



**Verified Carbon
Standard**

GROUPED ROOFTOP SOLAR PROJECT BY TATA POWER RENEWABLE ENERGY LIMITED

Document Prepared by Tata Power Renewable Energy limited

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1 PROJECT DETAILS

1.1 Summary Description of the Project

The project involves installation of Solar Photovoltaic (SPV) Panels on rooftops in various states of India. The sole purpose of project activity is to install solar power plant for captive purpose of their customer. Hence, according to the VERRA Clarification on solar rooftop captive consumption projects eligibility under VCS, those solar PV projects that generate electricity primarily to deliver to a captive consumer can account for 100% of the electricity generated by the solar PV system, even though the project is grid-connected, given that the main purpose is the delivery to the captive consumer.

Project Activity instance: The details of the first/current project activity instance are as below.

Sl.No.	Customer	Installed Capacity (kW)		Date Commissioning	of	Primary Purpose	Net Metering
		DC	AC				
1	Tinplate Company of India Limited	200.64	180	01-October-2020		Captive	No
2	Duraline India Pvt Ltd.	980	750	07-October-2020		Captive	Yes
3	GE T&D India Limited, Hosur	832	660	11-October-2020		Captive	No
4	Arya Anathalay I	80	80	20-December-2020		Captive	No
5	Time of India, Airoli	186.9	155	19-January-2020		Captive	No
6	Asian Paints Limited	500	460	18-February-2020		Captive	No
7	Time of India, Kolkata	229.5	225	22-February-2020		Captive	No
8	TATA Lockheed Martin Aerostructures Limited	999.6	780	03-March-2021		Captive	Yes
9	TSPDCL, Demag	318	240	31-March-2021		Captive	No
10	Apollo Gleneagles Hospital Limited	335	290	01-April-2021		Captive	No
11	Tata Metaliks Limited	1065	850	15-May-2021		Captive	No
12	Arya Anathalay II	202.29	210	03-June-2021		Captive	No
13	Tata Motors Limited	6250	5200	18-June-2021		Captive	No

Legal owner of the instances – SI No. 1, 2, 3, 4, 9 & 12 are owned by “TATA Power Renewable Energy Limited” & SI No. 5, 6, 7, 8, 10, 11 & 13 are owned by “The TATA Power Company Limited”.

The project location is entire India as geographical region & refer Section 1.12 for details

An explanation of how the project is expected to generate GHG emission reductions or removals.

The project activity will displace electricity from an electricity distribution system that is or would have been supplied by the fossil fuel dominated grid connected electricity thus, leads to reductions of anthropogenic GHG emissions from atmosphere.

A brief description of the scenario existing prior to the implementation of the project.

The baseline scenario would be the continued use of fossil fuel dominated grid connected electricity generation i.e., in the absence of the project activity. The average annual ERs are 15,171 t CO_{2e} & the total estimated ERs for the entire CP are 106,197 t CO_{2e}.

1.2 Sectoral Scope and Project Type

The project activity falls under consideration of the grouped project activity. The project activity instances as part of the grouped project will have the following parameters

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)

Project Type : I - Renewable Energy Projects

Project Category: Each project activity instances will apply only small-scale solar technology

Methodology : AMS-I.F.: Renewable electricity generation for captive use and mini-grid - Ver 5.0

The project activity under consideration is a grouped project activity.

1.3 Project Eligibility

The project activity involves installation and generation of electricity using renewable energy resources i.e. by using the solar energy (renewable sources) replacing electricity supply from a fossil-fuel dominated electricity, thus leads to reductions of anthropogenic GHG emissions from atmosphere. Hence the project activity is eligible Sectoral scope 1 i.e. energy industries (renewable/ non-renewable sources) under the scope of the VCS Program. In line with methodology, the proposed Project displaces grid electricity consumption (e.g. grid import) at the user end (excess electricity may be supplied to a grid).

Also, according to the VERRA Clarification on solar rooftop captive consumption projects eligibility under VCS, those solar PV projects that generate electricity primarily to deliver to a captive consumer can account for 100% of the electricity generated by the solar PV system, even though the project is grid-connected, given that the main purpose is the delivery to the captive consumer.

As the electricity produced by all the project activity instance involved in the proposed project is primarily intended to be used by the captive consumers and excess of the electricity to be supplied to the grid, 100% of the electricity generated by the solar PV units is to be accounted for emission reduction, even though the project is grid-connected, given that the main purpose is the delivery to the captive consumer.

There are 2 instances only (which are connected to grid) out of 13 instances included now in this grouped project activity & the same is mentioned in Section 1.1 of the joint PD & MR.

The sanctioned load details for the project sites are given below:

Sl. No.	Customer	Contract/ Sanctioned load (kW)	Installed AC Capacity (kW)	Installed DC Capacity (kW)
1	Duraline India Private Limited	1501	750	980
2	TATA Lockheed Martin Aerostructures Limited	1400	780	999.6

From the above-mentioned table, it can be concluded that the project installed capacity is less as compared to the sanctioned load for project location. The generated electricity from rooftop solar units is very less considering the PLF values in the range of 18-19% which is negligible when compared with electricity demand of the above consumers. Therefore, it is demonstrated that project activity instances under consideration do not supply more than 50% of the electricity generated to the grid. Hence, the project is not a grid-connected renewable energy project and does not fall in the excluded category as per paragraph 2.1.1 of VCS Standard 4.3.

1.4 Project Design

The proposed project activity is a grouped project activity.

Eligibility Criteria

The project is a grouped project and following are the eligibility criteria for inclusion of new project activity instances into the grouped project activity:

- 1) Applicability Conditions: The project activity instances shall meet applicability conditions for applicable methodology AMS I.F version 5.0 as defined in section 2.2
- 2) Geographical Area: The project activity instances to be included in the grouped project activity will be activities involving renewable electricity generation power plants connection using solar technology located within India that would be generating electricity for captive purpose. Along with the new instances, at different locations of India, there will be new installations in the same premises of the same SPV (at different building rooftops), which will be included as phase 2 of the same SPV.
- 3) Baseline scenario: All Project Activity Instances shall meet the baseline definition as defined in respective methodology and as explained in section 3.4
- 4) Technology type: The project activity instances to be included in the grouped project activity will be Greenfield activities involving renewable electricity generation power plants (captive use) using solar technology.
- 5) Additionality: The project activity instances to be added as part of the grouped project will meet additionality criteria as set out in the methodology.

For small scale project activity instances - As per Guidelines on the Methodological Tool for the demonstration of additionality of small-scale project activities - Version 13.1.0¹ (EB 105, Annex 4), the additionality of the project activity can be demonstrated using the Tool 27: Investment Analysis (EB 116, Annex 2, Version 12.0).

The project Owner identified the investment barriers as one of the barriers faced by the project activity under the Tool 21, therefore, this methodological tool is applicable to the project activity.

¹ <https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-21-v13.0.pdf>

Since this grouped project activity is of the capacity 10.08 MW. The project does not fit into the category of Auto-additional.

The additionality demonstration for this small scale grouped project activity will be proved using the Investment analysis.

- 6) **Start Date:** The start date of each project activity instance under the grouped project should not be prior to the start date of the grouped project. The start date of each project activity instance will be determined through documentary evidence i.e., Commissioning Certificate of each individual instance.
- 7) Conditions that avoid double counting of emission reductions like unique identifications of project and claiming emission reduction only under one GHG program.
- 8) The Grouped Project specific requirements stipulated by the Entity responsible for coordinating and managing grouped project for conducting local stakeholder consultations and environmental impact assessment (EIA), as applicable.
- 9) The project activity using solar PV Technology supplies electricity to users through grid network (micro grid) or in house captive consumption.

The following table demonstrates how the initial project activity instances being included in the grouped project activity fulfil above mentioned eligibility conditions:

Sr. No.	Eligibility Criteria	Project Activity instances eligibility
1	Applicability Conditions: The project activity instances shall meet applicability conditions for applicable methodology (AMS I.F version 5.0) as defined in section 2.2	All project activity instances meet applicability conditions of methodology (AMS I.F Version 5.0 (project activity instances having capacity less than 15 MW), hence this eligibility criteria is fulfilled. Please refer section 2.2 of this document for methodology applicability criteria.
2	Geographical Area: The project activity instances to be included in the grouped project activity will be activities involving Renewable Electricity Generation for captive use and Mini-grid using solar technology located within India.	All project activity instances being included in the grouped project are located within geographic boundaries of India. Hence this condition is fulfilled. Please refer commissioning certificate for Geographical area of project activity.
3	Baseline scenario: All Project Activity Instances shall meet the baseline definition as defined in respective methodology and as explained in section 3.4	All initial project activity instances have same baseline as per methodology as detailed in subsequent sections. Hence this eligibility criterion is fulfilled. Please refer section 3.4 of this document for baseline scenario.
4	Technology type: The project activity instances to be included in the grouped project activity will be	All project activity instances Instance are solar PV power plants supplying electricity for captive use and any surplus power after captive

	Greenfield activities involving Renewable Electricity Generation for captive use and Mini-grid using solar PV technology. The electricity should be supplied to grid, or to third party or to be used for captive purpose etc.	consumption shall be fed to the grid. All are green field projects. If any new project activity instance is added, electricity must be primarily used for captive purpose. Also, if the new project activity instance breaches the threshold, then the project activity instance will be excluded. Hence this condition is fulfilled.
5	Additionality: The project activity instances to be added as part of the grouped project will meet additionality criteria as set out in respective methodologies - for Small Scale Project instances the methodology applicable will be AMS-I.F. For small scale project, project activity instance will be auto additional.	The additionality for the all-project activity instances included in the grouped project has been demonstrated in section 3.5 of PD. Using the Tool 27: Investment Analysis (EB 116, Annex 2, Version 12.0), the project the project Owner identified the investment barriers as one of the barriers faced by the project activity under the Tool 21, therefore, this methodological tool is applicable to the project activity.
6	Start Date: The start date of each project activity instance under the grouped project should not be prior to the start date of the grouped project. The start date of each project activity instance will be determined through documentary evidence.	The start date of grouped project is considered as the earliest commissioning date (i.e. 01-October-2020) of project activity instance and start date of all other project activity instances is after this date. Please refer commissioning certificate for start date of grouped project activity.
7	Conditions that avoid double Counting of emission reductions like unique identifications of project and claiming emission reduction only under one GHG program.	The existing and new project activity instances are identified by latitude and longitude and location of the plant. Declaration has been provided and these project activity instances are not participating in any other GHG program. Hence this condition is fulfilled.
8	The Grouped Project specific requirements stipulated by the Entity responsible for coordinating and managing grouped project for conducting local stakeholder consultations and environmental impact assessment (EIA), as applicable.	Local stakeholder consultation has been conducted as a part of grouped project activity There is no requirement for carrying out EIA for these projects in India, hence this condition is fulfilled.
9	The project activity using solar PV project will supply electricity to grid or to users through grid network or in house captive use.	The existing and new project activity instances are solar PV power plants supplying electricity to user(s) . Hence this condition is fulfilled.

As per clause 3.5.7 of VCS Standard Version 4.3, Non-grouped projects with multiple project activity instances shall not exceed any capacity limits to which a project activity is subject. Thus, capacity limits criteria are applicable for non-grouped project activity. The proposed project activity is grouped project activity; thus, capacity limit is not applicable.

As per clause 3.5.10 of VCS Standard Version 4.3, Grouped project activity allows multiple project activities where meth applied to project allows it. Each project activity instance has total power generation capacity less than 15 MW.

“As with non-grouped projects, grouped projects may incorporate multiple project activities (see Section 3.5.1 – 3.5.3 for more information on multiple project activities). Where a grouped project includes multiple project activities, the project description shall designate which project activities may occur in each geographic area”

As per para 3.5.14 of VCS Standard V4.3, each project activity instances are not exceeding the capacity limit of 15 MW. The project activity instance involves multiple project activity instances and it is not cluster of project activity instances. Thus, there is no any requirement of division of clusters of project activity instances and no requirement to demonstrate that each project activity instances are not within one kilometer of each other.

If any project activity instance is bundled project, then that project activity instance capacity is within capacity limit of 15 MW.

1.5 Project Proponent

Organization name	Tata Power Renewable Energy Limited
Contact person	Prashant Kumar Tiwari
Title	Group Head - Carbon Asset Management,
Address	Tata Power Renewable Energy Limited, Corporate Center B, 34 Sant Tukaram Road, Carnac Bunder, Mumbai 400 009, Maharashtra, India
Telephone	+91 9099006418
Email	prashant.tiwari@tatapower.com

Organization name	The Tata Power Company Limited
Contact person	Prashant Kumar Tiwari
Title	Group Head - Carbon Asset Management,
Address	Tata Power Renewable Energy Limited, Corporate Center B, 34 Sant Tukaram Road, Carnac Bunder, Mumbai 400 009, Maharashtra, India
Telephone	+91 9099006418

Email	prashant.tiwari@tatapower.com
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1.6 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the project	Project Consultant
Contact person	Anil Kumar Nayakallu
Title	Senior Manager- Operations
Address	EnKing Embassy, Plot 48, Scheme 78 Part-2, Behind Vrindavan Hotel, Vijay Nagar, Indore-452010, Madhya Pradesh, India
Telephone	+91 8341435031
Email	anil.nayakallu@enkingint.org and registry@enkingint.org

1.7 Ownership

The renewable energy technology installed at site of each of the project activities as part of the proposed project activity are under ownership of respective SPV/Project Proponent. Tata Power Renewable Energy Limited is authorized PP by all owners of solar power plant. The commissioning certificate for project activity are the supporting documents to demonstrate the project ownership.

The following table gives the Instance wise legal owner & the consumer of the electricity:

Sl.No.	Legal Owner	Customer
1	Tata Power Renewable Energy Limited	Tinplate Company of India Limited
2		Duraline India Private Limited
3		GE T&D India Limited, Hosur
4		Arya Anathalay I
9		TSPDCL, Demag
12		Arya Anathalay II
5	The TATA Power Company Limited	Time of India, Airoli
6		Asian Paints Limited
7		Time of India, Kolkata
8		TATA Lockheed Martin Aerostructures Limited
10		Apollo Gleneagles Hospital Limited
11		Tata Metaliks Limited
13		Tata Motors Limited (Car Plant)

This demonstrates the right of use according to clause 3.6.1 (3) of VCS Standard Version 4.3 – “a project ownership arising by virtue of a statutory, property or contractual right in the plant,

equipment or process that generates GHG emission reductions and/or removals (where the project proponent has not been divested of such project ownership)”.

1.8 Project Start Date

Start date of project activity is 01-October-2020², which is the date of commissioning of the earliest commissioned solar unit involved in the grouped project activity.

1.9 Project Crediting Period

Crediting Period Start date: 01-October-2020

Crediting Period End date: 30-September-2027

The grouped project activity adopts renewable crediting period of 7 years period which can be renewed for maximum 2 times. This start date of crediting period will vary based on actual earliest commissioned date within the project activity instances of grouped project activity.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Indicate the scale of the project (project or large project) and the estimated annual GHG emission reductions or removals for the project crediting period.

Project Scale	
Project	✓
Large project	

Year	Estimated GHG emission reductions or removals (tCO ₂ e)
Year 1	15,494
Year 2	15,385
Year 3	15,277
Year 4	15,170
Year 5	15,064
Year 6	14,959

² The current project activity instance 1 is commissioned and the projects commissioned after 01-October-2020 shall be considered under this grouped project.

Year 7	14,854
Total estimated ERs	106,203
Total number of crediting years	7
Average annual ERs	15,171

1.11 Description of the Project Activity

The project involves installation of Solar Photovoltaic (SPV) Panels on rooftops in various states of India. The sole purpose of project activity is to install solar power plant to supply the electricity to the user(s) for captive purpose/consumption and surplus generated electricity can be supplied to grid and further equivalent energy will be consumed from grid through net metering arrangement with state electricity board.

Under the concept of Net Metering, the customers are charged only for the net power that they consume from the electricity service provider that has accumulated over a specific period. In other words, if their renewable energy generating systems make more electricity than consumed, they may be credited or paid for the excess electricity contributed to the grid over the same period. Net metering is also a way to increase the energy in the power grid to keep up with increase in demand during peak power use times, and this is of particular interest to states facing power shortages.

As per para 3.5.14 of VCS Standard V.4.3, each project activity instance of grouped project activity is less than 15 MW capacity. Thus, small scale methodology AMS I.F is applicable for proposed grouped project activity.

As per the applicable methodology, a Greenfield power plant is defined as “a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity”.

The Project activity is a new facility (Greenfield) and the electricity generated by the Project will be supplied to the user(s).The Project will therefore displace an equivalent amount of electricity which would have otherwise been generated by fossil fuel dominant electricity grid. The Project Proponent plans to avail the VCS benefits for the Project.

Specifications of the PV modules:

Parameters	Data			
Make of solar modules	Yingli Solar			
Power Output at STC (P_{max})	305 W _p	310 W _p	320 W _p	330 W _p
Module Efficiency η_m (%)	15.7	15.9	16.5	17.0
Voltage at P_{max} (V_{mpp})	36.1 V	36.3 V	37.0 V	37.4 V
Current at P_{max} (I_{mpp})	8.45 A	8.53 A	8.64 A	8.84 A
Operating temperature	-40 °C to +85 °C			
Frame material	Anodized Aluminum Alloy			

Dimensions (L/W/H)	1960 mm/ 992 mm/ 40 mm
Weight of the module	22 kg
Maximum system voltage	1000 V _{DC}
Lifetime of the modules	25 years
Certifications	IEC 61215, IEC 61730 & ISO 14001:2004

Specifications of the Inverters:

Parameters	Data	
Make of the inverter	Goodwe	
Nominal AC output power (PAC)	50 kW	60 kW
Maximum PV Power (W)	65000	80000
Nominal DC Power (W)	51500	62000
Max. DC voltage (V)	1000	1000
MPPT Voltage range (V)	200~850	200~850
MPPT Voltage range for full load (V)	520~850	520~850
Nominal DC Voltage (V)	620	620
Starting Voltage (V)	200	200
AC Output Range	45~55Hz/55~65Hz; 310~480V _{ac}	
Maximum Efficiency	98.7%	98.8%
Dimensions (W*H*D)	586 mm*788 mm*264 mm	
Weight (kg)	59	64
Standard Warranty (years)	5/10/15/20/25 (optional)	
Maximum operating altitude	4000m	4000m
Safety Standard	EN62109-1&-2	
Communication	RS485; WiFi	RS485; WiFi

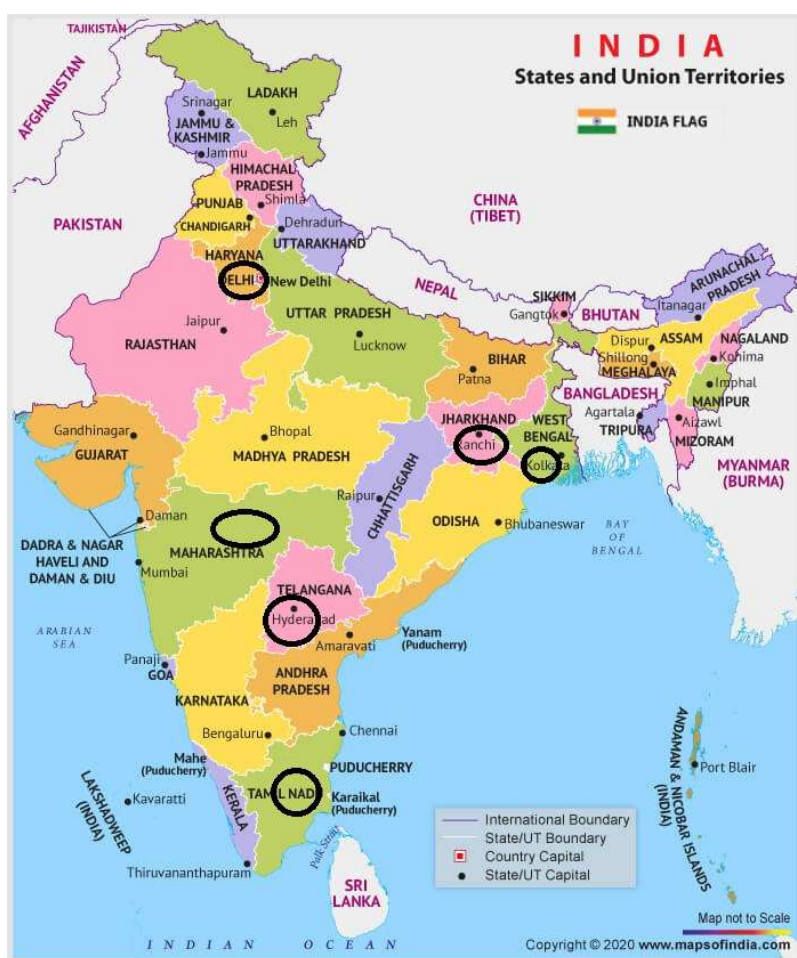
1.12 Project Location

The details of the project locations are mentioned in the table below:

S.I No.	Customer	Installed DC Capacity (kW)	Latitude	Longitude	City	State
1	Tinplate Company of India Limited	200.64	22.7936	86.2295	Jamshedpur	Jharkhand
2	Duraline India Private Limited	980	17.1699	78.2926	Hyderabad	Telangana
3	GE T&D India Limited, Hosur	832	12.7532	77.8098	Hosur	Tamil Nadu
4	Arya Anathalay I	80	28.5558	77.2558	Delhi	Delhi
5	Time of India, Airoli	186.9	19.1643	73.0017	Airoli	Maharashtra
6	Asian Paints Limited	451	19.0593	73.1221	Mumbai	Maharashtra
7	Time of India, Kolkata	226.95	22.5748	88.4266	Kolkata	West Bengal
8	TATA Lockheed Martin Aerostructures Limited	999.6	17.2292	78.5523	Hyderabad	Telangana
9	TSPDCL, Demag	318	22.7703	86.2198	Jamshedpur	Jharkhand

S.I No.	Customer	Installed DC Capacity (kW)	Latitude	Longitude	City	State
10	Apollo Gleneagles Hospital Limited	335	22.5739	88.4011	Kolkata	West Bengal
11	Tata Metaliks Limited	1059	22.3845	87.2849	Kharagpur	West Bengal
12	Arya Anathalay II	202.29	28.5575	77.2554	Delhi	Delhi
13	Tata Motors Limited (Car Plant)	6250	18.6578	73.8207	Pimpri	Maharashtra

This is a grouped project activity and the India is the boundary of the project activity.



A KML file have been submitted in order to indicate the project location and geographic boundaries.

1.13 Conditions Prior to Project Initiation

The project is a Greenfield solar power project and does not involve generation of GHG emissions for the purpose of their subsequent reduction, removal or destruction. Prior to the initiation of

the project activity, the equivalent amount of electricity would have been drawn from grid connected or new power plants, in Indian Grid. The grid is predominantly coal based and therefore is a major source of carbon dioxide emissions in India. The main emission in the pre project scenario is the power plants connected to the Indian Grid, and main GHG involved is CO₂. The baseline identified in section 3.4 is same as the pre-project scenario.

As per methodology, the baseline scenario would be either continued use of fossil fuel dominated grid connected electricity generation or fossil fuel used in power plant or carbon intensive electricity.

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

The Project has received necessary approvals for development and commissioning for each PV Plant from the state Nodal agencies and is in compliance to the local laws and regulations.

The relevant national laws and regulations pertaining to generation of energy in India are:

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006
- Operational Guidelines for Implementation Of Off-Grid And Decentralised Solar Applications Sub Scheme "Off-Grid And Decentralised Solar PV Applications" During 12th Plan Period dated 26th May 2014
- The Project activity conforms to all the applicable laws and regulations in India:
- Power generation using solar energy is not a legal requirement or a mandatory option.
- There are state and sectoral policies, framed primarily to encourage solar power projects. These policies have also been drafted realizing the extent of risks involved in the projects and to attract private investments.
- The Indian Electricity Act, 2003 (May 2007 Amendment) does not influence the choice of fuel used for power generation.
- There is no legal requirement on the choice of a particular technology for power generation.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

The instances covered under this grouped project activity has not been registered and is not seeking registration at moment under any other GHG programs.

The project activity instances covered under the grouped project activity are not participating in any other GHG program.

1.15.2 Projects Rejected by Other GHG Programs

This grouped project activity is neither participating in any other GHG Programme nor rejected by any other GHG programs.

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

The grouped project activity under consideration is not participating in any other Emission trading programme and other binding limits.

All project activity instances are not participating at moment in any other emission trading programme and other binding limits. The GHG emission reductions generated during the current monitoring period have not been used for compliance of other mechanism.

1.16.2 Other Forms of Environmental Credit

The grouped project activity neither has nor intends to generate any other form of GHG related environmental credit for GHG emission reductions or removals claimed under the VCS Program. The initial project activity instances are neither has nor intends to generate any other form of GHG related environmental credit for GHG emission reductions or removals claimed under the VCS Program.

This project is eligible to participate in other programs viz., REC (Renewable Energy Certificates) Mechanism, Gold Standard, GCC (Global Carbon Council) Mechanisms etc, however the projects instances are not claiming any other form of environmental credits and are only perusing registration in Verra under this grouped project activity.,

1.17 Sustainable Development Contributions

1.17.1 Sustainable Development Contributions Activity Description

Contribution to sustainable development:

Apart from generation of renewable electricity, the grouped project activity and project activity instances proposed to be included under it would contribute to the sustainable development of the region - socially, environmentally and economically. Ministry of Environment and Forests, has stipulated economic, social, environment and technological well-being as the four indicators of sustainable development. The project contributes to sustainable development using the following ways.

- **Social well-being:** The project would help in generating employment opportunities during the construction and operation phases. The project activity will lead to utilization of unused area with which the sources of development increases. This project will lead to development in infrastructure in the region by the multiple utilizations of single source and also may promote business with improved power generation.
- **Economic well-being:** The project is a clean technology investment in the region, which would not have been taken place in the absence of the VCS benefits. This project activity will also help to reduce the dependency on grid there by reduces the demand supply gap in the state. The project activity creates local employment generation in the form of O&M of the plant which helps economic well-being of local people.
- **Technological well-being:** The successful operation of project activity would lead to promotion of rooftop solar based power generation and would encourage other entrepreneurs to participate in similar projects.

- **Environmental well-being:** Solar being a renewable source of energy, it reduces the dependence on fossil fuels and conserves natural resources which are on the verge of depletion. Due to its zero emission the Project activity also helps in avoiding significant amount of GHG emissions in the area of installations by reducing the dependency on the fossil fuel based alternatives at times of grid connected power supply failure.

1.17.2 Sustainable Development Contributions Activity Monitoring

The project activity contributes to the sustainable development by the involves installation of Solar Photovoltaic (SPV) Panels on rooftops in various states of India. solar power plant for captive purpose and surplus generated electricity can be supplied to grid.

The total estimated emission reductions during the entire crediting period of 7 years will be approximately 106,197 tCO_{2e}.

For SDG -7. The project activity has produced 13,936 MWh of clean energy and supplied it to Indian grid.

For SDG -8. The project activity has created 13 employments and 13 trainings were imparted to the employees.

For SDG -13. The project activity has prevented the release of 12,966 tCO_{2e} into the atmosphere during the current monitoring period.

Table 1: Sustainable Development Contributions

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1)	7.2	7.2.1 Renewable energy share in the total final energy consumption	Implemented activities to increase	13,936 MWh renewable electricity is supplied to the grid that helps in the increase renewable energy share in the energy mix. This will be updated during the verification of the project activity.	This is the first joint validation & verification of the project activity. The electric power to the tune of 13,936 MWh has been generated and utilized as an alternative to the grid power supply. The amount of electricity can be monitored with the JMRs and they can be cross checked with the invoice
2)	8.5	Average hourly earnings of female and male employees by occupation, age and persons with disabilities	Implemented activities to increase	At least one person is employed at each instance and at least one training is provided to the staff to operate the plant safe & successfully.	13 employments were created and 13 trainings were imparted to the employees. The same can be cross checked with the employment records & the training records pertaining to the project instances.
3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	By supplying 13,936 MWh of clean electricity, the project avoided the release of 12,966 t CO ₂ e into atmosphere during this monitoring period	This is the first joint validation & verification of the project activity; the project avoided the release of 12,966 t CO ₂ e into atmosphere during this monitoring period

1.18 Additional Information Relevant to the Project

Leakage Management

Since the project activity instances to be included into the grouped project activity are renewable energy projects based on solar technology, no leakage emissions are considered - in line with paragraph 29 of the small-scale methodology AMS.I. F (version 5.0).

Thus, leakage management plan and implementation of leakage and risk mitigation measures are not applicable for this grouped project activity.

Commercially Sensitive Information

Not applicable. No any commercially sensitive information has been excluded from the public version of the project description. There is no commercially sensitive information

Further Information

Not applicable.

2 SAFEGUARDS

2.1 No Net Harm

The project activity promotes environmental and socio-economic well-being as it results in zero GHG emissions due to installation and operation of clean, renewable energy technology for electricity generation.

The report on “Developmental Impacts and Sustainable Governance Aspects of Renewable Energy Projects” prepared by MNRE dated September 2013. This report clearly mentioned that solar project activity operations do not result in direct air pollution, noise pollution. Please refer below web link for the same.

<https://smartnet.niua.org/sites/default/files/resources/report-on-developmental-impacts-of-RE.pdf>

Thus, there are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity.

2.2 Local Stakeholder Consultation

Local stakeholder meetings were conducted at each consumer office location by inviting the stakeholders by the SPV representatives to invite comments from local stakeholders and to understand their concerns with regard to the project activity.

The following table gives the required information pertaining to all 13 consumers, which are included instances during this monitoring period. The local stakeholders were notified 15 days

in advance (notice period) to the actual date of the local stakeholder consultation meeting. The stakeholders included the members of the company employees, local residents. Tata Power Renewable Energy Limited (TPREL) representatives as well as the Consumer representative lead the proposed meeting was presided them.

The stakeholders were presented with an overview of VCS and the project activity as well as the technological, economic, environmental and social issues associated with it. This was followed by a speech by representative of SPV, further explaining the project activity.

The stakeholders were then invited to give their comments, suggestions and concerns regarding the project activity. A questionnaire was circulated to all the stakeholders. A representative of the CDM consultant was also present at the stakeholder meeting.

The stakeholders gave their opinion on the project through the filled questionnaires. Overall a positive response was received from the stakeholders. The attendees identified development of local area, generation of employment opportunities and more awareness about these kinds of projects as potential benefits from the project activity.

A list of all the questions asked and responses are also attached.

Sl.No.	Question	Responded by	Response
1	What are all the benefits that the villagers can expect from this the project?	SPV Representative	The social as well as economic development of the nearby area will take place as a result of all the employment opportunities created by the project activity during the construction phase as well as the operation phase.
2	Will the local infrastructure like roads suffer any harm because of the construction of the project activity?	Consumer Representative	No local infrastructure will bear any harm from the project activity.
3	How is electricity generated from Rooftop Solar Projects and it is related to climate change related?	TPREL Representative	Solar energy is a renewable form of energy and is clean. It does not generate any greenhouse gas emissions. Therefore, as compared to energy generated from fossil fuels like coal, solar energy helps in reducing greenhouse gas emissions and hence in mitigating adverse effects of climate change.
4	Will there be any facilities available at the rooftop solar	SPV representative	Under their respective corporate social responsibility initiatives, SPV will promote development in the nearby areas.

	projects which can be beneficial to the local villagers?		
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Also, there is a dedicated e-mail ID “tatatpower@ethics-line.com” available for local stakeholders to lodge their complaints along with the toll-free helpline numbers 0008001004382 and 0008001008277. Also, accessible at normal domestic call rates within India: +91-11-71279005.

Also, the local stakeholders can reach through the third-party website: www.tip-offs.com & the physical mails can be addressed to “Delotte Touche Tohmatsu India LLP, C/o Arjun Rajagopalan, Partner (Ethics Helpline Services), 19th Floor, 46-Prestige Trade Tower, palace Road, High Grounds, Bengaluru – 560001.

Date of LSH Meetings at the project instances as follows

Sl. No.	Name of the customer	Date of Local Stakeholders Meeting	Location
1	Tinplate Company of India Limited	03-September-2019	Jamshedpur, Jharkhand
2	Duraline India Private Limited	09-September-2019	Hyderabad, Telangana
3	GE T&D India Limited, Hosur	04-June-2019	Hosur, Tamil Nadu
4	Arya Anathalay I	11-November-2019	Delhi, Delhi
5	Time of India, Airoli	03-January-2020	Airoli, Maharashtra
6	Asian Paints Limited	06-January-2020	Taloja, Maharashtra
7	Time of India, Kolkata	20-January-2020	Kolkata, West Bengal
8	TATA Lockheed Martin Aerostructures Limited	27-January-2020	Hyderabad, Telangana
9	TSPDCL, Demag	03-February-2020	Jamshedpur, Jharkhand
10	Apollo Gleneagles Hospital Limited	10-February-2020	Kolkata, West Bengal
11	Tata Metaliks Limited	17-February-2020	Kharagpur, West Bengal
12	Arya Anathalay II	16-March-2020	Delhi, Delhi
13	Tata Motors Limited (Car Plant)	23-March-2020	Pimpri, Maharashtra

2.3 Environmental Impact

The guidelines on Environmental Impact Assessment have been published by Ministry of Environment, Forests and Climate Change (MoEFCC), Government of India (GOI) under Environmental Impact Assessment notification 14/09/2006³. Further amendments to the notification have been done on 14/07/2018⁴. As per the notification:

The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall hereinafter referred to be as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority (SEIAA) for matters falling under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

- (i) All new projects or activities listed in the Schedule to this notification;
- (ii) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;
- (iii) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range."

As the solar power generation projects are not listed in any of the categories of the schedule. So, the project is considered environmentally safe and as per Host party- India no EIA is required.

2.4 Public Comments

This project was open for public comment on the project activity instances on Verra Registry & the public comment period started on 17-August-2022 and ended on 16-September-2022. There were no negative comments from the stakeholders regarding the project activity.

2.5 AFOLU-Specific Safeguards

This section is not required as this project activity is a non-AFOLU project activity.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

The project activity instances as part of the proposed grouped project activity will be small scale project activity instances with power generation capacity less than or equal to 15 MW. Accordingly, below mentioned methodology will be used for each of the project activity instances.

³ <http://www.environmentwb.gov.in/pdf/EIA%20Notification,%202006.pdf>

⁴ <http://www.egcipl.com/Doc/Gazette%20Notification.pdf>

The project activity instance based on its capacity:

The methodology for the project activity instances will be the approved methodology for small-scale CDM project activities. The details of the methodology are as follows:

Methodology : AMS.I. F

Project Type : Type-I: Renewable Energy Projects

Title : Renewable Electricity Generation for captive use and Mini-grid, Ver 5.0; EB 115

Reference : CDM Methodologies⁵

3.2 Applicability of Methodology

The Small-scale grid connected project activity instances under grouped project activity will meets the applicability conditions of the approved methodology AMS I.F., Version 5.0, Sectoral Scope 1, as described below-

Applicability Condition of AMS I F Ver. 5	Project activity vis-à-vis applicability Conditions
This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to user(s). The project activity will displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit i.e., in the absence of the project activity, the users would have been supplied electricity from one or more sources listed below: - A national or a regional grid (grid hereafter); - Fossil fuel fired captive power plant; - A carbon intensive mini-grid	The project activity instances comprise of renewable electricity generation using solar energy units which supply power to the user(s). The solar plant unit is located at the respective rooftop of the mentioned site at section 1. The project activity will displace electricity from INDAN Grid, which is supplied by predominantly fossil fuel plants. Out of the 13 project activity instances, 2 instances are connected to the grid through net metering & all the project instances will lead to replacement of equivalent quantum of fossil fuel dominated grid power. Hence, the project activity instances follow this applicability conditions.
Illustration of respective situations under which each of the methodology (AMS-I.D., AMS-I.F. and AMS-I.A.) applies is included in Table 3.	The project activity applies methodology AMS I.F and the detailed scenario has been explained after end of this table.

⁵ (<https://cdm.unfccc.int/methodologies/DB/9KJWQ1G0WEG6LKHX21MLPS8BQR7242>)

Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology: a. The project activity is implemented in an existing reservoir with no change in the volume of reservoir; b. The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m² c. The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m².	Project activity instances does not include hydro power generation.
This methodology is applicable for project activities that: a) Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); b) Involve a capacity addition, c) Involve a retrofit of (an) existing plant(s); or d) Involve a replacement of (an) existing plant(s).	All project activity instances are installation of greenfield power plants. Hence the condition (a) justifies by the project activity instances. For future project activity instances, option b, c and d may be applicable and applicability will be justified for each project activity instance.
In the case of project activities that involve the capacity addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	Project instances are not capacity addition. All instances are green field installation. If any project activity instance involves any capacity addition, then total capacity of each project activity instance is less than 15 MW.
In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	This Project activity instances are not a retrofit or replacement of existing project activity. If any project activity instance involves any retrofit or replacement, then total capacity of each project activity instance is less than 15 MW

If the unit added has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The project activity instances does not have a non-renewable component.
Combined heat and power (co-generation) systems are not eligible under this category.	The project activity instances does not involved with co-generation.
If electricity and/or steam/heat produced by the project activity is delivered to a third party, i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered that ensures that there is no double counting of emission reductions.	Every project activity instance having a contractual agreement between supplier and consumers in order to specifically avoid double counting.
In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	The project activity instances does not involved with biomass usage.

Differentiation amongst applicability of AMS – I.A, AMS-I. D and AMS- I.F

S. No	Project type	AMS-I. A	AMS-I. D	AMS-I. F
1	Project supplies electricity to a national/regional grid		√	
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			√
3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		√	
4	Project supplies electricity to a mini grid system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			√
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	√		

As the solar units involved in the proposed project generate electricity primarily to deliver to captive consumers and excess electricity is to be supplied to the grid, this resembles the scenario listed at S.I no. 2 of the above table and hence the methodology, AMS I F is applied appropriately.

Tool to calculate the emission factor for an electricity system⁶ - Version 07.0 (EB 100, Annex 04)

Applicability Criterion	Project Case
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g., demand-side energy efficiency projects).	The project is a grid connected Greenfield solar power project and thus the tool is applicable.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 2: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Steps involved in calculation of Emission Factor is included in section 4.1 of the PD as per the requirement of the tool.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	Project activity instances are located in non-Annex I country and hence the tool is applicable
Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The individual project activity instances is a solar project and there is no involvement of biofuels.

The project activity qualifies as Type I during every year of the crediting period in accordance with applicable provisions for project activity eligibility as discussed above. Also, the total installed capacity of each project instance is less than 15 MW threshold limit of small-scale project activity instances and respective methodology will be applicable for that project activity instances.

⁶<https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

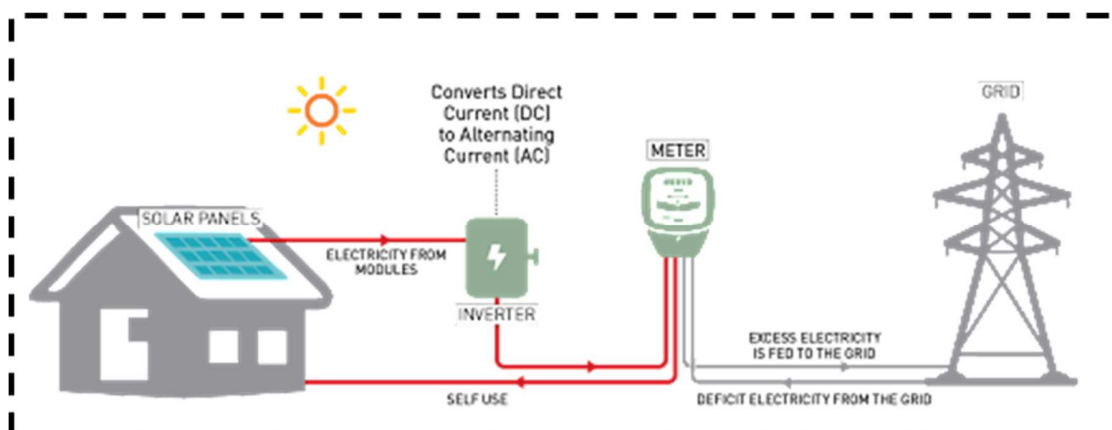
3.3 Project Boundary

As per AMS I.F, Version 5.0 “The spatial extent of the project boundary includes industrial, commercial facilities consuming energy generated by the system. In the case of electricity generated and supplied to distributed users (e.g., residential users) via mini/isolated grid(s) the project boundary may be confined to physical, geographical site of renewable generating units. The boundary also extends to the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to.”

The project boundary includes the solar project installed at the user’s premises. Users might also be connected to the Indian grid. Therefore, the entire Indian grid and all connected power plants have been considered in the project boundary for the proposed VCS project activity. The table below provides an overview of the emissions sources included or excluded from the project boundary for determination of baseline and project emissions.

Source		Gas	Included?	Justification/Explanation
Baseline	Grid connected electricity generation	CO ₂	Yes	Main emission source
		CH ₄	NO	Minor emission source
		N ₂ O	NO	Minor emission source
Project	Greenfield Solar Power Project activity	CO ₂	NO	No CO ₂ emissions are emitted from the project
		CH ₄	NO	Project activity does not emit CH ₄
		N ₂ O	NO	Project activity does not emit N ₂ O

The pictorial depiction of the project boundary is given below:



The proposed project activities will be rooftop solar projects, however main purpose is to supply the electricity to the user(s) for their consumption.

3.4 Baseline Scenario

As per the applicable methodology, a Greenfield power plant is defined as “a new renewable energy power plant that is constructed and operated at a site where no renewable energy power plant was operated prior to the implementation of the project activity”.

As per para 21 of AMS I.F version 5.0; “For project activities that displace electricity consumed from the electric grid and from a fossil fuel fired on-site captive power plant, the baseline emission factor shall reflect the emissions intensity of the grid and the captive power plant in the baseline scenario, i.e., the weighted average emission factor for the displaced electricity is calculated using values based on the historical (prior three year ratio) of electricity from captive plants and the grid. For new facilities, the most conservative (lowest) of the emission factor for the two power sources should be used”.

Hence, the baseline for this project activity is the equivalent amount of electricity from the INDIAN grid & the combined margin ($EF_{CO_2,y}$) is the result of a weighted average of two emission factor pertaining to the electricity system: the operating margin (OM) (having weightage 75%) and build margin (BM) (having weightage 25%). Calculations for this combined margin must be based on data from an official source of CEA database (where available) and made publicly available.

The combined margin of the INDIAN National Grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
$EF_{grid,CM,y}$	0.9305 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	This weighted average emission factor for the displaced electricity is calculated using values based on the historical (prior three year ratio) of electricity from captive plants and the grid. Hence, it is the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 17.0, October - 21 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,OM,y}$	0.9522 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3-year (2017-18, 2018-19, 2019-20) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 17.0, October - 21 published by Central Electricity Authority (CEA), Government of India
$EF_{grid,BM,y}$	0.8653 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	Baseline CO ₂ Emission Database, Version 17.0, October - 21 published by Central Electricity Authority (CEA), Government of India

3.5 Additionality

The additionality of the Project shall be demonstrated by applying the following approach, consisting of two components:

- (i) A Legal Requirement Test; and
- (ii) An Additionality Test either based on a Positive List test or a projects-specific additionality test.

a) Legal Requirement Test

The project is not enforced by law. The project passes the legal requirement test since there are no enforced laws, statutes, regulations, court orders, environmental-mitigation agreements, permitting conditions of other legally-binding mandates requiring its implementation. Since voluntary commitments/agreements within a sector or by an entity do not constitute the legal requirement, the outcome of the legal requirement test is concluded as positive.

b) Additionality Test

In accordance with applied Tool 21, “Demonstration of additionality of small-scale project activities” Version 13.1, the project proponent shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:

- Investment barrier
- Technological barrier
- Barrier due to prevailing practice
- Other barriers

The project proponent has identified “investment barrier” as the most relevant barrier faced by the project activity. The investment barrier faced by the project activity consists of barrier due to high capital cost and consequent impact on return

Investment Barrier:

The purpose of investment analysis is to determine whether the project activity is economically or financially less attractive than other alternatives without additional funding that may be derived from the sale of carbon credits. The investment analysis was conducted in accordance with guidelines on investment analysis.

The project proponent has considered Equity IRR as the suitable financial indicator for investment analysis.

Suitability of Benchmark:

As per Tool 27: Investment analysis, Version 12.0, EB 116, Annex 2 “In cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or WACC are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national authorities are also appropriate if the DOE can validate that the benchmarks used are applicable to the project activity and the type of IRR calculation presented.”

Accordingly, the project proponent has selected required/ expected returns on equity as the appropriate benchmark for the project.

The investment analysis has been carried out in Nominal terms. Accordingly, Default value has been adjusted by adding suitable forecasted inflation rate taken from RBI (Central Bank, India). Project proponent has calculated Benchmark based on WPI mean inflation rate. As per paragraph 16 of the Tool 27: Investment analysis, Version 12.0, EB 116, Annex 2, the inflation forecast of the central bank of the host country should be for the duration of the crediting period. However, since RBI provides forecast inflation only for 5 & 10 years, the project investor has calculated benchmark using 10 years durations and the same is considered as Benchmark for the project activity.

Methodology deployed for arriving at a suitable value of Benchmark using Default Value has been described below:

- As the project activity generates power utilizing solar energy, Group 1 as per paragraph 5 of Appendix of EB 116, Annex 2 has been identified as a suitable category.
- The investment analysis has been carried out in Nominal terms. Accordingly, default value as given in paragraph 6, Appendix, Annex 2, EB 116 has been adjusted by adding suitable forecasted inflation rate taken from RBI (Central Bank, India).
- Project investor has calculated Benchmark based on WPI mean inflation rate. As per paragraph 16 of Appendix of EB 116, Annex 2, the inflation forecast should be for the duration of the crediting period. The project investor has calculated benchmark using 10 years inflation as Benchmark for the project activity.

The benchmark has been computed in the following manner:

$$\text{Nominal Benchmark}^7 = \{(1 + \text{Real Benchmark}) * (1 + \text{Inflation rate})\} - 1$$

The financial spread sheets for the key assumption supporting the financial projections are tabulated below:

1. For Tinplate Company of India Limited

Details of the project		Source	Link
State where the project is situated	Jharkhand		
Total Capacity (MW)	0.180		
Expected Date of Commissioning	31-Oct-20		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	2,99,592	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf

⁷ As per Fisher Equation, https://en.wikipedia.org/wiki/Fisher_equation

Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.13	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.10	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	-		
Financial parameters			
TOTAL COST (INR Mn.)	9.54	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	9.54		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	9.54	Calculated Value	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	0.95	Calculated Value	
Net Depreciable Value (INR Mn.)	8.59	Calculated Value	
Residual Value (INR Mn.)	0.95	Calculated Value	
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm

Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.99%	Calculated Value	
MAT (%)	37.39%	Calculated Value	
Service Tax (%)	18.54%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.83%	11.64%	13.39%	14.18%	14.65%
O&M cost	11.82%		11.46%		-153.00%
Project Cost	13.39%		10.18%		-13.95%
Tariff	9.83%		13.39%		14.65%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.64%	14.18%

2. For Duraline India Private Limited:

Details of the project		Source	Link
State where the project is situated	Telangana		
Total Capacity (MW)	0.75		

Expected Date of Commissioning	31-Oct-20		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	12,48,300	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			-
O & M Expenses (INR Mn.)	0.53	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.40	As per CERC Order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			
Financial parameters			-
TOTAL COST (INR Mn.)	39.75	As per CERC Order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	39.75		
Term loan			-
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		-
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			-
Land	39.75	Calculated Value	
Gross Depreciable Value (INR Mn.)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage Value (%)	3.98	Calculated Value	
Salvage value (INR Mn.)	35.78	Calculated Value	

Net Depreciable Value (INR Mn.)	3.98	Calculated Value	
Residual Value (INR Mn.)	39.75	Calculated Value	
IT Depreciation			-
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			-
Financial Year	FY 2020-21		-
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%	for a domestic company	
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%	for a domestic company	
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.83%	11.64%	13.39%	14.65%	17.40%
O&M cost	11.82%		11.46%		-184.00%
Project Cost	13.39%		10.18%		-16.10%
Tariff	9.83%		13.39%		17.40%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.64%	14.65%

3. For GE T&D India Limited, Hosur:

Details of the project		Source	Link
State where the project is situated	Tamil Nadu		
Total Capacity (MW)	0.660		
Expected Date of Commissioning	31-Oct-20		
Life of the plant (Yrs.)	25		https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	10,98,504	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		-
Transmission & Wheeling Losses (%)	0.0%		-
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.46	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.35	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	0.46	As per CERC Order	-
Financial parameters			
TOTAL COST (INR Mn.)	34.98	CERC order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	34.98		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-
1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		

Gross Depreciable Value (INR Mn.)	34.98	Calculated Value	
Salvage Value (%)	10.00%	CERC order	-
Salvage value (INR Mn.)	3.50	Calculated Value	
Net Depreciable Value (INR Mn.)	31.48	Calculated Value	
Residual Value (INR Mn.)	3.50	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			-
Financial Year	FY 2020-21		-
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameter s	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.83%	11.64%	13.39%	15.71%	20.40%
O&M cost	11.82%		11.46%		-219.00%
Project Cost	13.39%		10.18%		-18.40%
Tariff	9.83%		13.39%		20.40%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
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11.64%	15.71%
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4. For Arya Anathalay I:

Details of the project		Source	Link
State where the project is situated	New Delhi		
Total Capacity (MW)	0.08		
Expected Date of Commissioning	20-Dec-20		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	1,33,152	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		-
Transmission & Wheeling Losses (%)	0.0%		-
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.06	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	-		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.04	As per CERC Order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	-		-
Financial parameters			
TOTAL COST (INR Mn.)	4.24	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	4.24		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-

1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	4.24	Calculated Value	
Salvage Value (%)	10.00%		-
Salvage value (INR Mn.)	0.42	Calculated Value	
Net Depreciable Value (INR Mn.)	3.82	Calculated Value	
Residual Value (INR Mn.)	0.42	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts %20%20tables/depreciation%20rate s.htm
Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//ht docs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	6.46%	11.62%	9.54%	14.65%	17.60%
O&M cost	8.36%		7.82%		-186.00%
Project Cost	9.29%		7.04%		-16.25%
Tariff	6.46%		9.54%		17.60%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.62%	14.65%

5. For Time of India, Airoli:

Details of the project		Source	Link
State where the project is situated	Maharashtra		
Total Capacity (MW)	0.155		
Expected Date of Commissioning	19-Jan-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	2,57,982	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		-
Transmission & Wheeling Losses (%)	0.0%		-
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.11	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.08	As per CERC Order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses			-
Financial parameters			
TOTAL COST (INR Mn.)	8.22	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	8.22		
Term loan			
Loan Amount (INR Mn.)			-
Interest rate (%)			-
Loan Tenure (Qtr.)			-
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		-
Repayment instalments value (INR Mn.)			-

1st instalment from (Qtr. end)			-
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	8.22	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	-
Salvage value (INR Mn.)	0.82	Calculated Value	
Net Depreciable Value (INR Mn.)	7.39	Calculated Value	
Residual Value (INR Mn.)	0.82	Calculated Value	-
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.87%	11.66%	13.38%	14.65%	17.50%
O&M cost	11.84%		11.47%		-184.00%
Project Cost	13.39%		10.21%		-16.20%
Tariff	9.87%		13.38%		17.50%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.66%	14.65%

6. For Asian Paints Limited:

Assumption and financial of the project			
Details of the project		Source	Link
State where the project is situated	Maharashtra		
Total Capacity (MW)	0.460		
Date of Commissioning	18-Feb-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	7,65,624	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.32	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.24	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	0.23		
Financial parameters			
TOTAL COST (INR Mn.)	24.38	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	24.38		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			

Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	24.38	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Salvage Value (%)	10.00%	Calculated Value	
Salvage value (INR Mn.)	2.44	Calculated Value	
Net Depreciable Value (INR Mn.)	21.94	Calculated Value	
Residual Value (INR Mn.)	2.44		
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameter s	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	8.83%	10.66%	12.42%	14.65%	23.11%
O&M cost	10.84%		10.47%		-243.15%
Project Cost	12.30%		9.28%		-21.45%
Tariff	8.83%		12.42%		23.11%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
10.66%	14.65%

7. For Time of India, Kolkata:

Details of the project		Source	Link
State where the project is situated	West Bengal		
Total Capacity (MW)	0.225		
Date of Commissioning	31-Jan-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	3,74,490	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.16	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.12	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	-		
Financial parameters			
TOTAL COST (INR Mn.)	11.93	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Loan Amount (INR Mn.)	-		

Equity Investment (INR Mn.)	11.93		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	11.93	Calculated Value	
Salvage Value (%)	10.00%	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Salvage value (INR Mn.)	1.19	Calculated Value	
Net Depreciable Value (INR Mn.)	10.73	Calculated Value	
Residual Value (INR Mn.)	1.19	Calculated Value	
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			

Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.87%	11.66%	13.38%	14.65%	17.50%
O&M cost	11.84%		11.47%		-183.58%
Project Cost	13.39%		10.21%		-16.20%
Tariff	9.87%		13.38%		17.50%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.66%	14.65%

8. For Tata Lockheed Martin:

Details of the project		Source	Link
State where the project is situated	Telangana		
Total Capacity (MW)	0.78		
Date of Commissioning	1-Mar-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	12,98,232	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.55	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.41	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	-		

Financial parameters			
TOTAL COST (INR Mn.)	41.34	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	41.34		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	41.34	Calculated Value	
Salvage Value (%)	10.00%	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Salvage value (INR Mn.)	4.13	Calculated Value	
Net Depreciable Value (INR Mn.)	37.21	Calculated Value	
Residual Value (INR Mn.)	4.13	Calculated Value	
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rated applicable@	
Corporate Tax / MAT (%)	15.00%	FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@	
Education cess (%)	4.00%		https://incometaxindia.gov.in/Booklets%20%20Pamph

		FY 2020-21 for a domestic company	ets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameter s	-10%	IRR (Base Case)	10%	Benchmar k	Breaching Value
Generation	9.92%	11.71%	13.45%	14.65%	Breaching Value
O&M cost	11.89%		11.53%		17.06%
Project Cost	13.45%		10.26%		-180.01%
Tariff	9.92%		13.45%		-15.85%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.71%	14.65%

9. For TSPDCL, Demag:

Details of the project		Source	Link
State where the project is situated	Jharkhand		
Total Capacity (MW)	0.240		
Date of Commissioning	31-Mar-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	3,99,456	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.17	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf

O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.13	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	-		
Financial parameters			
TOTAL COST (INR Mn.)	12.72	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	12.72		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	12.72	Calculated Value	
Salvage Value (%)	10.00%	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Salvage value (INR Mn.)	1.27	Calculated Value	
Net Depreciable Value (INR Mn.)	11.45	Calculated Value	
Residual Value (INR Mn.)	1.27	Calculated Value	
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2020-21		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		

GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	10.02%	11.83%	13.58%	14.18%	13.52%
O&M cost	12.01%		11.65%		-141.50%
Project Cost	13.58%		10.37%		-13.01%
Tariff	10.02%		13.58%		13.52%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.83%	14.18%

10. For Apollo Gleneagles Hospital Limited:

Details of the project		Source	Link
State where the project is situated	West Bengal		
Total Capacity (MW)	0.290		
Date of Commissioning	1-Apr-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	4,82,676	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf

Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.20	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.15	CERC order	http://www.cercind.gov.in/2016/orders/SO_17.pdf
Administrative expenses	-		
Financial parameters			
TOTAL COST (INR Mn.)	15.37	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	15.37		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	15.37	Calculated Value	
Salvage Value (%)	10.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Salvage value (INR Mn.)	1.54	Calculated Value	
Net Depreciable Value (INR Mn.)	13.83	Calculated Value	
Residual Value (INR Mn.)	1.54	Calculated Value	
IT Depreciation			

IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%2020tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2021-22		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.86%	11.67%	13.41%	14.65%	17.26%
O&M cost	11.85%		11.48%		-181.53%
Project Cost	13.42%		10.21%		-16.01%
Tariff	9.86%		13.41%		17.26%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.67%	14.65%

11. For Tata Metaliks Limited:

Details of the project		Source	Link
State where the project is situated	West Bengal		
Total Capacity (MW)	0.850		
Date of Commissioning	31-May-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			

PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	14,14,740	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.60	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.45	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	-		
Financial parameters			
TOTAL COST (INR Mn.)	45.05	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	45.05		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	45.05	Calculated Value	
Salvage Value (%)	10.00%	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Salvage value (INR Mn.)	4.51	Calculated Value	
Net Depreciable Value (INR Mn.)	40.55	Calculated Value	
Residual Value (INR Mn.)	4.51	Calculated Value	

IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2021-22		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameter s	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.86%	11.67%	13.41%	14.65%	17.23%
O&M cost	11.58%		11.48%		-181.51%
Project Cost	13.42%		10.20%		-16.01%
Tariff	9.86%		13.41%		17.23%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.67%	14.65%

12. For Arya Anathalay II:

Details of the project		Source	Link
State where the project is situated	New Delhi		

Total Capacity (MW)	0.210		
Date of Commissioning	3-Jun-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	3,49,524	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	0.15	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	0.11	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Administrative expenses	-		
Financial parameters			
TOTAL COST (INR Mn.)	11.13	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	11.13		
Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	11.13	Calculated Value	

Salvage Value (%)	10.00%	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Salvage value (INR Mn.)	1.11	Calculated Value	
Net Depreciable Value (INR Mn.)	10.02	Calculated Value	
Residual Value (INR Mn.)	1.11	Calculated Value	
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2021-22		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		
GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources/htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Books%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameter s	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.86%	11.67%	13.41%	14.18%	14.47%
O&M cost	11.48%		11.48%		-150.57%
Project Cost	10.20%		10.20%		-13.81%
Tariff	9.86%		13.41%		14.47%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.67%	14.18%

13. For Tata Motors Limited (Car Plant):

Details of the project		Source	Link
State where the project is situated	Maharashtra		
Total Capacity (MW)	5.20		
Date of Commissioning	18-Jun-21		
Life of the plant (Yrs.)	25	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Generation of electricity			
PLF (%)	19.00%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Annual generation (kWh)	86,54,880	Calculated Value	
Annual Degradation per year	0.50%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Tariff rate at the decision making (INR/kWh)	5.68	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Escalation in tariff rate	0.0%		
Transmission & Wheeling Losses (%)	0.0%		
Operation and maintenance cost and Insurance			
O & M Expenses (INR Mn.)	3.64	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
O & M free for (Yr.)	2.00		
Escalation in the operational expenses (%)	5.72%	As per CERC Order	https://cercind.gov.in/2016/orders/sm_3.pdf
Insurance (INR Mn.)	2.76	CERC order	http://www.cercind.gov.in/2016/orders/SO_17.pdf
Administrative expenses	-		
Financial parameters			
TOTAL COST (INR Mn.)	275.60	CERC order	http://www.cercind.gov.in/2016/orders/SO_17.pdf
Loan Amount (INR Mn.)	-		
Equity Investment (INR Mn.)	275.60		

Term loan			
Loan Amount (INR Mn.)			
Interest rate (%)			
Loan Tenure (Qtr.)			
Moratorium Period (Qtr.)	-		
Repayment Period (Qtr.)	-		
Repayment instalments value (INR Mn.)			
1st instalment from (Qtr. end)			
Book Depreciation (SLM Method)			
Land	-		
Gross Depreciable Value (INR Mn.)	275.60	Calculated Value	
Salvage Value (%)	10.00%	CERC order	http://www.cercind.gov.in/2016/orders/SO17.pdf
Salvage value (INR Mn.)	27.56	Calculated Value	
Net Depreciable Value (INR Mn.)	248.04	Calculated Value	
Residual Value (INR Mn.)	27.56	Calculated Value	
IT Depreciation			
IT Depreciation(%)	7.69%	As Per Depreciation Rates for Power Generating Units	https://incometaxindia.gov.in/charts%20%20tables/depreciation%20rates.htm
Income Tax			
Financial Year	FY 2021-22		
Income tax rate (%)	30.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Corporate Tax / MAT (%)	15.00%		

GST	18.00%	As Per Income Tax Rule	https://old.cbic.gov.in/resources//htdocs-cbec/gst/Work%20Contracts%20in%20GST.pdf
Surcharge (%)	7.00%	Tax rated applicable@ FY 2020-21 for a domestic company	https://incometaxindia.gov.in/Booklets%20%20Pamphlets/e-Pdf-INCOME-TAX-RATES-english-2022.pdf
Education cess (%)	4.00%		
Final Tax rates			
Income tax rate (%)	33.38%	Calculated Value	
MAT (%)	16.69%	Calculated Value	
Service Tax (%)	18.72%	Calculated Value	

Sensitivity Analysis:

Parameters	-10%	IRR (Base Case)	10%	Benchmark	Breaching Value
Generation	9.86%	11.66%	13.41%	14.65%	17.23%
O&M cost	11.85%		11.48%		-181.61%
Project Cost	13.42%		10.20%		-16.01%
Tariff	9.86%		13.41%		55.69%

Conclusion:

Equity IRR without	Benchmark (Equity IRR)
11.66%	14.65%

This substantiates that the investment is not financially attractive (Equity IRR for the project activity is less than the Benchmark Equity IRR) for any of the investor.

Also, it can be noted it has been more than a year since the first project instance is operational. Hence, the Equity IRR is calculated with the actual values and tabulated below:

Sl. No.	Name of the customer	Benchmark	Equity IRR (CERC Values)	Equity IRR (At Actuals)
1	Tinplate Company of India Limited	14.18%	11.64%	7.08%

2	Duraline India Private Limited	14.65%	11.64%	6.30%
3	GE T&D India Limited, Hosur	15.71%	11.64%	7.49%
4	Arya Anathalay I	14.65%	11.62%	6.71%
5	Time of India, Airoli	14.65%	11.66%	9.88%
6	Asian Paints Limited	14.65%	10.66%	9.43%
7	Time of India, Kolkata	14.65%	11.66%	9.85%
8	TATA Lockheed Martin Aerostructures Limited	14.65%	11.71%	9.71%
9	TSPDCL, Demag	14.18%	11.83%	5.95%
10	Apollo Gleneagles Hospital Limited	14.65%	11.67%	6.57%
11	Tata Metaliks Limited	14.65%	11.67%	2.60%
12	Arya Anathalay II	14.18%	11.67%	1.36%
13	Tata Motors Limited (Car Plant)	14.65%	11.66%	6.46%

With the above table, it is evident that no instance is breaching the benchmark even with the actual parameters (IRR Calculation sheets have been provided to VVB). Thus, it can be easily concluded that project activity is additional & is not business as usual scenario.

Common Practice Analysis

Not Applicable as this is a small-scale project activity.

3.6 Methodology Deviations

Not Applicable

4 ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

For Solar grid connected systems:

As per para 20 of AMS-I.F. version 5.0, the 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.

$$BE_y = EG_{BL,y} \times EF_{CO_2,y}$$

Where:

BE_y = Baseline emissions in year y (t CO₂)

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

$EF_{CO_2,y}$ = Emission factor(t CO₂/MWh)

- The emission factor of an electric grid shall be calculated as per the procedures provided in AMS-I.D.
- For a mini-grid system other than described in paragraph 19 above, the baseline emission factor shall be determined as per the weighted average emissions for the current generation mix following the procedure provided in AMS-I.D.,
- The emission factor for captive electricity generation shall be calculated as per the procedures described in the TOOL05

The spatial extent of the project boundary includes industrial, commercial facilities consuming energy generated by the system. In the case of electricity generated and supplied to distributed users (e.g. residential users) via mini/isolated grid(s) the project boundary may be confined to physical, geographical site of renewable generating units. The boundary also extends to the project power plant and all power plants connected physically to the electricity system as per the requirements provided in TOOL07 to which the project power plant is connected.

As per methodology, combined grid emission factor as per the “Tool to calculate the emission factor for an electricity system” version 07 is calculated as below.

CO₂ Baseline Database for the Indian Power Sector, Version 17, October 2021 published by Central Electricity Authority (CEA), Government of India has been used for the calculation of emission reduction.

As per Methodological tool: Tool to calculate the emission factor for an electricity system (Version 7.0, EB 100, Annex 4), following six steps have been followed:

- Step 1:** Identify the relevant electricity systems;
- Step 2:** Choose whether to include off-grid power plants in the project electricity system (optional);
- Step 3:** Select a method to determine the operating margin (OM);

- d) **Step 4:** Calculate the operating margin emission factor according to the selected method;
- e) **Step 5:** Calculate the build margin (BM) emission factor;
- f) **Step 6:** Calculate the combined margin (CM) emission factor.

Step 1: Identify the relevant electricity systems

As described in tool “For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity systems”. It also states that “If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used”. Keeping this into consideration, the Central Electricity Authority (CEA), Government of India have Indian grid.

However, since August 2006, however, all regional grids except the Southern Grid had been integrated and were operating in synchronous mode, i.e. at same frequency. Consequently, the Northern, Eastern, Western and North-Eastern grids were treated as a single grid named as NEWNE grid from FY 2007-08 onwards for the purpose of this CO₂ Baseline Database. As of 31 December 2013, the Southern grid has also been synchronized with the NEWNE grid, hence forming one unified Indian Grid. Since the project supplies electricity to the Indian grid, emissions generated due to the electricity generated by the Indian grid as per CM calculations will serve as the baseline for this project.

Table: Geographical Scope of Indian Electricity Grid

Northern	Eastern	Western	North-Eastern	Southern
Chandigarh	Bihar	Chhattisgarh	Arunachal Pradesh	Andhra Pradesh
Delhi	Jharkhand	Gujarat	Assam	Karnataka
Haryana	Orissa	Daman & Diu	Manipur	Kerala
Himachal Pradesh	West Bengal	Dadar & Nagar Haveli	Meghalaya	Tamil Nadu
Jammu & Kashmir	Sikkim	Madhya Pradesh	Mizoram	Telangana
Punjab	Andaman & Nicobar	Maharashtra	Nagaland	Puducherry
Rajasthan		Goa	Tripura	Lakshadweep
Uttar Pradesh				
Uttarakhand				

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

The project owner may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.

Option II: Both grid power plants and off-grid power plants are included in the calculation.

The project owner has chosen only grid power plants in the calculation.

Step 3: Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods, which are described under Step 4:

- (a) Simple OM; or
- (b) Simple adjusted OM; or
- (c) Dispatch data analysis OM; or
- (d) Average OM.

The data required to calculate Simple adjusted OM and Dispatch data analysis OM is not possible due to lack of availability of data to project developers. The choice of other two options for calculating operating margin emission factor depends on generation of electricity from low-cost/must-run sources. In the context of the methodology low cost/must run resources typically include hydro, geothermal, solar, low-cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
India	14.6%	14.3%	14.5%	17.0%	16.5%	14.6%

Data Source: Central Electricity Authority (CEA) database Version 17, October 2021⁸

The above data clearly shows that the percentage of total grid generation by low-cost/ must-run plants (on the basis of average of five most recent years) for the Indian grid is less than 50 % of the total generation. Thus, the Average OM method cannot be applied, as low cost/must run resources constitute less than 50% of total grid generation.

The simple OM emission factor is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units.

For the simple OM, the simple adjusted OM and the average OM, the emissions factor can be calculated using either of the two following data vintages:

(a) **Ex-ante option:** if the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.

OR

(b) **Ex-post option:** if the ex-post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emissions factor to be updated annually during monitoring.

⁸<https://cea.nic.in/cdm-co2-baseline-database/?lang=en>

Project Owner has chosen ex-ante option for calculation of Simple OM emission factor using a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PD to the VVB for validation.

OM determined at validation stage will be the same throughout the crediting period. There will be no requirement to monitor & recalculate the emission factor during the crediting period.

Step 4: Calculate the operating margin emission factor ($EF_{grid,OMSimple,y}$) according to the selected method

The operating margin emission factor has been calculated using a 3-year data vintage

Net Generation in Operating Margin (GWH) (incl. Imports)	2018-19	2019-20	2020-21
INDIAN Grid	995,957	965,009	958,218

Simple Operating Margin (t CO ₂ /MWh) (incl. Imports)	2018-19	2019-20	2020-21
INDIAN Grid	0.9603	0.9555	0.9405

Weighted Generation Operating Margin	
INDIAN Grid	0.9522

Step 5: Calculate the build margin (BM) emission factor ($EF_{grid,BM,y}$)

As per Methodological tool: "Tool to calculate the emission factor for an electricity system" (Version 7.0, EB 100, Annex 4) para 72:

In terms of vintage of data, the project owner can choose between one of the following two options:

(a) **Option 1** - for the first crediting period, calculate the build margin emission factor ex ante based on the most recent information available on units already built for sample group m at the time of PD submission to the VVB for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the VVB. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

(b) **Option 2** - For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 as described above is chosen by Project Owner to calculate the build margin emission factor for the project activity. BM is calculated ex-ante based on the most recent information available at the time of submission of PD and is fixed for the entire crediting period.

Build Margin (/MWh) (not adjusted for imports)	
	2020-21
INDIAN Grid	0.8653

Step 6: Calculate the combined margin (CM) emission factor ($EF_{grid,CM,y}$)

As per Methodological tool: “Tool to calculate the emission factor for an electricity system” (Version 7.0, EB 100, Annex 4) para 81:

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM

Project Owner has chosen option (a) i.e weighted average CM to calculate the combined margin emission factor for the project activity.

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$$

Where:

- $EF_{grid,BM,y}$ = Build margin CO₂ emission factor in year y (t CO₂/MWh)
- $EF_{grid,OM,y}$ = Operating margin CO₂ emission factor in year y (t CO₂/MWh)
- W_{OM} = Weighting of operating margin emissions factor (percent)
- W_{BM} = Weighting of build margin emissions factor (percent)

The following default values should be used for W_{OM} and W_{BM} :

For solar project activities: $W_{OM} = 0.25$ and $W_{BM} = 0.75$ (owing to their intermittent and non-dispatchable nature) for the second crediting period and for subsequent crediting periods. Since project activity is of power generation by using solar, the above weightage has been considered for OM and BM.

Therefore,

$$\begin{aligned} EF_{grid,CM,y} &= 0.8653 * 0.25 + 0.9522 * 0.75 \\ &= 0.9305 \text{ t CO}_2/\text{MWh} \end{aligned}$$

Therefore, referring para 20 AMS I.F. Version 5.0, the $EF_{CO_2,y}$ for grid connected project instances would be $EF_{grid,CM,y}$ i.e. 0.9305 t CO₂e/MWh. The baseline emission factor is ex- ante parameter and will remain constant throughout the crediting period.

$$BE_y = 16,305 \times 0.9305 = 15,171 \text{ t CO}_2\text{e (Estimated Annual Baseline Emissions)}$$

4.2 Project Emissions

As per the approved consolidated Methodology AMS I.F. Version 5.0 para 26 “For the other types of renewable energy projects, $PE_y = 0$. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$

Where:

PE_y = Project emissions in year y (t CO₂e/yr)

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year y (t CO₂/yr)

$PE_{GP,y}$ = Project emissions from the operation of dry, flash steam or binary geothermal power plants in year y (t CO₂e/yr)

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (t CO₂e/yr)

As the project activity is the installation of a new grid-connected solar Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

4.3 Leakage

Since the project activity instances to be included into the grouped project activity are renewable energy projects based on solar PV technology, no leakage emissions are considered - in line with paragraph 29 of the small-scale methodology AMS.I.F (version 5.0).

4.4 Estimated Net GHG Emission Reductions and Removals

As per the para 30 of AMS-I.F. version 5.0, the formula to calculate the emission reduction is

$$ER_y = BE_y - PE_y - LE_y$$

Where,

ER_y = Emission reductions in year y (t CO₂e/y)

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

PE_y = Project emissions in year y (t CO₂e/y)

LE_y = Leakage emissions in year y (t CO₂e/y)

As the project activity is a solar project, there is no any leakage emissions from the project activity.

Hence, $LE_y = 0$

Therefore, Emission Reductions for this project activity are calculated as follows:

$$ER_y = BE_y - PE_y$$

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
Year 1	15,494	0	0	15,494

Year 2	15,385	0	0	15,385
Year 3	15,277	0	0	15,277
Year 4	15,170	0	0	15,170
Year 5	15,064	0	0	15,064
Year 6	14,959	0	0	14,959
Year 7	14,854	0	0	14,854
Total	106,197	0	0	106,197

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid,OM,y}
Data unit	tCO ₂ e/MWh
Description	Operating Margin CO ₂ emission factor in year y
Source of data	CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value applied:	0.9522
Justification of choice of data or description of measurement methods and procedures applied	Calculated as the last 3-year (2018-19, 2019-20, 2020-21) generation-weighted average, sourced from Baseline CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	EF _{grid,BM,y}
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Data unit	tCO ₂ e/MWh
Description	Build Margin CO ₂ emission factor in year y
Source of data	CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value applied:	0.8653
Justification of choice of data or description of measurement methods and procedures applied	Calculated as the last year (2020-21) build margin, sourced from Baseline CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Purpose of Data	Calculation of baseline emissions
Comments	-

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ e/MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	CO ₂ Emission Database, Version 17.0, October- 2021 published by Central Electricity Authority (CEA), Government of India.
Value applied:	0.9305
Justification of choice of data or description of measurement methods and procedures applied	The combined margin emissions factor is calculated as follows: $EF_{grid,CM,y} = EF_{grid,OM,y} * W_{OM} + EF_{grid,BM,y} * W_{BM}$ Where: EF_{grid,BM,y}= Build margin CO₂ emission factor in year y (tCO₂/MWh) EF_{grid,OM,y}= Operating margin CO₂ emission factor in year y (tCO₂/MWh) W_{OM} = Weighting of operating margin emissions factor (%) = 75% W_{BM}= Weighting of build margin emissions factor (%) = 25%
Purpose of Data	Calculation of baseline emissions

Comments	-
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5.2 Data and Parameters Monitored

Data / Parameter	EG _{BL,y}
Data unit	MWh
Description	Quantity of net electricity displaced as a result of the implementation of the VCS project activity in year y (MWh)
Source of data	Monthly Joint Meter Readings taken at the project site
Description of measurement methods and procedures applied	The meter readings are taken by the individual project instance site employees and the same will be forwarded to the central office of the Tata Power Renewable Energy Limited. In case of net metering also, the meter readings are taken by the individual project instance site employees and the same will be forwarded to the central office of the Tata Power Renewable Energy Limited. In case of electricity supplied to grid, the same will be reflected in the consumer electricity bill.
Frequency of monitoring/recording	Continuous measurement & monthly recording
Value applied:	16,305
Monitoring equipment	Electricity Meters installed for each individual project instance. Kindly refer to Annexure – I for the details of meters viz., make, serial number, accuracy class & the calibration frequency.
QA/QC procedures applied	According to Central Electricity Authority (Installation and Operation of meters) Regulations 2006 ⁹ , all the electricity meters (interface & consumer meters) shall be tested at least once in five years and recalibrated, if required. Hence, all the meters that are part of this grouped project activity will be tested at least once in 5 years and recalibrated, if required.

⁹ https://cea.nic.in/wp-content/uploads/2020/02/meter_reg.pdf

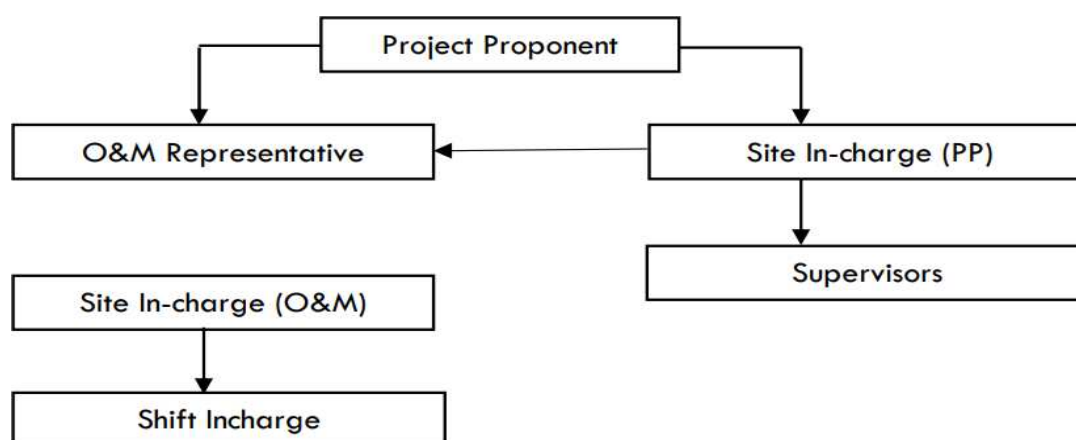
Purpose of data	Calculation of baseline emissions
Calculation method	The meter readings are taken by the individual project instance site employees and the same will be forwarded to the central office of the Tata Power Renewable Energy Limited. As part of cross check mechanism, all the generation reports (JMRs) will be cross checked with the invoices raised by the individual SPVs.
Comments	-

5.3 Monitoring Plan

The monitoring plan is developed in accordance with the modalities and procedures for CDM project activities. The monitoring plan, which will be implemented by the project participant describes about the monitoring organisation, parameters to be monitored, monitoring practices, quality assurance, quality control procedures, data storage and archiving.

Organizational structure and responsibilities:

The authority and responsibility for registration, monitoring, measurement, reporting and reviewing of the data rests with the project participant. PP proposed the following structure for



data monitoring, collection, data archiving and calibration of equipment for this project activity. The team comprises of the following members:

Responsibilities of Site Incharge (PP): Overall functioning and maintenance of the project activity, the Site incharge shall coordinate with the O&M operator as well as the site supervisors.

Responsibilities of O&M Representative: Co-ordination between Site incharge of the O&M operator as well as the project participant and further report to PP head office.

Responsibilities of Site In-charge (O&M Operator): Responsibility for maintaining the data records, ensures completeness of data, and reliability of data (calibration of equipment) as well as data recording for all the parameters.

Responsibilities of Shift In-charge: Responsibility for day-to-day data collection and maintains day to day monitored data.

Data Measurement

The net electricity displaced by project will be measured continuously using above mentioned energy meter located after inverters. Readings of meters shall be taken on monthly basis by authorized officer of developer in the presence of PP or representative of PP. In the event of failure of generation meter, the user energy meter or inverter generation value will be used in monitoring the electricity generation data.

Data collection and archiving

Readings from meters will be collected in the presence of the plant in-charge. The net electricity displaced by project would be recorded and stored in logs as well as in electronic form on a daily basis. The records are checked periodically by the Plant Manager and discussed thoroughly with the plant supervisor. The period of storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of VERs for the project activity whichever occurs later.

Emergency preparedness

The project activity will not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

QA/QC Procedures

Energy meters are installed at the respective project site. The testing of all the meters will be undertaken at required intervals (at least once in five years as per CEA notifications) and faulty meters will be duly replaced/recalibrated immediately. Records of calibration certificates will be maintained for verification purposes. Hence, a reliable method will be ensured with monitoring of the parameters. The invoice records will be used and kept for cross checking the consistency of the recorded data.

Sampling Approaches

Not required

Personnel training

In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff will be trained. The plant helpers will be trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan.

6 ACHIEVED GHG EMISSION REDUCTIONS AND REMOVALS

6.1 Data and Parameters Monitored

Data / Parameter	EG _{BL,y}
Data unit	MWh

Description	Quantity of net electricity displaced as a result of the implementation of the VCS project activity in year y (MWh)
Value applied:	13,936
Comments	-

6.2 Baseline Emissions

Baseline emission is the product of Quantity of net electricity generation that is produced as a result of the implementation of the project activity multiplied by the Combined margin CO₂ emission factor for grid connected power generation

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

Where,

BE_y = Baseline Emissions in year y; t CO₂

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

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system Version 7.0” (t CO₂/MWh)

$$BE_y = 13,936 \text{ MWh} \times 0.9305 \text{ tCO}_2\text{e/MWh} = 12,966 \text{ tCO}_2\text{e} \text{ (Rounded down value to nearest 0)}$$

6.3 Project Emissions

As per methodology AMS I.F. Version 5.0, for renewable energy projects, there is no any project emissions occurred.

$$\text{Hence, } PE_y = 0$$

6.4 Leakage

As per methodology AMS I.F. Version 5.0, for renewable energy projects, there is no any leakage emissions occurred.

$$\text{Hence, } LE_y = 0$$

6.5 Net GHG Emission Reductions and Removals

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2020 (01-Oct-2020 to 31-Dec-2020)	440	0	0	440
2021 (01-Jan-2021 to 31-Dec-2021)	8,607	0	0	8,607
2022 (01-Jan-2022 to 30-Apr-2022)	3,919	0	0	3,919
Total	12,966	0	0	12,966

It is to be noted here that as per the start of operational date of each instance, estimated emission reductions to be achieved from the project activity for the current monitoring period (01-October-2020 to 30-April-2022) is 17,803 t CO₂e, whereas actual emission reductions achieved are 12,966 t CO₂e, which is approximately 27.17% lower than the estimated emission reductions. The generation of electricity depends upon many other climatic conditions, which are not within the control of the project participant.

APPENDIX I: CALIBRATION DETAILS

Calibration Detail							
Sl. No.	Consumer Name	Meter Serial No	Make	Accuracy class	Date of Commissioning	Pre-Calibrated & tested meter Installed on	Validity of calibration
1	Tinplate Company	540180185287	Schneider	0.5	01-Oct-20	01-Oct-20	30-Sept-25
2	Duraline India Private Limited	540180126068	Schneider	1	07-Oct-20	07-Oct-20	06-Oct-25
		540180139276	Schneider	1	07-Oct-20	07-Oct-20	06-Oct-25
3	GE T&D India Limited	540180078599	Schneider	1	11-Oct-20	11-Oct-20	10-Oct-25
4	Arya Anathalay I	540180144423	Schneider	0.5	20-Dec-20	20-Dec-20	19-Dec-25
5	Time of India, Airoli	18057019	L&T	1	19-Jan-21	19-Jan-21	18-Jan-26
		540180052157	Schneider	1	19-Jan-21	19-Jan-21	18-Jan-26
6	Asian Paints Limited	540180139576	Schneider	1	18-Feb-21	18-Feb-21	17-Feb-26
7	Time of India, Kolkata	540180178009	Schneider	0.5	22-Feb-21	22-Feb-21	21-Feb-26
8	TATA Lockheed Martin	540180169779	Schneider	1	03-Mar-21	03-Mar-21	02-Mar-26
9	TSPDCL, Demag	540180151744	Schneider	0.5	31-Mar-21	31-Mar-21	30-Mar-26
		540180146357	Schneider	0.5	31-Mar-21	31-Mar-21	30-Mar-26
10	Apollo Gleneagles Hospital Limited	540180177968	Schneider	0.5	01-Apr-21	01-Apr-21	31-Mar-26
		X1255380	Secure	0.5	01-Apr-21	01-Apr-21	31-Mar-26
11	Tata Metaliks Limited	21022500097	L&T	0.5	15-May-21	15-May-21	14-May-26
12	Arya Anathalay II	540180139208	Schneider	0.5	03-Jun-21	03-Jun-21	02-Jun-26
13	Tata Motors Limited (Car Plant)	540180176580	Conzerv	0.5	18-Jun-21	18-Jun-21	17-Jun-26
		540180182808	Conzerv	0.5			
		540180179809	Conzerv	0.5			
		540180183090	Conzerv	0.5			
		540180182394	Conzerv	0.5			
		540180182582	Conzerv	0.5			
		540180183109	Conzerv	0.5			
		540180183111	Conzerv	0.5			
		540180183651	Conzerv	0.5			
		540180179814	Conzerv	0.5			
		540180183131	Conzerv	0.5			
		540180182541	Conzerv	0.5			
		540180182520	Conzerv	0.5			
		540180183753	Conzerv	0.5			
		540180183022	Conzerv	0.5			
		540180182821	Conzerv	0.5			
		540180183140	Conzerv	0.5			
		540180183074	Conzerv	0.5			