varahalakshmi Narasimha Swamy Devasthanam	Simhachalam	Visakhapatnam	1.00	3/2/2017
61	Tirumala Tirupati Devasthanams	Kasavaripalli (V) Thamballapalle (M)	Chittoor	3.00	2/2/2017
62	Kanti Brothers oils Pvt Limited	Kurnool	Kurnool	3.00	11/2/2017
63	Sri Chakra cements Projects Co Private Limited	Perindesam (V) KVB Puram (M)	Chittoor	2.00	9/2/2017
64	IFMR	Sri Kalahasti, Chittoor District	Chittoor	0.50	10/3/2017
65	SVR Corporation Pvt Ltd	Jillelamanda(V), KV Palli(M), Chittoor	Chittoor	2.00	15/3/2017
66	Nateems Green Energy Pvt Ltd	Thimmapuram SS, Kadiridevarapalli(V), Kambadar (M), Ananthapuram	Ananthapur	9.90	24/3/2017
67	GSL Educational Society	Mallampudi(V) & Tokanda (V) , Rajamandry, East Godavari District	East Godavari	1.50	31/3/2017
68	Cyber Village Solutions (P) Ltd	Yeleswaram (V&M)	East Godavari	2.00	31/3/2017
69	Repal Renewables Pvt Ltd	Thanakallu (V&M)	Ananthapur	5.10	31/3/2017
70	Nateems Solar power Pvt Ltd	Elakolanu (V), Rangampeta (M),	East Godavari	1.00	31/3/2017
71	B.G.Channappa, Class-L.K.P.W.D.	Gowdipalli,	Ananthapur	2.00	31/3/2017
72	Vyshaka Solar Energy System Pvt Ltd	Nuthanakaluva SS, MV Palli(V), KV Palli (M), Chittoor District	Chittoor	2.00	31.03.2017
73	Tirumala Tirupati Devasthanams	Kasavaripalli	Chittoor	7.00	31.3.2017
74	Nateems Green Energy Pvt Ltd	Garividi	Vizianagaram	10.00	31.03.2017
75	M/s Aurobind Pharma Ltd	Pydibhimavaram	Srikakulam	30.00	21.05.2017

UCR Project ID: 325

Commissioning Date: 31/03/2017

1st CoU Issuance Period: 31/03/2017-31/12/2022

1st Monitoring Period: 31/03/2017 to 31/12/2022

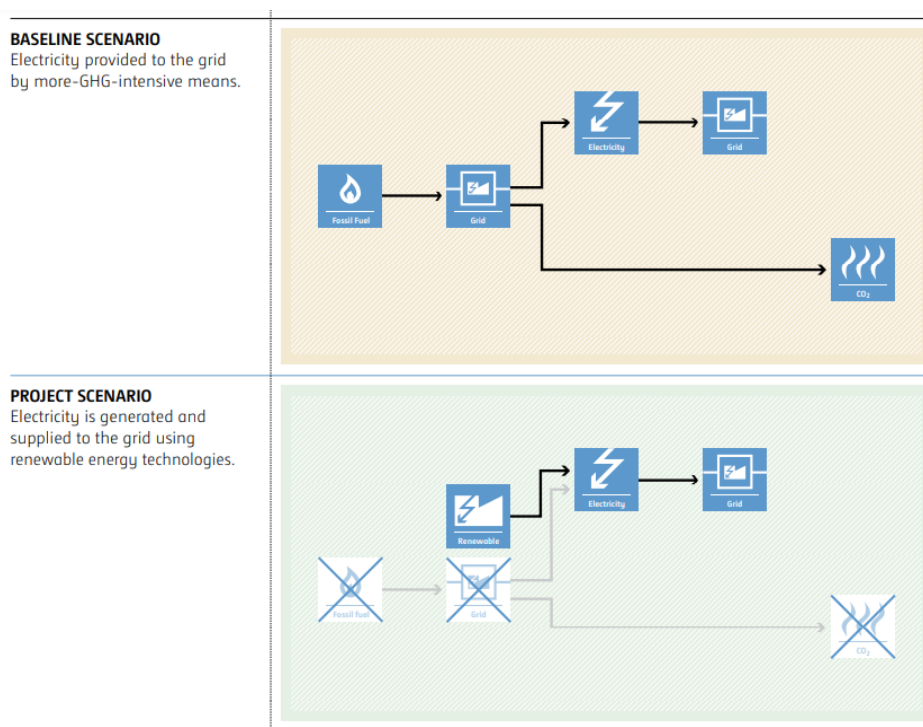
1st Crediting Period: 05 years 09 months

d). Total GHG emission reductions achieved or net anthropogenic GHG removals by sinks achieved in this monitoring period>>

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

Summary of the Project Activity and ERs Generated for the Monitoring Period	
Start date of this Monitoring Period	31/03/2017
CoUs claimed up to	31/12/2022
Total ERs generated in this crediting period (tCO ₂ eq)	14624 tCO ₂ eq
Leakage	0
Project Emissions	0

e). Baseline Scenario>>As per the approved consolidated methodology AMS-I.D. Version 18.0



As per the UNFCCC Methodology, 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.”*

A.2. Location of project activity>>

Country: India

Village: M V Palli,

Mandal: Kambam Vari Palle,

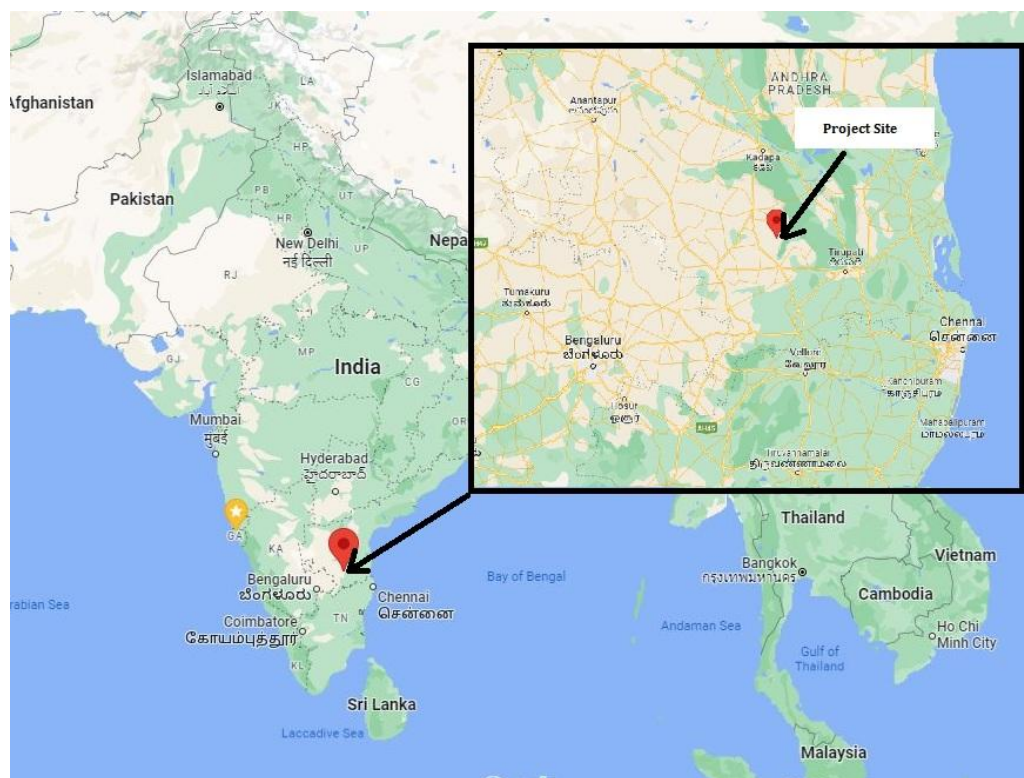
District: Chittoor

State: Andhra Pradesh

Latitude: 13°52'05.2"N

Longitude: 78°55'12.0"E

The representative location map is included below:



A.3. Parties and project participants >>

Party (Host)	Participants
India	Project Proponent: VYSHAKA SOLAR ENERGY SYSTEMS PRIVATE LIMITED (VSESPL) UCR Aggregator: Climekare Sustainability Pvt. Ltd. UCR ID: 336812961 Email: sustainability@climekare.com

A.4. References to methodologies and standardized baselines >>

SECTORAL SCOPE - 01 Energy industries (Renewable/Non-Renewable Sources)

TYPE - Renewable Energy Projects

CATEGORY - AMS-I. D: “Grid connected renewable electricity generation”, Version 18.0

A.5. Crediting period of project activity >>

1st CoU Issuance Period: 31/03/2017-31/12/2022

1st Monitoring Period: 31/03/2017 to 31/12/2022

1st Crediting Period: 05 years 09 months

A.6. Contact information of responsible persons/entities >>

UCR Aggregator: Climekare Sustainability Pvt. Ltd. Email: sustainability@climekare.com

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity >>

a) Provide information on the implementation status of the project activity during this monitoring period in accordance with UCR PCN>>

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.

Village	District	Type	Total installed capacity kW	Commissioning date
M V Palli	Chittoor	Ground mounted	2000	31/03/2017

b) For the description of the installed technology, technical process and equipment, include diagrams, where appropriate>>

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

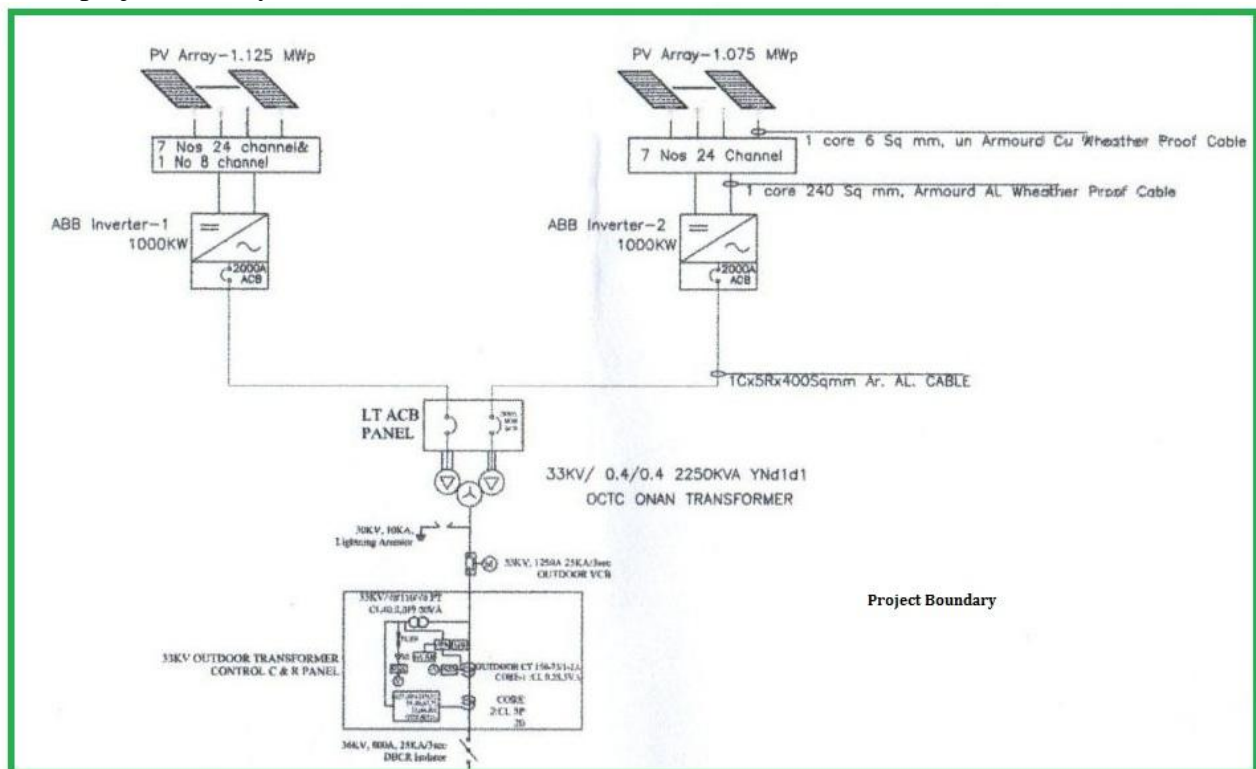
The project activity is using clean renewable solar energy to produce electricity. The applied technology is considered to be one of the most environment friendly technologies available as the operation of the Solar photovoltaic does not emit any GHGs or any other harmful gases unlike the operation of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



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

The Indian economy is highly dependent on “Coal” as fuel to generate energy and for production processes. Thermal power plants are the major consumers of coal in India and yet the basic electricity needs of a large section of population are not being met. This results in excessive demands for electricity and places immense stress on the environment.

Changing coal consumption patterns will require a multi-pronged strategy focusing on demand, reducing wastage of energy and the optimum use of renewable energy (RE) sources. This project is a greenfield activity where grid power is the baseline. 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 guide lines 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: 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.



12. 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.


United Nations Sustainable Development Goals:

The project activity generates electrical power using wind energy which is generated from windmills, thereby displacing non-renewable fossil resources resulting to sustainable, economic and environmental development. In the absence of the project activity equivalent amount of power generation would have taken place through fossil fuel dominated power generating stations.

Thus, the renewable energy generation from project activity will result in reduction of the greenhouse gas emissions. Positive contribution of the project to the following Sustainable Development Goals:

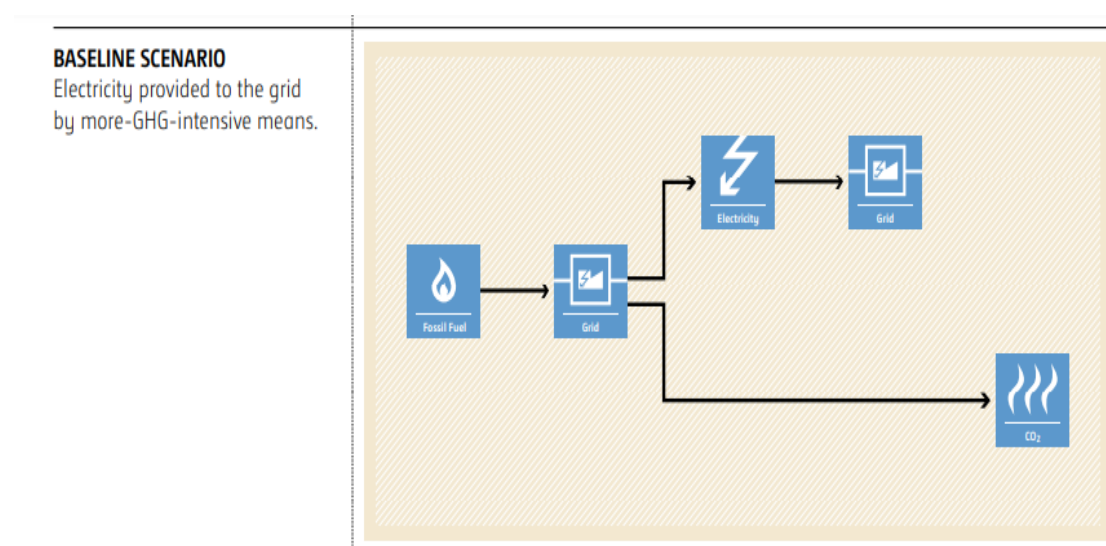
- SDG13: Climate Action
- SDG 7: Affordable and Clean Energy
- SDG 8: Decent Work and Economic Growth

Development Goals	Targeted SDG	Target Indicator (SDG Indicator)
 <p>SDG 13: Climate Action</p>	<p>13.2: Integrate climate change measures into national policies, strategies and planning</p> <p>Target: 14624 tCO₂ for the MR 01</p>	<p>13.2.1: Number of countries that have communicated establishment or operationalization of an integrated policy/ strategy/ plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)</p>
 <p>SDG 7: Affordable and Clean Energy</p>	<p>7.2: By 2030, increase substantially the share of renewable energy in the global energy mix</p> <p>Target: 16252 MWh for the MR 01</p>	<p>7.2.1: Renewable energy share in the total final energy consumption</p>

<p>8 DECENT WORK AND ECONOMIC GROWTH</p>  <p>SDG 8: Decent Work and Economic Growth</p>	<p>8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value</p> <p>Target: Training, O&M staff</p>	<p>8.5.1: Average hourly earnings of female and male employees, by occupation, age and persons with disabilities</p>
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B.3. Baseline Emissions>>

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 (Southern Grid)), which is carbon intensive due to predominantly sourced from fossil fuel-based power plants.



Thus, this project activity was a voluntary investment which replaced equivalent amount of electricity from the Indian grid. The project proponent was not bound to incur this investment as it was not mandatory by national and sectoral policies. Thus, the continued operation of the project activity would continue to replace fossil fuel-based power plants and help fight against the impacts of climate change. The Project Proponent hopes that UCR carbon incentives under the CoU program from 2017-2022 vintage years accumulated as a result of carbon credits generated will help repay scale up the project capacity and help in the continued maintenance of this project activity.

B.4. Debundling>>

This project activity is not a de-bundled component of a larger project activity.

SECTION-C: Application of methodologies and standardized baselines

C.1. References to methodologies and standardized baselines >>

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

TYPE I – Renewable Energy Projects

Applied Baseline Methodology: AMS-I.D.: “Grid connected renewable electricity generation”, Version 18.0

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

The project status is corresponding to the methodology AMS-I.D., version 18 and applicability of methodology is discussed below:

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 totalled installed capacity 2.2 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 31/03/2017 and is below the 15 MW methodology 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: <input type="checkbox"/> Technology Specification provided by the technology supplier <input type="checkbox"/> Purchase order copies <input type="checkbox"/> EPC contracts <input type="checkbox"/> Power purchase agreement <input type="checkbox"/> 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.

C.3 Applicability of double counting emission reductions >>

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

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

As per applicable methodology AMS-I.D. Version 18.0, “The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system.” Thus, the project boundary includes the Solar Photovoltaic Plant and the Indian grid system.

	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 ₂ O	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 ₂ O	Excluded	Excluded for simplification. This is conservative

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 Installed Capacity: 2.2MW_h

Total Grid Connected Capacity: 2.0 MW_h

Commissioning Date of first installation: 31/03/2017

Estimated Annual Emission Reductions: $BE_y = EG_{BL,y} \times EF_{CO_2, GRID, y}$

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)

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

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

As per para 19 of the approved consolidated methodology AMS-I.D. Version 18.0, 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 Solar Photovoltaic Plant to harness the green power from Solar energy and sell it to the grid. 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 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 2013-2020 years as a fairly conservative estimate for Indian projects not previously verified under any GHG program. Also, for the vintage 2021-22, the combined margin emission factor calculated from CEA database in India results into same emission factors as that of the default value. Hence, the same emission factor has been considered to calculate the emission reduction.

Net GHG Emission Reductions and Removals

Thus, $ER_y = BE_y - PE_y - LE_y$

Where:

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

BE_y = Baseline Emissions in year y (t CO₂/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 CO₂)

$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of this project activity in year y (MWh).

$EF_{grid,y}$ = UCR recommended emission factor of 0.9 tCO₂/MWh has been considered, this is conservative as compared to the combined margin grid emission factor which can be derived from Database of Central Electricity Authority (CEA), India. (Reference: General Project Eligibility Criteria and Guidance, UCR Standard, page 4)

Project Emissions

As per paragraph 39 of AMS-I.D. (Version 18.0), for most renewable energy project activities emission is zero.

Hence, $PE_y = 0$

Leakage Emissions

As per paragraph 42 of AMS-I.D. version-18, all projects other than Biomass projects have zero leakage.

Hence, $LE_y = 0$

Total Emission Reduction (ER) by the project activity for the current monitoring period is calculated as below:

Year	2017	2018	2019	2020	2021	2022
Total Units (MWh)	2228.104	3626.822	3301.061	2624.048	2293.447	2178.798
ER	2005	3264	2970	2361	2064	1960
Total ERs	14624					

C.6. Prior History>>

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

C.7. Monitoring period number and duration>>

Monitoring Period No: 01

1st Monitoring Period: 31/03/2017 to 31/12/2022

C.8. Changes to start date of crediting period >>

Crediting period start date has been changed to the first meter reading date which is 31/03/2017.

C.9. 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

C.10. Monitoring plan>>

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

Solar Power Plant, Project setup by M/s Vyshaka Solar Energy Systems (P) Ltd., Name of the Sub-Station: 33/11 kV SS, Nuthanakaluva			
Details of Billing Energy Meters			
	Main Meter	Check Meter	Stand by Meter
Make	SECURE	SECURE	SECURE
Sl.No./ Year	APX01192	APX01193	APX01196
Type	E3M024	E3M024	E3M024
Meter CT Ratio	50/1 A	50/1 A	50/1 A
Meter PT Ratio	33 kV/√3/110V/√3	33 kV/√3/110V/√3	33 kV/√3/110V/√3
MF for KWH	1000	1000	1000

Name & Location of the Plant: M/s Vyshaka Solar Energy Systems (P) Ltd.,		Solar Power Plant, Project setup by M/s Vyshaka Solar Energy Systems (P) Ltd., Name of the Sub-Station: 33/11 kV SS, Nuthanakaluva	
Location of Metering: Nuthanakaluva		PPA / PWPA / PPWA / OA :	
Fuel:	Solar	OA	
Date of Reading:	01.02.2022	Time of Reading:	12:09

Details of Metering CTs & PTs			Details of Billing Energy Meters			
	CTs	PTs		Main Meter	Check Meter	Stand by Meter
Class	0.2	0.2	Make	SECURE	SECURE	SECURE
Burden	5 VA	10 VA	SI.No./Year	APX01192	APX01193	APX01196
			Type	E3M024	E3M024	E3M024
	Available	Adopted	Meter CT Ratio	50/1 A	50/1 A	50/1 A
CT Ratio	50/1 A	50/1 A	Meter PT Ratio	33 kV/√3/110V/√3	33 kV/√3/110V/√3	33 kV/√3/110V/√3
PT Ratio	33 kV/√3/110V/√3	33 kV/√3/110V/√3	MF for KWH	1000	1000	1000

Sl. No.:	Display ID	MANUAL DISPLAY	MAIN METER	CHECK METER	STANDBY METER
1		All Segment on display			
2	Date	Date	01.02.2022	01.02.2022	01.02.2022
3	Time	Real Time	12:09	12:17	12:25
4	MWH(Import)1/4	Fund Active Import Energy Register	14199.20	14196.88	14199.18
5	MWH(Export)2/3	Fund Active Export Energy Register	41.47	41.76	42.42
6	MVAH	Apparent While Active Import Energy Register	14205.93	14203.49	14205.61
7	MVAH	Apparent While Active Export Energy Register	42.27	42.55	43.21
8	MVARH Lag	Reactive Import While Active Import Energy Register	56.56	56.21	56.54
9	MVARH Lead	Reactive Import While Active Export Energy Register	424.55	425.49	425.38
10	MVARH Lag	Reactive Export While Active Export Energy Register	1.54	1.50	1.50
11	MVARH Lead	Reactive Export While Active Import Energy Register	316.84	317.30	317.80
12	MVARH	Reactive High Net Energy Register	69.21	69.72	69.51
13	MVARH	Reactive Low Net Energy Register	34.35	34.74	34.34
14	MVA	TOD Apparent While Active Import MD Register (Reg 0-24hrs)	1.560	1.552	1.564
15	Time/Date	TOD Apparent While Active Import MD Occurrence Time and Date (Reg 0-24hrs)	16.01.22/13:00	16.01.22/13:00	16.01.22/13:00
16	MVA	TOD Apparent While Active Export MD Register (Reg 0-24hrs)	0.040	0.044	0.044
17	Time/Date	TOD Apparent While Active Export MD Occurrence Time and Date (Reg 0-24hrs)	06.01.22/06:45	06.01.22/06:45	06.01.22/06:45
18	MVA(Import)	Raising Demand With Elapsed Time Apparent while active import	0.956	0.304	1.024
19	MVA(Export)	Raising Demand With Elapsed Time Apparent while active export	0	0	0
20	CMD MVA(Import)	Apparent While Active Import Cumulative MD Register	108.252/109.812	107.464/109.016	107.832/109.396
21	CMD MVA(Export)	Apparent While Active Export Cumulative MD Register	2.904/2.944	2.424/2.468	2.356/2.400
22	Bills	MD Reset Or Bill Count	70/71	67/68	67/68
23	CIP MVA(Import)	Last IP Demand With Elapsed Time Apparent while active import	1.344	1.344	1.340
24	CIP MVA(Export)	Last IP Demand With Elapsed Time Apparent while active export	0	0	0
25	Frequency	Last Block Frequency	49.98	50.01	50.01
26	H1 MWH(Import)	History 1 Fund Active Import Energy Register	13981.58	13979.18	13981.21
27	H1 MWH(Export)	History 1 Fund Active Export Energy Register	40.95	41.24	41.88
28	H1 MVAH(Import)	History 1 Apparent While Active Import Energy Register	13988.15	13985.62	13987.49
29	H1 MVAH(Export)	History 1 Apparent While Active Export Energy Register	41.74	42.02	42.65

30	H2 MWH (Import)	History 2 Fund Active Import Energy Register	13788.93	13786.52	13788.56
31	H2 MWH (Export)	History 2 Fund Active Export Energy Register	40.47	40.75	41.38
32	H2 MVAH(Import)	History 2 Apparent While Active Import Energy Register	13795.27	13792.73	13794.61
33	H2 MVAH(Export)	History 2 Apparent While Active Export Energy Register	41.25	41.52	42.15
34	H1 TOD MVA (Im)	History 1 TOD Apparent While Active Import MD Register (Reg 0-24hrs)	1.436	1.440	1.436
35	Date/Time	History 1 TOD Apparent While Active Import MD Occurrence Time and Date(Reg 0-24hrs)	19.12.21/11:45	29.12.21/12:30	19.12.21/14:45
36	H1 TOD MVA -I(Im)	History 1 TOD Apparent While Active Import MD Register(Reg 1)	No Data	No Data	No Data
37	Date/Time	History 1 TOD Apparent While Active Import MD Occurrence Time and Date(Reg 1)	No Data	No Data	No Data
38	H1 TOD MVA -II(Im)	History 1 TOD Apparent While Active Import MD Register(Reg 2)	1.236	1.236	1.236
39	Date/Time	History 1 TOD Apparent While Active Import MD Occurrence Time and Date(Reg 2)	12.12.21/10:00	12.12.21/10:00	12.12.21/10:00
40	H1 TOD MVA -III(Im)	History 1 TOD Apparent While Active Import MD Register(Reg 3)	1.436	1.440	1.436
41	Date/Time	History 1 TOD Apparent While Active Import MD Occurrence Time and Date(Reg 3)	19.12.21/11:45	29.12.21/12:30	19.12.21/11:45
42	H1 TOD MVA -IV(Im)	History 1 TOD Apparent While Active Import MD Register(Reg 4)	1.216	1.216	1.216
43	Date/Time	History 1 TOD Apparent While Active Import MD Occurrence Time and Date(Reg 4)	25.12.21/14:15	25.12.21/14:15	25.12.21/14:15
44	H1 TOD MVA -V(Im)	History 1 TOD Apparent While Active Import MD Register(Reg 5)	No Data	No Data	No Data
45	Date/Time	History 1 TOD Apparent While Active Import MD Occurrence Time and Date(Reg 5)	No Data	No Data	No Data
46	H1 TOD MVA -VI(Im)	History 1 TOD Apparent While Active Import MD Register(Reg 6)	No Data	No Data	No Data
47	Date/Time	History 1 TOD Apparent While Active Import MD Occurrence Time and Date(Reg 6)	No Data	No Data	No Data
48	H1 TOD MVA (Ex)	History 1 TOD Apparent While Active Export MD Register(Reg 0-24hrs)	0.020	0.020	0.016
49	Date/Time	History 1 TOD Apparent While Active Export MD Occurrence Time and Date(Reg 0-24hrs)	22.12.21/18:15	22.12.21/18:15	22.12.21/18:15
50	H1 TOD MVA -I(Ex)	History 1 TOD Apparent While Active Export MD Register(Reg 1)	0.004	0.004	0.004
51	Date/Time	History 1 TOD Apparent While Active Export MD Occurrence Time and Date(Reg 1)	02.12.21/00:45	02.12.21/01:15	02.12.21/01:00
52	H1 TOD MVA -II(Ex)	History 1 TOD Apparent While Active Export MD Register(Reg 2)	0.008	0.004	0.004
53	Date/Time	History 1 TOD Apparent While Active Export MD Occurrence Time and Date(Reg 2)	27.12.21/06:45	02.12.21/07:15	02.12.21/06:45
54	H1 TOD MVA -III(Ex)	History 1 TOD Apparent While Active Export MD Register(Reg 3)	0.004	0.004	0.004
55	Date/Time	History 1 TOD Apparent While Active Export MD Occurrence Time and Date(Reg 3)	08.12.21/13:00	04.12.21/10:30	04.12.21/10:30
56	H1 TOD MVA -IV(Ex)	History 1 TOD Apparent While Active Export MD Register(Reg 4)	0.012	0.008	0.012
57	Date/Time	History 1 TOD Apparent While Active Export MD Occurrence Time and Date(Reg 4)	05.12.21/18:00	02.12.21/18:00	11.12.21/18:00
58	H1 TOD MVA -V(Ex)	History 1 TOD Apparent While Active Export MD Register(Reg 5)	0.020	0.020	0.016
59	Date/Time	History 1 TOD Apparent While Active Export MD Occurrence Time and Date(Reg 5)	22.12.21/18:15	22.12.21/18:15	22.12.21/18:15
60	H1 TOD MVA -VI(Ex)	History 1 TOD Apparent While Active Export MD Register(Reg 6)	0.004	0.004	0.004
61	Date/Time	History 1 TOD Apparent While Active Export MD Occurrence Time and Date(Reg 6)	01.12.21/23:15	01.12.21/23:45	01.12.21/23:30
62	H2 TOD MVA (Im)	History 2 TOD Apparent While Active Import MD Register(Reg 0-24hrs)	1.056	1.052	1.056
63	H2 TOD MVA -I(Im)	History 2 TOD Apparent While Active Import MD Register(Reg 1)	No Data	No Data	No Data
64	H2 TOD MVA -II(Im)	History 2 TOD Apparent While Active Import MD Register(Reg 2)	0.656	0.656	0.656
65	H2 TOD MVA -III(Im)	History 2 TOD Apparent While Active Import MD Register(Reg 3)	1.056	1.052	1.056
66	H2 TOD MVA -IV(Im)	History 2 TOD Apparent While Active Import MD Register(Reg 4)	0.860	0.860	0.864
67	H2 TOD MVA -V(Im)	History 2 TOD Apparent While Active Import MD Register(Reg 5)	No Data	No Data	No Data
68	H2 TOD MVA -VI(Im)	History 2 TOD Apparent While Active Import MD Register(Reg 6)	No Data	No Data	No Data
69	H2 TOD MVA (Ex)	History 2 TOD Apparent While Active Export MD Register(Reg 0-24hrs)	0.012	0.012	0.012
70	H2 TOD MVA -I(Ex)	History 2 TOD Apparent While Active Export MD Register(Reg 1)	0.004	0.004	0.004
71	H2 TOD MVA -II(Ex)	History 2 TOD Apparent While Active Export MD Register(Reg 2)	0.008	0.008	0.008
72	H2 TOD MVA -III(Ex)	History 2 TOD Apparent While Active Export MD Register(Reg 3)	0.008	0.008	0.008
73	H2 TOD MVA -IV(Ex)	History 2 TOD Apparent While Active Export MD Register(Reg 4)	0.012	0.012	0.012
74	H2 TOD MVA -V(Ex)	History 2 TOD Apparent While Active Export MD Register(Reg 5)	0.008	0.008	0.008
75	H2 TOD MVA -VI(Ex)	History 2 TOD Apparent While Active Export MD Register(Reg 6)	0.008	0.008	0.008
76	MWH (Import)	High Resolution Energy Fund. Active Import	14199.3018	14196.9844	14199.2816
77	MWH (Export)	High Resolution Energy Fund. Active Export	41.4707	41.7661	42.4267

78	MVAH (Import)	High Resolution Energy Apparent while active import	14206.0359	14203.5931	14205.7110
79	MVAH (Export)	High Resolution Energy Apparent while active export	42.2777	42.5558	43.2121
80	MVARH (Import Lag)	High Resolution Energy Fund. Reactive Import while Active Import	56.5687	56.2199	56.5486
81	MVARH (Export Lead)	High Resolution Energy Fund. Reactive Export while Active Export	316.8466	317.3060	317.8086
82	MVARH (Import Lag)	High Resolution Energy Fund. Reactive Import while Active Import	1.5417	1.5013	1.5027
83	MVARH (Export Lead)	High Resolution Energy Fund. Reactive Export while Active Export	424.5592	425.5032	425.3943
84	KV	Phase To Neutral Voltage R	17.98	17.87	17.62
85	KV	Phase To Neutral Voltage Y	17.99	17.87	17.66
86	KV	Phase To Neutral Voltage B	17.95	17.86	17.64
87	Amps	R Phase Line Current	24.25	26.38	25.43
88	Amps	Y Phase Line Current	25.50	27.58	26.59
89	Amps	B Phase Line Current	24.41	26.45	25.47
90	Power Factor	Instantaneous Average Power Factor	-0.999	-0.998	-0.998
91	Frequency	Supply Frequency	49.92	49.97	49.96
92	Power Factor	R Phase Power Factor Q1	-0.999	-0.998	-0.999
93	Power Factor	Y Phase Power Factor Q2	-0.998	-0.998	-0.998
94	Power Factor	B Phase Power Factor Q3	-0.999	-0.999	-0.999
95	MW	Instantaneous Load Active	1.33	1.43	1.35
96	MVAR	Instantaneous Load Reactive	0.05	0.06	0.06
97	MVA	Instantaneous Load Apparent	1.33	1.43	1.36
98	KV	Primary Voltage	33 KV	33 KV	33KV
99	Amps	Primary Current	50 A	50 A	50 A
100		Modbus ID	001	001	001
101		Baud rate for serial port	9600	9600	9600
102		Present PT Status	--	--	--
103		Present CT Status	--	--	--
104		Present Others Status	--	--	--
105		First Occurrence Tamper ID	3	3	3
106		Date of 1st Tamper Occurrence	11.11.16	11.11.16	11.11.16
107		Time of 1st Tamper Occurrence	05:35	05:33	05:34
108		Last Occurrence Tamper ID	2	2	2
109		Date of Last Tamper Occurrence	31.01.22	31.01.22	31.01.22
110		Time of Last Tamper Occurrence	18:14	18:15	18:14
111		Cumulative Tamper Count	05551	05543	05545
112		Connection Check	Good	Good	Good
113		Self Diagnostic Flags	00	00	00
114	Voltage	R Phase Voltage Total Harmonic Distortion	0.84	0.85	0.76
115	Voltage	Y Phase Voltage Total Harmonic Distortion	0.84	0.66	0.62
116	Voltage	B Phase Voltage Total Harmonic Distortion	0.40	0.44	0.43
117	Amps	R Phase Line Current Total Harmonic Distortion	3.21	3.08	3.12
118	Amps	Y Phase Line Current Total Harmonic Distortion	2.89	2.75	2.60
119	Amps	B Phase Line Current Total Harmonic Distortion	3.16	3.02	2.41
120	Watts	R Phase Active Power Total Harmonic Distortion	0.00	0.01	0.00
121	Watts	Y Phase Active Power Total Harmonic Distortion	0.02	0.02	0.01
122	Watts	B Phase Active Power Total Harmonic Distortion	0.01	0.02	0.01

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ANNEXURE-II A
READINGS OF MAIN, CHECK & STAND BY METERS
FOR THE BILLING MONTH OF JANUARY - 2022

Name & Location of the Plant: M/s Vyshaka Solar Energy Systems (P) Ltd.,			Solar Power Plant, Project setup by M/s Vyshaka Solar Energy Systems (P) Ltd.,			
Location of Metering : Nuthanakaluva			Name of the Sub-Station: 33/11 kV SS, Nuthanakaluva			
Fuel:	Solar		PPA / PWPA / PPWA / OA :		OA	
Date of Reading:	01.02.2022		Time of Reading:		12:09	
Parameters	Main Meter (APX01192)		Check Meter (APX01193)		Standby Meter (APX01196)	
	Import to AP TRANSCO	Export from AP TRANSCO	Import to AP TRANSCO	Export from AP TRANSCO	Import to AP TRANSCO	Export from AP TRANSCO
Readings before Manual Reset of MD						
MD (Present) (A)	1.560	0.040	1.552	0.044	1.564	0.044
CMD(Cumulative MD) (B)	108.252	2.904	107.464	2.424	107.832	2.356
Reset Count (C)	70		67		67	
Readings after Manual Reset of MD						
MD (Present) (D)	0	0	0	0	0	0
CMD (Cumulative MD) (E)	109.812	2.944	109.016	2.468	109.396	2.400
Reset Count (F)	71		68		68	
Readings of MD after manual reset in the previous JMR						
CMD (Cumulative MD) (G)	108.252	2.904	107.464	2.424	107.832	2.356
Reset Count (H)	70		67		67	
Comparative Statement (Readings of "Export from APTRANSCO" of Main Meter						
Cumulative MD reading after RESET in the present JMR (E)					2.944	
Cumulative MD reading after RESET in the previous JMR (G)					2.904	
Difference in Cumulative MD (I) = (E) - (G)					0.040	
Whether the difference in Cumulative MD (I) = (A)					Yes	
If YES, the current month MD to be billed = (A)					0.040 X 1000 = 40 KVA	
If NO, fill Annexure-II B						
Whether RESET count difference (F) – (H) equal to 1						
If NO, give the reasons:					Yes	

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MADANAPALLE.
EE/O & M/Madanapalle

Vyshaka Solar Energy Systems (P) Ltd

ANNEXURE-III A
STATEMENT OF BILLING PARAMETERS FOR THE BILLING MONTH OF JANUARY - 2022

Name & Location of the Plant: M/s Vyshaka Solar Energy Systems (P) Ltd.,		Solar Power Plant, Project setup by M/s Vyshaka Solar Energy Systems (P) Ltd.,					
Location of Metering: Nuthanakaluva		Name of the Sub-Station: 33/11 kV SS, Nuthanakaluva					
Fuel:	SOLAR		PPA / PWPA / PPWA / OA :				OA
Date of Reading:	01.02.2022		Time of Reading:				12:09
Description		Import to A.P. Transco (Main Meter (APX01192))	Export from A.P. Transco (Main Meter (APX01192))	Import to A.P. Transco (Check Meter (APX01193))	Export from A.P. Transco (Check Meter (APX01193))	Import to A.P. Transco (Standby Meter (APX01196))	Export from A.P. Transco (Standby Meter (APX01196))
MWH Final Reading on Dt.	01.02.2022	14199.20	41.47	14196.88	41.76	14199.18	42.42
MWH Initial Reading on Dt.	01.01.2022	13981.56	40.95	13979.13	41.24	13981.18	41.88
Difference in MWH (A)		217.64	0.52	217.75	0.52	218.00	0.54
% Difference between Main & Check Meters (MWH)		-0.051	0.000				
MVAH Final Reading on Dt.	01.02.2022	14205.93	42.27	14203.49	42.55	14205.61	43.21
MVAH Initial Reading on Dt.	01.01.2022	13988.13	41.74	13985.57	42.02	13987.46	42.66
Difference in MVAH (B)		217.80	0.53	217.92	0.53	218.15	0.55
% Difference between Main & Check Meters (MVAH)		-0.055	0.000				
MVARH (Lag) Final Reading on Dt.	01.02.2022	56.56	1.54	56.21	1.50	56.54	1.50
MVARH (Lag) Initial Reading on Dt.	01.01.2022	55.35	1.52	55.08	1.48	55.33	1.48
Difference in MVARH (Lag) (C)		1.21	0.02	1.13	0.02	1.21	0.02
MVARH (Lead) Final Reading on Dt.	01.02.2022	424.55	316.84	425.49	317.30	425.38	317.80
MVARH (Lead) Initial Reading on Dt.	01.01.2022	418.89	309.74	419.82	310.19	419.71	310.68
Difference in MVARH (Lead) (D)		5.66	7.10	5.67	7.11	5.67	7.12
TOD KVAH Final Reading on Dt.	01.02.2022	8690.0	13130.0	9170.0	13080.0	8850.0	13290.0
TOD KVAH Initial Reading on Dt.	01.01.2022	8690.0	12950.0	9160.0	12890.0	8830.0	13100.0
Difference in TOD KVAH (H)		0.00	180.00	10.00	190.00	20.00	190.00
Multiplication Factor (E)		1000	1000	1000	1000	1000	1000
Billing Energy in KWH (A x E)		217640	520	217750	520	218000	540
Billing Energy in KVAH (B x E)		217800	530	217920	530	218150	550
TOD billing energy KVAH (H)		0.00	180.00	10.00	190.00	20.00	190.00
Reactive energy in KVARH (C x E)		1210	20	1130	20	1210	20
Maximum Demand (MD) Reading (F)		1.560	0.040	1.552	0.044	1.564	0.044
Multiplication Factor (G)		1000	1000	1000	1000	1000	1000
Billing MD in KVA (F x G)		1560	40	1552	44	1564	44

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Vyshaka Solar Energy Systems (P) Ltd

Sample of January 2022 JMR copy

Data / Parameter:	EGy						
Data unit:	MWh						
	Year	2017	2018	2019	2020	2021	2022
	Total Units (MWh)	2228.104	3626.822	3301.061	2624.048	2293.447	2178.798
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:	<p>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.</p> <p>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.</p> <p>Accuracy class of energy meter: As per Power Purchase Agreement (PPA) or relevant National standards amended/modified from time to time.</p> <p>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.</p> <p>Entity responsible: Aggregator</p>						
QA/QC procedures:	<p>Monitoring frequency: Continuous</p> <p>Measurement frequency: Hourly</p> <p>Recording frequency: Monthly</p> <p>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).</p>						
Purpose of Data	-Calculation of baseline emissions						

Data/Parameter	EF, CO ₂ , GRID, y
Data unit	tCO ₂ /MWh
Description	Fixed
Value of data applied	0.9 UCR Standard Protocol As per Standard
Measurement methods and procedures	A "grid emission factor" refers to a CO ₂ emission factor (tCO ₂ /MWh) which will be associated with unit of electricity provided by an electricity system. The UCR recommends an emission factor of 0.9 tCO ₂ /MWh for the 2017 - 2022 years as a fairly conservative estimate for Indian projects not previously

Monitoring frequency Purpose of data	verified under any GHG program. Hence, the same emission factor has been considered to calculate the emission reduction under conservative approach.
	NA
	To estimate baseline emissions
Additional Comment	The combined margin emission factor as per CEA database (current Version 16, Year 2021 and 2022) results into higher emission factor. Hence for 2021-22 vintage UCR default emission factor remains conservative.

