



Project design document form
(Version 11.0)

BASIC INFORMATION

Title of the project activity	5 MW Solar PV Power Project at NTPC Faridabad
Scale of the project activity	<input type="checkbox"/> Large-scale <input checked="" type="checkbox"/> Small-scale
Version number of the PDD	06
Completion date of the PDD	25/02/2021
Project participants	NTPC Limited
Host Party	India
Applied methodologies and standardized baselines	AMS I.D.: Grid connected renewable electricity generation (version 18.0, EB 81, Annex 24)
Sectoral scopes	Sectoral scope 1: Energy industries (renewable - / non-renewable sources)
Estimated amount of annual average GHG emission reductions	6,287 tCO ₂ e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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The 5 MW Solar Photo Voltaic project has installed by project proponent NTPC Limited is a green field activity and is being pursued as a part of its green initiatives. The project activity involves installation of 5 MW Solar Photo Voltaic plant at NTPC-Faridabad to generate electricity from solar energy by utilizing the solar radiation potential available. The power plant comprises of Solar PV modules, junction boxes / combiner boxes, Power Conditioning Unit (PCU), module mounting structure, switch yard, evacuation facility etc. The PV module are made from high efficiency crystalline silicon solar cells. Modules generate direct current (DC) which is converted to alternating current (AC) by inverter hardware. The net generated power is supplied to GRIDCO via Indian grid which is a part of national grid.

Implementation status

The Notification of Award for the main plant has been placed on 21/05/2013 to M/s Eversun Energy Private Limited, Bangalore as EPC contractor. M/s Eversun Energy Private Limited is responsible for carrying out civil works including fixing up of Module Mounting Structure (MMS); supply of photovoltaic modules; supply of inverter, control and monitoring system; comprehensive installation of 33kV switchyard and mechanical & electrical integration.

Project activity commissioning date: 31/03/2014

Date of registration of project activity with UNFCCC: 23/05/2014

Purpose:

The project proponent NTPC limited is committed to make sustainable development through economic, environmental and social performance. With the growing concern for clean generation with less CO₂ emission, the company had focused on energy efficient technologies such as supercritical technology, integrated gasification combined cycle and renovation & modernization of old thermal power plants, generation with renewable energy sources like solar, wind, biomass, hydro.

Purpose of the project is to generate clean energy to supply it to the Indian grid of India through a power purchase agreement with the transmission company GRIDCO without emission of CO₂ since this amount of energy is coming through renewable source i.e. Solar. The proposed CDM project activity is being developed applying applicable methodology AMS-I.D, version 18, and the project falls under sectoral scope 1 of CDM i.e. Energy industries (renewable - / non-renewable sources) and Type I- Renewable Energy Projects Category I.D. Grid Connected Renewable Electricity generation. On the basis of estimated annual average generation 6,675.44 MWh and total estimated generation over the crediting period 46,728.11 MWh (at Plant Load Factor 16.91%) as

detailed in section B.6.3 of this PDD, the annual average GHG emission reduction in the second crediting period through the project activity is estimated to be 6,287 tCO₂e and total GHG emission reductions over the 7 year crediting period estimated to be 44,010 tCO₂e based on the generation.

Project activity is in line with its core purpose of the organization as reflected in Mission statement of NTPC given below:

"Develop and provide reliable power, related products and services at competitive prices, integrating multiple energy sources with innovative and eco-friendly technologies and contribute to society".

The Scenario existing prior to the implementation of the project activity

The project activity is the green field activity, which involves installation of new solar power project at site where there was no renewable energy power plant operating prior to the implementation of the project activity.

NTPC and its stations are assimilating new technologies to retain competitive advantage in power generation and are striving for satisfaction all stakeholders through sustainable performance. The Solar PV power plant (hereafter the Project) developed by NTPC (hereafter the developer) is the construction of a photovoltaic power plant. The purpose of this project is to generate electricity by solar energy and to reduce the greenhouse gases emissions in India.

Baseline scenario

Currently in India 81.2% of power generation is from coal, gas, diesel, naphtha, lignite and oil (source:https://cea.nic.in/wpcontent/uploads/baseline/2020/07/user_guide_ver15.pdf). This is resulting in emission factor 0.9419 tCO₂ /MWh in Indian Grid of India. The baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources. In the absence of the project activity, the electricity would be generated using fossil fuel based power plants. Hence, the electricity grid has been taken as the baseline for the project activity. The main emission sources in the pre-project scenario are the power plants connected to the Indian grid and the main greenhouse gas involved is CO₂.

Sustainability Aspects

This project is contributing the sustainable development of the Indian society as following aspects:

* **Technological Well-being:** Taking up the solar plant boosted the sector and accelerate technology development and encourage investment for further capacity addition. Introduction of solar photovoltaic technology upgrades its efforts for cleaner technology. It results in the improvement of the technical skill and knowledge level of the employees of the organization.

* **Social well-being:** As a responsible corporate entity, NTPC owns social responsibilities. Apart

from the number of facilities for its employees and their families the company is taking up community development activities. The project activity effectively results in corresponding social benefits by saving or enhancing availability of a corresponding amount of natural resources like coal and natural gas for other use. It reduces the effect from global warming. As per CERC regulation i.e. CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 (http://www.cercind.gov.in/2012/regulation/CERC_RE-Tariff-Regualtions_6_2_2012.pdf), the proceeds of carbon credit from approved CDM project shall be shared between generating company and the beneficiary (GRIDCO as per Power Purchase Agreement signed between NTPC Limited and GRIDCO) of power in the following manner, namely a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station ; b) In the second year, the share of the beneficiary shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiary.

* **Economic Well-Being:** The CDM project activity is bringing in additional investment consistent with the needs of the people. Utilizing energy from renewable source resulting in corresponding savings of fossil fuel combustion has its contributions towards a sustainable economy for the country. It saves the fast depleting fossil fuels. The project activity is providing the business opportunities for local people.

***Environmental well-being:** The effort of the project activity is to reduce the depletion of coal and gas which are primary resource for generation of electricity in India resulting substantial reduction of pollutants like SO_x, NO_x etc. Further the project reduces equivalent generation of carbon dioxide through other conventional sources. Thus environment friendly technologies are adopted in the project. This contributes to the sustainable development of environment.

A.2. Location of project activity

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The site is at the Jajru village, between National Highway-2 & Delhi-Agra railway line and is in possession of NTPC Faridabad. The site is appx. 14 km from NTPC Faridabad Gas Power Station.

Sl.No.	Description	Location details
1	Latitude	28° 17' 8.3" N
2	Longitude	77° 19' 4.1" E
3	Mean Elevation	220 M above MSL
4	Land available	Approx. 20 Acres



District map of Faridabad

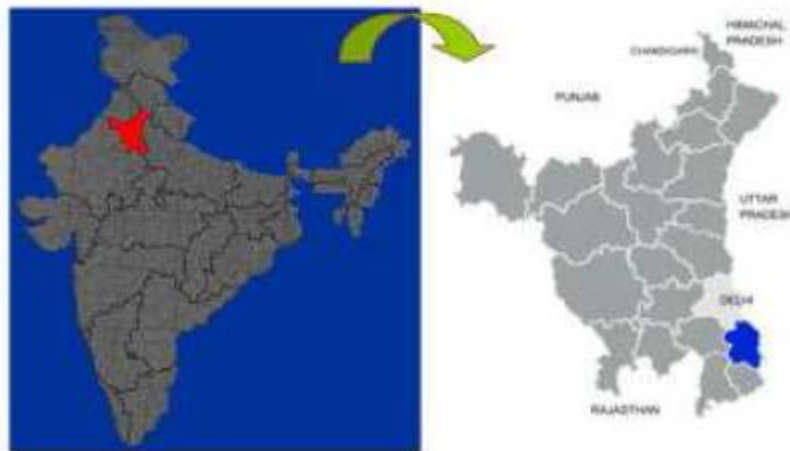


Fig Location map of Faridabad

A.3. Technologies/measures

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Description of Environment friendly Technology used for the project:

The project activity is a green-field activity and involves installation of a new solar PV power plant of 5 MW capacity. Photovoltaic module consists of several photovoltaic cells connected by circuits and sealed in an environmentally protective laminate, which forms the fundamental building blocks of the complete PV generating unit. Several PV panels mounted on a frame are termed as PV Array.

The project is a renewable energy project which displaces the electricity from the Indian grid that is dominated by carbon intensive fossil fuel. There were no facilities existing prior to the implementation of the project activity. The electricity generation from the project activity is an environmentally safe and sound power generation technology.

The project activity would use the reliable and proven technology to ensure that an environmentally safe and sound technology is only being implemented in the proposed project activity. Since the project activity is a Greenfield installation, there was no electricity generation at the project site

prior to its implementation. The average life time of the plant equipment as per manufacturer is 25 years which is in line with industry standard, i.e. CERC guidelines i.e. CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 (http://www.cercind.gov.in/2012/regulation/CERC_RE-Tariff-Regualtions_6_2_2012.pdf). The CUF (Capacity Utilization Factor) is 16.91%.

The high efficiency crystalline silicon solar cells are utilized for the proposed project. The 5 MWp photo voltaic array is divided in many quadrants depending on inverter size. The plant consists of 21,744 no. of 230 W_p poly crystalline silicon solar modules (>13.5% efficiency) arranged in 906 strings of 24 modules each (Source: Data sheet of M/s EMMVEE Photovoltaic Power Private Limited provided by M/s Eversun Energy Private Limited). Each string in the array has its own string monitoring unit which is one of the major diagnostic tools for the system operator. Each unit array has field connected redundant solar radiation meter, SPV module temperature sensor & string relay. The respective digital outputs are taken to a supervisory controller located in the control room. Electronic surge arrestors provided at the DC input & the AC output of each inverter. Necessary HT switch gears are provided for HT isolation & protection.

Total 08 Inverters of 630 kW of AEG make are used. Euro Efficiency of Inverter are greater than 98.15% and Max. Efficiency is greater than 98.4% (Source: Data sheet provided by M/s Eversun Energy Private Limited). Each inverter system has an independent Data Acquisition system (DAS) which would produce the real time Data as well as event logs indicating all the supervisory faults also. These Data via bus is taken to a master Supervisory control & Data Acquisition (SCADA System). Service interface on the operator panel is also provided.

The proposed CDM project activity is small scale CDM project activity, under sectoral scope 1 and Type I- Renewable Energy Projects Category I.D. Grid Connected Renewable Electricity generation.

a. Main plant Equipment and System

- Solar Photovoltaic modules
- Power conditioning units / Solar Inverter
- Control equipments
- Data Acquisition system (DAS) with event log
- Supervisory control & Data Acquisition (SCADA) System
- Total 04 Inverter Transformers of 1.25 MVA, 33/0.350/0.350 KV (Three Winding) of EMCO make (minimum 98% efficiency)
- 33 KV transmission line
- Switchgear equipments and 220 KV / 33 KV 7.5 MVA transformer (minimum 98% efficiency).

- Three energy meters (main, check and standby) of class 0.2 S accuracy suitable for ABT (Availability Based Tariff) requirement on 33 KV outgoing feeder to monitor net energy generated

b. Energy and mass flow

Being a solar plant, there is no mass flow. Further, energy and mass flow of the project activity does not have any effect on GHG emissions.

c. Existing Facilities, systems, equipment

Being a new project there is no equipment system or facilities existing.

d. Technology Transfer

There is no technology transfer involved in this project activity.

A.4. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host Party)	NTPC Limited (Public entity)	No

A.5. Public funding of project activity

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No public funding from Parties included in Annex I to the Convention is involved, and hence there is no diversion of official development assistance.

A.6. History of project activity

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The project activity has registered with UNFCCC on 23/05/2014 with renewable crediting period. The duration of the second crediting period is from 01/06/2021 to 31/05/2028.

- The project activity is not registered as a component project activity (CPA) in a registered CDM programme of activities (PoA).
- The proposed CDM project activity is not a project activity that has been deregistered.
- The Project activity is not rejected by any other GHG mechanism.

A.7. Debundling

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As per GUIDELINES ON **ASSESSMENT OF DEBUNDLING FOR SSC PROJECT ACTIVITIES version 03.0, EB 54, Annex 13**, a small-scale project is considered a debundled component of a large project activity if there is a registered small-scale activity or an application to register another small-scale activity:

- With the same project participants;

- In the same project category and technology/measure;
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity.

The project participant confirm that there are project from the same participant in the same project category and technology /measures however there is no registered project activity within previous 2 years whose project boundary is within 1 km of the project boundary of proposed small scale project activity. Accordingly, the project is not a debundled component of a larger project activity.

SECTION B. Application of methodologies and standardized baselines

B.1. References to methodologies and standardized baselines

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1. **Baseline & Monitoring methodology:** AMS I.D.: Grid connected renewable electricity generation (version, 18), EB 81, annex 24 dated 28/11/2014

2. Other References:

“Tool to calculate the emission factor for an electricity system” (Version 07.0), EB 100, Annex 04, dated 31/08/2018

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

Appendix B of the simplified modalities and procedures for small-scale CDM project activities (UNFCCC).

General guidelines for SSC CDM methodologies

https://cdm.unfccc.int/filestorage/e/x/t/extfile-20210211212225503-MethSSC_Guid25ver23.1.pdf/MethSSC_Guid25ver23.1?t=ZEp8cXI4d3Y2fDC2Of8UUoY-F7mlplgYjEm6

Further information for the methodology can be found at:

<https://cdm.unfccc.int/methodologies/SSCmethodologies/approved>

B.2. Applicability of methodologies and standardized baselines

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The project falls under UNFCCC sectoral scope 1: Energy industries (renewable - / non-renewable sources). According to Appendix B of the UNFCCC's published simplified procedures for small scale activities, the category of this project activity is:

Type I- Renewable Energy Project Category I.D- Grid Connected Renewable Electricity generation.

The applicability of the methodology (AMS-I.D version 18) to the project activity is addressed below:

S. No	>>AMS-I.D. Ver 18 applicability conditions	Project Applicability
1.	<p>This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal, and renewable biomass:</p> <p>(a) supplying electricity to a national or a regional grid. or</p> <p>(b) supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.</p>	<p>This project generates energy from solar energy and supply electricity to the national grid. Hence the condition (a) is applicable.</p>
2.	<p>Illustration of respective situations under which each of the methodology (i.e. AMS-I.D, AMS-I.F and AMS-I.A) applies as included in Table 2 (as shown below.) of the methodology.</p>	<p>The project supplies electricity to the national grid. Hence, this criteria for AMS-I. D is applicable.</p>
3.	<p>This methodology is applicable to project activities that: (a) Install a Greenfield plant; (b) Involve a capacity addition in (an) existing plant(s); (c) Involve a retrofit of (an) existing plant(s); (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s).</p>	<p>The project activity is installation of a new grid connected solar power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (green field plant) and hence this criteria (a) is applicable.</p>
4.	<p>Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <p>(a) The project activity is implemented in an existing reservoir with no change in the volume of reservoir;</p> <p>(b) The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the project emissions section, is greater than 4 W/m² ;</p> <p>(c) The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the project emissions section, is greater than 4 W/m² .</p>	<p>This project activity is solar based renewable energy power generation and doesn't involve installation of hydro power plant. Hence, this is not applicable.</p>
5.	<p>If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small- scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.</p>	<p>The project activity is a solar based renewable electricity generation project. Hence, there is no fossil fuel fired in this project activity. The total installed capacity of this project activity is 5 MW, which is below than the limit of 15 MW.</p>
6.	<p>Combined heat and power (co-generation) systems are not eligible under this category.</p>	<p>This project activity is not a combined heat and power (cogeneration) system and hence, the criterion is not applicable.</p>

7.	In the case of project activities that involve the 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.	This project activity is a solar based renewable electricity generation project and does not involve addition of capacity in any existing renewable energy generation unit. The total capacity of this project activity is 5 MW which is less than the limit of 15 MW.
8.	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.	Since there is no retrofit or replacement of unit in the project activity, this criterion is not applicable.
9.	In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. If the recovered methane is used for electricity generation for supply to a grid then the baseline for the electricity component shall be in accordance with procedure prescribed under this methodology. If the recovered methane is used for heat generation or cogeneration other applicable Type-I methodologies such as "AMS-I.C.: Thermal energy production with or without electricity" shall be explored.	Not applicable This project activity is a Solar power projects.
10.	In case biomass is sourced from dedicated plantations, the applicability criteria in the tool "Project emissions from cultivation of biomass" shall apply.	Not applicable The project activity is not a biomass related project.

Table 2: Applicability of AMS-I. D, AMS-I.F and AMS-I.A based on project types

	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 ¹ 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	√		

¹ The sum of installed capacities of all generators connected to the mini-grid is equal to or less than 15 MW.

B.3. Project boundary, sources and greenhouse gases (GHGs)

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As per approved methodology AMS I.D. version 18, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. As the project boundary includes the solar plant, metering system, Indian grid and other power plants connected to Indian grid. Hence the project boundary includes solar plant (the solar PV array, invertors, transformers), metering/substation system and Indian grid. A boundary is given below. There is no GHG emission from project activity inside the project boundary. Only data to be monitored is net electricity supplied to the grid.

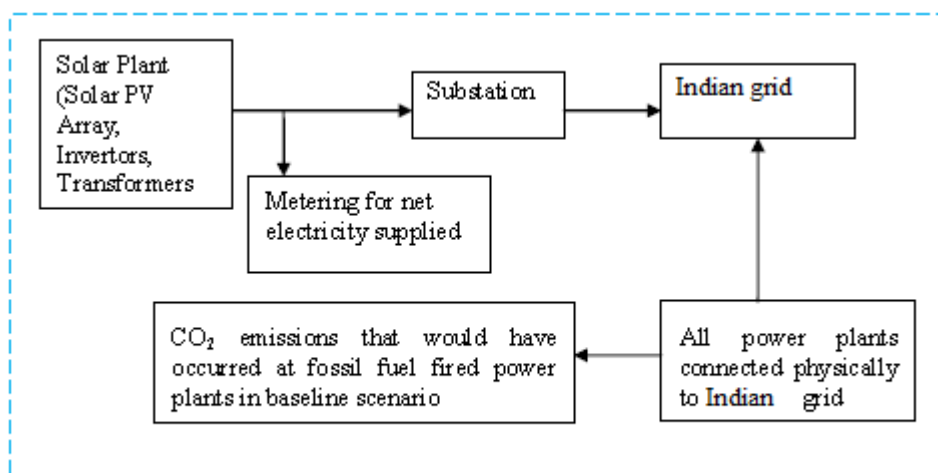


Fig: Project Boundary

	Source	GHG	Included?	Justification/Explanation
Baseline Project Activity.	Power Generation in the Regional Electricity Grid On site fossil fuel consumption due to project activity	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
	Greenfield Solar PV Power Project Activity.	CO ₂	No	Electricity generation through Solar does not lead to emission of greenhouse gases. The CO ₂ emission through fossil fuels are neglected.
		CH ₄	No	Electricity generation through Solar does not lead to emission of greenhouse gases.
		N ₂ O	No	Electricity generation through Solar does not lead to emission of greenhouse gases.

B.4. Establishment and description of baseline scenario

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The project category applicable to the proposed CDM project activity is AMS- I.D (Version 18).

Accordingly, the baseline scenario being considered is as directed in paragraph 19 of AMS- I.D. (Version 18). The proposed CDM project activity is the installation of a new grid-connected renewable power plant/unit and hence the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid- connected power plants and by the addition of new generation sources.

The project activity is located in the state of Haryana, Country India and connected to Indian grid.

In line with the “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” (EB66 Annex 47), the demonstration of the validity of the original baseline or its update does not require a reassessment of the baseline scenario, but rather an assessment of the emissions which would have been resulted from that scenario. The “CDM project standard for project activities” (Version 02.0) states in paragraph 284 that project participants shall assess and incorporate the impact of national and/or sectoral policies and circumstances existing at the time of requesting renewal of the crediting period, on the current baseline GHG emissions, without reassessing the baseline scenario.

As such and in accordance with Tool and AMS-I. D version 18, the “Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period” is applied for the demonstration of the validity of the current baseline;

Step 1: Assess the validity of the current baseline for the next crediting period

The validity of the current baseline is assessed using the following sub-steps:

Step 1.1: Access compliance of the current baseline with relevant mandatory national and/or sectoral policies

The Project has received necessary approvals for development and commissioning for solar PV project from the state nodal agencies and is in compliance to the local laws and regulations. The Project activity conforms to all the applicable laws and regulations in India

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

- Electricity Act 2003
- National Electricity Policy 2005
- Tariff Policy 2006

The Project activity conforms to all the applicable laws and regulations in India:

- Power generation using renewable energy is not a legal requirement or a mandatory option
- There are state and sectoral policies, framed primarily to encourage Renewable 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

Thus, the project is in compliance with laws and regulations required. There is no mandatory requirement to implement the project activity. Thus, the present national and/or sectoral policies and circumstances toward installation of any electricity generation is similar compared to at the time of project registration. Thus, baseline of this project has not changed.

Step 1.2: Assess the impact of circumstances

An assessment of the impact of circumstances exists at the time of requesting renewal of the crediting period on the current baseline emissions has been conducted, without reassessing the baseline scenario. The emission factor for the Indian grid as well as the current grid matrix in the country has been revised. Accordingly, Baseline CO₂ Emission Database, Version 15, published by Central Electricity Authority (CEA), Government of India has been used for estimation of baseline emissions.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

Since the project activity is a Greenfield project with a life time of 25 years, the baseline scenario identified during the validation of the project was electricity generation in power plants which are connected to Indian Integrated grid, that are displaced due to the project activity and was not the continued use of the current equipment(s) or investment for the crediting period of which the renewal is being requested. Hence this sub step is not applicable for this project activity.

Step 1.4: Assessment of the validity of the data and parameters

The emission factor for the grid as well as the current grid matrix in the country has been revised. Accordingly, Baseline CO₂ Emission Database, Version 15, published by Central Electricity Authority (CEA), Government of India has been used for estimation of baseline emissions.

Step 2: Update the current baseline and the data and parameters

As a result of Step 1.4 above, this Step 2 is applied.

Step 2.1: Update the current baseline

Based on the latest approved AMS-I.D and the assessment results of Steps 1.1, 1.2 and 1.4 above, the current baseline has been updated.

Step 2.2: Update the data and parameters

In line with Step 1.4, the following data and parameters that were only determined at the start of the first crediting period and not monitored during the crediting period are updated according to relevant data sources listed in table below. These data and parameters are applied to calculate the grid emission factors are described under section B.6.2 as well as described below: -

In accordance with the methodology, AMS I.D. version 18, the baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid. The proposed CDM project activity is the installation of a new grid-connected renewable power plant/unit and hence the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources.

(a) Estimation of Emission reduction resulting from Project Activity:

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (1)$$

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 CO₂/y)

LE_y : Leakage emissions in year y (t CO₂/y)

(b) Baseline Emissions:

As per AMS- I.D. Version 18, the baseline emissions are the product of electrical energy baseline $EG_{BL,y}$, expressed in MWh of electricity produced by the renewable generating unit n multiplied by the grid emission factor.

$$BE_y = EG_{BL,y} \times EF_{CO_2, grid,y} \quad (2)$$

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)

$EF_{CO_2, grid,y}$: CO₂ emission factor of the grid in year y (t CO₂/MWh)

Here emission factor of a grid, $EF_{CO_2, grid,y}$, shall be calculated as per the procedures provided in AMS I.D Version 18.

As per AMS- I.D. (Version 18), the Emission Factor ($EF_{CO_2, grid,y}$) can be calculated in a transparent and conservative manner as follows:

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the Latest version 07.0 of 'Tool to calculate the emission factor for an electricity system'.

OR

(b) The weighted average emissions (in t CO₂/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

As per AMS- I.D. version 18, calculations shall be based on data from an official source (where available) and made publicly available. The baseline emission factor has been worked out by Central Electricity Authority (CEA) based on detailed authenticated information obtained from all the operating Power Stations in the country. The database is an official publication of the Government of India for the purpose of CDM baselines.

Project participant choose option (a) of AMS I.D. version-18. and to calculate the emission factor in accordance to option (a), CO₂ Baseline Database for the Indian Power Sector, Version 15.0 has been used. "CO₂ Baseline Database for the Indian Power Sector, Version 15.0, Dec 2019" has been published by the Government of India with the purpose of providing a ready reference for the emission factors to be used in CDM projects. For detail refer Section B.6.

Option (a) has been considered to calculate the grid emission factor as per the 'Tool to calculate the emission factor for an electricity system' as data is available from an official source.

In this project activity, Grid emission factor has been calculated and **fixed ex-ante**.

The Operating Margin has been taken as a generation-weighted average of the past 3 years:

Operating Margin (OM)

Year	2016-17	2017-18	2018-19
Simple Operating Margin (tCO ₂ /MWh) including imports	0.9636	0.9543	0.9685

Year	2016-17	2017-18	2018-19
Net generation (GWh) including imports	916,278	960,693	995,957
Generation-weighted OM	0.9622		

According to 'Tool to calculate the emission factor for an electricity system' EB 100, annex 04 Build Margin of the last one year has been selected:

Build Margin

Year	2018-19
Build Margin (tCO ₂ /MWh)	0.8811

Further, based on the baseline emission factor (combined margin) arrived above, the expected baseline emissions in year y (BE_y in tones of CO₂) has been calculated in section B.6.3.

Source: CO₂ Baseline Database for the Indian Power Sector", Version 15.0, December 2019, Central Electricity Authority, India. For more detail calculation, please refer Section B.6.1 of this PDD.

The combined margin of the Indian grid used for the project activity is as follows:

Parameter	Value	Nomenclature	Source
EF _{grid,CM,y}	0.9419 tCO ₂ /MWh	Combined margin CO ₂ emission factor for the project electricity system in year y	Calculated as the weighted average of the operating margin (0.75) & build margin (0.25) values, sourced from Baseline CO ₂ Emission Database, Version 15 published by Central Electricity Authority (CEA), Government of India.
EF _{grid,OM,y}	0.9622 tCO ₂ /MWh	Operating margin CO ₂ emission factor for the project electricity system in year y	Calculated as the last 3-year (2016-17, 2017-18 and 2018-19) generation weighted average, sourced from Baseline CO ₂ Emission Database, Version 15, published by Central Electricity Authority (CEA), Government of India.
EF _{grid,BM,y}	0.8811 tCO ₂ /MWh	Build margin CO ₂ emission factor for the project electricity system in year y	Baseline CO ₂ Emission Database, Version 15, published by Central Electricity Authority (CEA), Government of India.

Project emission:

As per AMS I.D. version 18, for most project activity, project emission is zero. This project activity also does not come under two options suggested in the same para. Since the project activity is installation of solar power plant which does not consume any fossil fuel for its operation so as per approved methodology AMS I.D. Version 18, no project emission has been considered for the project activity. Hence, for this project activity, project emission remains zero.

Leakage:

Here energy generating equipment is not transferred from another activity hence as per AMS I.D. version 18, leakage need not to be considered.

B.5. Demonstration of additionality

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As per Annex 27 **“GUIDELINES ON THE DEMONSTRATION OF ADDITIONALITY OF SMALL-SCALE PROJECT ACTIVITIES”** (Version 09.0) of EB 68 report, documentation of barriers is not required for the positive list of technologies that are defined as automatically additional for project sizes up to and including the small-scale CDM thresholds (e.g. installed capacity up to 15 MW). The positive list consists grid-connected and off grid renewable electricity generation solar technologies (photovoltaic and solar thermal electricity generation). Since the installed capacity of the project is 5 MW i.e. much below 15 MW and photovoltaic technology power generation is in the positive list, the project activity defined as automatically additional.

CDM Prior Consideration:

As per **Procedure:** Clean Development Mechanism project cycle procedure version 07.0, clause 4.1, CDM-EB65-A32-PROC:

For project activities with a start date on or after 2 August 2008, the project participants shall notify the designated national authority (DNA) of the host Party of the project activity and the UNFCCC secretariat in writing of the commencement of the project activity and their intention to seek the CDM status within 180 days of the start date of the project activity by using the “Prior consideration of the CDM form” (F-CDM-PC).

The start date of the project activity is 21/05/2013 which corresponds to the date of placing notification of award for supply and erection of equipments of project signed between NTPC LIMITED and M/s Eversun Energy Private Limited. The following are the evidences of prior consideration:

S. no.	Event	Date /Month
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1.	Publication of feasibility report with CDM Consideration by NTPC Renewable Energy & Distributed Generation wing	July 2011
2.	Local external stake holder consultation meet	06/03/2012
3.	Initiation of proposal for validation contract	11/04/2012
4.	Signed Power supply agreement with M/s GRIDCO Limited ,Orissa	26/04/2011
5.	Approval of Director (Tech) NTPC Ltd for applying for approval of Host Country	03/05/2012
6.	Intimation to UNCCC CDM EB and DNA of intention for CDM project activity	10/05/2012
7.	Submission of CDM documents (PDD / PCN) for obtaining Host country approval	11/05/2012
8.	NCDMA meeting for Host Country Approval	24/08/2012
9.	Award of contract for supply and installation of equipments of project	21/05/2013

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

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Emission Reductions: This is as per methodology AMS I.D “the baseline emissions are the product of electrical energy baseline ($EG_{BL,y}$) expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

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

Where,

BE_y : baseline emissions in year y, tCO₂

$EG_{BL,y}$: quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y; MWh

$EF_{CO_2, \text{grid},y}$: CO₂ emission factor of the grid in year y, tCO₂e/MWh

According to Paragraph 26 of AMS I.D Ver. 18, if the project activity is the installation of a greenfield power plant, the quantity of net electricity generation is as follows;

$$EG_{PJ,y} = EG_{PJ,\text{facility},y}$$

Where,

EG_{PJ, facility, y} Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)

According to Paragraph 23 of AMS I.D Ver. 18, the emission factor shall be calculated in a transparent and conservative manner as follows:

- (a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the “Tool to calculate the emission factor for an electricity system”; or
- (b) The weighted average emissions (in t CO₂/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

Option (a) has been considered to calculate the grid emission factor as per the ‘Tool to calculate the emission factor for an electricity system’ (Version 07.0, EB 100 Annex 4) since data is available from an official source.

CO₂ Baseline Database for the Indian Power Sector, Version 15, Dec 2019², 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:

- (a) **Step 1:** Identify the relevant electricity systems;
- (b) **Step 2:** Choose whether to include off-grid power plants in the project electricity system (optional);
- (c) **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 has divided the Indian Power Sector into five regional grids viz. Northern, Eastern, Western, North-eastern and Southern. However, all the 5 zones have been synchronized and called as Indian Grid.

²http://www.cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver15.pdf

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

Project participants 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 Participant 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, wind, low cost biomass, nuclear and solar generation.

Share of Must-Run (Hydro/Nuclear) (% of Net Generation)					
	2014-15	2015-16	2016-17	2017-18	2018-19
India	16.8%	15.1%	14.6%	14.3%	14.5%

Data Source: Central Electricity Authority (CEA) database Version 15, Dec '2019

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 (t CO₂/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.

PP 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 CDM-PDD to the DOE for validation.

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

a) Simple OM

In the Simple OM method, the emission factor is calculated as generation - weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system, not including low-operating cost and must-run power plants. Simple OM can be calculated using any of the two available methods. Option A has been selected where the data on fuel consumption and net electricity generation of each power plant/ unit is available. The CEA baseline is derived using the following formulae to calculate simple OM

$$EF_{grid,OMSimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OMSimple,y}$ = Simple operating margin CO₂ emission factor in year y (tCO₂/MWh)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$ = CO₂ emission factor of power unit m in year y (tCO₂/MWh)

m = All power units serving the grid in year y except low-cost / must-run power units

y = The relevant year as per the data vintage chosen in Step 3

Determination of $EF_{EL,m,y}$:

The emission factor of each power unit m is determined applying Option A1.

If for a power unit m data on fuel consumption and electricity generation is available, the emission factor ($EF_{EL,m,y}$) should be determined as follows:

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_{m,y}}$$

Where:

$EF_{EL,m,y}$ = CO₂ emission factor of power unit m in year y (tCO₂/MWh)

$FC_{i,m,y}$ = Amount of fossil fuel type i consumed by power unit m in year y (Mass or volume unit)

$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)

$EF_{CO_2,i,y}$ = CO₂ emission factor of fossil fuel type i in year y (tCO₂/GJ)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

m = All power units serving the grid in year y except low-cost/must-run power units

i = All fossil fuel types combusted in power unit m in year y

y = The relevant year as per the data vintage chosen in Step 3

The Operating Margin (including imports) 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 using the CEA CO₂ data base for the Indian Grid.

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

Simple Operating Margin Emission Factors (t CO ₂ /MWh) (incl. Imports)			
	2016-17	2017-18	2018-19
Indian Grid	0.9636	0.9543	0.9685

Net Generation in Operating Margin (GWh) (incl. imports)			
	2016-17	2017-18	2018-19
Indian Grid	916,278	960,693	995,957

Weighted Generation Operating Margin (t CO ₂ /MWh)	0.9622
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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 07.0, EB 100, Annex 4) para 72:

In terms of vintage of data, project participants 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 CDM-PDD submission to the DOE 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 DOE. 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 PP 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 PDD and is fixed for the entire crediting period.

The build margin emissions factor is the generation of weighted average emission factor (tCO₂/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows:

$$EF_{\text{grid,BM},y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{\text{grid,BM},y}$ – Build margin CO₂ emission factor in year y (tCO₂/MWh)

$EG_{m,y}$ – Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$ – CO₂ emission factor of power unit m in year y (tCO₂/MWh)

m – Power units included in the build margin

y – Most recent historical year for which power generation data is available

Build Margin (tCO ₂ /MWh) (not adjusted for imports) ³	
	2018-19
Indian Grid	0.8811

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 07.0, 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.

PP 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 CO ₂ emission factor in year y (t CO ₂ /MWh)
$EF_{grid,OM,y}$	=	Operating margin CO ₂ emission factor in year y (tCO ₂ /MWh)
w_{OM}	=	Weighting of operating margin emissions factor (per cent)
w_{BM}	=	Weighting of build margin emissions factor (per cent)

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

(a) Wind and solar power generation project activities: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods

$$\begin{aligned} \text{Therefore, } EF_{grid,CM,y} &= 0.9622 * 0.75 + 0.8811 * 0.25 \\ &= 0.9419 \text{ t CO}_2/\text{MWh} \end{aligned}$$

Project emission (PE_y):

As per AMS I.D. version 18, for most project activity, project emission is zero. This project activity also does not come under two options suggested in the same para. Since the project activity is installation of solar power plant which does not consume any fossil fuel for its operation so as per methodology AMS I.D. Version 18, no project emission has been considered for the project activity. Hence, for this project activity, **project emission remains zero.**

Leakage(LE_y):

Leakage due to transfer of equipments from another activity:

³ https://cea.nic.in/reports/others/thermal/tpece/cdm_co2/user_guide_ver15.pdf

The equipments installed in the project activity are not transferred from any other activity which is in line with AMS I.D. Version 18.

Hence $LE_y = 0$

Emission Reductions:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y : Emission reduction (t CO₂ e)

BE_y : Baseline emissions (t CO₂ e)

PE_y : Project Emissions (t CO₂ e)

LE_y : Leakage emissions (t CO₂ e)

B.6.2. Data and parameters fixed ex ante

Data/Parameter	EF_{grid,OM,y}
Data unit	tCO ₂ /MWh
Description	Simple Operating Margin of the Indian Grid
Source of data	Central Electricity Authority (CEA) of India Database as given in user guide version 15.0, Dec 2019
Value(s) applied	0.9842
Choice of data or measurement methods and procedures	3 year average data calculated from CEA Database for Indian grid in India specifically meant for use in CDM project activities CEA calculated emission factor by collecting information on fuel consumed, net energy generated and, GCV and measuring oxidation factor and emission factor.
Purpose of data	For calculation of emission factor
Additional comment	This database is an official publication of government of India for the purpose of CDM baseline. It is based on most recent data available to CEA and hence considered for authentic. As the calculation for baseline has been done ex-ante, its value will remain fixed for the entire crediting period.

Data/Parameter	EF_{grid,BM,y}
Data unit	tCO ₂ /MWh
Description	Build Margin of the Indian Grid
Source of data	Central Electricity Authority (CEA) of India Database as given in user guide version 15.0, Dec 2019
Value(s) applied	0.8587
Choice of data or measurement methods and procedures	3-year average data calculated from CEA Database for Indian grid in India specifically meant for use in CDM project activities CEA calculated emission factor by collecting information on fuel consumed, net energy generated and, GCV and measuring oxidation factor and emission factor.
Purpose of data	For calculation of emission factor.
Additional comment	This database is an official publication of government of India for the purpose of CDM baseline. It is based on most recent data available to CEA and hence considered for authentic. As the calculation for baseline has been done ex-ante, its value will remain fixed for the entire crediting period.

Data/Parameter	EF_{grid,CO2,y}
Data unit	tCO ₂ /MWh
Description	Emission factor of the Indian Grid
Source of data	Central Electricity Authority (CEA) of India Database as given in user guide version 15.0, Dec 2019
Value(s) applied	0.9528
Choice of data or measurement methods and procedures	3 year average data calculated from CEA Database for Indian grid in India specifically meant for use in CDM project activities CEA calculated emission factor by collecting information on fuel consumed, net energy generated and, GCV and measuring oxidation factor and emission factor
Purpose of data	For calculation of emission factor

Additional comment	This database is an official publication of government of India for the purpose of CDM baseline. It is based on most recent data available to CEA and hence considered for authentic. As the calculation for baseline has been done ex-ante, its value will remain fixed for the entire crediting period
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B.6.3. Ex ante calculation of emission reductions

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Annual electricity generation

Capacity Utilization Factor	16.91% (This is in line with EB 48, Annex 11)
Working days /annum (assumed)	365
hours/days (assumed)	24
EG_{BL,y} - Energy output (MWh)/year	
Year 1	6,888.1194
Year 2	6,814.0536
Year 3	6,739.9878
Year 4	6,665.9220
Year 5	6,602.9661
Year 6	6,540.0101
Year 7	6,477.0542
Total estimated energy over the first crediting period	46,728.1132
Average	6,675.4447
The annual electricity generation has been estimated considering following loss factors:	
Module degradation	10% for first 10 years
Auxiliary Power Consumption is taken negligible as per industry standard, i.e. CERC guidelines. (http://www.cercind.gov.in/2012/regulation/CERC_RE-Tariff-Regualtions_6_2_2012.pdf)	

Equations used for emission reductions

Baseline emission

The baseline emissions are the product of electrical energy baseline $EG_{BL, y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{BL, y} * EF_{CO_2, grid, y}$$

Where:

BE_y : Baseline Emissions in year y (tCO₂)

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

$EF_{CO_2, grid, y}$: CO₂ emission factor of the grid in year y (t CO₂/MWh)

The project activity pertains to supply of power to Indian Grid which is a part of national grid. So emission factor 0.9419 tCO₂/MWh applies to our project activity as mentioned in B.6.1

Project emissions:

As per AMS I.D. Version 18, for most renewable energy project activities, $PE_y = 0$. However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002.

Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption); Emissions from water reservoirs of hydro power plants.

As the project activity is a construction of a new solar power plant, there is no project emission.

$$PE_y = 0$$

Since the project activity is installation of solar power plant which does not consume any fossil fuel for its operation so as per methodology AMS I.D. Version 18, no project emission has been considered for the project activity. Hence, for this project activity, project emission remains zero.

Leakage emissions:

There is no leakage involved as the energy generating equipment is not transferred from another activity. This is in line with methodology AMS I.D. Version 18

$$LE_y = 0$$

Emission reductions:

$$ER_y = BE_y - PE_y - LE_y = BE_y$$

$$\text{as } PE_y = 0 \text{ and } LE_y = 0 \text{ } ER_y = BE_y$$

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions (t CO ₂ e)	Project emissions (t CO ₂ e)	Leakage (t CO ₂ e)	Emission reductions (t CO ₂ e)
Year 1	6,487	0	0	6,487
Year 2	6,418	0	0	6,418
Year 3	6,348	0	0	6,348
Year 4	6,278	0	0	6,278
Year 5	6,219	0	0	6,219
Year 6	6,160	0	0	6,160
Year 7	6,100	0	0	6,100
Total	44,010	0	0	44,010
Total number of crediting years	7			
Annual average over the crediting period	6,287	0	0	6,287

B.7. Monitoring plan**B.7.1. Data and parameters to be monitored**

Data/Parameter	EG _{BLy}
Data unit	MWh/y
Description	Quantity of net electricity supplied to the grid by power plant in year y
Source of data	From "INTER OFFICE MEMO" prepared by (AGM-EEMG, NTPC Faridabad) at project site and submitted to AGM-Commercial Office of NTPC for issuance of invoice to GRIDCO.
Value(s) applied	6675.4447(Average)
Measurement methods and procedures	<p>Measurement methods and procedures is according to that detailed in the Power Purchase Agreement (PPA). A set of ABT (Availability Based Tariff) compliant Main meter, Check meter and Standby meter with 0.2s accuracy class as per CEA (Installation & operation of meters) regulations 2006 (http://www.cea.nic.in/reports/regulation/meter_reg.pdf) / IEGC as applicable is installed at the common connection point at which all the solar modules are connected i.e. at the premises of generating station on the 33 KV outgoing feeder and meter reading is considered for estimating emission reduction (Refer to Section B.7.3). Person responsible for measurement is Head of O&M (Operation& Maintenance), which is common for Gas & solar plant.</p> <p>Net electricity supplied to the grid is cross checked with records for sold / purchased electricity (e.g. invoices / receipts)</p>

Monitoring frequency	<p>- ABT compliant Meters measure net electricity in 15 minute time-blocks (real time) and hence meet the requirement of continuous monitoring, hourly measurement and at least monthly recording prescribed in the methodology.</p> <p>- Data are aggregated daily, monthly and yearly</p> <p>The data monitored and required for verification and issuance be kept and archived electronically for two years after the end of the crediting period or the last issuance of CERs, whichever occurs later.</p>
QA/QC procedures	<p>One set (Main & Check) of class 0.2 S accuracy energy meters suitable for ABT requirement is provided for the 33 KV outgoing feeder. Another one no. of class 0.2 S accuracy standby energy meter suitable for ABT requirement is provided for the 33 KV outgoing feeder</p> <p>The main and check meters are checked jointly at the time of installation as per the CEA (Installation & operation of meters) regulations 2006 (http://www.cea.nic.in/reports/regulation/meter_reg.pdf) as amended from time to time.</p> <p>Regular cross checking and analysis of meter readings and meter failure or discrepancies are reckoned as per CEA (Installation & operation of meters) regulations 2006 as amended from time to time. If the main meter or check meter is found to be not working at the time of meter reading or at any other time, NTPC informs the SLDC (State Load Despatch Centre) / RLDC (Regional Load Despatch Centre) of the same (http://cercind.gov.in/Regulations/Signed-IEGC.pdf) .</p> <p>In case of failure of meters, energy accounting for the period as per procedure laid down by CERC (http://cercind.gov.in/220206/IEGC_2005.pdf) or as per the mutually agreed procedure. In case of absence of any such procedure, the following procedure is followed:</p> <p>In case of failure of main meter, reading of check meter for the corresponding period is considered for energy accounting. If both the main and check meter(s) fail to record or if any of the PT fuses is blown out, energy are computed based on standby meters.</p> <p>Testing and Calibration: All meters are calibrated and tested as per procedure laid out in CEA (Installation & operation of meters) regulations 2006. The meters are calibrated once in five years by NABL accredited agency in the presence of representative of NTPC and M/s GRIDCO as per procedure laid out in CEA (Installation & operation of meters) regulations 2006.</p> <p>Quality assurance system elaborating the roles and responsibilities has been implemented to ensure consistency and accuracy of monitoring.</p>
Purpose of data	For calculation of baseline emission
Additional comment	The data monitored and required for verification and issuance be kept and archived electronically for two years after the end of the crediting period or the last issuance of CERs, whichever occurs later

B.7.2. Sampling plan

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Not applicable.

B.7.3. Other elements of monitoring plan

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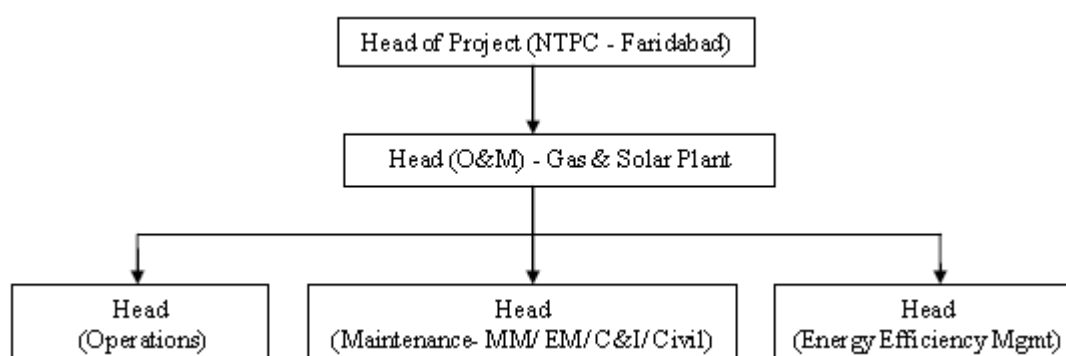
1. Name and reference of approved monitoring methodology

The monitoring plan of the project activity is formulated as per approved methodology AMS I.D version 18. As per the methodology, net electricity supplied to the grid is to be monitored.

BOT process: The solar plant to be installed in the proposed CDM activity is supplied by M/s Eversun Energy Private Limited, Bangalore, India. The proposed CDM activity is operated and managed by supplier for the first year under coordination of NTPC representative. Documentation practice is followed to ensure the reliability and availability of data for all the activities as required by the identification of site, logistics, finance, construction, commissioning and operation of the solar plant. NTPC is responsible for operation and maintenance of project activity from the second year until end of crediting period.

2. Operational and management structure

The organisation structure for the proposed power plant envisages a head for operations and maintenance of solar power plant with reporting structure as given below:



Responsibilities

Only parameter required to be monitored is net energy generated from project activity. The organisation structure for the proposed power plant envisages a head of O&M, which is common for Gas & solar power plant ; he has completed the control over monitoring aspects of the Solar Power Plant. He is directly reporting to the Head of Project. The Head of O&M are assisted by operation, energy efficiency management and maintenance personnel and have overall responsibility of monitoring of power generation and consolidating daily weekly, monthly and yearly and archiving the same. The day-to-day operation control is performed by the operation engineers who monitor solar power generation continuously. Energy efficiency management engineer are responsible for archiving and reporting of energy generated as measured by online special energy meter.

Designation	Responsibility
Head of project	<input type="checkbox"/> Holds complete control over monitoring aspects pertaining to the project <input type="checkbox"/> Review of Monitoring report
Head (O&M)	<input type="checkbox"/> Oversees the collection, recording and storage of data <input type="checkbox"/> Entire power plant operation & maintenance for both Gas & Solar Power Plant
Head of Maintenance (MM/ EM/ C&I/ Civil)	<input type="checkbox"/> Maintenance of all equipments <input type="checkbox"/> Coordination with operation & other maintenance groups <input type="checkbox"/> Training of the staff
Head of Operation	<input type="checkbox"/> Day to day operation <input type="checkbox"/> Coordination with maintenance groups <input type="checkbox"/> Training of the staff
<input type="checkbox"/> Head of Energy and Efficiency Monitoring group	<input type="checkbox"/> Data collection and storage <input type="checkbox"/> Archiving and reporting of net energy generated as measured by online special energy meter <input type="checkbox"/> Monitoring of power generation and measurement of power generated in 15 minutes blocks <input type="checkbox"/> Periodic checking of recorded & stored data <input type="checkbox"/> Responsible for carrying out periodical testing and calibration of equipments and meters. <input type="checkbox"/> Emission reduction calculation & Monitoring report preparation

3. Data Measurement:

Main and check meter are installed as per the specification stipulated in the PPA. The accuracy class of energy meter is 0.2s. There is continuous monitoring of power generated, 15 minute block wise measurement and reading is recorded daily and data of net energy generated is reported weekly to SLDC / RLDC. The electricity supplied to the grid is measured continuously using main meter and check meter installed at 33 KV outgoing feeder. In case of failure of main meter, reading of check meter for the corresponding period is considered for energy accounting. If both the main and check meter(s) fail to record or if any of the PT fuses is blown out, energy is computed based on standby meters.

4. Data collection and archiving:

The meter readings from main and check meters are collected under the supervision of Energy and Efficiency Monitoring Group. The net electricity supplied data would be recorded and stored in electronic form. The records are checked periodically by the Head (O&M). The period of the storage of the monitored data will be 2 years after the end of crediting period or till the last issuance of CERs for this project activity whichever occurs later.

5. QA/QC procedures:

Refer section B.7.1 of PDD.

6. Emission reduction calculation: Meters reading is considered for calculating emission reduction.

7. Emergency preparedness: The project activity does 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.

8. Personnel training: In order to ensure a proper functioning of the project activity and a properly monitoring of emission reductions, the staff are trained. The personnel are trained in equipment operation, data recording, reports writing, operation and maintenance and emergency procedures in compliance with the monitoring plan. The Head of the Maintenance & Head of Operation are responsible for training of their staff in association with Employee Development Centre (EDC).

SECTION C. Start date, crediting period type and duration**C.1. Start date of project activity**

>>

As per Glossary CDM terms version 10.0, the start date has been considered as the earliest date at which either the implementation or construction or real action of a CDM project activity begins.

Start date of project activity is 21/05/2013, the day of issuing notification for award for supply and erection of solar plant equipments to M/s Eversun Energy Private Limited. This is the earliest date in which NTPC Limited has committed expenditures for construction and supply of plant.

C.2. Expected operational lifetime of project activity

>>

25 years 00 month

C.3. Crediting period of project activity**C.3.1. Type of crediting period**

>>

Type of crediting period - Renewable

This is the second crediting period.

C.3.2. Start date of crediting period

>>

Start date of second crediting period is: 01/06/2021

C.3.3. Duration of crediting period

>>

7 years 00 month. Seven year crediting period will be renewed twice.

SECTION D. Environmental impacts**D.1. Analysis of environmental impacts**

>>

Environmental impacts of the project activity are not significant. There are no waste products, no requirements for cooling, no moving parts, no noise and no impact on flora and fauna. As per circular No. J-11013/41/2006-IA.II (I) dated 13/05/2011 "Applicability of environmental clearance for Solar Photo Voltaic (PV) Power Projects", by Government of India, Ministry of Environment and Forests, the Solar PV power project are not covered under the ambit of EIA notification 2006, and no environment clearance is required for such projects (refer <http://moef.nic.in/downloads/public-information/OM-SolarPV.pdf>).

D.2. Environmental impact assessment

>>

Not Applicable

SECTION E. Local stakeholder consultation**E.1. Modalities for local stakeholder consultation**

>>

As per definition of Stakeholders in annexure of Decision 3/CMP.1 of UNFCCC stakeholders means the public, including individuals, groups or communities affected, or likely to be affected, by the proposed clean development mechanism project activity.

NTPC Limited is developing a 5 MWp Solar Photovoltaic (SPV) power plant at the Jajru village, between National Highway-2 & Delhi-Agra railway line. The land is in possession of NTPC- Faridabad. The proposed 5 MWp SPV power project of NTPC are reducing the greenhouse gases emissions and contribute the sustainable development in India.

The SPV project has been envisaged as a CDM project. In line with the guidelines issued for CDM, a 'stake holder consultation meet' was organized at NTPC-Faridabad on 06/03/2012. To inform the stakeholders about the project activity, invitation was given by making appeal in newspapers namely Hindustan, New Delhi dated 04/03/2012, Dainik Jagran, New Delhi, dated 06/03/2012, Rasthriya Sahara dated 29/01/2012 for attending stakeholder consultation meet on 06/03/2012. Personal invitations were also given to the stakeholders.

Stakeholder Presence:

Approx. 101 persons attended the meeting, which include officials from the customer organization, representatives from EPC contractor, Gram Panchayat, Government School Principals / Teachers, PGCIL & BBMB. The representatives from Executive Association & Workmen Union of FGPS (Faridabad Gas Power Station) also attended the said meet. Sh. Pradip Godara, Additional Deputy Commissioner-Faridabad chaired the stakeholder consultation meet. Stakeholders were explained about the project activity and the related benefits arising out of the project activity. The list of participants is brought out in **Appendix-6**.

Proceedings of the meeting:

- DGM(P&S), NTPC-Faridabad Co-ordinated the proceedings of the meeting.
- AGM(I/c), NTPC-Faridabad welcomed the gathering and explained the working of various renewable energy technologies with special emphasis to solar / thermal. He also explained the necessity of renewable energy in the present scenario & requested all to help NTPC in meeting this endeavour successfully. He assured the village community of vill. Jajru & Payala that NTPC under its R&R / CSR policy is working on the community development activities and organizing medical camps for the overall betterment of the villages under its CSR program..
- DGM(P&S), NTPC-Faridabad made detailed presentations on the salient features of the NTPC and proposed SPV project.
- AGM(Engg-CDM), NTPC made detailed presentations on the proposed CDM SPV Project.
- Subsequently comments of stakeholders were invited through the paper slips circulated before hand. The point wise clarifications provided are brought out in **Appendix-6**.

- ADC-Faridabad in his speech thanked NTPC for choosing Vill. Jajru for developing a 5 MW solar PV plant. He requested all the villagers of Vill. Jajru & Payala to help NTPC in this project for its timely completion. He assured that the district authorities will extend all necessary help to NTPC for timely completion of this project. He praised NTPC for doing excellent CSR activities in vill. Neemka & Mujheri. He requested NTPC to focus on developing infrastructure facilities like road, street light & other community development activities in vill.jajru & Payala. He emphasised necessity of maintaining hygienic conditions in & around villages and requested NTPC to take initiative of helping villagers in building toilet facilities under the state govt. scheme in association with the district authorities- Faridabad.
- A few photos of the meeting are brought out in **Appendix-6**.

E.2. Summary of comments received

>>

All the stakeholders unanimously ensured their support to make this project a successful one. They were in favour of such projects being set up in their locality as it would help them in standardising their economic conditions. Refer **Appendix-6** for the comments received along with the stakeholders.

E.3. Consideration of comments received

>>

The queries of the stakeholders were answered satisfactorily by the project participant. The project proponent explained the positive impacts of the proposed solar photovoltaic project in detail. The stakeholders were happy about the fact that there are overall development of the local region due to the project activity. There were no negative comments received from the stakeholders on environmental impact. For detail refer **Appendix-6**.

SECTION F. Approval and authorization

>>

Host Country Approval and Authorization from National CDM Authority, India has been obtained.

Appendix 1. Contact information of project participants

Organization name	NTPC LIMITED
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Contact person	Mr. N.S.P Singh

Appendix 2. Affirmation regarding public funding

No public funding from Parties included in Annex-I to the Convention is involved, and hence there is no diversion of official development assistance.

Appendix 3. Applicability of methodologies and standardized baselines

The details regarding applicability of selected methodology are provided in Section B.2

Appendix 4. Further background information on ex ante calculation of emission reductions

The background information on the ex ante calculation of emission reductions is detailed in section B.6.3.

CO₂ Baseline Database for the Indian Power Sector version-15.0 Dec 2019 published by Central Electricity Authority

Links:

https://cea.nic.in/wp-content/uploads/baseline/2020/07/user_guide_ver15.pdf

Appendix 5. Further background information on monitoring plan

The detailed monitoring plan is as provided in Section B.7.3.

Appendix 6. Summary report of comments received from local stakeholders



5 MW Solar PV Power CDM Project at NTPC-Faridabad

Stake Holders Consultation meet

Date: 06-03-2012

Venue: NTPC-Faridabad

Comments received from Stakeholders and reply

Sl. No.	Name / Designation	Comments / Questions	Reply
01	Sh. Aditya Gaur, Dy. M (P&S)	What is the estimated CER of the project?	The estimated annual average CER is 7017 MT of CO ₂ e, over the crediting period of 7 years.
02	Sh. D. K. Geel, Dy. M (Civil)	How can we calculate the carbon credits? What is the present cost of CER?	The estimated CERs has been calculated based on estimated annual electricity generation multiplied by weighted average emission factor.
03	Sh. Sand Kumar, Asst. Chemist (BMG)	Who will get the benefit of carbon trading?	CDM benefits will be shared in line with CERC regulations.
04	Sh. Amit Tyagi, Sr. E (MM)- FEAN Representative	(a)What is the total cost of the project (b)cost of production, (c)cost of procurement by department (d) performance during monsoon(e) lead time from start to completion of the project(f) life of solar panels(g) total capacity planned? (h)Can private participation in the project is viable	(a) It depends on the technology employed and other variables. It can vary between 9-11 Cr. / MW (b&c) It will be sold at a rate prescribed by CERC. (d)During monsoon, production will come down, especially during cloudy season (e)Project lead time is 12 months from the date of EPC contract award (f)Economic life of solar panel is 25 years (g)NTPC's present plan is 5MW (h)The project is owned and operated by NTPC.
05	Sh. Sanjay Kumar, SM (EM)- Gen Secretary, FEAN	Whether emission reduction is compared to diesel or coal?	The weighted average emission factor has been considered as 0.95 based on CEA CO ₂ database.



06	Sh. Pawan Singh, President, NTPC, Karamchari Sangh.	Why such a consultation was being done?	It was explained that as per CDM procedure laid out by UNFCCC such a consultation is required.
07	Sh. Ram Parkash, Ex. Sarpanch- Jajra	Will this project provide opportunity for our villagers to work at site?	The project will definitely generate employment for skilled as well as unskilled manpower for the local resident thru various agencies who will come to execute the work at Solar Plant- Jajra.
08	Sh. Tek Chand Duboi, Farmer, Vill. Payala	How our village community will be benefited by this Project?	It was explained that NTPC under its R&R/ CSR Policy has already executed several community development works at Jajra & Payala village. The company will continue to work on community developmental activities like building infrastructure facilities, organizing medical camps and skill educational programmes for the village community at Jajra & Payala.
09	Smt. Bahata, Sarpanch- Jajra	How NTPC will provide community development activities like building Road & Street light in Village Jajra.	It was explained that NTPC under its R&R/ CSR Policy focuses on providing community developmental activities like building infrastructure facilities, organizing medical camps and skill educational programmes for the village community.
10	Sh. Devi Ram, Farmer, Vill. Jajra	How NTPC will develop Toilet facilities for villagers as these are lacking & lead to unhygienic conditions in the village.	It was explained that NTPC under its R&R/ CSR Policy will focus on building infrastructure facilities with the help of District Authorities.
11	Smt. Sanooch, Panch, Vill. Jajra	What are the proposed actions by NTPC to prevent dusty environment in Vill. Jajra & in particular to its proposed solar plant as the roads are damaged in the village.	It was explained that dust accumulation over solar panels reduces its efficiency. NTPC under its R&R/ CSR policy will focus on providing community development activities including Roads in the village and around its proposed solar plant site to prevent dusty atmosphere.



	(EEMG)	40°C	per the I-V curve of module
19	Sh. Anaya Pal Singh, Headmaster, Govt. High School, V.R. Parola	What is the duration of 5 MW supply in a day, whether it is available throughout the year, if not how many days, any study made?	It will be 4-5 hours per day, depending upon the duration of 'solar window'. Estimated annual working days are ~300.
20	Sh. Kamal, Farmer, Vill Mandhewala	SPV plant is very expensive to us. Thanks to NTPC, NTPC is producing power from all types of sources, except from our custom (wires) method.	Preliminary studies have indicated that, with the present technology, power from solar current is techno-economically not viable.



12	Sh. Lekhi Ran Dagar, Teacher (Ran), Vill. Agra	The project is new and not replacing any fossil fuel at use. How it would result into reduction of GHG emission?	It was explained that in absence of the project activity, the equivalent power would have been generated in the grid. It was also elaborated that the emission factors for power generated in the grid are published by Indian Government and the same are used to arrive at the emission reduction from the project activity.
13	Sh. Ravi Kumar Tawar, Principal, Govt. Middle School Vill. Agra	What is global warming? How does CO2 emission contribute to global warming?	It was informed that there are many GHGs and CO2 is one of them which aggravate trapping of sun rays that enters earth's atmosphere. Due to this there is rise in temperature on the earth's atmosphere. As the quantity of emission from the trapping of heat increases which causes global warming. Also, explained the harmful effects of Global warming. It was informed the project does not release any other harmful gas.
14	Sh. Nishu Ravi, Panch, Vill. Agra	Whether the project will need any additional infrastructure like Roads/ Water around its site?	It was explained that to avoid dusty atmosphere, the plant will require a circular road around its site and some water will be required for general cleaning purpose for the solar panels to remove dust accumulation.
15	Sh. Dev Ran Sharma, Police Inspector (Ran), Vill. Agra	Do you have any plan for welfare of villages?	NTPC is socially responsible company and carries out regular activities for community welfare and uplifting local villages.
16	Sh. Hakimuddin, SSE, NIMB- Ballabgarh	Whether this proposed 5 MW plant will have any problem with our grid due to variation of generation?	The proposed generation control module is expected to take care of the variations in the generation.
17	Sh. Tej Pal Rana, Indian Air Force (Retd.) Vill. Parsala	What are the essential activities required to maintain the rated o/p throughout the 25 year life cycle.	The SPV plant is a static unit, with minimal maintenance. Periodic cleaning of modules to prevent dust accumulation and preventive maintenance of electrical / electronic components are the major tasks involved.
18	Sh. Anil Kumar, DGM	What is the efficiency at	Module efficiency at 25°C is 16-19%. As the temperature rises, module efficiency falls as







NTPC Limited

5 MW Solar PV Power CDM Project at NTPC-Paridabad

Stake Holders Consultation meet

Date: 06-03-2013

Attendance sheet

Venue: NTPC-Paridabad

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3.	RATIV KUMAR	Cont. / Sr. Eng. (NTPC)	96099316	rativkumar@nptcl.co.in	
4.	ANURAG GUPTA	System Operation/Devt (NTPC)	96099317	anuraggupta@nptcl.co.in	

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No.	Item Name	Department/Division	Material Name	Quantity	Remarks
1	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
2	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
3	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
4	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
5	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
6	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
7	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
8	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
9	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
10	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
11	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
12	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
13	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
14	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
15	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
16	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
17	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
18	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
19	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100
20	Electric Cable	NTC/NTS / OLA/RO	100/100/100/100	100	100

No.	Specimen (Date)	Specimen / Location	Field Number	Field Date	Signature
24	Lygus lineatus	NTPL / CA 1990	745011000	10/10/90	[Signature]
25	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
26	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
27	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
28	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
29	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
30	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
31	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
32	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
33	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
34	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
35	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
36	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
37	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
38	S. X. clausus	NTPL / 1990	745011000	10/10/90	[Signature]
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Appendix 7. Summary of post-registration changes

In section B.7.1. Source of data for parameter $EG_{BL,y}$ is corrected as per actual practice at project site. The monitored value is recorded electronically as main & check Energy meters have been installed at 33 KV Switch yard at the location of plant. The energy billing is done on monthly basis through electronically down loaded data of energy meter and monthly value in “INTER OFFICE MEMO” prepared by (AGM-EEMG, NTPC Faridabad) at project site and submitted to AGMCommercial Office of NTPC for issuance of invoice to GRIDCO. So, the document “ Joint Energy meter reading report” is replaced by the “INTER OFFICE MEMO” where reading on the first day of every month recorded at project site and then submitted to AGM-Commercial Office of NTPC for issuance of invoice to GRIDCO. The same is corrected in monitoring plan of the PDD.

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
11.0	31 May 2019	Revision to: <ul style="list-style-type: none"> • Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
10.1	28 June 2017	Revision to make editorial improvement.
10.0	7 June 2017	Revision to: <ul style="list-style-type: none"> • Improve consistency with the “CDM project standard for project activities” and with the PoA-DD and CPA-DD forms; • Make editorial improvement.
09.0	24 May 2017	Revision to: <ul style="list-style-type: none"> • Ensure consistency with the “CDM project standard for project activities” (CDM-EB93-A04-STAN) (version 01.0); • Incorporate the “Project design document form for small-scale CDM project activities” (CDM-SSC-PDD-FORM); • Make editorial improvement.
08.0	22 July 2016	EB 90, Annex 1 Revision to include provisions related to automatically additional project activities.
07.0	15 April 2016	Revision to ensure consistency with the “Standard: Applicability of sectoral scopes” (CDM-EB88-A04-STAN) (version 01.0).
06.0	9 March 2015	Revision to: <ul style="list-style-type: none"> • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Make editorial improvement.
05.0	25 June 2014	Revision to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the project design document form for CDM project activities (these instructions supersede the "Guidelines for completing the project design document form" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the project activity in B.7.4 and Appendix 1; • Change the reference number from F-CDM-PDD to CDM-PDD-FORM; • Make editorial improvement.
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	13 March 2012	Revision required to ensure consistency with the “Guidelines for completing the project design document form for CDM project activities” (EB 66, Annex 8).

<i>Version</i>	<i>Date</i>	<i>Description</i>
03.0	26 July 2006	EB 25, Annex 15
02.0	14 June 2004	EB 14, Annex 06b
01.0	03 August 2002	EB 05, Paragraph 12 Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Registration Keywords: project activities, project design document		